The Nature of the Relationships between Social Networks,

Interpersonal Trust, Management Support, and Knowledge Sharing

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Said Abdullah Al Saifi

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Abstract

The nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing

Purpose – Past research has shown that, by implementing knowledge sharing, an organisation can maintain its long-term competitive advantage. Hence, this research will explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing.

Methodology/approach – In order to achieve the above purpose, semi-structured interviews were used to gather qualitative data. Interviewee participants included top and middle managers and frontline employees. The total number of participants included in the research was 25, equally representing five companies. The core business of all the companies was large-scale manufacturing. A grounded theory approach was used to analyse the data, augmented by the computer-assisted qualitative data analysis software, Nvivo.

Findings – The results reveal that social networks facilitate knowledge sharing in diverse ways. These ways are: the use of multiple communication styles, brainstorming and problem solving, learning and teaching, training, employee rotation, and consultation. In addition, the data from the interviews suggests that, through various factors, the level of interpersonal trust, influences the extent to which employees are willing to share knowledge. These factors are organisational, relational, and individual factors. Furthermore, this study shows that both middle and top managers can play significant roles in facilitating knowledge sharing between employees. These roles are: encouragement of participation in decision-making, provision of recognition, breaking down of barriers, building up of teams, providing training or assigning others to do training, encouragement of training, communication, learning, putting knowledge into practice in the form of processes, and movement of employees.

Research contributions – Six models were developed from the qualitative analysis of the field data. The brainstorming and problem solving model identifies various steps for brainstorming and problem solving which influence social

networks and knowledge sharing. The model of learning and teaching explains how social networks can be built based on the receivers' levels of knowledge, namely, the novice, competent, expert, and proficient levels. The model of factors influencing social networks and knowledge sharing illustrates various factors. These are: using multiple communication strategies, brainstorming and problem solving, learning and teaching, training, employee rotation, and consultation. The model of factors influencing interpersonal trust describes three factors for achieving such trust: organisational, relational, and individual factors. This model also elaborates on three factors that negatively influence interpersonal trust. These are division between departments, team conflict, and a sense of vulnerability.

The model of the role of management teams in encouraging participation in decision-making elaborates on levels of decision-making among employees and the way in which knowledge flows between top and middle management and frontline employees. The integrative model deciphers the relationships between social networks, interpersonal trust, management support, openness, and knowledge sharing. In addition, the relationships between each area of emphasis and knowledge sharing are included in the model. Based on this model, a survey questionnaire was developed.

These models provide new insights into the relationships between social networks, interpersonal trust, management support, and knowledge sharing. By applying these models to appropriate field situations, both practitioners and academics may be able to improve current practices relating to how knowledge is shared and evolves within organisations.

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Chapter One: Introduction

This chapter introduces the thesis by providing background information on the goal of the research, on the nature of knowledge, and, briefly, on the links between social networks, interpersonal trust, management support, and knowledge sharing. Specifically, it highlights the need to explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Next, motivation for conducting the research is presented. Then, the research goals and questions are stated. After that, the research scope is set out, followed by a summary of the research methodology employed. At the end of this chapter, the structure of this thesis is introduced and a brief summary is provided.

1.1 Research background

The primary goal of conducting this research is to study the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Both business and academic sources argue that, by implementing knowledge management, an organisation can maintain its long-term competitive advantage (Gonzalez-Padron, Chabowski, Hult, & Ketchen, 2010; Liu & Lai, 2011), sustain high performance (Pina, Romao, & Oliveira, 2013; Theriou & Chatzoglou, 2009), and become more innovative (Gonzalez-Padron et al., 2010; He&Abdous, 2013), especially in the current business environment which is regarded as a knowledge driven economy (Zhou & Fink, 2003). Thus, managing knowledge becomes a requirement for organisations to survive in competitive marketplaces (Matusik & Hill, 1998).

The definitions of knowledge have been discussed broadly in the knowledge management literature. Knowledge can be defined as "a fluid mix of framed experience, values, contextual information and expert insight that provide a framework for information" (Davenport & Prusak, 1998, p. 5). It can be broken down into explicit and tacit knowledge according to the way in which it is shared between individuals (Nonaka, 1994; Nonaka & Takeuchi, 1995). Explicit knowledge refers to knowledge that can simply be expressed by words or documents (Yang & Wu, 2008). According to Nonaka and Konno (1998), explicit

knowledge can be expressed in words and numbers and shared in kinds of data such as scientific formulae, specifications, manuals, and the like. This kind of knowledge can be readily transmitted between individuals formally and informally (Fernandez & Sabherwal, 2010). It is clear from the preceding discussion that explicit knowledge can be easily communicated and can be transmitted electronically (Nonaka & Takeuchi, 1995).

Tacit knowledge is embedded in individuals' thinking, making it hard to capture and equally hard to convert into useful information (Sarin & McDermott, 2003). It is an outcome of social activities among individuals and groups (Hildreth & Kimble, 2002), and deeply rooted in action, commitment, and participation in a specific context (Nonaka, 1994). Such conceptualisation is consistent with social constructivism, which views knowledge, and, indeed, all human understanding, experience, and realities as socially constructed through social interactions amongst people (Lincoln & Guba, 2000). To look at it another way, tacit knowledge encompasses an individual's know-how and the context added through experience and interaction (Alavi & Leidner, 2001). Tacit knowledge is subconsciously understood and applied; it is hard to articulate using formal language and is developed from experience. It involves individual experiences, beliefs, perspectives, and values.

Previous research shows that there is an urgent need for employees to collaborate and share knowledge instead of hoarding it (Husted, Michailova, Minbaeva, & Pedersen, 2012; Lu, Leung, & Koch, 2006). Taking a more pragmatic view, Chakravorti (2011) claims that knowledge management is not about only managing knowledge, but also about changing a culture to one that values knowledge sharing. Wong and Aspinwall (2004) point out that the most critical among the building blocks of knowledge management is creating a conducive and comfortable culture in an organisation to facilitate knowledge sharing.

The effective sharing of knowledge in manufacturing companies can assist them in diverse ways. It can enhance innovation through facilitating the free flow of ideas (Wasko & Faraj, 2000), which, in turn, builds knowledge. It could also assist with knowledge of market requirements and customers' demands (Fathi,

Eze, & Goh, 2011). Moreover, knowledge sharing brings advantages to manufacturing companies regarding the improvement of products and services, and the development of both vision and strategies (Sanchez & Palacios, 2007). In addition, with effective knowledge sharing, manufacturing companies can get products and services to the market more quickly (Davenport & Prusak, 1998). The knowledge embedded in a modern manufacturing company commonly represents its highest value (Fischer & Stokic, 2002). This fact is already well known by many manufacturing companies, and a great deal of investment is put into the sharing of knowledge. The previous literature suggests that the high importance of effective knowledge sharing is well recognised in a number of manufacturing companies. However, there is a requirement to further reinforce implementation of knowledge sharing and tools, by effectively dealing with fundamental and specific enablers related to knowledge sharing practice in manufacturing companies.

As noted before, understanding the role of knowledge sharing enablers is important in order to ensure the successful implementation of knowledge sharing (Kim, Lee, Paek, & Lee, 2013; Lee & Choi, 2003; Yeh, Lai, & Ho, 2006). These enablers have been found to facilitate knowledge sharing in organisations. As shown in the literature review, key enablers, such as face-to-face social networks, interpersonal trust, and management support can shape the culture of organisations.

A good deal of empirical evidence in the social interaction literature shows numerous advantages of face-to-face social networks relevant to knowledge sharing in organisations. People who have a history of interaction with others are more helpful and accessible (Cross & Sproull, 2004), provide more assistance, and support to one another (Seibert, Kraimer, & Liden, 2001). Another group of researchers affirm that social networks can be used for a variety of individual and organisational functions, involving enhancing decision-making practices, providing messaging consistency and setting up social linkages (Mehra, Dixon, Brass, & Robertson, 2006; Mischen & Jackson, 2008; Seibert et al., 2001). These functions help people to become better connected so the organisation can gain the

true advantage of their knowledge more quickly (Cross, Parker, Prusak, & Borgatti, 2001).

Interpersonal trust is cited by many researchers as one of the most important preconditions for knowledge sharing (Chowdhury, 2005; Davenport & Prusak, 1998; Rolland & Chauvel, 2000; Sveiby & Simons, 2002). Previous research shows that interpersonal trust has several roles in knowledge sharing, both as a factor and as an outcome of it (Alesina & Ferrara, 2002; Davenport & Prusak, 1998; Zaheer, McEvily, & Perrone, 1998). Nelson and Cooprider (1996) empirically examined interpersonal trust as a factor of knowledge sharing and showed a causal relationship. They suggested that trust functions through shared knowledge to influence group performance.

The support of management is recognised as one of the enablers having a significant potential role in organisational knowledge (Connelly & Kelloway, 2003; Gupta, 2008; Unruth, 1997). It has been discovered that management support is vital to creating a supportive climate and supplying enough resources for it (Lin, 2006). For this reason, management support is an important driver of knowledge management. Along the same lines, other researchers state that management support determines the success or failure of knowledge management (Daghfous, 2004; King & Marks, 2008; Lin & Lee, 2006). Other reasons for concentration on these three factors that influence knowledge sharing are illustrated in the following section.

1.2 Motivation for conducting this research

In the information economy, innovation, service, quality, speed, and knowledge sharing are significant factors to take into consideration (Hope & Fraser, 1997). This may be because knowledge is the currency of the twenty-first century. In fact, in an information economy, intellectual capital becomes a critical metric for determining the economic value of a company; in most companies today, intellectual capital forms the greater part of their market value (Figure 1.1).
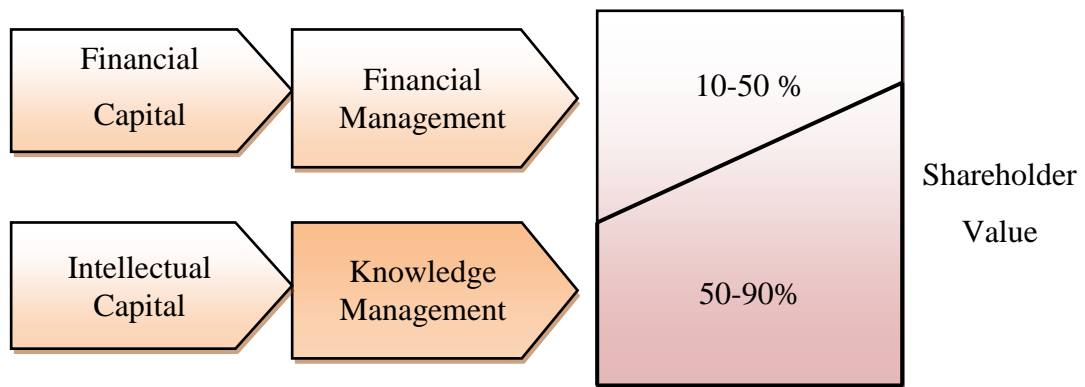
Figure 1.1 The new management priorities

The arrival of the knowledge economy has seen a decline in the relative significance of tangible resources and has made requisite a paradigm shift towards reliance on knowledge and intellectual capital (Guthrie, 2001a; Marti & Cabrita, 2012; Mouritsen, Thorsgaard, & Bukh, 2005). The kind of ownership of intellectual property in organisations that is truly empowering is increasingly seen as knowledge not of low-cost production methods or human resource-intensive production processes, but of methods of creation, protection, and further development of value (Lange, 2006). Within companies, knowledge resources are fast becoming crucial intellectual assets that define a firm's competitive advantage. As the economy becomes more knowledge-based in nature, there is a pressing need for organisations of all kinds to manage knowledge more effectively and efficiently, thereby enabling organisations to gain value (Burstein, Zyngier, & Rateb, 2002). Therefore, conducting research to explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing would be helpful for organisations and enable them to benefit from knowledge sharing.

Although the literature has stressed the significance of social networks, interpersonal trust, and management support in the sharing of knowledge, to our knowledge, nobody has yet looked at this topic in further detail. In addition, while it has already been suggested that these three dimensions play a significant role in knowledge sharing, little research has explored how they facilitate it, and what lessons can be learnt in terms of enhanced knowledge sharing in real

organisations. Therefore, this study covers an important area of exploration: how and why certain variables contribute to effective and efficient knowledge sharing, and how such knowledge sharing occurs. Thereby, the study aims to make an important contribution to existing knowledge by offering some tangible evidence of how and why social networks, interpersonal trust, and management support influence the sharing of knowledge. In addition, a motivation for producing the study is to explore other factors that lead to the creation of a strong culture of knowledge sharing. The study not only concentrates on the three factors already named, but, equally importantly, on what other factors exist that enhance knowledge sharing and how they influence it.

The research by Goh and Hoper (2009) provides findings on the significance of knowledge sharing within the New Zealand Defence Force.The researcher found only one quantitative study conducted in New Zealand focusing on knowledge sharing in the manufacturing industry, despite the growing significance of knowledge sharing (Guthrie, 2001b). Hsu, Kannan, Tan, and Leong (2008) conducted a comparative study to examine the effects of knowledge sharing capability on buyer-supplier relationships, but their research does not explore knowledge sharing contexts and how critical success factors enhance such sharing. Hence, there is a gap in the existing literature, and this thesis is a response to the scant body of research exploring the factors that influence knowledge sharing among employees in New Zealand, a record especially sparse with specific reference to manufacturing companies.

1.3 Research goals and research questions

The first goal of conducting this research has been to explore the nature of the relationship between social networks and knowledge sharing. In fact, the workplace is changing as greater social networks among employees becomes vital; therefore, diverse methods of knowledge sharing are required to provide employees with important skills and strategies for it (Drucker, 1999). Notwithstanding, it is acknowledged that organisations commonly repeat mistakes, duplicate tasks, and otherwise waste resources because staff members are not able to see or find each other's work (Krebs, 2009). Therefore, it is necessary to build social networking by creating a strong culture of knowledge

sharing. Kogut and Zander (1992) clarify that a company should be understood as a social community focusing on effectiveness and efficiency in the exchange of knowledge. Conceptualising organisations as social communities in which knowledge is structured, coordinated, and shared is important to understanding knowledge sharing (Marouf, 2007). Therefore, there is a need to explore the nature of the relationship between social networks and knowledge sharing. In order to do so, the following question is formulated:

RQ1: What is the nature of the relationship between social networks and knowledge sharing?

The willingness of organisational employees to share knowledge depends on the extent to which they trust each other (Adler, 2002; De Long & Fahey, 2000; Lucas, 2005; Yoong & Molina, 2003). All of these studies are, however, limited in the scope and generalisability of their constructs. None of these studies has linked interpersonal trust to the integrative, hierarchical understanding of interpersonal trust at diverse organisational levels. Hence, this study should advance the understanding of how knowledge sharing is influenced by interpersonal trust and, significantly, provide a basis for practical, operational action on the part of those who want to improve their company's cross-functional collaboration. To be more specific, it is the intention here to query how to effectively develop interpersonal trust in such a way as to develop an environment conducive to knowledge sharing. Hence, the following question is addressed in this thesis:

RQ2: What is the nature of the relationship between interpersonal trust and knowledge sharing?

Support from management is critical in the growth of knowledge management practices since it encourages employee participation in donating and collecting significant knowledge (Lin, 2011). Therefore, high levels of management support might lead to more mature knowledge sharing practices. Despite research efforts to examine organisational and social, as well as individual, factors that enable or impede knowledge sharing (Bock, Lee, Zmud, & Kim, 2005; Coakes, Coakes, & Lu et al., 2006; Rosenberg, 2008), there is relatively little research about the

mechanisms by which management might enable knowledge sharing (Nonaka & Toyama, 2005), in particular, by exploring how and why management encourages employees to share knowledge. Exploring the relationship between management support and knowledge sharing can enable the researcher to derive information concerning management practices that would support and enhance knowledge sharing. In view of this, the following research question on the relationship between management support and knowledge sharing is proposed:

RQ3: What is the nature of the relationship between management support and knowledge sharing?

Another research goal deals with the employees' perceptions and experiences regarding the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. This idea is based on the notion that organisations have realised that the knowledge of employees, that is, the intellectual capital of the organisation (Nahapiet & Ghoshal, 1998), is a major contributor to competitive advantage. Moreover, as is highlighted by Nikula, Sajaniemi, and Kälviäinen (2000), there is a gap between what is reported through the literature and what actually occurs in practice.Therefore, greater understanding of social networks, interpersonal trust, and management support insofar as they influence knowledge sharing and the relationships between them is essential for both knowledge management practitioners and researchers.

1.4 Research scope

This research is for the purpose of exploring the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. In terms of geographical area, participant companies are selected from five manufacturing companies in the North Island of New Zealand. Interviewee participants included top managers, middle managers, and frontline employees.

1.5 Research methodology

As previously mentioned, the main goal of conducting this research is to explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. However, the nature of their relationships to knowledge sharing has remained largely unknown. This research

was carried out in order to explore the phenomena under examination, which required an exploratory study that involved qualitative research. As the aim of this research is to build theory, an interpretive paradigm is deemed appropriate. A semi-structured interview was prepared and used to collect data from a number of interviews in manufacturing companies with a range of business employees. Interviews with five employees from each of the five companies were carried out. This distribution allowed the researcher to compare and contrast employees' roles in their companies with behaviour related to knowledge sharing. Due to the qualitative nature of the research questions, the researcher used grounded theory techniques to analyse the interview data and document reviews. These techniques include many specific ideas and techniques for forming grounded theory, all of which can be well supported using Nvivo software.

1.6 Structure of the thesis

The thesis is organised into seven chapters. Chapter One provides an introduction to knowledge management and sets out the motivation for conducting this research along with its goals and questions, scope, and methodology.

Chapter Two reviews the academic literature related to social networks, interpersonal trust, and management support and their relationships with knowledge sharing. It comprises 11 sections. The first section presents an overview of definitions of data, information, and knowledge. Following that, different types of knowledge are outlined. Then, definitions of knowledge management are provided. Next, the importance of knowledge management and its main processes are elaborated. Moreover, definitions of *knowledge sharing* are introduced, and the importance of knowledge sharing is outlined. Next, knowledge sharing enablers are discussed. Thereafter, previous academic literature that explores the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing is examined. Finally, a brief summary of the chapter is given in section 11.

Chapter Three presents the research gaps in the literature, and outlines the research objectives and research questions used in this study.

Chapter Four details the research methodology. This chapter starts by setting out the research's philosophies and paradigms. In addition, the research methodology is made clear, and the rationale underlying the choices made and methods used are explained. Next, the unit of analysis is illustrated. Following this section, the design of the interview is discussed, as are the selection of the research participants, the procedures for conducting the interview, and the collection of data. Data analysis based on grounded theory is then discussed. Furthermore, issues of trustworthiness are explained. Finally, this chapter presents the ethical procedures followed.

Chapter Five concentrates on the findings of the research undertaken. The results presented are derived from the interviews conducted with all the participants, who consisted of top and middle managers and frontline employees. Section 5.1 is a discussion of the grounded theory method of coding and analysis used to determine primary themes in the interview data. Then, the storyline of the nature of knowledge sharing in the studied companies is illustrated. Following that, the research findings and analysis related to social networks and knowledge sharing are elaborated. The research findings on and analysis of interpersonal trust and knowledge sharing are then illustrated. The final section of this chapter lays out those areas where the research findings and analysis concern management support and knowledge sharing. The summary of the research findings in this section is based on the main research results for each of the three research questions.

Chapter Six discusses the results of this research, based on the research objectives and questions identified earlier. This chapter begins by discussing the findings on the nature of the relationship between social networks and knowledge sharing. There is then discussion on the research on the nature of the relationship between interpersonal trust and knowledge sharing. The discussion then moves to the relationship between management support and knowledge sharing. Following that discussion, the development of the research model and research findings on the other factors for knowledge sharing and the relationships amongst them are explained.

The final chapter draws some conclusions and provides the main contributions made by, and implications of, this research to the field of knowledge management. It also explains the limitations of the research and points out some directions for future research that need to be investigated.

1.7 Chapter summary

This chapter lays the foundation for the thesis within the framework of the research problems. First, background information was provided on knowledge sharing and its links with social networks, interpersonal trust, and management support. Second, the research motivation was explained. Following that, the research goals and questions addressed in this study were identified. The research scope was also outlined. Next, the research methodology was briefly outlined. The final section of this chapter presented an overview of the chapters of this thesis. The next chapter reviews the relevant literature on knowledge management, and the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing.

Chapter Two: Literature Review

2.0 Introduction

This chapter will review the academic literature related to the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. It comprises 11 sections. The first section presents an overview of definitions of data, information, and knowledge. Following that, different types of knowledge are outlined. Then, definitions of knowledge management are provided. Section 2.4 elaborates on the importance of knowledge management. Section 2.5 describes its main processes. In section 2.6, definitions of *knowledge sharing* are introduced, and the importance of knowledge sharing is outlined. In Section 2.7, knowledge sharing enablers are discussed. Following that, previous academic literature that explores the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing is reviewed. Finally, a brief summary of the chapter is given in section 11.

2.1 Overview of knowledge definitions

In this section, definitions of the terms *data, information,* and *knowledge* are provided. Alternative views of knowledge are then explained. This section will start by setting forth the definitions of data, information, and knowledge.

2.1.1 Definitions of data, information, and knowledge

In order to comprehend the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing, it is vital to differentiate the meaning of knowledge from the meanings of information and data. A review of the knowledge management (KM) literature reveals many different definitions and viewpoints on data, information, and knowledge. The following discussion provides an overview of some of these views.

Knowledge has been differentiated from data and information in two distinct ways. A simplistic view recognises knowledge as the highest level in a hierarchy with information at the middle level and data at the lowest (Abdel-Qader, Al-Duaij, Nour, &Hussein, 2013) (see Figure 2.1). Although this simplistic view of

knowledge might not be totally inaccurate, it does not seem to fully elucidate the features of knowledge. Instead, there is a need to take a more complete view, in which knowledge is intrinsically dissimilar from information. Instead of recognising knowledge as a richer or more detailed set of facts than information, knowledge can be defined, as an area, as justified beliefs about relationships among concepts related to a particular area (Nonaka, 1994; Fernandez & Sabherwal, 2010).
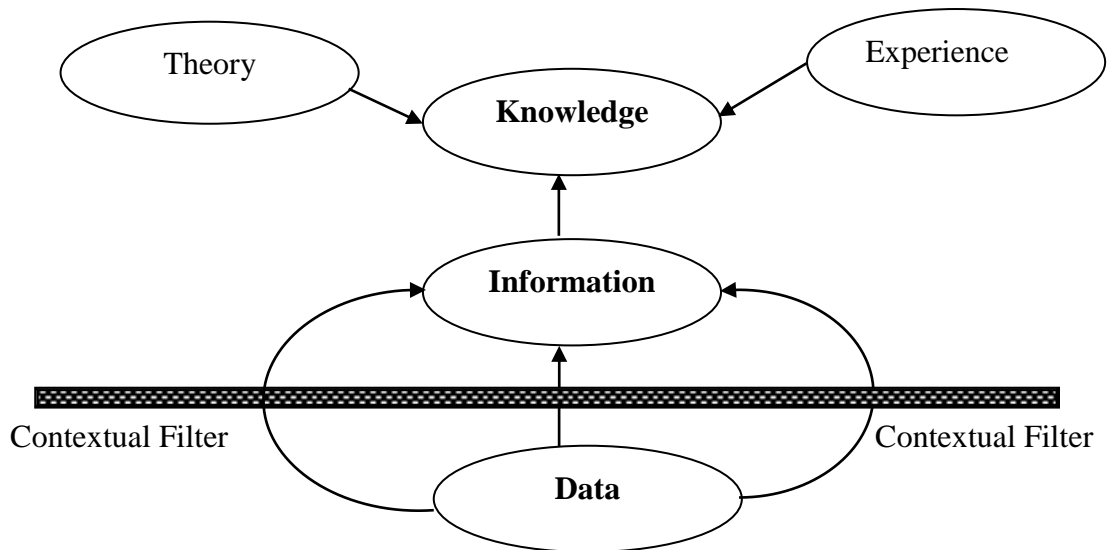
Adapted from: Small & Sage (2005/2006)

Figure 2.1 Knowledge: A derivative of theory, information, and experience

Data is the raw element of information. Essentially, it includes no meaning; it becomes information when framed within a meaningful context. By itself, data depicts raw numbers or assertions and might, therefore, be devoid of context, meaning, or intent (Fernandez & Sabherwal, 2010). For example, the numbers 17 and 1230 are just items of data. Framed within a context, such data might provide information, for example, that the number 17 bus is due at 12:30 p.m. Hence, data is converted into information.

Information can be defined as the manipulation of raw data to achieve a more meaningful indication of trends or patterns within it (Fernandez & Sabherwal, 2010). This definition has two parts. The first, manipulation of data, portrays the flow of information through a channel. This is flow without inherent meaning, and simply concerns the capacity of a channel to move volumes of data, also known as

syntactic information. The second part, the purpose of achieving meaningful indications of trends or patterns within it, ascribes an inherent meaning, that is, semantic content, to the flow of data (Geisler, 2008).

Much of the published research to date has adopted Davenport and Prusak's (1998) definition of knowledge, which calls it a "fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information" (p. 5). Knowledge is validated and authenticated information (Alavi & Leidner, 2001) that is ready to be used to decide and act. It implies a conglomeration of skills, principles, insights, instincts, ideas, rules, and procedures that help in taking these steps in decision and action. Miller and Morris (1999), for example, define knowledge as the intersection of information, experience, and theory. This definition can be expanded to involve wisdom, which may be defined as successful application of knowledge, which will commonly be tacit - in nature (Small & Sage, 2005/2006).

According to Brown and Duguid (2000), there are at least three significant distinctions between information and knowledge: 1) knowledge involves a knower, 2) is much harder to detach, transfer, and share than information, and, 3) is much harder to assimilate and comprehend than information.

It can be seen from the previous discussion that knowledge is conventionally viewed as conceptually distinct from information (Keane & Mason, 2006). Table 2.1 sheds light on definitions of information and knowledge as stated by some of the well-known authors in the field of knowledge management.

Table 2.1 Definition of information and knowledge

Definition of Information	Definition of Knowledge	Author(s)
Processed data	Interpreted information	(Jasimuddin, 2012)
A subset of data that possess context, relevance, and purpose	Justified beliefs about relationships among concepts related to that specific area	(Fernandez & Sabherwal, 2010)
Data vested with meaning	The ability to use information within a given scheme of action	(Geisler, 2008)
Can be transferred through information technologies	Requires human involvement in addition to IT	(Grover & Davenport, 2001)
Data vested with meaning	Justified, true beliefs	(Choo, Detlor,& Turnbull, 2000)
A message meant to change the receiver's perception	Experiences, values, insights, and contextual information	(Davenport & Prusak, 1998)
Text that answers the questions who, when, what, and where	Text that answers the questions why and how	(Quigley & Debons, 1999)
Data with relevance and purpose	Valuable information from the human mind	(Davenport, 1997)
A flow of meaningful messages	Commitments and beliefs created from these messages	(Nonaka & Takeuchi, 1995)

It is clear from the preceding table that Davenport (1997) and Davenport and Prusak (1998) use the terms "information" and "knowledge" synonymously. It is interesting to note that many of the authors use similar words in order to describe knowledge, for example, belief, ability to assign meaning, experiences, and values.

2.1.2 Alternative views of knowledge

Knowledge can be viewed from either a subjective or objective position (Fernandez & Sabherwal, 2010). The subjective view depicts knowledge by using two possible specific viewpoints, which are: as being a state of mind, or as being a process. However, the objective view describes knowledge from three possibly more specific viewpoints, which are: as an object, as access to information, or as capability. These perspectives are illustrated in Figure 2.2 and in the following subsections.

Perspectives on knowledge

Subjective viewpoint

Knowledge as a state of mind

Knowledge as a process

Objective viewpoint

Knowledge as an object

Knowledge as access to information

Knowledge as capability
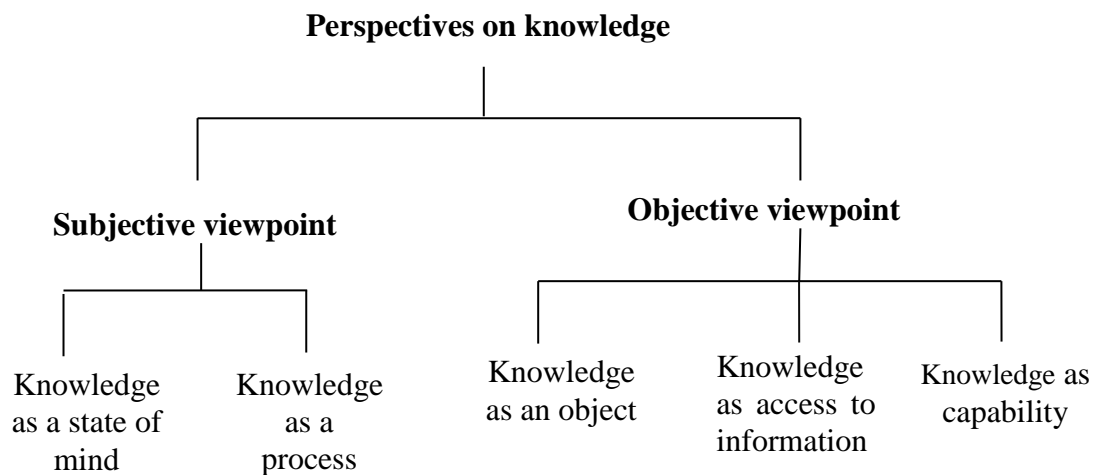
Source: Fernandez & Sabherwal (2010)

Figure 2.2 Various perspectives of knowledge

2.1.2.1 Subjective view of knowledge

In the subjective perspective of knowledge, reality is socially constructed through communication amongst individuals (Schultze, 1999). Knowledge is viewed as a continuing achievement that continuously impacts and is affected by social practices (Boland & Tenkasi, 1995). As a result, knowledge cannot be placed at a single location, as it is not independent of social relationships (Swan, Newell, & Robertson, 2000). According to the subjective view of knowledge, knowledge can be recognised from different viewpoints, either as a state of mind or as a process.

Knowledge as a state of mind

This view recognises knowledge as being a state of an individual's mind. Organisational knowledge can be viewed as personal beliefs of the individuals within the organisation (Nonaka, 1994; Song, Deng, & Martin, 2004; Sveiby,

1997). In addition, to the extent that diverse individuals have differing experiences and backgrounds, their beliefs and, for this reason, knowledge, can also differ (Fernandez & Sabherwal, 2010). As a result, the emphasis here is on enabling individuals to further increase their personal areas of knowledge so that they can use them to best pursue organisational objectives (Alavi & Leidner, 2001).

Knowledge as a process

Knowledge as a process concentrates on the application of expertise, from which perspective knowledge can be seen as a process of knowing and acting (McQueen, 1998; Zack, 1999). Viewing knowledge as a process concentrates on the flow of knowledge continually emerging through practice (Song, 2007). In addition, knowledge is comprised of collective rather than individual beliefs and, hence, is better reflected in organisational activities than in the minds of the organisation's individuals (Fernandez & Sabherwal, 2010; Meso & Smith 2000; Nonaka & Takeuchi, 1995). This being the case, information technology is needed to codify, store, and retrieve knowledge in an effective manner (Shin et al., 2001). This perspective is rooted in the view of the organisation as a knowledge system, and of knowledge as a competitive resource. Spender (1996) further adds that to know is to be able to take part in the process that makes the knowledge meaningful. As such, the existence of an organisation involves social communication with and between the individuals who comprise it (Shin, Holden, & Schmidt, 2001). Knowledge management driven by the definition of knowledge in terms of process-driven knowledge management is best explained by Nonaka and Takeuchi's (1995) knowledge creation model. In it, knowledge can be viewed as a flow, rather than objects, and it concentrates on knowledge generation, collaboration, and practices.

2.1.2.2 Objective view of knowledge

From this perspective, reality is independent of human insights and can be structured in terms of *a priori* categories and concepts (Schultze, 1999). The objective viewpoint recognises knowledge from three specific views, which are: those of knowledge as an object, as access to information, and as capability.

Knowledge as objects

Seeing knowledge as an object means seeing it as a "thing" that can be stored, transferred, and valued as an independent object (Hawryszkiewycz, 2010; Raisanen, 2010; Zack, 1999).Consequently, knowledge is more or less separate from the people who create and use it (Raisanen, 2010). In line with the definition of knowledge as a set of justified beliefs, these knowledge-objects can exist in a variety of locations (Fernandez & Sabherwal, 2010). The view of knowledge as an object is closely associated with the scientific perspective on knowledge, in which knowledge is seen as a body of facts that are not open to social interpretation (McAdam & McCreedy, 2000). Thereby, knowledge management can be seen, as it commonly is, as a merely technological solution. As a result, a great amount of concentration is devoted to implementing platforms and repositories to capture, store, control, manage, and reuse structured knowledge (Chatti, 2012).

Knowledge as access to information

The view of knowledge as access to information can be seen as an extension of the view of knowledge as objects, and as one which includes a special emphasis on the accessibility of those objects (Alavi & Leidner, 2001; Fernandez & Sabherwal, 2010). This viewpoint recognises knowledge as a state of access to documents and databases comprising data and information which is critical for an organisation to be successful (McQueen, 1998). To facilitate knowledge sharing, data and information must be added to some form of storage with information systems capabilities (McQueen, 1998). Thus, knowledge must be organised to enable access to and retrieval of content.

Knowledge as capability

This perspective is consistent with the last two views of knowledge as objects or as access to information. However, it varies in that the emphasis here is on the methods by which knowledge can be implemented to influence action (Carlsson, El Sawy, Eriksson, & Raven, 1996). This perspective places focus on knowledge as a strategic capability generated by experts' work activities (Barley, 1996) which can potentially be implemented to seek a competitive advantage (Fernandez & Sabherwal, 2010; Meso & Smith, 2000). In other words, knowledge is generated through dynamic interaction between experts' practices and the work

context, an interaction which is referred to as "knowing" (Cook & Brown, 1999). As such, knowledge cannot be taken away from practice by transferring it from one place to another as objects, nor can it be shared as individual cognition (Hsiao, Tsai, & Lee, 2006).

In sum, the five viewpoints discussed above differ in what they direct attention to knowledge, but they all follow the same line of viewing knowledge as a set of beliefs about relationships. The main issues of concern in these viewpoints are summarised in Table 2.2.

Table 2.2 Alternative views of knowledge

Knowledge as…	Main issues of concern
A state of mind	Beliefs within human minds
A process	Beliefs implicit in actions or practice
An object	Beliefs as objects to be stored and managed
Access to information	
Capability	

Source: Fernandez & Sabherwal (2010)

2.2 Different types of knowledge

The review of the literature reveals many dimensions of knowledge, which include those of tacit versus explicit (Alavi & Leidner, 2001; Cook & Brown, 1999; Fernandez & Sabherwal, 2010; Nonaka, 1994; Nonaka & Konno, 1998), procedural versus declarative (Alavi & Leidner, 2001; Fernandez & Sabherwal, 2010; Zack, 1998, 1999), general versus specific (Fernandez & Sabherwal, 2010; Sabherwal & Becerra- Fernandez, 2005), individual versus social (Alavi & Leidner, 2001; Cook & Brown, 1999; Nonaka, 1994), simple versus complex (Fernandez & Sabherwal, 2010; Garud & Nayyar, 1994), relational versus pragmatic (Alavi & Leidner, 2001; Winslade, 2009), public versus private knowledge (Marouf, 2007; Uzzi & Lancaster, 2003), and epistemological versus ontological knowledge (Akehurst, Rueda-Armengot, Lopez, & Marques, 2011; Cook & Brown,1999; Jasimuddin, 2012). These dimensions are illustrated in Table 2.3

Table 2.3 Dimensions of knowledge

Knowledge dimensions		Definitions	Examples	Authors
Tacit vs. explicit	Tacit	Knowledge rooted in actions, experience, and involvement in a specific context	Surgical skills	(Alavi & Leidner, 2001; Nonaka, 1994; Nonaka & Konno, 1998)
	Explicit	Knowledge that has been expressed in words and numbers	The basic principles for stock market analysis in book format	(Cook & Brown, 1999; Fernandez & Sabherwal, 2010; Nonaka, 1994)
Procedural vs. declarative	Procedural	Focuses on beliefs relating sequences of actions to desired or undesired outcomes; know-how	How to administer a specific drug	(Alavi & Leidner, 2001; Fernandez & Sabherwal, 2010; Zack, 1998, 1999)
	Declarative (substantive)	Concentrates on beliefs about relationships among variables; know-what	What drug is appropriate for an illness	
General vs. specific	General	Knowledge that is possessed and transferred easily by a large number of individuals	Knowledge of the rules of baseball	(Fernandez & Sabherwal, 2010)
	Specific (idiosyncratic knowledge)	Knowledge that is possessed by a very limited number of individuals and is expensive to transfer	Coaches' knowledge	(Sabherwal & Becerra-Fernandez, 2005; Fernandez & Sabherwal, 2010)
Individual vs. social	Individual	Knowledge created by and residing in an individual mind	Insights gained from completed project	(Alavi & Leidner, 2001; Cook & Brown, 1999; Nonaka, 1994)
	Social	Knowledge created by and inherent in collective actions of a group	Norms for intergroup communication	

Knowledge dimensions		Definitions	Examples	Authors
Simplicity vs. complexity	Simple	Concentrates on individual basic items of knowledge	Knowledge of how to switch cell phone off and on	(Fernandez & Sabherwal, 2010; Garud & Nayyar, 1994)
	Complex	Concentrates on multiple distinct areas of expertise	Knowledge of how to solve a problem with a cell phone	
Relational vs. pragmatic	Relational	Existing knowledge in relation to something else; know-with	Comprehending how a certain liquid interacts with other liquids	(Alavi & Leidner, 2001; Winslade, 2009)
	Pragmatic	Knowledge useful for an organisation in order for it to understand how to act	Best practices, business frameworks, project experiences, engineering drawings, market reports	
Public vs. private	Public	Hard information accessible through public domain	Company reports in a newspaper	(Marouf, 2007; Uzzi & Lancaster, 2003)
	Private	Knowledge not available via third parties which deals with soft information and related unpublished features of an organisation	Knowledge coming from personal driving skills	
Epistemological vs. ontological	Epistemology	Deals with the nature of knowledge	Scientific knowledge (e.g., physical, technical, etc.)	(Akehurst et al., 2011; Cook & Brown, 1999; Jasimuddin, 2012)
	Ontology	Deals with the nature of reality	Brute facts, e.g., river, mountain, or institutional facts, e.g., company	

Most discussions and definitions of knowledge differentiate between two types, and the most widely accepted characterisation of knowledge falls into the two types: explicit and tacit respectively (Kogut & Zander, 1992; Leonard & Sensiper, 1998; Nonaka & Takeuchi, 1995; Polanyi, 1962). The dimension of the tacit versus the explicit is commonly emphasised in knowledge management literature and this dimension is related to the three research questions in this study. Therefore, it is an area deserving of further explanation. The following discussion will decipher the explicit-tacit divide in knowledge in more detail.

2.2.1 Explicit and tacit knowledge

Explicit knowledge typically refers to knowledge that can be codified (Zander & Kogut, 1995), is easy to access (Hawryszkiewycz, 2010), and can be expressed in words and numbers (Fernandez & Sabherwal, 2010). It is more formal and systematic than the tacit kind, and is often found in books, reports, videos, images, sound recordings, databases, and computer software.Thus, explicit knowledge can be articulated and stored independently from its source without losing its meaning (Wang, Ashleigh, & Meyer, 2006). Explicit knowledge, unlike tacit, can be encoded in a code or language (Koskinen, 2003), and, as a result, can be easily shared (Fernandez & Sabherwal, 2010). The code may be words, numbers, or symbols such as grammatical statements, mathematical expressions, manual material, drawings, audio- and videotapes, computer programs, and so forth (Dalkir, 2011; Koskinen, 2003). In addition, explicit knowledge is more objective, rational, and free of context than tacit knowledge, and can be transferred in formal and systematic language (Sun, 2008).

Tacit knowledge involves insights, intuition, and hunches (Nonaka &Takeuchi, 1995). It is likely to be personal and based on individual experiences and activities (Fernandez & Sabherwal, 2010). It is believed that tacit knowledge is part of an individual's cognitive thought process and perception, which is not easily shared (Wang et al., 2006). Thus, tacit knowledge denotes knowledge related to the experience of individuals. In Polanyi's discussion of human knowledge, he states that, "we know more than we can tell" (Polanyi, 1966, p.4) and further explains this concept with such commonplace examples as the ability to recognise faces and to swim without even the slightest idea of how it is done. Thus, tacit

knowledge equals practical know-how (Koskinen, 2003). This dimension of tacit knowledge is seen solely from a practical perspective, which is to say, experts are not able to clearly express what they know and how they are capable of things. The main critique of this dimension is against the viewing of tacit knowledge from only a practical perspective, while several other dimensions of it have been ignored (Nielsen, 2002).

Nonaka and Konno (1998) broaden the definition of tacit knowledge and explain it as consisting partly in technical skills and also as having a cognitive dimension. The technical aspect covers the kind of informal and personal skill in crafts often referred to as *know-how*. Know-how is the characteristic of the expert, who uses it to act, make judgments, and so forth.The cognitive dimension comprises beliefs, ideas, and values, all three of which are cognitive scripts. In addition to Nonaka and Konno's (1998) cognitive and technical skill aspects, Wagner (1987) mentions the concept of a social aspect of tacit knowledge. Thus, tacit knowledge has three key dimensions: cognitive, technical, and social.

Another established classification is based on whether knowledge deals with questions of "know-what", that is to say, with facts, concepts, and generalisations, or with "know-how,"that is, with skills, procedures, and processes (Kogut & Zander, 1992). Know-what knowledge can be likened to a "list of ingredients," and know-how knowledge to a "recipe" (Kogut & Zander, 1992). While a recipe (know-how) involves explicit instructions, it also has tacit components that cannot be explained totally in the instructions.

Tacit knowledge is deeply rooted in action, procedures, routines, commitment, ideals, values, and emotions (Nonaka, Toyama, & Konno, 2000; Polanyi, 1966). It expresses itself in human actions in the form of evaluation, attitude, perspective, commitment, and motivation (Nonaka & Takeuchi, 1995). Tacit knowledge contributes to the "stickiness" of information required for problem-solving, making it hard for others to collect, transfer, and implement (von Hippel, 1994). The difficult-to-codify nature of tacit knowledge makes for difficult-to-imitate capabilities that might provide competitive advantages over other organisations (Nahapiet & Ghoshal, 1998). Commonly, it is difficult to directly explain tacit

knowledge in words, and frequently the only methods of explaining it are through metaphors, drawings, and dissimilar methods of expression that do not depend on a formal use of language (Koskinen, 2003).

The review of the literature reveals three important viewpoints concerning tacit and explicit knowledge. The first group of researchers argues that all knowledge is tacit in nature, since explicit knowledge depends on comprehended and externalised tacit knowledge (Polanyi, 1969 as cited in Kreiner, 2002). According to this perspective, explicit knowledge can be viewed as a type of information, because it cannot be successfully used without the input of individual tacit knowledge. At a later time, Nonaka and Takeuchi (1995) concluded that knowledge can be either tacit or explicit. This perspective has been criticised by many scholars, as knowledge cannot be separated in practice (Inkpen & Dinur, 1998; Politis, 2001; Spender, 1996). Finally, by combining Polanyi (1969) and Nonaka's (2007) perspectives, Cavusgil, Calantone, and Zhao (2003) and Koskinen, Pihlanto, and Vanharanta (2003) suggest a more realistic view by characterising knowledge as being convertible along a spectrum from the explicit to the tacit and vice versa according to the context in which it is found. These viewpoints are summarised in Figure 2.3.
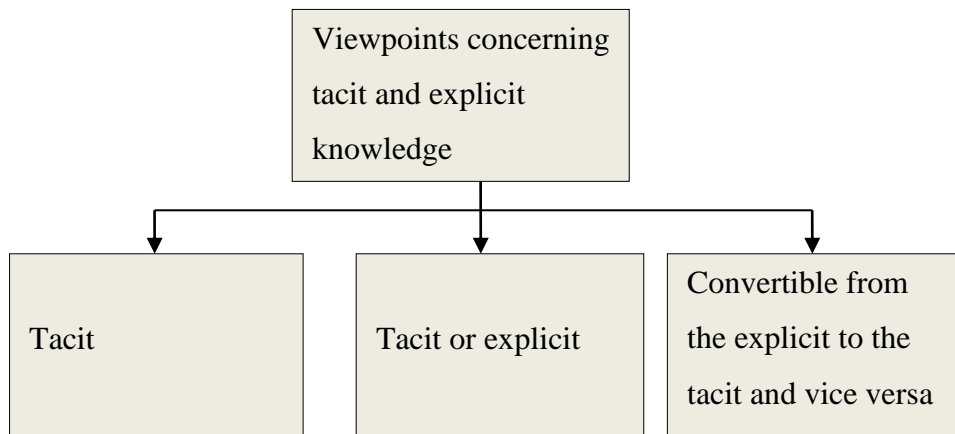
Figure 2.3 Viewpoints concerning tacit and explicit knowledge

2.3 Definitions of knowledge management

Moving on from discussions about knowledge and its dimensions, this review now turns to the literature on its management. There is no agreed upon definition for knowledge management, and definitions often depend upon researchers, their knowledge and skills, their philosophical background and interest (Koulopoulos &

Frappaolos, 2000; Parikh, 2001), and different viewpoints or schools of knowledge management.

Knowledge management involves the set of business processes that focus on technology and people. Horwitch and Armacost (2002, p. 28) define knowledge management as: "The practice of creating, capturing, transferring, and accessing the right knowledge and information when needed to make better decisions, take actions, and deliver results in support of the underlying business strategy". Similarly, Alavi and Leidner (2001) believe that knowledge management is largely regarded as a process containing numerous activities/processes: knowledge creation, storing, sharing, and application. In addition, Bhatt (2001) sees knowledge management as the process of the creation, validation, presentation, distribution and application of knowledge, which allows organisations to learn, reflect, unlearn, and relearn, leading them to achieve core competencies. Knowledge management can also be recognised as the process of delivering the right knowledge to the right persons at the right time (Coakes, 2003). In the same way, Lakshman (2007) expresses the same perspective, in which knowledge management is viewed as the process of an organisational capability allowing people in organisations, working as individuals or in teams, projects, or other such communities of interest, to create, capture, share, and leverage their collective knowledge to improve performance. Magnier-Watanabe and Senoo (2008) present their understanding of knowledge management as the process of acquiring, storing, diffusing, and implementing both tacit and explicit knowledge within and outside the organisation's boundaries with the goal of gaining and sustaining competitive advantage.

To take a broader view on knowledge management, it can be defined as a common business practice and as a theoretical field of study. In practice, knowledge management is a conscious effort to gain from the knowledge that lies within an organisation by utilising it to accomplish the organisation's goal (McInerney, 2002). Similarly, Wang and Wang (2008) define knowledge management as a set of practices of creation, development, and application of knowledge to improve the organisations' performance. In addition, knowledge

management can be defined as doing what is required to get the most out of knowledge resources (Fernandez & Sabherwal, 2010).

One definition (Bergeron, 2003) is that "knowledge management is a deliberate systematic business optimisation strategy that selects, distils, stores, organises, packages, and communicates information essential to the business of a company in a manner that improves employee performance and corporate competitiveness''(pp. 8-9). With knowledge thus managed, people are empowered to efficiently solve problems, make decisions, reply to customer questions, and generate new products and services that meet consumers' requirements (Karkoulian, Halawi, & McCarthy, 2008).

Further definitions come from the intellectual or knowledge asset viewpoint. For example, Stankosky (2008) defines knowledge management as leveraging intellectual assests to facilitate organisational performance. In the case of such action, to manage knowledge is to seek to gradually gain more and more intellectual capital that will generate unique core competencies and lead to advantageous findings (Rigby, 2009).

From the review of the above literature, it seems that there are two perspectives on the definition of knowledge management. The first views knowledge management from a technical perspective. Here knowledge management systems are seen as an advanced assembly of software and its related hardware structure for facilitating knowledge management processes. In line with this viewpoint, Meso and Smith (2000) define knowledge management from a technical viewpoint as comprising three components: technology, function, and knowledge. The main objective of this approach is to enhance access to information through enhanced ways to access and reuse documents through the use of technology such as databases, full-text search, and hypertext linking (Pauleen, Corbitt, &Yoong, 2007). Another school defines knowledge management from a sociotechnical perspective driven by the goal of getting the right information from the right people to the right people at the right time (Samad, 2005). This view can be made possible and facilitated by a range of social, organisational, and technical antecedents, which must be considered in any knowledge management policy or

practice initiative (Carayanis, 1998). The above definitions of knowledge
management are summarised in Table 2.4.

Table 2.4 Diverse definitions of knowledge management

Knowledge management as	Main focus	Authors
A practice	Implementing knowledge management processes to achieve competitive advantage	(Alavi & Leidner, 2001; Bhatt, 2001; Coakes, 2003; Fernandez & Sabherwal, 2010; Horwitch & Armacost, 2002; Lakshman, 2007; Magnier-Watanabe & Senoo, 2008)
A strategy	Systematic business optimisation strategy to improve employee performance, corporate competitiveness, and meet consumers' requirements	(Bergeron, 2003; Karkoulian et al., 2008)
Intellectual capital or knowledge assets	Leveraging intellectual assets to generate unique core competencies	(Rigby, 2009; Stankosky, 2008)
Technical perspective	Assembly of software and its related hardware structure for facilitating knowledge management processes	(Meso & Smith, 2000; Sherif, Hoffman, & Thomas, 2006)
Sociotechnical perspective	A range of social, organisational and technical antecedents	(Carayanis, 1998; Fatt & Khin, 2010; Fernandez & Sabherwal, 2010; Lee, kim, & Kim, 2006; Samad, 2005)

While it can be seen from the terms used above that the definitions vary in their
knowledge management focus, there seems to be a consensus that acknowledges

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knowledge management as a process of leveraging knowledge as the means of achieving an organisation's goals. In addition, it is clear from these definitions that knowledge management has a wide definition and is made up of diverse activities that ultimately assist individual or organisational knowledge. By and large, definitions range from "a method for getting the most out of knowledge resources and making it available to other people", to "knowledge management processes'', to "the strategic use of knowledge resources in an organisation in order to optimise best advantage''.

2.4 The importance of knowledge management

Knowledge is recognised to be the only resource that increases in value, so it is worth putting great effort into managing it (Probst, Raub, & Ramhardt, 2000). Businesses must position themselves within new economic realities, and optimising brainpower through knowledge management is one method of beginning the process of change (Alvesson & Karreman, 2001; Bassi & Van Buren, 1999). Knowledge management is also thought of as a method of dealing with uncertainties through finding the points at which the human imagination can be deployed to resolve them (Spender, 2008), which is important for organisations due to their need to provide quick and strong responses to unpredictability and to deal with problems (Spender, 1993). Thus, a successul organisation is one that can live with uncertainties and involve employees with knowledge vested in the organisation in the decision-making process. Speaking specifically, such uncertainty is usually tackled through the use of an adhoc approach to dealing with problems, particularly when uncertainties are dealt with as one-off scenarios (Koh, Gunasekaran, & Saad, 2007). All organisations make strategic decisions, but smart decision-making lies at the heart of organisational knowledge and its management (Chien, 2006).

Aside from its role in decision-making, knowledge management can add value in terms of innovation. Innovation is becoming an important driving force for individual companies, as well as the entire economy, and can play a significant role in the success of organisations (Gonzalez-Padron et al., 2010; He & Abdous, 2013; Manley & Mcfallan, 2002). An organisation's viability and success depend directly on the competitive quality of its knowledge assets and the successful

implementation of them in all business activities. Therefore, knowledge management is emerging as a major facilitator to meet this need for enterprise innovation. This can be achieved through rhythmic processes of search, selection, exploration, synthesis and divergent thinking, and decision-making (Leonard & Sensiper, 1998). Murray (2002) suggests that organisations do not know what they know and thus should recognise and use internal knowledge instead of constantly "reinventing the wheel". Again, the implication is that knowledge management can help to identify internal sources of knowledge and make it available for innovation.

Another valuable outcome of knowledge management is that it has given many organisations a sustainable competitive advantage (Davenport & Prusak, 1998; Gonzalez-Padron et al., 2010; Liu & Lai, 2011; Nonaka et al., 2000; Zack, 2003), giving them a high ranking positionin their markets. Becerra-Fernandez, Gonzalez, and Sabherwal (2004) affirm that knowledge management impacts organisations in diverse ways, such as by increasing returns on investment, and employee satisfaction, and providing economic scope and scale. Knowlege management was introduced along with other attempts to maximise organisational performance using effective and efficient processes (Pina, Romao, & Oliveira, 2013; Riege & Lindsay, 2006; Theriou & Chatzoglou, 2009). For this reason, it is beneficial for organisations to invest in managing their knowledge as well as investing in material assets (Quinn, 1992). This investment benefits the organisation by reducing defects in production and maximising profit (Drucker, 1999). Examples of organisations which have done so are Xerox, IBM, Microsoft, Schlumberger Limited, Shell, British Telecom, and Mitsubishi (Becerra-Fernandez et al., 2004; Nonaka & Takeuchi, 1995).

Another area in which knowledge management has value includes furthering the sharing of distributed knowledge within an organisation. Essentially, sharing knowledge entails the closely interactive process of bringing out the right information at the right time to improve the importance of an organisation. A knowledge management strategy can help to define close interaction, which indicates that knowledge is closely linked to whoever improves it (Hansen,

Nohria, & Tierney, 1999), and is shared mainly through close proximity (Gertler, 2003).

2.5 Knowledge management processes

As can be seen from the preceding discussion, knowledge management concepts in the literature differ mainly in terms of the enumeration and labelling of processes rather than the underlying concepts (Alavi & Leinder, 2001). This diversity may come about because organisations vary in their comprehension of what a knowledge management effort involves. To some, a knowledge management effort is completely about information technology capabilities. To others, it is about successfully capturing and distributing internal and external knowledge. In addition, knowledge management effort is about supporting an environment where knowledge is created, disseminated, and capitalised on (Barreto, 2003). Therefore, it is significant to review the literature on this area. For instance, Grant (2005) differentiates between two important processes, namely, the generation of knowledge, and the effective application of new and exciting knowledge. Table 2.5 presents an overview of the different approaches to the classification of knowledge management processes.

Table 2.5 Different approaches to the classification of knowledge management processes

Classifications	Authors
Transfer, creation, storage, and retrieval	(Jasimuddin, 2012)
Sourcing, transformation, and exploitation	(Love, Roper, & Bryson, 2011)
Creation, sharing, and use	(Salazar, 2010)
Creation, capture, organisation, sharing, and refinement	(Urso et al., 2009)
Sharing, storage, and audit	(Akhavan, Jafari, & Fathian, 2006)
Generation, and application	(Grant, 2005)
Creation, distribution, organisation, adaptation, identification, distribution, and application	(Ward & Aurum, 2004)
Creation/acquisition, modification, use, archiving, transfer, translation, access,and disposal	(Bergeron, 2003)
Creation/acquisition, organisation/storage, distribution, and application	(Rus & Lindvall, 2002)
Creation of new knowledge, packaging and assembly, application, reuse, and revalidation	(Tiwana, 2002)
Creating, capturing, storing, sharing, transferring, implementing, exploiting, and measuring	(Egbu, Botterill, & Bates, 2001)
Acquisition, conversion, application, and protection	(Gold, Malholtra, & Segars, 2001)
Creation, transmission, and utilisation	(Nonaka & Teece, 2001)
Creation, storage/retrieval, transfer, and application	(Alavi & Leinder, 2001)

The review of previous research suggests five basic processes of knowledge management. It is worthwhile to illustrate them in more detail. They are: knowledge acquisition and creation, knowledge storage, knowledge sharing,

knowledge transfer, and knowledge application. These processes are illustrated in more detail in the following subsections.

Knowledge acquisition and creation

Knowledge acquisition can be considered at both the organisational and individual levels. At an organisational level, it can be defined as accepting knowledge from the external environment and transforming it so that it can be implemented by an organisation (Liao, Wu, Hu, & Tsuei, 2009). At an individual level, it is comprised of two crucial components. The first is change in one's cognitive structure or mental model by justification of one's personal belief that the acquired knowledge is true (Gray & Meister, 2004; Nonaka, 1994). The second component is intention to use the knowledge (Pacharapha & Ractham, 2012).

Knowledge acquisition at the organisational level involves the activities of extracting, interpreting, and transferring knowledge so as to develop existing organisational knowledge (Liao et al., 2009). Althoughthe term *acquisition* implies that knowledge already exists and is brought in from outside the company, the fact that this already-existing knowledge becomes, for the first time, an element of the organisation, gives it the status of new knowledge there.

Nonaka, Toyama, and Konno (2000) defined knowledge creation as an organisational, social, and collaborative dynamic process of interactions between explicit and tacit knowledge, rather than a process from tacit or explicit knowledge alone. Ang (2006) believes that knowledge creation is the activity of developing new understanding. Schulz (2001) defines three kinds of knowledge creation processes: firstly, encoding existing knowledge in forms suitable for transmission, in which the goal is to simplify difficult cause and effect knowledge; secondly, combining existing knowledge, in which the goal is to capture current information and use it with a historical context; and, thirdly, production of new knowledge, in which the goal is to provide current information that informs new insights into the organisation.

Knowledge storage

Probst et al. (2000), describe knowledge storage as a system of knowledge and skills that preserves and stores perceptions and experiences beyond the moment at which they happen, so that they can be retrieved at a later time. Many researchers, for example, Stein (1995), Olivera (2000), and Wei (2005) maintain that computer-based technologies play a key role in enhancing the capability of enterprises to store large amounts of knowledge and make it accessible. These technologies, such as shared electronic databases, electronic bulletin boards, intranets, query language, multimedia databases, and expert systems are widely used in order to collect explicit knowledge, store it, and make it accessible. However, although computers can store and display natural language to humans with ease, they cannot totally exploit the real meaning of the text (Reporter-Staff News Editor, 2013).

Knowledge sharing

Knowledge sharing can be defined as "the act of making knowledge available to others within the organisation" (Ipe, 2003, p. 341). Similarly, Davenport and Prusak (1998) propose that knowledge sharing means providing others with one's knowledge and receiving knowledge from others. Knowledge sharing can also be defined as a culture of social interaction, denoting the exchange of people's knowledge, experiences, and skills throughout an entire organisation (Lin, 2007). Examples can similarly be provided of how knowledge sharing happens at the individual and organisational levels. At the individual level, knowledge sharing includes talking to colleagues to help them to get something done better, more quickly, or more effectively. At an organisational level, knowledge sharing is taking, organising, reusing, and transmitting experience-based knowledge that dwells within the organisation and making it available to others (Lin, 2007). This type of knowledge is illustrated in more detail in section 2.6.

Knowledge transfer

Knowledge transfer can be defined as the process by which the knowledge of one actor is obtained by another. Van Wikj, Janse, and Lyles (2008) define it as the process by which organisational entities, such as individuals, teams, and units, exchange, receive, and are influenced by knowledge from a third party. Davenport

and Prusak (1998) expand the definition of the objective of knowledge transfer to involve the use of knowledge to develop an organisation's ability, and, thereby, increase its value.

Knowledge application

Knowledge application can be defined as the business processes through which effective storage and retrieval mechanisms facilitate a firm's easy access to knowledge (Lin & Lee, 2005). The main drawback of the previous definition is that simple availability of knowledge does not guarantee such existing knowledge is truly implemented. In other words, knowledge in and of itself does not produce organisational value. Its application to create effective action does. Knowledge representation and distribution area prerequisite to effective use of knowledge. Representation and distribution still do not ensure utilisation of knowledge, but the opportunity to use highly available and distributed knowledge does become greater (Sun & Haoy, 2006).

The process of knowledge application involves retrieving and using knowledge in support of making decisions, solving problems, developing competency maps to place people in jobs and teams so as to best enhance productivity, and providing job aids and training to bring people up to speed quickly (Sagsan, 2006). As is clear about the previous processes, the application of knowledge implies a range of interventions aimed at enhancing the implementation of knowledge to find a way of dealing with human problems.

As can be seen, there is overlap between the definitions. For example, the creation of knowledge sometimes can be the result of the sharing of knowledge, while knowledge sharing could also be the result of knowledge creation. In addition, some scholars use the term knowledge transfer to mean the giving part of the knowledge management process (i.e., Alavi & Leinder, 2001; Bergeron, 2003). Moreover, still others use another word, such as transmission or distribution (i.e., Egbu et al., 2001; Rus & Lindvall, 2002; Ward & Aurum, 2004). In addition, knowledge application or use requires at least one of two elements of knowledge sharing: giving, and receiving it.

To be more specific, these definitions of knowledge management processes vary substantially. Accordingly, in order to understand knowledge sharing in more detail, there is a need to shed light on its definition. The definition of knowledge sharing is further explained in the next section.

2.6 Definition of knowledge sharing

Knowledge sharing can be defined as "the act of making knowledge available to others within the organisation" (Ipe, 2003, p. 341). Similarly, Davenport and Prusak (1998) propose that knowledge sharing means providing others with one's knowledge and receiving knowledge from others. This definition signifies that every knowledge-sharing behaviour constitutes both donating or bringing knowledge together and collecting or receiving it. Knowledge sharing can also be defined as a culture of social interaction, denoting the exchange of people's knowledge, experiences, and skills throughout an entire organisation (Lin, 2007). In the same way, Ardichvili, Page, and Wentling (2003), for example, observe that knowledge sharing involves both the provision of and the demand for new knowledge. Van den Hooff and de Leeuw van Weenen (2004) believe that knowledge sharing includes both the voluntary communication of one's knowledge to another, and knowledge collecting. Examples of knowledge sharers include people who are willing to share knowledge in order to communicate effectively with colleagues (knowledge senders) and those who effectively consult friends in order to learn from them (knowledge receivers).

Academic research on knowledge sharing can be summarised under three categories involved in the process: individuals (Choi & Lee, 2003; Stenmark, 2001), groups (Cabrera, 2002; Maznevski & Chudoba, 2000; Wenger & Snyder, 2000), and organisations (Sanchez, 2004; Santoro & Gopalakrishnan, 2000; Schelgenlmich & Chini, 2003). Examples can similarly be provided of how knowledge sharing happens at the individual, group, and organisational levels. At the individual level, knowledge sharing includes talking to colleagues to assist them to do something better, more quickly, or more effectively. In the knowledge sharing process, source individuals do not relinquish ownership of their knowledge. Rather, by sharing with a recipient the outcome is joint ownership of the knowledge (Ipe, 2003, p. 340). At the group level, employees with

complementary skills can work together to accomplish projects (Blankenship & Ruona, 2009) or complete a specific task, such as creating a new product or solving a problem (Wenger & Snyder, 2000). In this regard, the increase of knowledge sharing in project teams can lead to better implementation of knowledge and improved decision-making through comprehensive consideration of alternatives (Srivastava, Bartol, & Locke, 2006). At an organisational level, knowledge sharing is taking, organising, reusing, and transmitting experience-based knowledge that dwells within the organisation, and making it available to others (Lin, 2007).

Another group of definitions define knowledge sharing as the process through which explicit or tacit knowledge is communicated to others. It is believed that knowledge sharing is the process by which individuals mutually exchange their knowledge, tacit and explicit, and jointly produce new knowledge (Van den Hooff & De Ridder, 2004). In addition, the review of previous research reveals that knowledge sharing is used in two different ways. Some researchers view it as part of exploitation (i.e., Ghemawat & Costa, 1993; Im, 2006; McElroy, 2003). This view considers it as a set of processes by which existing knowledge is captured, transferred, and deployed in a similar condition. On the other hand, other researchers consider knowledge sharing as a kind of exploration (i.e., Benner & Tushman, 2003; Im, 2006; Swan, Newell, Scarbrough, & Hislop, 1999). This perspective evokes a process by which knowledge is shared and synthesised and by which new knowledge is created (McElroy, 2003). Two subprocesses in the sharing of knowledge are also mentioned: (a) externalisation, by which those who have knowledge make it available to others, and (b) internalisation, by which those looking to acquire knowledge behave in some way to process it (Hendriks, 1999).

The sharing of knowledge from an objectivist perspective is represented by what Bolisani and Scarso (2000) refer to as the "conduit model". This model, which is outlined in Figure 2.4, suggests that knowledge is shared by the unidirectional transferral of explicit codified knowledge (in the form of text, a diagram, or an electronic document) from an isolated sender to a separate receiver.

Source: Hislop (2002)
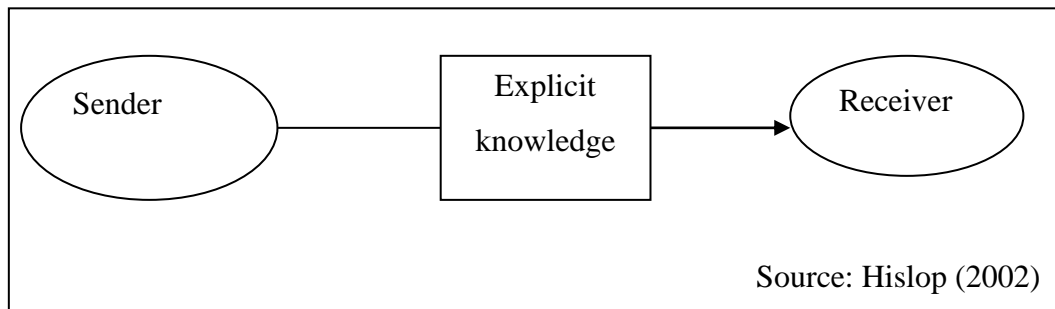
Figure 2.4 Conduit model of knowledge sharing

The main idea behind the above model is that the sender in isolation from the receiver can generate wholly explicit knowledge and then transfer it to the receiver. The receiver is then assumed to be capable of receiving this knowledge and understanding and utilising it without any other form of communication with the sender. In addition, it is assumed that no significant feature of this explicit knowledge is lost in the transfer. In order to define knowledge sharing for this research, the researcher has adapted Davenport and Prusak's (1998) definition, which is that of providing others with one's knowledge and receiving knowledge from others.

Many authors have argued that knowledge sharing is a significant value-adding component of knowledge-management initiatives (e.g., Davenport & Prusak, 1998; vonKrogh, 1998). Other researchers affirm that knowledge sharing is perceived as one of the significant factors in the functioning of an organisation (Kikawada & Holthouse, 2001; Okyere-Kwakye & Nor, 2011). Accordingly, the researcher has decided to focus on knowledge sharing. In order to understand knowledge sharing in more detail, there is a need to shed light on the importance of it. The importance of knowledge sharing is further explained in the next section.

2.6.1 The importance of knowledge sharing

Knowledge sharing has been identified as a core component of knowledge management (Davenport & Prusak, 1998; Dixon, 2000; Fullan, 2001; Jashapara, 2005), and, as such, is the chief concept in this research. It is not simply the transfer of knowledge, but a more complex and dynamic exchange that is made through a relationship between two actors. Knowledge sharing is essential

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because it provides a connection between the individual and the organisation by moving knowledge that is within an individual to the organisational level (Hendriks, 1999).

Illustrating the importance of knowledge sharing at an individual level, one study conducted to illustrate the significance of knowledge sharing found that a significant number of participants had positive perspectives on the sharing of knowledge (Ling, Sandhu, & Jain, 2009). Another study in selected Malaysian universities found that nearly all the academic employees indicated positive perspectives on the significance of knowledge sharing (Jain, Sandhu, & Sidhu, 2007). In addition, evidence confirms that the extent of individuals' knowledge and the perceived organisational value of knowledge sharing influence the extent of the reliance on income rather than outcome and on group, rather than individual, performance (Hwang, Erkens, & Evans, 2009). Another study found that knowledge sharing leads to success for individuals in their day-to-day business operations (Okyere-Kwakye & Nor, 2011). The process of sharing knowledge enables individuals to reflect on the effects of their behaviour and actions, to gain insights from the environment in which they operate, to understand their environment and, hence, to interpret meanings and respond to them in an appropriate manner (Zainol & Zaki, 2010). In addition, these actions will increase the rate of learning, cut down the risk of not knowing and repeating mistakes, and allow the retaining of knowledge assets when people move, leave, or retire (Dalkir, 2011). More significantly, this process can reduce costs and make important contributions to overall organisational success by preventing individuals from repeating the errors of others (Zainol & Zaki, 2010).

The importance of knowledge sharing for organisations is in terms of, for example, empowerment to align with missions, vision and values, and strategy, joint team accountability, process concentrate, stronger awareness of customer and competition, a collaborative team environment, and decentralised decision-making (Tiwana, 2002). In addition, the sharing of knowledge also decreases the time needed to market new products by improving group processes (Cooper, 2001). For instance, at the Ford company, the development time for designing cars was reduced from 36 to 24 months just by sharing organisational knowledge

across the company (Gazeau, 1998). Moreover, sharing in addition to simply owning knowledge is related to the competitive advantage of the organisation (Von Krogh, Nonaka, & Aben, 2001). Furthermore, as observed by Mueller and Dyerson (1999), knowledge that is not shared slows innovation in organisations (Teece, 1998). Daellenbach and Davenport (2004) and Chowdhury (2005) point out that, through knowledge sharing, the capacity of an organisation to innovate and produce quality solutions can be optimised quickly.

Other studies have found that knowledge sharing enables people to come up with creative solutions and enables their organisations to introduce new products and services to the market (i.e., Morag, Allison, & Malcolm, 2010; Nonaka & Takeuchi, 1995; Wang & Noe, 2010). The previous discussion suggests that there is a need to shift the perspective from that of saying "knowledge is power", to that of saying "sharing knowledge is more powerful," and to that of a culture that will enable what people can and will do with the knowledge assets of their organisations (Dalkir, 2011).

On the other hand, when knowledge is hoarded, the potential to make use of expertise is hindered (Hansen, 2002; Lu, Leung, & Koch, 2006). For instance, consulting firms such as Bain, BCG, and Mckinsey have devoted considerable effort to developing face-to-face connections to improve knowledge-sharing activities (Carmeli, Gelbard, & Palmon, 2013). Another example is the company Ericsson, which supports problem-solving techniques. In it, the focus is on building technical skills through knowledge sharing inside and outside organisational boundaries (Carmeli et al., 2013).

The following section describes knowledge sharing enablers which can play a significant role in the sharing of knowledge.

2.7 Knowledge sharing enablers

Knowledge sharing enablers can be defined as the structural and functional conditions in an organisation that are responsible for the success of a knowledge-sharing initiative (Chauvel & Despres, 2002). Lee and Choi (2003), and Yeh et al.

(2006) treat them as the mechanisms or antecedents for enabling knowledge sharing.

Knowledge sharing has an important influence on the success or failure of business sharing; hence, bringing knowledge sharing into a business has become one of the hottest topics of discussion in business literature (Yeh et al., 2006). In order to ensure the success of knowledge sharing, it is vital to be able to acquire the key facilitators in order to make probable the effective utilisation of an organisation's limited resources, reduce the use of manpower, material, and time, yet at the same time still be able to accomplish the expected outcomes (Yeh et al., 2006). Moreover, identifying drivers of knowledge sharing can help organisations to plan appropriate knowledge-sharing programmes to deal with their particular requirements, and comprehending the influence of knowledge sharing facilitators is important for making sure that these programmes are carried out successfully. In fact, knowledge sharing enablers not only influence knowledge sharing in general, but, equally importantly, they influence the specific dimensions of knowledge sharing. A review of the literature on knowledge sharing enablers reveals numerous facilitators of successful knowledge sharing. These are summarised below.

2.7.1 National culture

Culture has long been the subject of academic research, and the following definition of culture encapsulates the concept:

> "Culture is the accumulation of shared meanings, rituals, norms and traditions among the members of an organization or society. It is what defines a human community, its individuals, its social organizations, as well as its economic and political system. It includes both abstract ideas, such as values, ethics, as well as objects and services that are produced or valued by a group of people" (Solomon, Bamossy, & Askegaard, 1999, p. 377).

Knowledge about different cultures, therefore, helps us to understand why people in different societies behave, think, and learn in different ways.

Culture presents itself at different levels. At the highest level sits the culture of a country, which can be called its national culture. According to this method of classification, the next level of culture covers attitudes within a specific organisation, and these are described as organisational level culture (Schein, 2004). Finally, within establishments, individuals with certain functions who tend to share certain professional and ethical orientations form cultures called professional or individual cultures (Trompenaars, 1998). National culture characteristics embedded within individuals may impact knowledge management activities such as knowledge creation and sharing (Ray, 2014). Therefore, there is a need to understand the cultural context of employees when an organisation has employees from different cultures.

Research on cross-cultural influences on knowledge sharing is vital and required (Weir & Hutchings, 2005) as these will influence the success of knowledge sharing practices within the organisation. In order to illustrate the impact of national culture differences on knowledge sharing, the following sections will focus on some of the most salient attributes of national culture that have an impact on individuals' sharing of knowledge. These attributes are: gaining face, saving face (Hwang, Francesco, & Kessler, 2003), individualism-collectivism (Hofstede, 1991, 2001), and high and low context communication (Hall, 1976). Among the dimensions of national culture that have been identified across studies (such as Hall, 1976; Hofstede, 1991, 2001; Hwang et al., 2003) these attributes are commonly seen as basic values that distinguish members of different cultural groups from one another. The following sections will consider in detail the above attributes.

2.7.1.1 Gaining face (asking questions) and losing face (answering questions)

In terms of cultural antecedents affecting knowledge seeking behaviour, the literature indicates one attribute that is very significant for sharing knowledge, namely, face (Ardichvili, Maurer, Li, Wentling, & Stuedemann, 2006; Chow, Deng, & Ho, 2000; Hwang et al. 2003). Face is the image that people strive to maintain before others in pursuit of recognition and inclusion (Hwang et al., 2003). Hu (1994) believes that face gaining implies providing help to others. Chu

(2006b) argues that one significant method by which one can gain face in accord with the expectations of others is self-expression. In order to avoid losing face, people will inhibit their behaviour as much as possible (Chu, 2006a), even to the extent of avoiding contact with others (Chu, 2006b). Thus, during the knowledge sharing process, if people are afraid of sharing knowledge that they believe might be "wrong", thereby displaying their ignorance in such a way as to make them feel a loss of face, they will probably not want to participate in knowledge sharing activities at all.

Researchers have noted that although the concern for face is encountered in many cultures across the globe, it is a particularly important concern in a collectivistic culture like the Chinese culture (Chow et al., 2000) and this concern can limit collectivists' readiness to share some kinds of knowledge (Chow et al., 2000). Hwang et al. (2003) have found that the extent to which individuals try to gain face or avoid losing face impacts knowledge seeking behaviour. In their study on undergraduate business students, they found that individualism is positively related to gaining face and that, consequently, individualists, in this case American students, were most likely to ask questions in class.

2.7.1.2 Individualism/collectivism

Individualism-collectivism has been identified by many researchers as another significant dimension of cross-cultural studies (Morris, Davis, & Allen, 1994; Triandis, 1995). Individualism is illustrated by the tendency of people to place personal goals ahead of the goals of a larger social group, such as the organisation (Braun, 2014; Hook, Worthington, & Utsey, 2009). People are less inclined to give up their individual requirements when there is a conflict between their needs and group needs (Triandis, 1995). In contrast, collectivism is the degree to which people prefer to behave as members of a group rather than as individuals. In a collectivist culture, members prefer to maintain harmony and relationships. Therefore, with reference to sharing knowledge, collectivism has been viewed as the subordination of one's personal objectives to those of the group (Morris et al., 1994). Studies have also illustrated that people from collectivist cultures display a greater tendency to cooperate in order to be more competitive (Wagner, 1995). People of individualistic cultures see themselves as independent of others, while

collectivists see themselves as interdependent on other members. Cross-cultural literature suggests, however, that members of collectivist cultures tend to be open and keen to share their knowledge with members of their in-group (Chow et al., 2000; Magnier-Watanabe & Senoo, 2010).

2.7.1.3 High-low context cultures

Another cultural factor is the impact of context on communicative interaction. This factor concentrates on the correlations of communication context to communication pattern. All cultures communicate in contexts, but how they use these contexts in their communication differs broadly. Hall (1976) developed the concept of high context and low context communication. Communication relies strongly on contextual and social cues for its meaning. Hall (2000) states: "I have observed that meaning and context are inextricably closely connected with each other" (p. 36). In order to comprehend communication, he suggests, one must look at the meaning, the context, and the words themselves. Individuals learn how to act and to gain elements of value and belief systems through three main methods: through the family unit; the environment; and, the various social networks to which the individual belongs, with all serving as models of behaviour.

In high context communication, there tends to be non-verbal, indirect forms of communication. Conversely, in low context communication, the meaning resides originally in the explicitly coded part of the communication. Accordingly, there is a focus on information that is specific to the individuals at hand (Thatcher, 2004). As Hall (2000) illustrates, when high context communicators comprehend the context, their communication can be very agile, often requiring no more than a word or a glance. Notwithstanding this, when the communicators' context is not understood, high context communicators tend to evoke in the coded text all the fine nuances of the context before communicating the key message.

2.7.2 Organisational culture

Alavi et al. (2006) mention that organisational culture is a broad term, and thus inclusive in scope. This broad scope may be because organisational culture comprises a complex, interrelated, comprehensive, and ambiguous set of factors (Cameron & Quinn, 1999). Cameron and Quinn also state that the open-ended

nature of this concept has led researchers to offer a proliferation of different ways of explaining social behaviours (Alavi et al., 2006).

Morgan (2006) states that there are two methods of defining organisational culture: the anthropological definition, which illustrates that organisations have cultures; and, the sociological definition, which illustrates that organisations are cultures. Morgan also confirms that people from surrounding communities who become members of organisations bring their culture with them; however, that does not mean that organisations do not have their own culture that shapes the behaviours of those they employ.

Some researchers assign certain levels to organisational culture in an attempt to specify the term more narrowly. For instance, Schein (2004) points out that organisational culture exists essentially in relation to three conceptual levels: those of artefacts, espoused beliefs and values, and basic underlying assumptions. Artefacts can be defined as visible expressions of culture, including aspects of organisations such as structures, practices and processes, rituals, technology, manner of dress, and language. In order to comprehend the meaning of these artefacts, there is a need to dig deeper and reach the second level of culture, which is espoused beliefs and values. At the level of espoused beliefs and values, Schein suggests looking for a reason behind any observed artefact. Examples of espoused beliefs and values are those favoring creativity, problem solving, and working with others. Underlying assumptions are an unconscious element of organisational culture that comprise elements such as perceptions, thoughts, and feelings. This part of organisational culture can be presented in the form of general and abstract statements that express specific ideas and truths about human beings (Schein, 2004). This level of culture is the most difficult to relearn and change.

Some researchers combine different attributes when they define organisational culture. For example, organisational culture can be defined as the pattern of values, beliefs, norms, attitudes, and assumptions that might, though not articulated, form the methods by which people act and by which things get done (Armstrong, 2006). Organisational culture is made up by a set, whether more or less coherent or articulated, of values, meanings, behaviours, and organisational

practices (Campeanu-Sonea, Borza, Sonea, & Mitra, 2010). Another definition of organisational culture gives more attention to both its causes and effects (Dalkir, 2011). Using an outcomes viewpoint, organisational culture can be defined as a manifest pattern of behaviour, of consistent behavioural patterns noticed across individual groups. Culture thus defines consistent methods through which people accomplish daily tasks, solve problems, and deal with conflicts as they treat employees and customers, and the like.

The link between organisational culture and knowledge sharing is the subject of much research. Zheng (2009) suggests a theoretical framework that combines existing research on cultural antecedents that affect knowledge sharing. The framework includes three cultural categories: cultural antecedents linked to knowledge, people, and work. She shows that each category influences knowledge sharing in a different way, some relating to its effectiveness and others to its efficiency or sustainability. Under such conditions, creating a culture that values the sharing of ideas is essential for knowledge-sharing initiatives to succeed (De Long & Fahey, 2000; Gupta & Govindarajan, 2000). It is confirmed that culture can play a significant role in how knowledge-sharing functions are carried out in organisations (Smith & McKeen, 2003). As McDermott (1999) observes, four domains of challenges in knowledge sharing entail human interaction. These are the technical, social, managerial, and personal domains. They can shape the culture of organisations.

2.7.3 Strategy

Knowledge-sharing strategies are defined as high-level plans that describe and outline the processes, tools, and infrastructure (organisational and technological) needed to manage knowledge and allow it to flow effectively in corporations (Zack, 2002).

A knowledge-sharing strategy involves giving exact details of the objectives of knowledge-sharing initiatives and the methods adopted to achieve them (Maier & Remus, 2001). This precision helps to clearly set out the role of knowledge sharing in enhancing the attainment of organisational goals, and creates stronger

stimulus for an organisation's workers to encourage knowledge- sharing initiatives.

The relationship between knowledge sharing and strategy is frequently discussed in two separate but connected ways in the literature. First, knowledge sharing should support business strategies and be integrated within the strategic planning of an organisation (Conley & Zheng, 2009). In addition, in order to carry out an organisation's goals, there should be an identified knowledge-sharing strategy in place, such as a codification or personalisation strategy (Alazmi & Zairi, 2003; Artail, 2006; Hansen et al., 1999; Mathi, 2004). Codification strategy means that knowledge is carefully codified and stored in databases and then accessed and implemented easily by anybody in the firm (Hansen et al., 1999). Conversely, personalisation strategy means that knowledge is closely linked to the person who improved it (Hansen et al., 1999), and is shared mainly through person-to-person communication, telephone, and e-mail (Nicolas & Cerdan, 2009).

2.7.4 Structure

Organisational structure can be defined as the way in which responsibility, duty, coordination, and communication are managed (Brink, 2001). Many studies examine organisational structure from a traditional perspective, with centralisation and formalisation as the two critical dimensions (Gold et al., 2001; Hall, 2002; Holsapple & Joshi, 2000; Rainey, 2003; Robbins & Decenzo, 2001; Tata & Prasad, 2004; Tsai, 2002).

Formalisation can be defined as the degree to which decisions and working relationships are governed by formal rules, standard policies, and procedures (Holsapple & Joshi, 2000). Formal organisational structure inhibits interaction among employees, yet those very interactions are where effective knowledge sharing lies (Gold et al., 2001). It has been found that a hierarchical structure in organisations restricts active knowledge-sharing activities between employees (Creed & Miles, 1996). Furthermore, it is believed that organisational structure ought to be designed for flexibility rather than rigidity, in order to facilitate sharing and collaboration within the organisation (O'Dell & Grayson, 1998).

The "centre" in centralisation can be defined as a hierarchical level that has the authority to make decisions within an organisation (Hall, 2002; Rainey, 2003; Robbins & Decenzo, 2001; Tsai, 2002). Centralisation is one of the basic dimensions of organisational structure (Chen & Huang, 2007; Lee & Choi, 2003; Tata & Prasad, 2004). Centralised structure can lead to difficulty in communication and infrequent sharing of ideas due to the fact that it consumes time and causes distortion of ideas (Pemberton & Stonehouse, 2000). As a result, the decreased flexibility in an organisational structure can result in restricted knowledge sharing. Centralised structure is appraised within the knowledge sharing context for two main reasons. Firstly, decisions about the sharing of specialised knowledge can only be effective if the centralised decision-maker knows which knowledge is possessed individually (Willem & Buelens, 2007). Secondly, the effectiveness of coordination mechanisms for knowledge sharing relies on the level of specialisation in the organisation and, specifically, the levels of knowledge complexity, interdependency, and unit differences (Willem & Buelens, 2007).

2.7.5 Technological support

The term *technological support* refers to the availability of information and communication technology that is intended to facilitate knowledge-sharing activities (Lee & Choi, 2003). IT technologies can enhance information sharing between individuals by fostering the dissemination of resources within and around the organisation. This process distributes strategic knowledge required to compete in the market (Sher & Lee, 2004). When users grasp the meaning of the shared knowledge and interpret it information is converted into explicit knowledge, which in turn enhances individuals' capability to understand the requirements of others (Im & Workman, 2004).

Information technology (IT) is a significant enabler when a business implements a knowledge-sharing programme, as it has both direct and indirect impacts on knowledge sharing (Alavi & Leidner, 2001; Alazmi & Zairi, 2003; Allee, 1997; Bock et al., 2005; Fairuz, Chong, & Chew, 2008; Hariharan, 2005; Hendriks, 1999; Wong, 2005) by increasing the speed of sharing and decreasing costs due to time and distance (Albino, Garavelli, &Gorgoglione, 2004). Bolisani and Scarso

(2000) studied several cases and found various information communication technologies (ICT) which are efficient tools for knowledge- sharing activities in an organisation.

Call (2005) warns that knowledge-sharing initiatives will not succeed if based solely on technology. Therefore, a combination of technological and social perspectives is needed in order to optimise organisational goals. In the pursuit of this end, information technology and knowledge sharing are closely tied together, in order to support communication, collaboration, and the search for knowledge (Ngoc, 2005). In turn, in order to do these activities, organisations should have well developed technology that is accessible and makes it easy to leverage knowledge sharing (Lin & Tseng, 2005).

2.7.6 People

Many scholars affirm that people are at the core of creating organisational knowledge (Cook & Brown, 1999; Holsapple & Joshi, 2000; Mamabolo, 2014; Ndlela & Toit, 2001), because it is people who create and share knowledge. In this regard, leadership and corporate culture are the biggest enablers, because it is through them that job descriptions, the necessary knowledge for jobs, and members' work atmosphere are clearly decided on. Therefore, managing people who are keen to share their knowledge is important (O'Dell & Grayson, 1998). In order for them to do so, the key components that are necessary for an organisation's success in optimising knowledge management are the processes of encouraging employees to share knowledge.

Chase (1997) claims that successful knowledge management is primarily linked to organisational culture and people, for two reasons. First, because the sharing of knowledge is a social activity which can be optimised through the movement of employees across different departments, in order to accelerate the process of learning within the organisation through social interaction and social networks (Al Azmi, Al-Lozi, Al-Zu'bi, Dahiyat, & Masa'deh, 2012; Marsick, 2009). Second, practices are complex. To ensure that practices and knowledge transfer effectively and make a difference, there is a requirement to link people who can, and are eager to, share the deep, rich, tacit knowledge they have (O'Dell & Grayson,

1999, p.13). According to Junnarkar (1997), Hanan and Stemke (2014), knowledge communities need to be supported by human networks rather than information technology networks. These communities tend to be more successful if the people within them link to each other in one way or another. However, it is not logical to ignore the significant role of virtual communities in linking individuals through online social networks in which people with common interests, objectives, or practices communicate to share information and knowledge, and engage in social interactions (Chiu, Hsu, & Wang, 2006).

One adage affirms that knowledge management is 10 percent technology and 90 percent people (Zack, 1999). This point is demonstrated by Koenig and Membrillo (1998) who state that "money can talk but it cannot think. Machinery production is better from human production but it cannot create innovation. The ability to think and to innovate can only be done by knowledge workers and knowledge companies. The things are not seen physically but from their knowledge, not mechanically but the thought orientation" (p.13). The previous discussion implies that knowledge sharing activities require people with ample competence. This can be measured by seeing their capabilities in doing their jobs. The level of competence relies on knowledge, professionalism, experience, talent, and individual skills (Choi, 2002). Knowledge and competence can be obtained by adding new people with desirable skills (Stonehouse & Pemberton, 1999). The use of competencies transfers the concentration of human resource management away from crude, general perceptions of employee expertise to a position where each person is regarded as a knowledge node with a unique bundle of competencies (Migdadi, 2009). To create effective knowledge sharing within organisations, individual skills in creating and sharing knowledge are required (Kamath, Rodrigues, & Desai, 2014; Wah, Loh, Menkhoff, & Evers, 2005).

People commonly seek advice from friends and coworkers to help them to deal with their problems on the job. This tendency involves motivation, which is a major factor of sharing knowledge at the individual level. Huang, Chiu, and Lu (2013) believe that people are more likely to share knowledge if they have personal motivation. Motivational antecedents can be broken down into internal and external factors (Ipe, 2003). Internal factors include the perceived value and

benefit of possessed knowledge. External antecedents include relationship rewards, such as mutual trust with the recipient, in exchange for sharing. If individuals perceive that they can obtain power from the knowledge they have, or if the knowledge can keep their job position safe, these factors are likely to lead to knowledge hoarding rather than knowledge sharing (Gupta & Govindarajan, 2000). Knowledge-sharing enablers are summarised in Table 2.6.

Table 2.6 Previous studies on knowledge-sharing enablers

Enablers	Sources
Strategy, leadership, organisational culture, and information technology (IT)	(Ramachandran, Chong, & Wong, 2013)
Mutual trust, decentralisation, technology, collaboration, and formalisation	(Chawla & Saxena, 2012)
ICT know-how and skill, training, collaboration, feedback on performance, learning, information sourcing opportunities, leadership support, knowledge sharing culture, ICT infrastructure and software, knowledge management technology, and knowledge-sharing processes	(Chong, Salleh, Ahmad, & Sharifuddin, 2011)
Leadership, technology, and culture	(Anantatmula & Kanungo, 2010)
Strategy, leadership, organisational culture, organisational incentive systems, and information systems	(Ho, 2009)
Management leadership and support, culture, IT, strategy and purpose, measurement, organisational infrastructure, processes and activities, motivational aids, resources, training and education, and human resource management	(Migdadi, 2009)
Culture, leadership, measurement, and technology	(Wei, Choy, & Yew, 2009)
Information technology, learning strategy, trust, culture, flexibility of structure and design, and strategy	(Rhodes et al., 2008)
Corporate culture, people, information technology, strategy, and leadership	(Yeh et al., 2006)

Enablers	Sources
Top management support, culture, technology infrastructure, and top management involvement	(Hariharan, 2005)
Technical resource, structural resources, cultural resources, and human resources	(Chuang, 2004)
Organisational culture, and technology	(Park, Ribiere, & Jr, 2004)
Culture, structure, and IT support	(Lee & Choi, 2003)
Having strong, charismatic cluster champions/leaders, developing respect and trust between cluster members,and participants believe in collaboration	(Yoong & Molina, 2003)
Culture, structure, IT infrastructure, organisational and managerial enablers, and industry-specific enablers	(Nemati, 2002)
Information technology, organisational structure, and corporate culture	(Andrew, Arvin, & Albert, 2001)
Technology, structure, and culture	(Gold et al., 2001)
Strategy, structure, culture, and technology	(Grover & Davenport, 2001)

As can be seen from the previous discussion, the relationship between what knowledge sharing can affect and what affects knowledge sharing are diverse and complicated. The complexity of knowledge sharing is not only due to the multiplicity of its facilitators but, equally, the intertwined way in which these interact. In addition, as found in previous research studies, there are overlaps among knowledge-sharing enablers. By and large, the enablers illustrated in the table can be classified under four main categories: culture, structure, strategy, and IT infrastructure.

The creation of a knowledge-sharing culture is thought to be one of the most significant knowledge-sharing facilitators (Davenport & Prusak, 1998). Thus, one

key challenge for an organisation might be to enable effective sharing of knowledge within it by ensuring a culture that enhances the sharing of knowledge (Nielsen, 2006). Wong and Aspinwall (2004) point out that the most critical building block is the creation of a conducive and comfortable organisational culture to facilitate knowledge sharing. It is important to understand the role of knowledge-sharing enablers when trying to ensure the successful implementation of knowledge sharing in practice (Lee & Choi, 2003).

An intensive review of the literature suggests a number of factors were cited by a significant number of researchers as playing a significant role in enabling knowledge sharing. These factors are: social networks (Bell, 2005; Borgelt & Falk, 2007; Cross & Sproull, 2004; Kim & Lee, 2006; Nahapiet & Ghoshal, 1998; O'Dell & Grayson, 1998), and interpersonal trust (Andrews & Delahaye, 2000; Cohen & Prusak, 2001; Davenport & Prusak, 1998; Folkens & Spiliopoulou, 2004; Hao, 2003; Levin, Cross, Abrams, & Lesser, 2002; McEvily, Perrone, & Zaheer, 2003; Nonaka, Toyama, & Nagata, 2000), and management support (Baldanza & Stankosky, 2000; Koh, Ryan, & Prybutok, 2005; Mumford, Scott, Gaddis, & Strange, 2002; Sosik, Kahai, & Avolio, 1998; Ward & Aurum, 2004). In addition, as mentioned in the first and third chapters of this thesis, there is a gap in the existing literature in terms of exploring the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Hence, there is a need to elaborate on what is already reported in the literature. As a start, the following section will begin by identifying the nature of the relationship between social networks and knowledge sharing.

2.8 Social networks and knowledge sharing

In this section, a definition of social networks is introduced. Following that, a review of the importance of social networks for knowledge sharing is explained. Moreover, types of social networks are illustrated. In addition, dimensions of social networks are elucidated. The following section begins by defining social networks.

2.8.1 Definition of social networks

A *social network* can be defined as "the pattern of ties linking a defined set of persons or social actors" (Seibert et al., 2001, p. 220). Liebowitz (2007) defines social networks as "a set of relationships between a group 'actors' (the 'actors' could be individuals, departments, and so on) who usually have similar interests.' (p. 3). Social network theory has been used as a theoretical lens aimed at elucidating the nature and interaction of individuals in social networks. Yli-Renko, Autio, and Sapienza (2001) define social interaction as "the extent of social relationships between the focal firm and customers" (p. 590). This definition shows that social networks involve communication, dialogue, and individual or group interaction that enhances and encourages knowledge-related employee activities (Leonard & Sensiper, 1998).

Since the spectacular rise of computer-mediated personal communication websites like Facebook, most contemporary use of the term social networks has come to mean the use of these Facebook types of systems, and this usage has been reinforced by the movie "Social Networks" that described the genesis of Facebook. However, this study is not about this computer-mediated communication, but instead focuses on the face-to-face, interpersonal communications that happen constantly when people interact with each other in organisational contexts as they develop relationships, and in turn share their knowledge. To be more specific, in this research, *social* refers to the capability of person(s) to connect to and interpret information generated by other agents and to communicate in turn; the use of the term *network* means that these are particular connections (often in a face-to-face social network).

2.8.2 The importance of social networks

The growth of social network practices has been supported by three significant improvements in the business world (Cross, Borgatti, & Parker, 2002). The first is the development of a concept of the significance of the informal structure within an organisation that exists together with the formal one. Second is the changeover in the late twentieth century to an organisation model that is flatter, more flexible, team-oriented, and more dependent on knowledge assets. Third is the quick growth in closely cooperative relationships across the organisation's boundaries.

According to Kilduff and Tsai (2003), "The study of such relationships is therefore the study of human nature itself" (p. 131). Cross and Parker (2004) go on to argue that research on social networks in organisations can enhance organisational cognition, behaviour, theory, strategy, and leadership at all layers in the organisation and between organisations.

The literature on social networks suggests that a social network can play a key role in enhancing organisational learning since social networks can be a source of information (Liebeskind, Oliver, Zucker, & Brewer, 1996). Thus, there is a growing body of research focusing on social networks as a locus of learning (McEvily & Zaheer, 1999; Rhee, 2004). It has been argued that social networks facilitate learning by promoting the rapid transfer of information among members (Rhee, 2004). However, individuals may find social networks to be less useful as a source of information when the information available on social networks is not relevant to the interests of the individuals (Rhee, 2004).

Empirical evidence in social interaction literature shows numerous advantages of social networks relevant to knowledge sharing in organisations. People who have a history of interaction with others are more helpful and accessible (Cross & Sproull, 2004), and provide more assistance and support to one another (Seibert et al., 2001). Another group of researchers affirms that social networks can be used for a variety of individual and organisational functions, involving enhancing decision-making practices, providing messaging consistency, and setting up social linkages (Mehra et al., 2006; Mischen & Jackson, 2008). These functions help people to become better connected so the organisation can gain the true advantages of their knowledge more quickly (Cross et al., 2001).

In a quantitative study, Noorderhaven and Harzing (2009) found that face-to-face social interaction forms a channel of communication which makes the sharing of tacit knowledge in particular easier. Even in the most bureaucratic organisations, individuals do, on every occasion, interact with others using an extremely high number of methods unspecified by the organisation charter (Cross, Parker, Borgatti, 2002). Taken to the extreme, this perspective means that there will be no knowledge to share if there is no social interaction between employees.

By and large, it is believed that obstacles to knowledge management should be overcome by networking, and that knowledge islands should be cross-connected in order to stimulate the sharing of knowledge. Taking advantage of social networks in order to facilitate organisational knowledge management is widely required (Papailiou, Apostolou, & Mentzas, 2007).

2.8.3 Types of social networks

Knowledge sharing is organised via certain channels that act as links between those sharing, and expedite the transfer of knowledge from source to object (Holtham & Courtney, 1998; Kwok & Gao, 2005; O'Dell & Grayson, 1998). Therefore, the availability and the richness of such channels may influence the success of knowledge sharing to some extent (Kwok & Gao, 2005).On the basis of these channels, five basic kinds of social networking can be discerned: informal, formal, personal, impersonal, strategic, and online strategic networks. These kinds of social networking are elucidated in the following discussion.

The first kind of social interaction is through informal networks. In such interaction, groups of staff have a common area of interest which is generally not very formalised and, frequently, closely related to their practice (Verburg & Andriessen, 2011). An example of informal networks is communities of practice which support a group of practitioners to develop a shared meaning and engage in knowledge building among themselves (Hara & Schwen, 2006). Other examples of informal social networks are unplanned meetings and informal seminars. By these methods, it is possible to produce an effective result of encouragement for socialisation, particularly in small organisations (Fahey & Prusak, 1998). As a result of socialisation, employees are expected to learn from each other through sharing what they know. In the context of organisations, these informal networks expand not only internally but also externally across organisational boundaries. They involve working relationships, collaboration, and knowledge sharing between individuals (Cross & Parker, 2004).

The second kind of social interaction is through formal networks. Ibarra (2000), and Allen, James, and Gamlen (2007) define formal networks as a set of formally specified relationships between superiors and subordinates, and among

functionally distinguished groups which must communicate to achieve an organisationally defined task. In formal social networks, a team of diversely skilled members work for a limited period of time to create custom and complex products and services (Jones, 1996). Examples of formal methods are training sessions, formal learning, and structured work teams, which are thought to ensure greater distribution of knowledge. Expanding the use of these networks to a more formal method of sharing knowledge and documenting experiences is a truly practical approach to knowledge sharing (Adam, 2008).

Speaking of them both together, it is suggested that the effectiveness of the sharing of knowledge is determined by the completeness of formal and informal social networks and a shared knowledge-related artefact network in a specific work environment (Bosua & Scheepers, 2007). It is further suggested that enabling mechanisms within the social and artefact networks, and actions that connect these networks, impact the overall efficiency of the sharing of knowledge in complex contexts (Bosua & Scheepers, 2007).

The third kind of social interaction is through personal networks. Such networks can be defined as a subset in egocentric network analysis, in which there is a person who is in frequent contact with the others and the network members surrounding this ego (Marin & Hampton, 2006). For examples of personal channels, apprenticeships or personnel transfers might be more effective in sharing highly context-specific knowledge. Personal networks can be divided into three primary forms which are those of line, circle, and star networks (Liebowitz, 2007). A line network involves informing somebody, by word of mouth, or a few sentences, for example, a story. That person then tells the next person the same story, who then passes it on the next. The circle social network is a closed loop which means that "what goes around, comes around" (Liebowitz, 2007, p. 5). The star structure network can be viewed as a snowball effect in networking. In a star network, one individual asks people within his or her network about a specific issue. Thereafter, each of those friends tells others in his or her social network.

The fourth kind of social interaction is through strategic networks. These generally involve a limited number of institutionalised experts whose activities are

concentrated on organisational learning (Verburg & Andriessen, 2011), in the context of which purposeful objectives require a long period of time for the achievements of the network (Gulati, Nohria, & Zaheer, 2000). These groups are strongly supported with resources and are expected, implicitly or explicitly, to achieve highly for the organisation, improve best practices, or even develop innovative solutions (Verburg & Andriessen, 2011). In strategic networks, resource commitments to advance shared goals are made in discrete, separate episodes (Human & Provan, 1997; Lavie, Lechner, & Singh, 2007). Each participant in the network is supposed to make resource commitments towards the progress of shared goals, and it is through such commitments that strategic networks build up and mobilise resources in commonly agreed directions (Wincent, 2008).

The fifth kind of social interaction is online networks. This kind of networkinvolves low to intermediate proximity to the organisation and low levels of institutionalisation (Verburg & Andriessen, 2011). The advent of computers and the Internet has fundamentally changed the methods by which individuals share knowledge with each other and has brought into existence new types of organisations, such as online communities (Lange, McDade, & Oliva, 2004). Enabling information sharing can be achieved through the use of diverse information systems tools such as forums, blogs, Facebook, LinkedIn and Twitter (Shah, 2010; Stephen, Dover, & Goldenberg, 2010). For example, more than 30 billion pieces of content are shared on Facebook each month (Keyes, 2012). In such networks, each person has a select network of direct relationships with other users with whom they can share knowledge (Shah, 2010). One of the personal advantages of contributing to an online group is establishing social relationships with others (Gupta & Kim, 2007).

Notwithstanding, a process of knowledge sharing does not necessitate the use of all of the previously mentioned methods. Successful knowledge sharing can be established in a simple manner, such as through daily dialogue. That is to say, the richness of the channel could differ considerably between various knowledge sharing circumstances.

2.8.4 Dimensions of social networks

Alongside the research that classifies social networks other researchers have explored the nature of the relationships within social networks. This exploration involves the density of links, strength of ties, and intensity and frequency of interaction (Bogenrieder & Nooteboom, 2004; Wasko, Faraj, & Teigland, 2004). Chow and Chan (2008) propose that the more extensive the social network among institutions' employees, the more favourable the attitude towards knowledge sharing will be. The availability of extensive channels can encourage people to expand their networks with others through more extended connections, which are expected to increase the level of knowledge sharing. Moreover, extensive channels facilitate people's convenient and flexible sharing of knowledge in terms of time and place (Kwok & Gao, 2005). Given social expectations of reciprocity, an organisation's staff who have built extensive relationships can be expected to share their knowledge (Chow & Chan, 2008).

The ties between individuals within social networks can enhance knowledge transfer and further improve the quality of information obtained (e.g., Cross & Cummings, 2004; Reagans & McEvily, 2003). Such ties can be classified into two categories, namely, weak and strong ties. The concept of tie strength suggests that strong ties comprise higher emotional closeness, while weak ties are more linked to nonredundant connections and, thus, related to nonredundant information (Perry-Smith, 2006). Strong describes the strength of a social relationship (Retzer, Yoong, & Hooper, 2010), such as those established and maintained by friendship or familial linkages. For instance, Hassan (2009) has illustrated that strong ties are crucial in transferring tacit and complex knowledge. Another study found that the strength of business relationships, rather than the strength of social relationships, plays a significant part in the sharing of private and public knowledge within organisations (Marouf, 2007).

Conversely, weak ties are linked with infrequent relationship links, such as those of acquaintances (Li, Xi, & Yao, 2008). Further examination of the implications of strong or weak ties for the transfer of knowledge drawn by several researchers disclose that weak ties are critical for connecting previously unconnected

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networks and facilitating the sharing of explicit information (Chan & Liebowitz, 2006; Li et al., 2008; Liebowitz & Liebowitz, 2008).

Other researchers go further by examining the link between certain dimensions of the strength of social networks, such as that between frequency of interaction and the closeness of relationships (i.e., Hansen, 2002; Marouf, 2007; Reagans & McEvily, 2003). Frequency of interaction is defined as how often people interact with one another. Closeness of relationships can be defined as the emotional intensity between two actors.

It has been found that the frequency of business interactions predicted the sharing of public noncodified knowledge, while the closeness of the working relationship allowed prediction of the sharing of public codified knowledge (Marouf, 2007). Thus, when an organisation's employees strongly encourage coworkers to communicate openly, they are expected to succeed in holding attention in extensive and frequent interaction with one another, involving, for example, sharing of skills, information, knowledge, or expertise with each other.

de Vita and Conaldi (2009) and Obstfeld (2005) concur that densely linked structures are commonly crucibles for the sharing of complex information. I believe that dense social networks are not necessarily strong, because the density of social networks is mainly related to the availability of many people in them. Therefore, their density could go together with strength or weakness depending on the type of relationships between those within them.

It can be seen from this discussion that researchers have dissimilar classifications of social networks. In detailed and exact terms, they do not have the same opinion of what should be involved in a social network. As can be deduced from its name, the concept of a social network concentrates on the structure of interpersonal relationships. Notwithstanding, it is not evident what types of variables should be considered as social network variables. This lack of clarity might be because many scholars give dissimilar names to similar variables and place diverse variables within the same classes. For example, it seems that the frequency of interaction is closely related to the strength or weakness of ties, as the higher the

frequency of interaction, the stronger the ties will be. On the other hand, the lower the frequency of interaction, the weaker the social network will be.

The following section will start to identify the nature of the relationship between interpersonal trust and knowledge sharing.

2.9 The relationship between interpersonal trust and knowledge sharing

This section begins by introducing definitions of trust. Following those, the importance of trust is set out clearly. Then, dimensions of trust are explained. Finally, literature that links interpersonal trust and knowledge sharing is reviewed. The following subsection introduces definitions of trust.

2.9.1 Definition of trust

Trust is a concept that is much debated, with no agreement on its definition other than that it is complicated and multifaceted (Costa& Anderson, 2011; Mayer, Davis, & Schoorman, 1995; McAllister, 1995; Rousseau, 1998). Some researchers have decided that the exploration of trust is difficult to deal with as regards its own meaning, the dearth of clarity in explaining the link between it and risk, and confusion about its factors and outputs (Adler, 2001; Fisman & Khanna, 1999; Hardin, 2001; Simons, 2002).

As Dietz and Den Hartog (2006) mention in their overview of the most-quoted definitions of trust that the possible forms that trust can take are those of trust as belief, as action, and as decision. These forms will be elaborated on in the following argument.

The review of the research reveals that most researchers define trust as belief. For example, Gabbay and Leenders (2003) and Mayer, Davis, and Schoorman (1995) view trust as "a set of beliefs about the other party (trustee), which leads one (trustor) to suppose that the trustee's actions will have positive influences for the trustor's self" (p. 712). Another definition is that trust is a belief that another individual makes an effort to achieve commitments, is honest, and does not ask to

take unfair advantage of chances (Cummings & Bromiley, 1996; Dirks & Ferrin, 2001).

Many authors have defined distinct dimensions within the concept of trust as a belief; many of these are essentially the same but bear different labels (Dietz & Den Hartog, 2006). Mayer et al. (1995) define three types of perceived trustworthiness: capability, benevolence, and integrity, which are characteristics of the trustee. Capability can be defined as the groups of skills, competencies, and features that allow a party to have effect within some particular domain. Benevolence refers to the extent to which a trustee is believed to want to do good to the person who trusts, beyond an egocentric profit motive. Integrity involves a person's perception that the trustee adheres to a set of principles that the trustee approves of. According to Mayer et al. (1995), capability, benevolence, and integrity are all significant to trust, but each may be independent of the others.

Other researchers go further by linking trust to future action. For example, Lewis and Weigert (1985) emphasise that trust involves not only individuals' beliefs but, equally importantly, their intention to employ knowledge to affect future action. Along the same lines, Sztompka (1999) defines trust as ''a bet about the future contingent actions of others'' (p. 25).

Trust can be defined as a cognitive process by which a decision is made about whether to trust (Smith & Lohrke, 2008; Song, 2009; Webber & Klimoski, 2004). They all have the same opinion, that people cognitively decide whom they will trust and under which conditions, and that people base their decision on a logical reason. Trust as a cognitive process is based mainly on beliefs about the trustee's ability and integrity (Chua, Ingram, & Morris, 2008; Wilson, Straus, & McEvily, 2006). This kind of trust can be shaped through direct communication with the trustee as well as from learning about the trustee's reputation (McKnight, Cummins, & Chervany, 1998).

Another definition views trust dyadically. For example, McAllister (1995) defines trust as "the extent to which a person is confident in, and keen to act on the basis of, the words, actions, and decisions of another" (p. 25). This definition seems to

be a combination of trust as an action and as a decision. In addition to this definition, Fukuyama (1995) defines trust as ''the expectation that arises within a community of regular, honest and cooperative behaviour, based on commonly shared norms, on the part of the members of the community'' (p. 26).

The focus of this research is mainly on interpersonal trust or trust between employees. The researcher believes that the above definitions of trust can include interpersonal trust. Therefore, there is a need to provide a specific definition of interpersonal trust. Interpersonal trust can be defined as employees maintaining reciprocal faith in each other in terms of intention and behaviour (Whitener, 2001). One widely accepted definition of interpersonal trust comes from Mayer et al. (1995): ''Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party'' (p. 712).

2.9.2 The importance of interpersonal trust

It is argued that trust is not something absolutely present or absent from a social relationship, but is something which is contextually related to it (Fineman, 2003, p. 565). Successful cooperation requires a climate in which staffs feel safe showing proactive behaviour (Liao, 2006). Trust is fundamental for all social situations that demand cooperation and interdependent checking (John, Weiss, & Dutta, 1999). Owing to the lack of explicit rules and regulations, people have to depend on cooperative behaviour to justify the anticipated advantages they will receive from the exchange (Luo, 2002). The enhanced complexity and ambiguity of the business context cannot be negotiated without interpersonal trust, and in this way, particularly in knowledge intensive businesses, trust is a highly desirable property for enhancing knowledge sharing (Lane, 1998; Szulanski & Cappetta, 2003).

Interpersonal trust is commonly said to be advanced through continual face-to-face communication (Davenport & Prusak, 1998). In addition, trust is clearly perceived as playing a significant role in enabling knowledge flow both within and between firms, in that it decreases transaction costs, promotes cooperation,

increases the likelihood that newly acquired knowledge can be absorbed and retained, and raises the acceptable level of risk for the trusted person (Abrams, Cross, Lesser, & Levin, 2003; Currall & Judge, 1995; Davenport & Prusak, 1998).

Trust is cited by many researchers as one of the most important preconditions for knowledge sharing (Chowdhury, 2005; Davenport & Prusak, 1998; Rolland & Chauvel, 2000; Sveiby & Simons, 2002). Previous research shows that trust has several roles in knowledge sharing, both as a factor in and as an outcome of it (Alesina & Ferrara, 2002; Davenport & Prusak, 1998; Zaheer et al., 1998). Nelson and Cooprider (1996) empirically examined trust as a factor of knowledge sharing and showed a causal relationship. They suggest that trust functions through shared knowledge to influence group performance. Another group of researchers illustrate that trust is the outcome of either shared values amongst a community whose members put collective interests above their individual interests (Burchell & Wilkinson, 1997; Fukuyama, 1995), calculative processes (Dasgupta, 1988), or communication that results in negotiated shared meanings (Das & Teng, 1998). Therefore, trust development is the outcome of individual agency and patterned social interaction that shapes new, common meanings and rules (Saunders, Lewis, Thornhill, 2003).

Numerous studies have emphasised the significance of trust developed through close personal relationships. For instance, Hansen (1999) discovers that, in new product development projects, strong personal ties were essential for the transfer of tacit knowledge between employees. Epstein (2000) illustrates that individuals who were friends had higher potential to share personal and complicated knowledge through face-to-face meetings. These studies propose that willingness to share tacit knowledge with another coworker is impacted by affect-based trust. It seems that when two groups start to trust each other, they become keener to share their expertise without worrying that they will be taken advantage of by the other party (Tsai & Ghoshal, 1998).

Two dimensions of trust have been discussed in the literature. These dimensions are elaborated on in the following subsection.

2.9.3 Dimensions of interpersonal trust

McAllister (1995) empirically developed and examined the distinction between two types of trust. The first type is affect-based trust, which is grounded in mutual care and concern between workers. The second form is cognition-based trust, grounded in co-worker reliability and competence. In the case of this type of trust, people cognitively decide in advance with whom they will exchange trust and what kind of criteria will affect their decision. In other words, cognition-based trust is established through some comprehension of the other in whom we are going to place our trust.

A number of researchers have begun to forge a link between cognition- and affect-based trust on the one hand and knowledge sharing research on the other. For example, Chowdhury (2005) conducted a study to examine the link between affect- and cognition-based trust and knowledge sharing, suggesting that each of the two kinds of trust has a distinct pattern of relationship with the sharing of complex knowledge. Additionally, the presence of one form of trust does not increase the influence of the other, as the two kinds of trust do not, in tandem, interact with or produce any effect on the sharing of complex knowledge. In another study that discovered a link between dimensions of trust and sharing and using tacit knowledge within organisations, Holste and Fields (2010) carried out a survey of 202 managerial and professional staff in an international organisation. Their study illustrates that the levels of cognition-based trustwere higher than those of affect-based trust. In this study, it is found that the levels of both forms of trust impact the extent to which employees are willing to use knowledge. In addition, this study affirms that affect-based trust had a significantly greater effect on the willingness to share tacit knowledge, whereas cognition-based trust played an important role in willingness to implement it. The above studies suggest that cognition- and affect-based trust can be viewed as complementary.

Affect- and cognition-based trust are explored in more depth in the literature. For the dimensions of affect-based trust, there are two important antecedents: citizenship behaviour and interaction frequency (McAllister, 1995). Chowdhury (2005) argues that affect-based trust, with frequent social interactions and citizenship behaviour, would lead the evaluating person to trust the evaluated

person with sensitive personal information, ideas, and knowledge. In this regard, it is proposed that trust between coworkers can be an effective enabler of knowledge sharing in interactive relationships (e.g., Levin & Cross, 2004; McEvily et al., 2003). For instance, Brown and Duguid (2000) suggest that interaction partners require a shared collaboration on knowledge due to the fact that knowledge sharing needs at least some level of sharing of a cognitive base to be effective (Nonaka & Takeuchi, 1995). In this way, the trusting individuals will be open to others.

The following section elaborates on previous academic research on interpersonal trust and knowledge sharing.

2.9.4 Interpersonal trust and knowledge sharing

Many studies have confirmed that interpersonal trust or trust between coworkers is connected to variables such as communication, problem solving, risk-taking and cooperation (Abdul Hamid, 2008; Katsamakas, 2007; McEvily et al., 2003). It is, therefore, envisaged that interpersonal trust will have a positive effect on organisations' knowledge management processes for facilitating and implementing knowledge activities (Poon, 2009).

Some of the effect of the interaction context on knowledge sharing occurs in terms of the context impacting affective and cognitive social capital. In this regard, previous research has argued that interpersonal trust can be a powerful enabler of knowledge sharing in active relationships (Levin & Cross, 2004; McEvily et al., 2003). In other words, it is suggested that social relationships have a vital influence on connecting employees, and that these relationships help employees to develop confidence in each other, thereby supporting knowledge sharing and the development of mutual trust.

Interpersonal trust is an essential attribute for organisations, and is believed to have a strong influence on knowledge sharing (Kramer, 1999; Levin & Cross, 2004; Yoong & Molina, 2003). According to Cohen and Prusak (2001), high levels of worker trust can cause better knowledge sharing. In companies, knowledge sharing is greatly affected by trust because, as found by Deng (2008),

trust is an indispensable facilitator for knowledge sharing, and the success of building trusting relationships for the sharing of knowledge depends on whether management affirms knowledge management principles.

The level of trust may be relevant to the degree to which knowledge is shared among organisations' members. This proposition is that trust and knowledge sharing are inextricably related; this said, which comes first in this cyclical process has still not been identified. It is considered in this proposition that the link between the two is dynamic, oscillating between trust coming first and knowledge sharing coming first, relying on a number of other antecedents including type of team, proximity of team members, interpersonal relationships, and the longevity and history of the team (Wang et al., 2006). When two parties start to trust each other, they become keener to share their resources or expertise without worrying whether they will be taken advantage of (Tsai & Ghoshal, 1998).

As can be seen in the above discussion, trust is frequently argued to be significant to knowledge sharing. Many researchers believe that where there are relationships based on trust, people are more willing to share knowledge in an effective way (Katsamakas, 2007; Levin et al., 2002; McEvily et al., 2003). Also, when trust exists, people are more willing to listen and absorb each other's knowledge (Andrews & Delahaye, 2000; Tsai & Ghoshal, 1998). Without trust, people are not willing to keep paying attention to social exchanges, and the sharing of knowledge cannot be expected to take place. Generally, the knowledge sharing literature suggests that if trust is high in an organisation, people will be more willing to share their knowledge. On the other hand, if trust is low, they will not be willing to share their knowledge (Sharkie, 2004).

There is also a body of research that empirically examines the impact of trust on knowledge sharing. Wu, Lin, Hsu, and Yeh (2009) affirm that workers' perception of their own trust in coworkers, either fellows or supervisors, was positively related to their knowledge sharing habits in the workplace. Setting up a knowledge sharing culture must begin with an environment of trust among staff.

A trusting environment in organisations further improves staff's willingness to share knowledge (Liao, 2008).

Other researchers go further by exploring the impact of interpersonal trust on the contribution and collection of knowledge as two dimensions of knowledge sharing. It has been found that, in organisations, interpersonal trust significantly and positively influences members' knowledge contributing and knowledge collecting behaviour (Chen & Hung, 2010). On the other hand, Lee and Choi (2003) examine the lack of trust among staff as one of the major obstacles impeding the sharing of knowledge. When staff relationships are highly trusting, staff become more willing to get involved in knowledge sharing (Abrams et al., 2003; Dalkir, 2011; Lucas, 2005).

Another factor that encourages employees to share their knowledge is management support. This factor is illustrated in the following section.

2.10 Management support and knowledge sharing

This section begins by introducing definitions of leadership and management. Following those, the importance of management support for knowledge sharing is elucidated. Next, dimensions of leadership style are explained. Then, literature that links management support and knowledge sharing is reviewed.

2.10.1 Definitions of leadership and management

The review of previous literature treated the words "management" and "leadership" as two distinct constructs that involve considerable overlap in some aspects (Armandi, Oppedisano, & Sherman, 2003; Kotter, 2001; Pearce et al., 2003). Therefore, there is a need to differentiate between the two terms to obtain a clear understanding, during the review of the previous literature, and during the implementation of the entire research procedure.

Leadership can be described as the process of motivating people to act in specific ways in order to accomplish specific goals (Hannagan, 2008). In the same way, Dubrin defines leadership as the ability of leaders to inspire and stimulate group members to achieve the organisations' goals (Dubrin, 2007), which contribute

towards the effectiveness and success of the organisations. To manage means to bring about, to control, to coordinate, to have charge of, and to harmonise a group towards achieving the required objectives (Northouse, 2010). The definition of management is "to exercise executive, administrative, and supervisory direction of a group or organization" (Ricketts, 2009, p. 2). House and Aditya (1997) concur when they say that management involves implementing the vision and direction provided by leaders, coordinating and staffing the organisation, and handling day-to-day issues. The main function of managers is to make sure that results are achieved through order and efficiency; whereas a leader's primary function is to create significant useful change (Clements, 2013). Both leadership and management share similarities in terms of the concentration on decision making regarding what requires to be achieved, and depend on relationships with individuals and networks to make sure that the work gets done (Kotter, 1990). Leadership has followers while management have subordinates (Clements, 2013). A comparison between leadership and management is illustrated in Table 2.7.

Table 2.7 A comparison between leadership and management

	Leadership	**Management**
Definition	Leadership means the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of organisations.	Management comprises directing and controlling a group of one or more people or entities for the purpose of coordinating and harmonising that group towards accomplishing a goal.
Goal setting	Articulates a vision Creates the future	Executes plans Improves the present
Outcomes	Create significant useful change	Ensure that results are achieved through order and efficiency.
Role in decision making	Involved	Involved
Styles	Transformational, consultative and participative	Dictatorial, authoritative, transactional, autocratic, consultative, and democratic
Organization	Leaders have followers.	Managers have subordinates.

Adapted from: Carmichael, Collins, Emsell, & Haydon (2011); Clements (2013); Dubrin (2007); Hannagan (2008); Kotter (1990); Lunenburg (2011); Northouse (2010)

2.10.2 The importance of management support

The support of management is recognised as one of the factors having a significant potential impact on organisational knowledge (Connelly & Kelloway, 2003). It has been discovered that management support is vital to creating a supportive climate and supplying enough resources for it (Lin, 2006). For this reason, management support is an important driver of knowledge sharing. Along the same lines, other researchers state that management support determines the success or failure of knowledge sharing (Daghfous, 2004; King & Marks, 2008; Lin & Lee, 2006).

Management support can play a significant role in generating a context for change (Williams, 2010; Wruck & Wruck, 2002) through forming a long-range vision or mission for the organisation (Williams, 2010). For example, top managers impart their organisations' values, strategies, and lessons through the way in which they behave towards others, both inside and outside the organisation (Kanfer & Ackerman, 2004). This finding implies that management support must closely monitor customer requirements, competitors' moves, and long-term business, economic, and social trends (Williams, 2010).

In addition, it is argued that management support is important to the growth of knowledge sharing, as it attracts voluntary participation from workers in initiating and disseminating significant knowledge (Chkravarthy, Zaheer, & Zaheer, 1999; O'Dell, & Grayson, 1998). Additionally, research by Nadler and Nadler (1996) states that it is important for management to support the culture of knowledge sharing with consistent action.

To sum up this discussion, support from management is necessary to the growth of knowledge sharing practices, since it encourages voluntary staff participation in giving and getting significant knowledge. Hence, high levels of management support may lead to effective knowledge sharing.

2.10.3 Dimensions of leadership style

A review of the academic literature reveals that there are diverse styles of leadership. These can be described as facilitative, transactional, and transformational (Bens, 2007; Chen & Barnes, 2006). The defining feature of facilitative leadership style is that they offer process and structure instead of directions and answers (Bens, 2007). Such leaderships can be recognised as democratic in style. In this style, it is expected that consideration for and participation with others will encourage them to share their knowledge. It is believed that a facilitative style of leadership has two components: consideration and participation. Consideration can be defined as the degree to which leaders manifest concern for and interest in team members' wellbeing (Sarin & McDermott, 2003). It can create a sense of belonging and provide team members with encouragement and appreciation of what they are doing as valued and

significant. Participation can be defined as the degree to which the highest leader invites members' active participation in the decision-making process (Sarin & McDermott, 2003). It promotes the flow of new ideas and collaboration within the team (Rabie, 2013; Sarin & McDermott, 2003). Hence, consideration and participation are expected to encourage people to share their knowledge. In addition, facilitative leadership behaviour encourages trust and collaboration within teams (Norrgren & Schaller, 1999), which, in turn, may promote knowledge sharing.

According to Chen and Barnes (2006), the leadership process can occur in one of two ways: transactional or transformational. Transactional leadership is based on the view that the relationship between leaders and followers is a type of transaction. Thus, transactional leadership is based on connecting efforts to rewards in followers' minds in order to keep them on task at every point of the process (Ke & Wei, 2008). Bass (1995) summarises four types of behaviour inherent in transactional leadership; these are: giving of contingent rewards; management by exception; avoidance of decision-making; and, abdication of responsibilities. On the other hand, transformational leadership can be defined in terms of the leader's effect on followers: they feel trust, admiration, loyalty, and respect toward the leader (Yukl, 1998). Bass (1995) identifies four components of transformational leadership which are: provision of vision and sense of mission; raising employee awareness of problems; individual treatment of employees; and, giving of appropriate advice to each employee.

Politis (2001) examines the impact of transformational and transactional leadership on one dimension of knowledge sharing. He discovered that both leadership styles are positively related to some dimensions of knowledge acquisition. These dimensions are communication/problem understanding, personal traits, and organisation. In addition, another study found that transformational leadership behaviours are a significant predictor of knowledge sharing, while contingent reward leadership behaviours are also significantly and positively correlated with knowledge sharing (Chen & Barnes, 2006).

2.10.4 Management support and knowledge sharing

It is suggested that managers have direct influence on how their firms approach and deal with knowledge management practices (Sarin & McDermott, 2003). Additionally, if knowledge management does not spread to all levels of the organisation, beginning at the top, it is not expected that knowledge management programmes will ever be efficient (DeTienne, Dyer, Hoopes, & Harris, 2004). Moreover, Kluge, Stein, and Licht (2001) point out that while managers across all levels of organisations have significant roles to play in managing knowledge, it is especially important for the manager at the top level to take part in knowledge management processes. In addition, they state that if the top management takes knowledge seriously, the rest of the firm will follow suit automatically. These perspectives on management support and its influence on organisations' knowledge management programmes provide an obvious indication of its importance. Therefore, to successfully carry out the role of an effective facilitator and stimulator in a knowledge-based environment and encourage people to apply knowledge, the manager must possess highly developed expertise (Nader, 2000).

The role of management support has been found to influence knowledge management in general and, specifically, knowledge sharing. Takeuchi (2001) describes three methods by which managers should direct where the company should head in terms of knowledge management. Firstly, managers must express an overarching theory regarding the expectation of the company's having a culture of knowledge management. Secondly, managers must include this vision for knowledge management in the organisation's corporate goals or policy statement. These findings mean that, by performing these actions, corporations will encourage and even optimise their desired culture of knowledge sharing. Thirdly, managers must make a strategic decision regarding efforts to encourage and develop knowledge sharing and then follow that strategy.

Unruth (1997) stresses that managers have a vital role in generating value for customers, and highlights the influence of managers on fostering an organisational culture of knowledge sharing. Managers who are effective enablers use their own learning and interpersonal skills to support opportunities for informal learning which constitute knowledge sharing in their organisations (MacNeil, 2001). It is

affirmed that managers try to persuade employees that knowledge management is not just for the benefit of others. They attempt to encourage workers by illustrating that, through knowledge sharing, they can gain numerous advantages (Earl & Scott, 1998).

Another role of management in knowledge sharing is encouraging formal and informal communication. For example, staff may be encouraged to share knowledge through formal methods such as seminars, formal meetings, conferences, etc. In addition, there is a need to encourage informal communication, such as informal knowledge-sharing sessions (Wai & Chai, 2008). Accordingly, these measures cause the work to be done efficiently and effectively due to the sharing of knowledge (Battersby, 2004; Wai & Chai, 2008). On the other hand, a shortage of managerial direction can restrict knowledge sharing. Since knowledge sharing is effectively both voluntary and a new knowledge-gaining behaviour for some people who might need training and continuous encouragement, clear instructions seem to be a clear precondition for successful sharing in all organisational layers (Ives, Torrey, & Gordon, 2000). It is suggested that, in organisations in which knowledge sharing is at a low level, the management must shift the focus to enhancing the antecedents of knowledge sharing (Gupta, 2008).

It seems that diverse efforts have been made to find approaches and mechanisms to improve knowledge sharing (Bock et al., 2005; Willem & Buelens, 2009). Some of them have tried to arouse employee knowledge sharing tendencies in response to reward systems (Bock et al., 2005; Hsu, 2006; Hwang & Kim, 2007; Willem & Buelens, 2009). One technique that helps managers to enhance knowledge sharing is providing incentive systems. The following argument will explore the effects of incentive systems on knowledge sharing.

A number of studies have explored the enhancing influence of incentive systems on knowledge sharing behaviour (i.e., Bock et al., 2005; Syed-Ikhsan & Rowland, 2004; Willem & Buelens, 2009). However, there is mixed evidence for the effectiveness of such rewards. In one study, the role of monetary rewards was examined in encouraging knowledge sharing in organisations through four

mechanisms*:* contribution of knowledge to organisational databases; sharing knowledge in formal interactions; sharing knowledge in informal interactions; and, sharing knowledge within communities of practice (Bartol & Srivastava, 2002). It is argued that incentive systems are helpful and important for most mechanisms of knowledge sharing and that they are a good investment for firms (Bartol & Srivastava, 2002; Lee & Ahn, 2007; Maltz & Kohli, 2000).

On the other hand, other studies have found that using incentives is not as universally effective as proposed. In fact, there are intrinsic obstacles to knowledge sharing. Under the conditions of emphatic internal competition for rewards, status, and promotions (Menon & Pfeffer, 2003), workers usually regard their unique knowledge as a form of power to safeguard their situations within the organisation (Ba, Stallaert, & Whinston, 2001).

The difficult task of leaders is to generate an environment in which people desire both to share what they have learnt and make use of what other people know. People cannot be supposed to share their knowledge and viewpoints easily on every occasion simply because it is the right thing to do. Managers need to reassure staff that they should not sit on concepts for fear of their intellectual property being taken. The solution is to improve collaboration with other people (Gurteen, 1999). For this reason, the focus on leaders' expectations, long-term commitment, and supportive roles are basics for the development and promotion of a centric organisational culture that enables employees to share knowledge effectively (MacNeil, 2001; McDermott & O'Dell, 2001).

Managers have shown an increasing interest in comprehending and motivating knowledge sharing behaviour in their organisations. For instance, MacNeil (2001) has proposed that managers can contribute significantly to the improvement of core competencies and skills through their role as enablers of learning in the organisation, especially by setting up a knowledge-sharing environment in which workers are motivated to use their knowledge to solve problems. Moreover, it has been found that management facilitates knowledge sharing by allocating resources to support it (Han & Anantatmula, 2007).

2.11 Chapter summary

This chapter presented an overview of the academic literature and theories relevant to the area of study. First, key terminology on knowledge, knowledge management, and knowledge sharing were identified. Second, knowledge management processes were discussed. In addition, various knowledge sharing enablers were set out clearly. Then the links of social networks, interpersonal trust, and management support respectively with knowledge sharing were explained. The next chapter presents the conceptual model, and research gap, and questions upon which this study is based.

Chapter Three: Research Gap and Questions

3.0 Introduction

The chapter describes the research gap that emerged from the previous literature review. Following that, research objectives and questions are elucidated. At the end of the chapter, a brief summary is provided.

3.1 Gap in the literature

This section explains the research gap that became apparent from the review of the existing literature. This gap is concerned with social networks, interpersonal trust, management support, and their respective links with the sharing of knowledge, with a particular focus on the nature of the relationships. The following section is devoted to illustrating the research gap in the area of social networks and knowledge sharing.

3.1.1 Research gap regarding social networks and knowledge sharing

As can be seen from the literature review, knowledge sharing between employees has become a competitive necessity in companies. Previous research has presented fruitful insights into the motivation to share knowledge. In spite of the growing interest in social networks and knowledge sharing, there has been no exploratory research that seeks to understand how specific social networking practices can enhance the sharing of knowledge.

Moreover, many researchers have concentrated on the role of online social networks in the sharing of knowledge (i.e., Gupta & Kim, 2007; Shah, 2010; Stephen et al., 2010), while the role of face-to-face networks has been, to some extent, disregarded. For example, Choo et al. (2000) argue that information system designers traditionally analyse infrastructure and infostructure but neglect the underlying social relationships surrounding work group processes. Practice

reveals that digital networks such as electronic networks cannot thrive without a corresponding and coexisting social network (Wellman, 2000).

Alongside this insight, however, researchers agree on the significance of social networks in determining knowledge practices. In this respect, many studies looked at what the actions of social mechanisms are, rather than at what kind relationship exists between social networks and the sharing of knowledge. Most either do not recognise the nature of the relationship between two actors, or concentrate on one kind of relationship, usually the informal. Informal social networks exist in the workplace just as they do outside it.

From Appendix A, it is clear that only 4 out of 17 reviewed articles took a qualitative approach to studying the influence of social networks on knowledge sharing and they did not illustrate the nature of how such a relationship exists. Therefore, there is a need to explore the nature of the relationships in social networks, as businesses depend on patterns of social interaction to maintain themselves over time. Therefore, there is still a need to provide answers to some questions about existing social networks, such as what the social network circumstances that enhance knowledge sharing are. The priority of this research is related to how individuals are linked to each other and how the use of the network structure transpires by means of dyadic connection, how this connection effects the sharing of knowledge, and how such relationships can be improved. To be more specific, researchers have not reached a consensus on how social networks effect action, that is, in what particular manner they effect action.

3.1.2 Research gap regarding interpersonal trust and knowledge sharing

It is extremely important to generate an atmosphere of trust and security in order to develop knowledge sharing. Although large organisations in the public and private sectors are working on knowledge management in general and particularly on knowledge sharing, considering it as a way to gain a competitive advantage, the review of previous research reveals that there is a lack of exploratory evidence about the precise variables of interpersonal trust that influence knowledge sharing. Therefore, the challenge is to understand what behaviours, qualities, and

interactions can enhance knowledge sharing, and how interpersonal trust can be improved through knowledge sharing. In addition, the question of which acts raise employees' interpersonal trust needs further exploration. Moreover, a narrow focus on technological instead of social aspects leads to poor knowledge management practices or a complete failure in implementing such practices in companies. As a result, it is necessary to comprehend how interpersonal trust, which is, as noted, linked to knowledge sharing within companies, succeeds or fails, by recognising the prerequisites for interpersonal trust to thrive.

Additionally, previous research has, commonly, not revealed much interest in individual differences. This study seeks to achieve diverse perspectives from diverse sorts of employee, such as executive, middle manager, and front line employee, in manufacturing companies. The researcher argues that two connected issues in this domain seem to be especially noticeable as requiring research exploration. First, there is a requirement to comprehend if, and how, interpersonal trust at dissimilar hierarchical levels differs in its nature. The motivation for exploring whether, and how, interpersonal trust works over hierarchical levels, builds on the fairly clear idea that employees at different company levels view their organisational worlds from dissimilar perspectives.

Furthermore, a significant proportion of previous research is quantitative in nature (i.e., Bakker et al., 2006; Barachini, 2009; Gupta, 2008; Liao, 2006; Lin, 2006). In these terms, it is difficult to position trust and knowledge sharing within a company, even when there is more and more support for the trust having a number of significant advantages for organisation members. The complexity inherent in employing only quantitative research to measure trust is an example of the more general difficulty with measuring diverse constructs in diverse organisations (Schein, 1996) by using only quantitative measures (Grandori & Kogut, 2002; Soo, Devinney, Midgley, & Deering, 2002). Appendix B sets out the nature of previous research related to interpersonal trust and knowledge sharing. From Appendix B, it is clear that only 2 out of 23 reviewed articles took a qualitative approach to studying the influence of interpersonal trust on knowledge sharing, and even these did not illustrate how such a relationship works.

3.1.3 Research gap regarding management support and knowledge sharing

The study of knowledge management, at the beginning, concentrated on information technology applications, for example, the Internet, extranets, etc. Not long ago, however, their emphasis has shifted predominantly to "the people side", in order to develop diverse ways for improving the culture of organisations, particularly as many knowledge management initiatives have not been seen to be successful because of shortages of supportive action from management (Andersen et al., 2000). Hence, this study aims to explore further the role of management in facilitating knowledge sharing. Such study will allow the researcher to gain a better picture of what motivates employees to share their knowledge with one another.

The review of previous research explicitly mentioned the role of management in enhancing the sharing of knowledge. However, most of the literature is general in terms of what kind of leadership is looked at, whether top or middle management. Therefore, there is a need to explore what sort of influence there is from each level on knowledge sharing. For instance, the influence of the frontline management of an organisation will be very different from that of its top management, yet both of these impacts might be indispensable. In addition, each will support dissimilar weights at different phases in the process of leading and participating. Therefore, there is a need to specify what kinds of manager can take action to enhance knowledge sharing.

Moreover, as can be seen from the literature, the focus of much research has been devoted to the role of management in providing incentive systems. Such incentive systems are expected to cause a rise in the sharing of knowledge. To be more specific, there is a need to confirm that the dimensions identified in the literature are relevant to practice, to identify any further dimensions that may not have emerged from the literature review, and to gain insights into practice that will help in understanding what management actions need to be taken in order to establish some link between itself and knowledge sharing.

Furthermore, most previous research that sheds light on the link between management support and knowledge sharing is quantitative in nature (i.e., Connelly & Kelloway, 2003; Lee, Kim, & Kim, 2006; Liao, 2008; Lin, 2007; Lin, 2011). Therefore, exploratory qualitative research that examines the association is needed in order to gain a better understanding of the nature of the relationship between management support and knowledge sharing. Appendix C sets out the nature of previous research related to management support and knowledge sharing. From Appendix C, it is clear that only 1 out of the 13 reviewed articles took a qualitative approach to studying the impact of management support on knowledge sharing, and even this did not illustrate how such a relationship comes about.

3.2 Research goals and research questions

As stated in the previous chapter, the main goal of conducting this research is to study the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Along with this primary goal, a number of sub goals emerged, specifically in the light of the discussion in the literature review, which highlighted the need to explore the relationships between social networks, interpersonal trust, management support, and knowledge sharing.

This study has three primary goals. The first goal of conducting this research is to look at how social networks influence knowledge sharing and to examine what the companies being studied are doing to enhance social networks. The second objective of this research is to explore how interpersonal trust impacts knowledge sharing, and the nature of the interpersonal trust that helps to facilitate knowledge sharing. The third objective is to investigate the role undertaken by managers to help employees to share their knowledge. The theoretical model of this research is presented in Figure 3.1.
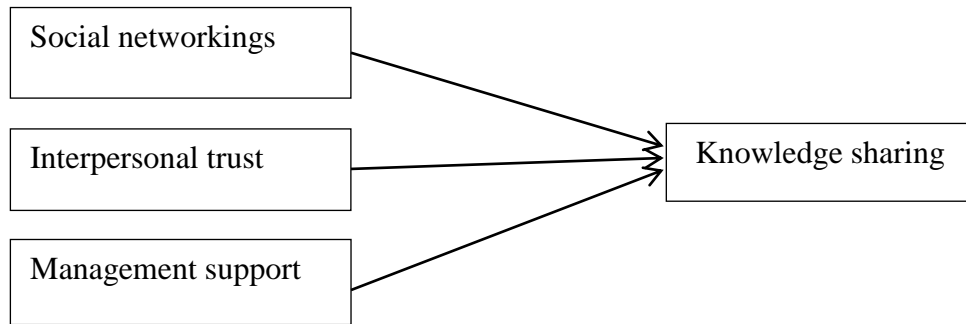
Figure 3. 1 Conceptual framework

The fundamental premise of the above model is that key antecedents influence knowledge sharing among employees. As depicted in Figure 3.1, three key factors which have received strong emphasis in the literature for their influence on the success of knowledge sharing have been selected. The following section elaborates on the research question regarding social networks and knowledge sharing.

3.2.1 Research question regarding social networks and knowledge sharing

The first goal of conducting this research is to explore the relationship between social networks and knowledge sharing.

Social networks within the community are a significant factor that influences employees' knowledge sharing. Methods of sharing knowledge within networks include communication, dialogue, and individual or group interactions that support and encourage individual knowledge-related activities (Leonard & Sensiper, 1998). Both formal and informal relationships and contacts between people are considered significant for sharing perspectives and knowledge within organisations (O'Dell & Grayson, 1998). In addition, Constant, Sproull, and Kiesler (1996) discuss the emerging role of communities of practice, that is, voluntary employee forums built around specific topics of interest, as knowledge sharing networks. Social networks may assist communication among people which, in turn, may influence their knowledge sharing capabilities.

In order to facilitate social networks, there is a need to build strong relationships. These relationships, in turn, affect how much an employee wants to share

knowledge, because good relationships can result in favourable reception of knowledge from other actors in the network. Knowledge sharing functions as a reciprocal process, particularly in cooperative circumstances (Bock et al., 2005). In a knowledge management case study carried out on a large information technology service company, Garud and Kumaraswamy (2005) affirm that enhancing social networks among employees can lead to the improvement of knowledge sharing. Such sharing is inevitable when one actively engages in learning and attempts to work with others in the organisation in a collaborative relationship, and this sharing is enhanced by open communication (Gibson & Vermeulen, 2003).

Although the significance of the implementation of knowledge management in organisations is acknowledged, it is still the least theoretically explored the sharing of knowledge. For this reason, one goal of this study is to explore the role of a social network perspective on the sharing phase of knowledge management. The review of research reveals that qualitative studies that have examined the relationship between social networks and knowledge sharing are limited. Therefore, there is a need to explore the role of social networks in knowledge sharing, using qualitative methods. In order to do so, the following question is formulated:

RQ1: What is the nature of the relationship between social networks and knowledge sharing?

3.2.2 Research question regarding interpersonal trust and knowledge sharing

It is necessary to understand the relationship between interpersonal trust and the enabling of knowledge sharing in companies. The presence of trust is regarded as a significant condition for the enabling of cooperative work practices (Kelly, 2007). It is affirmed that the foundation for any efficient collaborative work practice is the development of a high level of trust between the relevant parties, and that only in this way can the exchange of knowledge be truly efficient (Dodgson & Rothwell, 1994).

It is believed that culture facilitates active knowledge sharing among organisational members and that trustworthy behaviour enhances communication speed by empowering organisational members to freely share personal knowledge and concerns (Von Krogh, 1998). According to Cohen and Prusak (2001), high levels of interpersonal trust can lead to better knowledge sharing. Additionally, Connelly (2000) reports that the more trust there is between employees in an organisation, the more knowledge is shared. Similarly, individuals who provide information must trust that the given knowledge will be used appropriately. Andrew and Delahaye (2000) also argue that in the absence of trust, formal knowledge sharing is inadequate to encourage individuals to share knowledge with others in the same work environment.

The empirical research of McAllister (1995) illustrates that interpersonal trust is connected to organisational citizenship behaviour towards other individuals in an organisation; such trust and such citizenship play connected roles. Therefore, trust might contribute to how much employees desire to share knowledge as the basis for action (Holste & Fields, 2010). These studies, taken together, propose that workers must be relatively certain that knowledge sources will provide complete and closely connected information, will deliver what is expected, and are perceived in the organisation as being worthwhile. The desire of employees to use knowledge may rely on the extent to which they trust their coworkers as recipients and sources (Adler, 2001; De Long & Fahey, 2000; Lucas, 2005). For instance, Lucas (2005) found that interpersonal trust between coworkers, and their reputations, have separate impacts on staff members' experiences in transferring knowledge, i.e., sharing and using it, within a company. Thus, it is argued that trust creates conditions for increased knowledge transfer and ensures its transferability in a form that is beneficial to the recipient (Lucas, 2005).

As can be seen from previous research, interpersonal trust has been widely considered in many studies as a significant enabling factor for knowledge sharing. However, despite this consideration, there is a lack of exploratory investigation of the specific role of interpersonal trust on the sharing of knowledge. In order to address this gap, this research has involved the undertaking of an exploratory study in order to get a better understanding of the issues in the gap area. To be

more specific, it is the intention here to query how to effectively develop interpersonal trust in such a way as to develop an environment conducive to knowledge sharing. Hence, the following question is answered in this thesis:

RQ2: What is the nature of the relationship between interpersonal trust and knowledge sharing?

3.2.3 Research question regarding management support and knowledge sharing

Management support is considered one of the significant potential factors in the area of organisational knowledge (Connelly & Kelloway, 2003). MacNeil (2003) focuses on the significance of management's visible support for knowledge sharing among organisational members. In addition, Lin and Lee (2004) suggest that perceptions of how much management encourages knowledge sharing intentions are critical for creating and maintaining positive knowledge sharing in a company. In addition, genuine support from the management is required to ensure the success of knowledge sharing (Ling et al., 2009).

Managers have shown an increasing interest in comprehending and motivating knowledge-sharing behaviour in their companies. For instance, MacNeil (2001) has proposed that managers can contribute significantly to the improvement of core competencies and skills through their role as enablers of learning in organisations, especially by setting up a knowledge-sharing environment in which workers are motivated to use their knowledge to solve problems. To achieve strategic organisational goals, managers must change their perceptions of knowledge sharing (Stoddart, 2001). Although such studies have provided much helpful information on the role of managers' perceptions in knowledge sharing, nearly all have been explanatory and very few haveprovided in-depth insights.

The support of those who work in management for knowledge sharing has been shown to be positively related to employees' insights into knowledge sharing culture (Connelly & Kelloway, 2003; Lin, 2007). Lee et al. (2006) discover that management support affected both the level and quality of knowledge sharing by affecting employee commitment to knowledge management. Perceived supervisors' and coworkers' support and the resulting enhancement of the sharing

of knowledge also improve employees' knowledge exchange and their insights into the usefulness of the sharing of knowledge (Cabrera, Collins, & Salgado, 2006; Kulkarni, Ravindran, & Freeze, 2006/2007). Connelly and Kelloway (2003) provide insight into encouragement from managementto share knowledge. Such encouragement was positively related to the actual sharing of knowledge. These findings are consistent with the speculation that the support of management has a positive impact on the implementation of knowledge management (Lin, 2011).

Lin and Lee (2004) suggest that it is essential that management supports workers' intentions to share knowledge, and that this condition is essential for creating and maintaining a positive knowledge sharing culture in an organisation. In light of this research, this study accepts the proposition that the support of management positively impacts employee willingness to share knowledge with coworkers.

It is believed that a supportive and coaching-oriented manager makes staff members feel safe in the team environment. Edmondson (1999) proposes that the creation of such psychological safety facilitates the team members' open admission and analysis of and learning from their mistakes. Facilitative managers constantly challenge the team members to new heights; encourage them to think freely, and to illustrate their viewpoints openly (Norrgren & Schaller, 1999). Facilitative managers generate a nurturing environment within which the team members feel that it is safe to take risks and investigate nonroutine alternatives (Edmondson, 1999; Norrgren & Schaller, 1999). This environment supports members' voicing of dissenting perspectives without fears of backlash and allows them to disagree on issue-based conflict (Sarin & McDermott, 2003). These conditions may encourage members to implement knowledge effectively. The review of research conducted in the area of knowledge management practices appears to reveal considerable qualitative research that has concentrated on the role of managers in providing incentive systems to enhance knowledge sharing.

In the existing research that has explored the role of management in the sharing of knowledge, much examines the direct link between the two using quantitative methods. Management support has been found to affect an organisation's knowledge sharing culture. Knowledge-sharing behaviour then feeds back into the

culture of an organisation and, in turn, affects the development of this antecedent, leadership, in either a positive or negative manner. Although such studies have provided much helpful information on the role of managers' perceptions of knowledge sharing, they have rarely engaged in exploratory study of the specific nature of management support that has the potential to influence knowledge sharing. Therefore, there is a need to explore what actions management can carry out in order to encourage employees to share their knowledge with one another. Hence, the following research question on the nature of the relationship between management support and knowledge sharing is proposed.

RQ3: What is the nature of the relationship between management support and knowledge sharing?

3.3 Chapter summary

The literature review led to the identification of gaps in the literature which centred around the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. The first part of this chapter discussed research gaps in the areas associated with this study. Second, research goals and questions were arrived at. The next chapter will outline the research methodology employed by this study.

Chapter Four: Research Methodology

4.0 Introduction

In the previous chapter, the justification for the research project was outlined in terms of the gaps in the literature, and the three research questions to be investigated were presented. This chapter starts by setting out the research philosophies and paradigms. In addition, the research methodology is made clear, and the rationale underlying the choices made, and methods used, are explained. Next, the unit of analysis is illustrated. Following that, the design of the interview is discussed, as are the selection of the research participants, the procedures for conducting the interview, and the collection of data. Data analysis based on grounded theory is then discussed. Furthermore, issues of trustworthiness are explained. Finally, the chapter presents a review of the study from an ethical viewpoint.

4.1 Research philosophies and paradigms

This section discusses research philosophies and paradigms, and a justification of the selected research paradigm.

When conducting research, it is important to take into consideration different research paradigms and issues of ontology and epistemology. Parameters in terms of these represent insights, beliefs, assumptions, and the nature of reality and truth. Such parameters guide the researcher to follow certain steps from the design of a research study to its completion. Therefore, it is vital to comprehend and discuss these aspects in order to understand how individuals, groups, or organisational practices can be interpreted. The most widely known view on research paradigms is the contribution of Burrell and Morgan (1979), and so it offers an appropriate point at which to begin the discussion.

Burrell and Morgan (1979) suggest that approaches to social science are underwritten by philosophical theories, and that all social scientists approach their

subject through explicit assumptions about the nature of the social world and the methods by which it might be examined. Social scientists conceptualise social science in terms of four dimensions of proposition connected with ontology, epistemology, human nature, and methodology respectively.

Ontology refers to the indispensable assumptions a researcher takes into consideration regarding the nature of reality (Easterby-Smith, Thorpe, & Jackson, 2012, p. 236, Gioia & Pitre, 1990, p. 585). Ontology, to social scientists, is related to the very essence of the phenomena under examination, whether reality has a "subjective" or an "objective" nature, and whether the reality to be examined is internal or external to the individual (Burrell & Morgan, 1979).

Epistemology refers to basic assumptions about the nature of knowledge as well as reality and correlated phenomena (Johnson & Duberley, 2000), about what sorts of knowledge can be acquired, and about whether the nature of knowledge is hard, real, possible to transmit in tangible form and, accordingly, obtainable, or whether it is softer, subjective, spiritual, and based on experience and perception of a unique and fundamentally personal nature (Burrell & Morgan, 1979).

The third set of assumptions is about human nature. According to Burrell and Morgan (1979), these are concerned specifically with the relationship between human beings and their environment, as human life is fundamentally both the subject and object of enquiry. According to them, perspectives in social science are those that can be recognised through the perspective of human beings responding in a mechanistic or deterministic fashion to the circumstances faced in their external world.

Methodology refers to fundamental assumptions about the nature of ways of studying phenomena. In the social sciences, research methodologies include surveys, experiments, histories, analysis of archival information, and case studies (Yin, 2003). Burrell and Morgan (1979) argue that some assumptions about methodology emphasise the relativistic nature of the social world to such an extent that they might be perceived as "antiscientific" in comparison to the ground rules usually set out in the natural sciences. Burrell and Morgan (1979) point out

that the three sets of assumptions outlined above have direct methodological implications. As shown in Figure 4.1, the impact of ontology and epistemology on methodology guides the selection of research designs and instruments.

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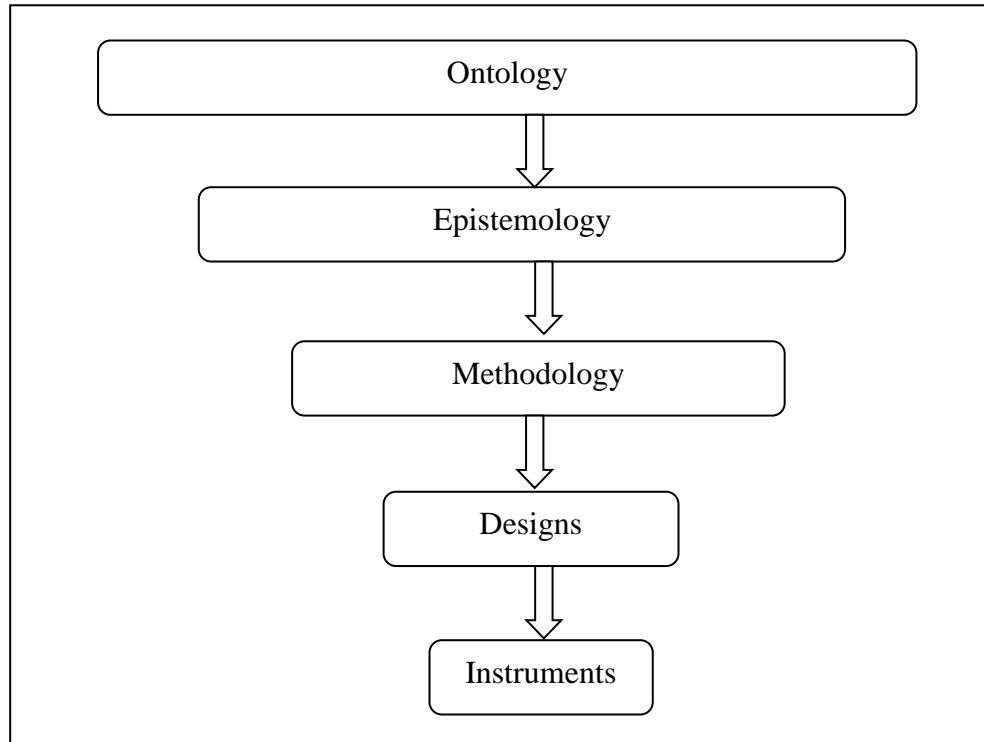
Source: (Saunders et al., 2003)

Figure 4.1 The foundation of research

Research design can be defined as a tool for the collection, measurement, and analysis of data, based on the research questions of the study (Saunders et al., 2003; Sekaran & Bougie, 2013). According to Denzin and Lincoln (2000), a research design elaborates a flexible set of procedures that link theoretical paradigms first to strategies of enquiry and second to methods for gathering the required material. Yin (2003) illustrates five different research designs which are: experiment, survey, archival, history, and case study. These ways of designing research lead to the development of research instruments. In summary, a research design involves issues regarding the purpose of the study, the research strategy (for example, experiments, surveys, interviews, and case studies), its location, time horizon, and unit of analysis (Sekaran & Bougie, 2013). The main features of the theoretical foundations of social research are summarised in Table 4.1.

Table 4.1 Summary of the main features of the theoretical foundations of social research

	Deals with	Asks
Ontology	The nature of reality	What does research focus on?
Epistemology	The nature of knowledge	What kind of knowledge is research looking for?
Methodology	The nature of research design and methods	How is research constructed and conducted?
Research	The execution of research design	How is research executed and designed?

Adapted from: Saunders et al., (2003)

4.1.1 Theoretical perspectives

The goal of this section is to elucidate the main arguments surrounding the way of thinking that may be taken into consideration when conducting social science research with the objective of providing insight into and comprehension of the way in which the research questions for this thesis have been examined.

A paradigm can be defined as a framework or a set of basic beliefs (Guba & Lincoln, 1994). Guba and Lincoln further affirm that the researcher is required to obtain ideas about the nature of reality in order to identify correlations between variables, and to define suitable methods for implementing a particular research project. A paradigm is also defined as a set of philosophies and propositions about the world and the nature of knowledge held by a community of scientists which influences the kind of problems they examine and their method of conducting research (Babbie, 2004; Collis & Hussey, 2009). Therefore, the methods of management and business research are closely tied to different visions of how organisational reality should be studied (Bryman & Bell, 2007). Burrell and Morgan's framework of four paradigms is expounded in the following section.

4.1.1.1 Burrell and Morgan's Framework of Four Paradigms

The seminal work produced by Burrel and Morgan (1979) depicts four paradigms which social science researchers can use to support their research assumptions. In fact, Burrel and Morgan's work expands on the positivism-phenomenology argument and invites discourse on other issues that relate to the nature of social research. They label two polar extremes− objective and subjective − and then allow the researcher to take a position along the continuum. In the subjective-

objective dimension there is a structure for positioning beliefs, depending on whether or not people can be examined externally by the researcher. Burrel and Morgan suggest that there is also another dimension − the environment − in which subjectivity exists. They present an environment at one end of the continuum where there is complete order (regulation), while at the other extreme there is conflict (radical change). A regulated environment is fixed, integrated, and has provision for functional coordination and consensus between the individual subjects. On the other hand, a radical change environment is characterised by continuous change, conflict, and disintegration. It is evident from Figure 4.2 that Burrell and Morgan (1979) incorporate the two continuums − subjective-objective and regulatory-radical change − to suggest a four-paradigm model within which researchers can establish their hypothesis.

The Sociology of Radical Change

	Radical Humanist (Postmodernist)		Radical Structuralist (Critical Thinker)	
Subjective		Subjective Change	Objective Change	**Objective**
		Subjective Regulation	Objective Regulation	
	Interpretive (Phenomenological or Postpositivist)		Functionalist (Positivistic)	

The Sociology of Regulation

Source: Burrell & Morgan (1979)

Figure 4.2 Burrell and Morgan's framework of research paradigms

As can be seen from Figure 4.2, Burrell and Morgan's paradigms are Functionalist (Positivist), Interpretive (Postpostivist), Radical Structuralist (Critical Thinker), and Radical Humanist (Postmodernist).

Researchers adopting the classical approach of the functionalist, which is closely related to the scientific method, are supposed to be objective and self-reliant.

Solving a problem under this paradigm begins with formulating assumptions that are subjected to experimental testing through quantitative methods (Buttery & Buttery, 1991). This paradigm is often problem-oriented and involves attempts to provide an explanation in order to find practical solutions to support the prevailing status quo, social order, solidarity, need for satisfaction, and actuality (Burrell & Morgan, 1979).

In functionalist research, the role of the researcher is to infer from theory causal correlations between phenomena, with the objective of testing whether or not such correlations are reasonable. A functionalist researcher believes that the causal correlation between phenomena remains independent of herself or himself and believes that it is the role of the researcher to find evidence, especially mathematical, of the correlation without directly affecting the phenomena (Connolly, 2007).

The interpretive, that is, postpositivist approach is commonly adopted in social science research. The most important objective of Interpretivism is to interpret the social world (Higgs, 2001). Interpretivism is based on the belief that there are diverse perspectives on reality, and it involves looking for the big picture through richness, depth, and complexity (Decrop, 1999). One goal of interpretive researchers is to find the order that exists within the phenomenon under examination; notwithstanding this, they are not objective (Ardalan, 2009). Consequently, the interpretive paradigm is concerned with comprehending the world as it is at the level of subjective experience (Ardalan, 2009).

The goal of interpretive research is considered to be comprehension of a specific condition rather than discovery of universal rules (Willis, 2007). Hence, in determining the reason or goal for conducting research, it can be seen that this study concentrates, to a great degree, on the understanding of the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. To be more specific, it invokes the premise that comprehension of the fundamental features of given circumstances is a worthy goal (Willis, 2007). Willis (2007) affirms that the nature of comprehension means that the process or experience which the knowledge constitutes can be obtained

from an inductive generation of hypotheses and theories instead of a deductive or test-based theory.

The interpretive approach criticises Positivism because the latter does not deal with the significance of people and their ability to think, nor does it consider the social context, and is, therefore, antihumanist (Neuman, 2003). Easton (1998) believes that Postpositivism is independent of researchers and is open to dissimilar viewpoints. These viewpoints are not reality, but merely windows through which to gain a better picture of particular realities. Chauvel and Despres (2002) state that "post-positivists hold that realities are multiple rather than singular, objectivity is a myth, that action arises from interactions in circumscribed conditions, and that the meanings ascribed to the words we use are imperfectly shared at best" (p. 209). As a result, Postpositivism focuses on the significance of multiple measures and observations, each of which may have diverse types of errors. Triangulation needs to be applied across these multiple, inaccurate sources to gain a better picture of what is happening in reality (Sweeney, 2000). Researchers who work under this paradigm tend to focus on inductive logic in which research is affected by hypotheses set out in a primarily formal writing style (Onwuegbuziem, 2002). The researcher's objectivity under this paradigm is focused on triangulating across multiple, fallible viewpoints, while also, at the same time, triangulating across the possibility of bias (Trochim, 2005).

To fully comprehend any condition using an interpretive paradigm, Willis (2007) thinks that the researcher should be cognisant of five conceptual areas. These areas and the resulting perspectives are illustrated in Table 4.2.

Table 4.2 Differences between postpositivism and interpretivism on the five major issues

Issues	Positivism	Interpretivism
Nature of reality	External to human mind	Socially constructed
Research goal	Find universals	Reflect and comprehend
Acceptable methods of data gathering	Scientific method	Objective and subjective research approaches are both allowed.
Significance of data	For use in testing theories	Comprehension is contextual in nature and universals are deemphasised.
Relationship of research to practice	Separate activities; research guides practice	Each directs and, in the end, becomes the other.

Adapted from: Willis (2007)

The Radical Humanist paradigm, also referred to as Postmodernist, is underpinned by the essential hypothesis that each human being has an individual voice (Rousseau, 1998) and that these voices are being oppressed by domination and power (Connolly, 2007). In social science research, this dominating power is commonly perceived to be the organisation in which the individual works, or the society in which the individual lives (Connolly, 2007). Radical Humanist researchers think that the world is subjective in nature and can only be comprehended by studying it through the eyes of subjects (Burrell & Morgan, 1979).

The Radical Structuralist or Critical Thinker paradigm is similar to the Radical Humanist paradigm in that it takes into account individuals being oppressed by power (Connolly, 2007). Notwithstanding this, in contrast to radical humanist researchers who think that the world is subjective in nature and can only be understood by examination through the eyes of the subjects, the radical structuralist researcher considers an objective viewpoint possible (Burrell & Morgan, 1979). In addition, the radical structuralist researcher has a desire to

restructure society (Burrell & Morgan, 1979; Connolly, 2007), as well as organisations, in order to change the current power structures (Connolly, 2007).

4.1.2 Justification of selected research paradigm

In order to deepen understanding of, and explore the nature of, the relationships between social networks, interpersonal trust, management support, and knowledge sharing, the researcher decided to use qualitative methodology. Thus, the nature and goals of the study have directed the choice of research paradigm. As the aim of this research is to build theory, an interpretive paradigm is deemed appropriate. Firstly, the researcher considers his own view to be interpretive. Interpretive research takes the view that reality is subjective and deciphered differently by different people. Also, with the interpretive paradigm, knowledge is obtained from the sense of things; comprehension of meaning and interpretation are especially significant (Sarantakos, 2005, pp. 37-38). The underlying assumptions of the interpretive paradigm are rooted in the comprehension "of how we construct meaningful worlds through communication and how we act in those worlds" (Miller, 2002, p. 46). That is, humans construct meaningful realities and live in those realities.

A richer understanding of the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing was aimed for in this research, so the participants targeted were those who have had a range of experiences and educational backgrounds. In order to comprehend how employees share their knowledge and how different organisational factors optimise such sharing, interviewees were asked to interpret their knowledge sharing through the meanings that the participants assign to them. That approach was taken to enable the researcher to understand the social world according to the interviewees' insights, and also to more accurately interpret these meanings.

Finally, the interpretive perspective is considered to be connected to inductive approaches (Sarantakos, 2005). These imply the generation of theory (Brymen & Bell, 2007). Thus, it can be said that, for all these reasons, the research paradigm chosen is that of an interpretive perspective, because it not only allows the researcher to seek to identify or test variables, but also, equally importantly, to

draw meaning from social contexts about the perspectives of key players within companies.

4.2 Research methodology

Research methodology can be broadly broken down into two distinct approaches: qualitative and quantitative. The methodology for any given research should be based on the nature of the phenomena under examination. When the researcher is interested in an in-depth comprehension of a topic, qualitative approaches are best; however, if a researcher has a desire to present a numeric measurement of the data under examination, quantitative methodology may be proposed (Creswell, 2007). This section provides detailed descriptions of the methodology used in this research, and the advantages and disadvantages of qualitative and quantitative methodologies. In addition, it provides justification for the chosen methodology.

4.2.1 Quantitative research

Quantitative research emphasises quantification in the collection and analysis of data (Bryman & Bell, 2007). Such methodology entails the use of the deductive approach, where a theory is developed and hypotheses are proposed. The procedure for research using this method is to design a research strategy to test research theories by specifying narrow hypotheses and collecting data to support or refute them (Creswell, 2009).

Diverse strengths of quantitative research have been identified. They include its conscious distancing of the researcher from the object of study through systematic development and validation of measures, through study design, and through testing of statistical hypotheses; these means are useful in furthering validity (Miller et al., 2011). Another strength of quantitative methods is that they can provide wide coverage of a range of conditions. In addition, the quantitative approach is, in general, fast and economical. Such methods are suitable when time and resources are limited. Moreover, measurement in quantitative research allows delineation of differences between the people in question (Bryman & Bell, 2007).

Diverse limitations of quantitative research are discussed by Bryman and Bell (2007). The first is that it does not take into consideration the role of people's self-reflection in their interpretation of the world around them. Another is that the measurement process is in an artificial setting. Therefore, the link between the measures developed by the researcher is assumed, rather than real. In addition, the reliance on instruments and procedures weakens the link between the research and everyday life. This might be because the researcher does not know if survey participants have the required knowledge to answer a question, or if occurrences in their everyday lives correspond. Furthermore, the meaning of events to individuals is disregarded, and the researchers do not know how the results relate to everyday contexts. This might be because the analysis of relationships between variables generates a static view of social life that is independent of people's actual lives. Such analysis is often a poor substitute for a researcher's vivid descriptions (Gray, Williamson, Karp, & Dalphin, 2007).

4.2.2 Qualitative research

Qualitative research focuses on the description of a scenario using words instead of the quantification of a phenomenon using the collection and analysis of data (Bryman & Bell, 2007). Qualitative methods involve, for example, case study, grounded theory, ethnography, and action research (Bryman & Bell, 2007; Corbetta, 2003). The methods employed to gather qualitative information involve in-depth interviewing, observation, and participant observation (Ticehurst & Veal, 2000).

The adoption of qualitative methods is argued to allow researchers to gain deeper understanding of the phenomenon under exploration (Piekkari, Welch, & Paavilainen, 2009). Furthermore, qualitative methodology allows participants to go into detail about their experiences (Creswell, 2009). In addition, Marschan-Piekkari and Welch (2004, p. 8) believe that qualitative research "takes a more holistic approach to the research object and studies a phenomenon in its context". Moreover, research instruments need to be chosen for the domain in which the research is to be carried out. Qualitative research is affirmed to have the potential to be an empirical approach and allow organisations to be studied on their own terms, without the imposition of the researcher's own culturally specific

perspectives (Piekkari et al., 2009). Such an advantage can provide the researcher with rich insights into the phenomenon being studied. In certain situations, a subjective and interpretive, rather than an objective, framework is needed. The strengths of a qualitative method lie especially in the specificity of the respondents' focus, and in the development of trust in face-to-face interviews (Marschan-Piekkari & Welch, 2004).

Limitations of qualitative research are discussed by many researchers (i.e., Bryman & Bell, 2007; Creswell, 2009; Gray et al., 2007). Qualitative research is subject to personal prejudice. This might be because qualitative researchers have their own unsystematic perspectives on how people make sense of their lives, experiences, and the structures of their world. Another limitation is the difficulty of replicating a qualitative study. Further limitation consists in problems with generalisation. This problem may arise because the scope of the results of qualitative investigations is restricted to a small number of individuals in a specific organisation. Therefore, it is not possible to know how the results can be generalised to other settings. After considering these two research methodologies, the researcher determined that this research would be based on the qualitative research methodology. The fundamental differences between the key features of both quantitative and qualitative methods research are shown in Table 4.3.

Table 4.3 Key features of qualitative and quantitative research

Area or aspect of comparison	Qualitative	Quantitative
Epistemological orientation	Interpretivism	Positivism
Ontological orientation	Constructionism	Objectivism
Nature of reality	Multiple realities; reality is subjective	Single reality; reality is objective
Most common research objectives	Explore, discover, describe, observe, and explain	Predict, test, examine, and construct
The role of theory in relation to research	Inductive; generation of theory	Deductive; testing of theory
Researcher's role	Active; both parties are interactive and inseparable	Passive; distant from the subject (dualism)
Setting	Natural	Artificial
Research design	Concerned with generating theories	Concerned with testing of hypotheses
Example of strategies employed	Phenomenology, grounded theory, ethnography, case study, and narrative	Survey and experiments
Sample size	Small	Large
Reliability	Low	High
Validity	High	Low
Type of data analysis	Identify statistical analysis	Identify patterns, features, themes
Generalisations	Generalise from one setting to another	Generalise from sample to population

Adapted from: Bryman & Bell (2007); Creswell (2009); Daymon & Holloway, (2011); Hussey & Hussey (1997); Johnson & Christensen, (2008); Lichtman (2006); Sarantakos (2005)

4.2.3 Justification of selected research methodology

As previously mentioned, the main goal of conducting this research is to explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Such factors are deemed important according to previous research. However, the nature of their impact on knowledge sharing has remained largely unknown. This research was carried out in order to explore the phenomena under examination, which required an exploratory study that involved qualitative research. Such a design is useful for exploring relationships when the variables to be studied are unknown.

In fact, lack of clear understanding of how social networks, interpersonal trust, and management support influence knowledge sharing led the researcher to opt for an exploratory study. The review of the literature revealed that diverse antecedents can help to create a culture of knowledge sharing. Therefore, critical factors that support knowledge sharing vary substantially between organisational cultures. In order to avoid such ambiguity, the researcher decided to employ an exploratory study in order to deepen his understanding of the critical factors of success that influence knowledge sharing in manufacturing companies.

It is also suggested in the literature that exploratory research is employed when the field of research does not itself suggest an obvious idea of the problems to be addressed during the study (Cooper & Schindler, 2006). It seems that exploratory research can be employed when a problem is difficult to structure and when there is uncertainty regarding what approach to employ and what criteria are significant. Exploration might also save time and money when the perceived problem turns out to be not as significant as first thought, because more extensive studies can then be decided against (Cooper & Schindler, 2006).

4.3 Research methods

This section details the methods used to address the research questions. It begins by justifying the use of the interview method for the research questions. Following on, types of interview and the relative strengths and weaknesses of each one are elucidated.

4.3.1 Interview

An interview is a circumstance in which the data and results are related to direct researcher-to-participant conversations either in person or by phone (Daniels & Cannice, 2004). Rubin and Rubin, (2005) go further by defining qualitative interviewing as a particular way of discovering other people's feelings and ideas about their worlds.

There are three conditions under which interview methods might be suitable for business research (Daniels & Cannice, 2004). Firstly, interviews are especially beneficial for exploratory studies. In this circumstance, interviews allow the researcher to discover new relationships or conditions not previously conceived of, as the comments and perspectives of the main participants constitute a focal part of the research. Thus, the researcher's choice of exploratory interviewing was inspired by the idea that "Qualitative interviewing is an important adventure; every stage of an interview brings up new information and opens a new window into the experiences of the people" (Rubin & Rubin, 2005, p.1). Secondly, interviews are appropriate when there is a small population of interviewees, which means that researchers must concentrate on the depth of data collection, since breadth is simply not achievable. Thirdly, interviews can give researchers the opportunity to develop a deep rapport with interviewees; in this way they can generate a trusting relationship which is helpful when further information or cooperative contribution to the research is required.

Varieties of interviews are distinguished according to the goal and role of the interviewees and interviewers, the sample size, and the presentation. The research literature differentiates between at least three interview methods: structured, unstructured, and semi-structured (Fontana & Frey 2000; McMurray, Pace & Scott, 2004; Rubin & Rubin, 2005). The following discussion will shed light on the differences between them.

4.3.1.1 Types of interview

Structured interview

Highly structured interviews comprise particular ranges of questions necessitating restricted responses (Baghdadabad, 2008). In this context, the role of the

researcher is to ask each respondent the same series of questions. Consequently, questions and their order in structured interviews are decided in advance, and the researcher purposes to always behave in the same way in all aspects of the interviews. Accordingly, this kind of interviewing is recognised as being less flexible in the way its questions are asked or answered (Merriam, 1998). Therefore, in structured interviews, the role of the researcher seems neutral. The interviewer's role is to guide the participant back to the interview questions in case he or she moves away from the topic at hand.

As mentioned previously, in structured interviews, an exact adherence to the order and wording of the questions is needed. Eventually, a highly structured interview allows for an extensive degree of comparison between interviews because the findings having a greater degree of standardisation (Hesse-Biber & Leavy, 2011).

Unstructured interview

In a low-structure interview or in open-ended interviews, the role of the researcher is to ask few, but broad, questions and to let the participant take the discussion in whatever direction he or she desires (Hesse-Biber & Leavy, 2011). It is believed that, in this kind of interview, the researcher behaves freely on the basis of specific research issues, preparing and repreparing questions as needed and employing neutral probing. This form of interview is flexible in structure and the constraints are minor, in most situations taking the form of guidelines rather than rules (Sarantakos, 2005). In this context, the area of inquiry is, to some degree, unrecognised, and the interviewer looks to learn from participants about unidentified issues that need to be examined (Merriam, 1998). The researcher has a specific issue chosen for the study, and he or she permits the dialogue to go any way the respondent considers relevant to it.

Unstructured interviews have been found to provide data of great breadth and to give especially deep understanding (Baghdadabad, 2008). Accordingly, they give the respondents much more opportunity to represent their thoughts using their own methods of thinking. In spite of the strengths of this kind of interview, time pressures on participants, rather than on the interviewer, resulted in its not being realistic to implement in this research.

Semi-structured interview

Semi-structured interviews allow the researcher to get away from the constraints of structured interviews in terms of stipulated questions and their wording and order, and to have the opportunity to pursue any special perspectives that may appear suddenly during the interviews (Daymon & Holloway, 2011; Rubin & Rubin, 2005). The interview guide, however, ensures that the researcher collects similar types of data from every interviewee. Although the interview guide may be quite long and detailed, it is not necessary to follow it exactly because the goal is to understand the perspective of the participants and to create a meaningful account of the topic area (Daymon & Holloway, 2011). An example of semi-structured interview questions is provided in section 4.5.2.2.

As can be seen from the previous discussion, semi-structured interviews can be placed somewhere between the structured and unstructured kinds. They comprise components of both, with some leaning in the direction of structured interviews, and others in the direction of unstructured interviews (Daymon & Holloway, 2011). It is affirmed that the degree to which interviews are structured depends on the research topic and goal, resources, methodological standards, and the sort of information sought, which, of course, is, in turn, recognised in the research goals (Sarantakos, 2005).

The degree of structure imposed during the interview influences the researcher's role in the interview situation. The higher the degree of structure sought, the more control the researcher introduces (see Figure 4.3) (Hesse-Biber & Leavy, 2011).

High
structure

Medium
structure

Low structure

Closed-ended interview;
consistent questions for
all respondents

Open-ended interview;
different questions and
approaches for different
respondents
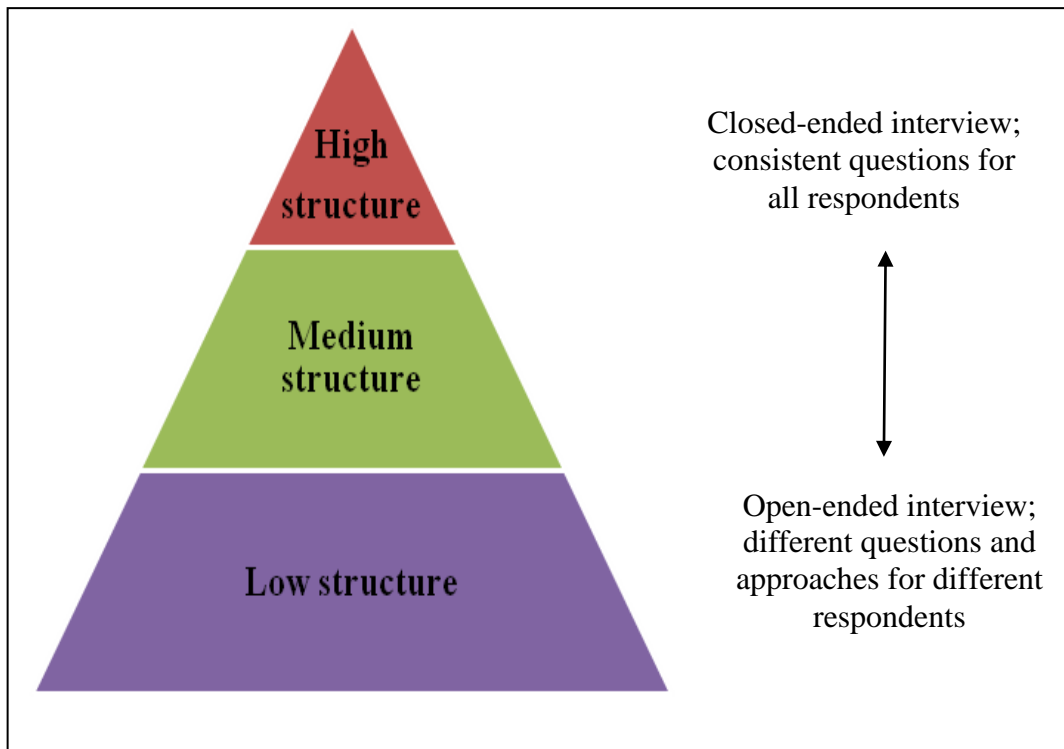
Figure 4.3 Structure of qualitative interviews

Some advantages of semi-structured interviews are flexibility, provision of opportunities to observe nonverbal behaviour, control over the investigative environment, and control over question order (Ding, 2011). This type of flexibility relates, in turn, to the possibility of modifying the questions. Another advantage of the semi-structured interview relates to the possibility of raising additional questions and exploring fundamental issues in depth (Ding, 2011). In addition, the interviewer is allowed to add extra questions during the interview in order to garner more detail regarding a specific answer or to explore new issues that arise from a specific answer (Collis & Hussey, 2009). Under such conditions, interviewees are allowed to share their real opinions. Similarly, the researcher can obtain rich data for interpretation. This richness can be achieved through follow-up probing questions which provide a great opportunity to assess the validity of responses through observation of nonverbal communication.

Considering the advantages of semi-structured interviews, the researcher has decided to use this kind. For a record of the interview protocols and questions used, please refer to Appendices G &I.

4.4 Unit of analysis

The research questions determine whether the unit of analysis is individuals, dyads, groups, organisations, industries, cultures, or nations (Tone, 2005). For this study, the interview method was employed, and individual opinions and personal reflections on the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing have also been taken into consideration. Consequently, the chosen unit of analysis is the individual. In general, the unit of analysis is a sampling unit, which is a single element or group of elements. The selection of participants and procedures is discussed in the following section.

4.5 Data collection procedures

In this section, the procedures used to gather data within the research settings will be discussed. The research process is described, including the selection of participants and the procedures for conducting the interview.

4.5.1 Data collection procedure of interview

4.5.1.1 The interview participants'characteristics

A list of New Zealand-based companies was drawn from the Internet and the Kompass directory. Information such as the locations and contact details of these companies was also gathered from these two sources. Diverse criteria were considered to ensure that the selection of companies avoided single resource bias and represented a diverse range of companies. An initial sample list of possible companies was drawn up. In terms of prioritising the companies, the researcher began with one where his chief supervisor could provide an entrée to it.

Participation was voluntary. As a result, the data gathering was limited to those employees who were willing to participate in the study. There are many different ways to find managers' names and addresses, such as through supervisor contacts, participant databases, databases of organisations, staff lists on websites, and personal contacts. The total number of participants included in the research was 25, equally representing five companies. To be more specific, from each company, the researcher interviewed one person in top management, two in

middle management, and two frontline employees. Opting for a small number of interviewees reflects the idea of purposeful sampling within each company. Purposeful sampling is used when there is a need to target a specific group in the make-up of a sample. This approach is in line with the aim to include the perspectives of diverse employees in New Zealand manufacturing companies on the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. As a result, the significant antecedent in purposeful sampling is not sample size but the purpose and rationale of the study (Lincoln & Guba 1985 as cited in Polit & Hungler, 1999, p.435).

As mentioned previously, this qualitative study was comprised of employees from manufacturing industry backgrounds. This approach was to ensure that the viewpoints would be fairly representative of the wider study population. This research employed a purposive snowball sample within each company. To use this technique, the researcher chose a few respondents and asked them to recommend other participants who met the standards of the research and who would be willing to participate in it. This process was continued with the new participants until saturation, that is, until no more considerable information can be obtained through extra interviewees, or until no more participants are available (Sarantakos, 2005).

The total number of interviewees was 25, which was sufficient, as clear signs of data saturation appeared. Saturation, as indicated in the research literature, occurs when no new or relevant information or themes are seen to emerge from data, hence indicating that the sample size is adequate (Guest, Bunce, & Johnson, 2006; Richards, 2005). The demographic information on interviewees was extracted after completing each interview. This included information on age groups, level of qualification, job title, years of working in the company, and years of working in their current position. A summary of the demographic data of the industry types and interviewees is shown in Appendix K. For reasons of confidentiality, the names of participants and their companies have been disguised. The industry type is related to whether the business is manufacturing or service oriented or a combination of the two. The core businesses for all five companieswere related to manufacturing. These are illustrated in Appendix K.

Interview participants included top and middle managers and frontline employees. Demographic data on the participants is presented in Appendix K. As can be seen from Appendix K, 40% (n=10) of the respondents were frontline operational employees, the same as the percentage of middle managers. In addition, 20 % (n=5) of the respondents were top managers. Taken together, more than half of the sample (60%, n=15) had some form of management responsibility. This distribution allowed the researcher to compare and contrast an employee's role in a company with his or her behaviours in relation to the sharing of knowledge.

4.5.1.2 Initial contacts and gaining access

Potential interviewees were initially contacted by email. They were informed that doctoral research was to be conducted and that my objective was to gain insight into the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. It was further explained that an interview of approximately one hour would be conducted at their convenience (see Appendix F). Two weeks from the initial contact, follow-up procedures were required to contact all participants who had not replied to the initial contact. Such procedures included calling participants and sending another email. Even after several rounds of emails and telephone calls, the response rate was very low. Out of the 25 organisations that were initially contacted, 5 responded with a willingness to participate.

Hence, in order to conduct the data and evidence gathering procedure correctly, and to provide potential participants with first-hand materials and information on the research project, the researcher visited some HR managers several times at their companies in order to provide explanations about any issues they might have with the research before collecting data. In fact, this was a good chance to get to know managers and to talk to them about the main goals of conducting this research prior to the main data collection phase.

As can be seen from this discussion, diverse efforts were made in order to make arrangements for participants to become involved in this research. These arrangements for interviews, and the efforts made to get access, helped the researcher to get more information in an informal and yet secure manner without

encountering many challenges. The following section elaborates on the interview processes.

4.5.2 The interview processes

This subsection explains three processes of data collection. The first is the pre-pilot interview, the second, the pilot interview, and the third, the semi-structured interview. The following discussion sheds light on the pre-pilot study.

4.5.2.1 The pre-pilot interview

Before trialling the interview, five specialists in interview construction were asked to check its content and construction. Following that, two training sessions with my supervisors were undertaken in order to become familiar with interview technique. After that, two trial run interviews were undertaken with two Ph.D. students. In addition, another two trial runs were employed with friends. The main reason for such pre-pilot testing is that it allows the interviewer to become familiar with interview techniques. The average interview lasted around one hour. The period of data collection for this pilot study was one month, July 2011.

The pre-pilot study participants were asked to take note of anything that seemed unclear or needed adjustment. For example, one recommendation related to the question, "Do you feel people in your organisation trust each other?" The pre-pilot study participant mentioned that this question was broad in terms of what kind of interpersonal trust was being looking for. Therefore, the main goal of asking interviewees that question needed to be clear. In addition, some terminology was changed in order to make it easier for participants to understand. Such feedback on the treatment, measures, and other features of research was useful and desirable.

4.5.2.2 The pilot interview

The term *pilot study* is employed in two distinct ways. Pilot studies can be those which are also called feasibility studies; these are a small-scale version(s) or trial run(s) of a study (Polit, Beck, & Hungler, 2001, p. 467), commonly implemented when researchers need to explore areas about which they have little or no

knowledge (Chenail, 2011). A pilot study can also be the pretesting of a specific research instrument (Baker, 1994).

The first reason for conducting a pilot interview is that it afforded the opportunity to deal with almost all of the data gathering procedures. Going through the steps of contacting, scheduling, and implementing the interviews enhanced the researcher's capabilities by serving as a formative stage during which to assess the relevant parameters of the questions. The researcher was then able to confirm whether the questions asked were connected and in appropriate alignment with the conceptual design and the research questions (Robson, 2002; Yin, 2003). The pilot interview allowed the interviewer to practise interviewing, observing, and writing, and refinement of interview questions.

Another reason for conducting a pilot study is to test the quality of an interview guide and recognise possible researcher biases; that is, participants try out being interviewed with the proposed methods to see if the planned procedures actually turn out as envisioned by the researcher (Chenail, 2011). In this research, when the researcher conducted the first pilot study, he unwittingly commented that the respondent's answers were good answers. However, he quickly realised such commenting demonstrated poor interview technique when it comes to avoiding bias. During the ensuing pilot studies, the need to be neutral and maintain respectful silence during interviews was taken into consideration, and conscious awareness of his own experience was preserved, so as to avoid bias.

In addition, a researcher can expect feedback from research participants that leads to significant improvement in the main research project. For this study, four participants were interviewed in order to determine the ease of answering the questions and navigating the form in which the interview was administered.

Furthermore, the researcher wanted to be comfortable with the environment chosen for the interview. In a way appropriate for conducting pilot interviews, the researcher became more familiar with the guided interview questions when to do so bore the probability of hearing of additional, possibly richer, experiences. The

researcher became comfortable with the procedure of attracting the participant's attention completely without concern for the mechanics of the interview.

The pilot interview processes

In this study, four pilot tests were used to check whether the semi-structured research questions could attain the research goals. No pilot interview was treated as a real interview. As a result of the pilot study, vague questions and the interview design were revised. The pilot study was conducted at two organisations located in New Zealand.

There were four meetings. Their location was convenient to the pilot study respondents' places of work. The collection of data for the pilot study was accomplished through voice recording of the interviews with a digital voice recorder. To reduce distractions, a separate room was requested for the interview. Next, soon after the interview, the recorded information was transcribed when it was still fresh in the researcher's mind. The interview protocol was tested during the pilot study. Given that the study concentrated on respondents' live experiences, the questions in the interview protocol were intentionally directed at obtaining such experiences. During the pilot study, all four participants were encouraged to ask questions for clarification. From this pilot study, interview questions were developed to further enhance a set of semi-structured interview questions.

The first stage was to prepare the respondent for the interview. The interview protocol was used as a guide to ensure that all topics of interest were covered during the interview. The interview protocol is provided in Appendix G. The interview was started by turning on the digital recorder. Next, the researcher started the initial discussion, explaining the main goal of conducting the research, the research procedures, and the ethics of the process; this introductory stage was expected to create a platform for good participatory involvement. Following that, all participants were given two copies of a consent form. They signed them, signifying their willingness to participate in the study. A sample of this form is included in Appendix H. One copy of the consent form was for the researcher and the other for the participants.

The researcher began the interviews by asking the participants general questions. This approach is necessary in order to put interviewees at ease at the opening of the interview process. The researcher engaged them in a brief chat about their position, length of service, other positions held, and the history of the company. This introductory stage was important in order to ensure that the participant felt comfortable speaking to the researcher. In addition, basic demographic information was obtained. For this purpose, an interview record sheet was used. A copy of this is provided in Appendix J.

Most of the interview questions were open-ended to allow the respondents to answer as they saw fit. For instance, the questions were worded in the following format: Tell me about how ...?, Explain what your organisation does ...?, How does ...?. An example used as a guide only is provided in Appendix I. The interviewer needed to be flexible and changed and reordered questions based upon the direction of the interview.

All interviews were recorded and were transcribed as soon as possible after the interview. During the interviews, the interviewer took notes about the interviewees' actions during the interview, and also tried to summarise their actions so that there was a record on the annotated transcript.

After the transcription, a brief narrative on the participant was put together which summarised his/her background and demographical profile. All willing participants who wanted one were provided with a copy of the transcript of their interview to review. By and large, for each interviewee, the following items were gathered:

- Audio transcript of the interview
- Interview record sheet with demographical information
- A consent form.

The average duration of the interviews was around one hour. The period of data collection for this pilot study was one month, August 2011, during which four semi-structured interviews and observations were conducted. During this period of time, the connected documents were gathered, the websites accessed, and

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interviewees for the semi-structured interview identified. It is clear from this account that the first stage of interviews was much less structured than the next one. The following discussion describes the data collection of the semi-structured interviews with the 25 real participants.

4.5.2.3 Semi-structured interviews

Participants were interviewed in their own offices so that their management practices could be viewed in their normal context. Interviews carried out in person in a private setting, protected by confidentiality, tend to elicit more honest opinions about what the interviewees really believed, thought, and felt. The in-person interview helped the researcher to probe, explore, and clarify responses to seek out deeper understanding.

The semi-structured interviews followed the same procedures at the preparation stage, set out in Sections 4.5.1.1 and 4.5.1.2. The participants described what they actually do, rather than what they think they should be doing. The period of data collection for these semi-structured interviews was from September 2011 to November 2011. Twenty-five interviews were carried out. The average length of the interviews was approximately one hour and all were recorded. Three interviewees asked to be provided with a summary of this thesis after its completion. The researcher confirmed to them that this would be done.

4.6 Document review

Review of documents is a research technique for collecting data and information without asking questions of participants. Document review can be employed to support information already gathered through other methods, such as interview or survey. In this study, five types of documents were reviewed for each company; the first three types were company history documents, informative leaflets about services, and public Internet sites. In addition, the researcher received two internal documents from two companies during the interviews. The document analysis allowed the researcher to obtain contextual information to assist in elaborating on how social structures enabled or inhibited knowledge sharing, and to obtain additional evidence relative to the contextual factors that may have influenced knowledge sharing between employees. The information gathered through the

document review was analysed and integrated using Nvivo software to support the data analysis. The following section delineates the interview analysis procedures.

4.7 Developing the grounded theory

In order to analyse qualitative data, the grounded theory approach was used. This method is described and discussed below. Specific results from the research are provided in Chapter Five.

Grounded theory, popularised by Glaser and Strauss (Glaser & Strauss, 1967), has proved to be one of the most widely used approaches for qualitative data analysis. It has been used extensively across a variety of social science disciplines. Its principal focus is on inductively generating novel theoretical ideas or hypotheses from the data (Glaser, 2008; Leedy & Ormrod, 2005; Urquhart, Lehmann, & Myers, 2010; Yoong & Pauleen, 2004). A grounded theory strategy is, according to Goulding (2002), specifically useful for research to predict and explain behaviour, the focus being upon developing and building theory through a combination of induction and deduction (Creswell, 2007; Saunders et al., 2003). Both qualitative and quantitative data are useful for the verification and generation of these theories (Nelson, 2004). To arrive at a theory thus, this methodology calls for the researcher to, instead of starting out with a speculation that is to be examined, follow a series of stages that lead to the creation of a theory that accounts for the current state of research (Grounded Theory Institute, 2008). Insofar as these new theories arise out of the data and are supported by it, they are said to be grounded, hence the name of the approach.

To illustrate this point, grounded theorists argue that preliminary data collection and initial analysis should occur before consulting and incorporating any research literature (Daymon & Holloway, 2011; Urquhart et al., 2010). On the other hand, some scholars argue that the use of preexisting theories to guide the researcher's comprehension of data is recognised as academically acceptable (Corbin & Strauss, 2008; Pauleen et al., 2007; Sun, 2006). Therefore, an initial theoretical framework was used to guide research analysis of data. Notwithstanding, it is worth mentioning that much research that claims to employ grounded theory does not adopt the full set of steps recommended by its initial developers. Commonly,

the term simply means that a theory has emerged from the data, without necessarily denoting all of the features of the approach (Bryman & Burgess, 1994).

While GT is suitable for many qualitative studies, scholars in the field would argue that there are significant differences between GT as *a methodology* (GTM) and GT *as an approach or general method*. *Research methodology* refers to the theory not only of how research is conducted, but also comprises attention to the philosophical and theoretical viewpoints held by the researcher that underpin the study (Birks & Mills, 2011; Bryant & Charmaz, 2007). In the social sciences, the research methodologies involve surveys, experiments, histories, analysis of archival information, and case studies (Yin, 2003). From what has been illustrated above, it can be inferred that research methodology has many dimensions and the scope of research methodology is wider than that of research methods.

Research methods can be comprehended as all those methods/techniques that are implemented for the conducting of research (Kothari, 2004). In other words, all those methods used by the researcher during the course of studying his research problem are termed as *research methods*. Kothari (2004) classified research methods in line with three situations which they are related to: the collection of data: statistical techniques; and, evaluation of the accuracy of the research findings. Saunders et al. (2003) wrote that research method refers to the tools and techniques used to obtain and analyse data. They added that the tools constitute questionnaires, observations, and interviews, while techniques involve statistical and nonstatistical analysis. It would seem that many researchers have commonly utilised the grounded theory method as a mode of coding qualitative data (Benoliel, 1996; Bryant, Hughes, Myers, Trauth, & Urquhart 2004; Urquhart, 2007). In this research, grounded theory were used as a method of data collection and analysis.

The review of previous literature reveals that grounded theory can be interpreted and implemented in a number of different ways. Barney Glaser and Anselm Strauss [the two authors who first introduced the concept of grounded theory] have continued to develop their ideas of grounded theory, but in a "very public

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disagreement" (Urquhart et al., 2010, p. 361). Accordingly, a number of versions of the grounded theory methodology have emerged. There are two basic schools for Grounded Theory: the Glaserian School and the Straussian School (Melia, 1996; Stern, 1994). The differences between these are major, and, in some cases, minor. The prime differences, however, can have a significant effect in the direction and implementation of the primary research. Therefore, there is a need to elaborate on the main differences between the Glaserian School and the Straussian School, as is illustrated in Table 4.4.

Table 4.4 Comparisons of the two schools of Grounded Theory

Glaserian	Straussian
Starting with general wonderment (an empty mind)	Having a general idea of where to start
Emerging theory, with neutral questions	Forcing the theory, with structured questions
Development of a conceptual theory	Conceptual description of situations
The theory is grounded in the data.	The theory is interpreted by an observer.
The credibility of the theory or verification is derived from its grounding in the data.	The credibility of the theory comes from the rigour of the method.
The researcher is passive.	The researcher is active.
Data reveals the theory.	Data is structured to reveal the theory.
Coding is more rigorous and defined by technique. Codes are derived from 'micro-analysis which consists of analysis data word-by-word'.	Coding is less rigorous, a constant comparison of incident to incident, with neutral questions and categories and properties evolving.
Three types of coding, open, axial, and selective	Two coding types, simple (fracture the data then conceptually group it) and substantive (open or selective, to produce categories and properties)
Regarded by some as a form of qualitative data analysis (QDA)	Regarded by some as the only 'true' GTM

Adapted from: Onions (2006)

As can be seen from Table 5.2, Glaser takes the stance that researchers should have an empty mind, while Strauss permits a general idea of the area under exploration. Glaser leads with the principle that theory should emerge, while Strauss utilises structured questions to lead a more forced emergence of theory (Jones & Alony, 2011). Jones and Alony (2011) affirm that one of the major differences between the two versions of grounded theory relate primarily to the coding paradigms each adopts. Glaser suggested breaking down the coding process into three steps which are open, axial, and selective coding, whereas Strauss uses just two coding steps: simple and substantive coding. Glaser's writings illustrate a dissimilar viewpoint on grounded theory to his colleague's, concentrating on grounded theory as a method and on the substance of the resulting theory that emerged. In contrast, Strauss was more interested in validation criteria and developing systematic approaches to executing research, by concentrating on grounded theory as a set of strategies and techniques (Dillon, 2012). According to the Straussian School, the credibility of the theory comes from the rigour of the method (Onions, 2006). Additionally, Glaser chooses incident-by-incident coding, in relation to earlier ideas of line-by-line coding, and has become more committed to comparative methods (Glaser, 1978).

4.7.1 Evaluation of grounded theory

The previous section has described the essential grounded theory methods and discussed their use and application for the goal of developing grounded theory. In this section, evaluation of grounded theory will be discussed. The following discussion elaborates criticism of grounded theory.

One criticism of grounded theory is that the difficulty of operationalising a grounded theory approach leads many researchers to follow a simplified version of its principles and procedures. The steps of grounded theory building have been accused of being bewilderingly complicated, making them difficult to follow in practice (Nelson, 2004; Partington, 2000). One problem is related to theoretical sampling. Commonly researchers utilise sampling procedures which they decide on before they initiate data gathering, forgetting that sampling in grounded theory proceeds on theoretical ground (Corbin & Strauss, 1990). For example, the various stages in coding and categorising might be condensed, or the sample

might be selected in advance of data collection, or the development of a conceptual framework may precede data collection (Dymon & Holloway, 2011). In fact, many researchers produce good categories and interesting narratives, but commonly omit underlying social processes, or they fail to develop abstract concepts (Dymon & Holloway, 2011).

Another criticism of grounded theory is the requirement for the researcher to be theoretically sensitive in order to construct categories and a theoretical scheme (Locke, 2001). Being sensitive means being theoretically aware. But it is not easy for researchers to gain this awareness without drawing on knowledge they have already obtained from dealing with life's experiences. This aspect guides the researcher towards specific aspects of research, such as phenomena that others overlook because their dissimilar interests cause them to concentrate on different features. The requirement to obtain perspectives from contradictory sources, as well as inside the field, is one of the greatest obstacles to following the grounded theory approach (Dymon & Holloway, 2011).

In addition, the capacity to demonstrate arrival at the point of saturation has attracted some criticism and debate. The notion of theoretical saturation in grounded theory, the point at which the collection of more data would be counterproductive to the objectives of the study (Kennedy & Lingard, 2006; Strauss & Corbin, 1998), is not easy to specify. In addition, Glaser and Strauss (1967) also argue that, when saturation is attained, the researcher will frequently find gaps in his/her theory. For many, confirmation of a theory must broaden beyond theoretical saturation within the narrow context found in most grounded theory research. Therefore, as Charmaz (2003) proposed, it is "an elastic category that contracts and expands to suit the researcher's definitions rather and any consensual standard" (p. 325). Such comments emphasise the subjectivity of such claims. Nevertheless, Charmaz (2003) also suggested that this weakness may be dealt with through prolonged field research.

Another criticism of grounded theory is illustrated by Conrad (1990), Riessman (1990), and Strauss and Corbin (1998) who recommend detailed analysis of transcripts, comprising line-by-line analysis and "fracturing of data", which in

turn decreases the researchers' ability to depict the whole experience of the individuals involved. From a grounded theory viewpoint, fracturing the data entails generating codes and categories as the researcher defines themes within the data. In summary, the criticism assumes that the grounded theory approach: (a) restricts entry into subjects' worlds, and thus decreases comprehension of their experiences; (b) limits representation of both the social world and subjective experience; and, (c) depends on the viewer's authority as expert observer (Luttrell, 2010).

Suddaby (2006) lists six common misconceptions about grounded theory. Firstly, he claims that grounded theory is not an excuse to disregard the literature, or defer reading existing theory until the data are gathered and analysed. Also, grounded theory is not the presentation of raw data. It is vital that the data gathered are considered at a conceptual level in order to draw conclusions which involve theoretical insights. Additionally, Suddaby asserts that grounded theory is not theory testing, content analysis, or word count. He states that some researchers engaged in the sloppy practice of methodological slurring (Goulding, 2002) use interpretive methods to analyse assumptions (Suddaby, 2006). In most cases these researchers start with clear sets of positivist assumptions, involving hypotheses, and then proceed to report their "test" of hypotheses by means of sets of interviews or counts of words in related publications. In other cases, manuscripts will begin with interpretive premises, such as social construction of reputation in the popular business press, and then report word counts, with the claim of having performed grounded theory.

Next, Suddaby contends that grounded theory is not simply routine application of formulaic procedures to data. It is not a combination of techniques and procedures, such as a prescribed number of interviews, or the application of computer software packages to analyse data. While Suddaby does not criticise the adoption of these processes, he warns that the vital issue to remember here is that grounded theory is an interpretive process, not a logico-deductive one, and the researcher should treat it as a highly creative one (Suddaby, 2006). Moreover, Suddaby warns that grounded theory is not perfect. By its nature, it is messy. It requires researchers to develop a tacit knowledge of, or feel for, when purist

admonitions may not be appropriate to their research and may be ignored. Finally, he cautions against assuming that grounded theory is easy. He believes that "the seamless craft of a well-executed grounded theory study, however, is the product of significant experience, hard work, and creativity" (Suddaby, 2006, p. 639).

4.7.2 Grounded theory process

Due to the qualitative nature of the research questions, a grounded theory approach was used to analyse the interview data and document reviews. As a systematic process, the data analysis of grounded theory involves a standard format consisting of three phases: (a) open coding, whereby categories of information are chosen; (b) axial coding, whereby the categories are interconnected; and, (c) selective coding, whereby a story is formed connecting the assembled categories (Strauss & Corbin, 1998). These techniques include many specific ideas and techniques for achieving a grounded theory, all of which can be supported well using Nvivo. Before coding data, the researcher read and reread the interview transcripts and document reviews, in order to become familiar with the research data. Following that, Nvivo was used to store all the research data. (See Figure 4.4).
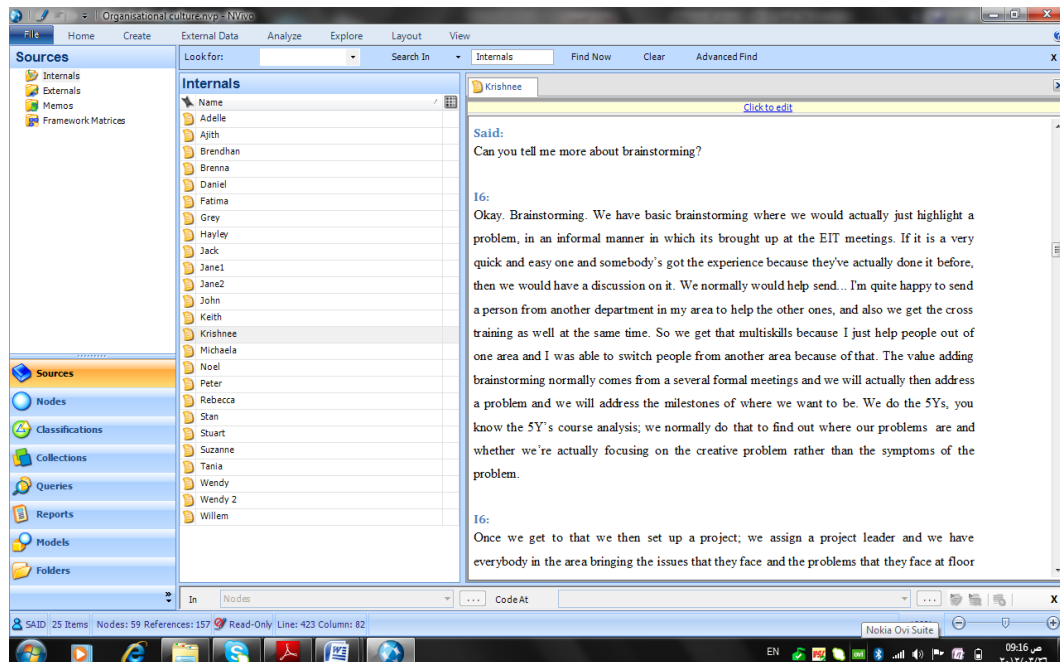
Figure 4.4 Nvivo being used to store all the research data

The three coding levels of data analysis and interpretation in grounded theory research are demonstrated in Figure 4.5 and further discussed below.
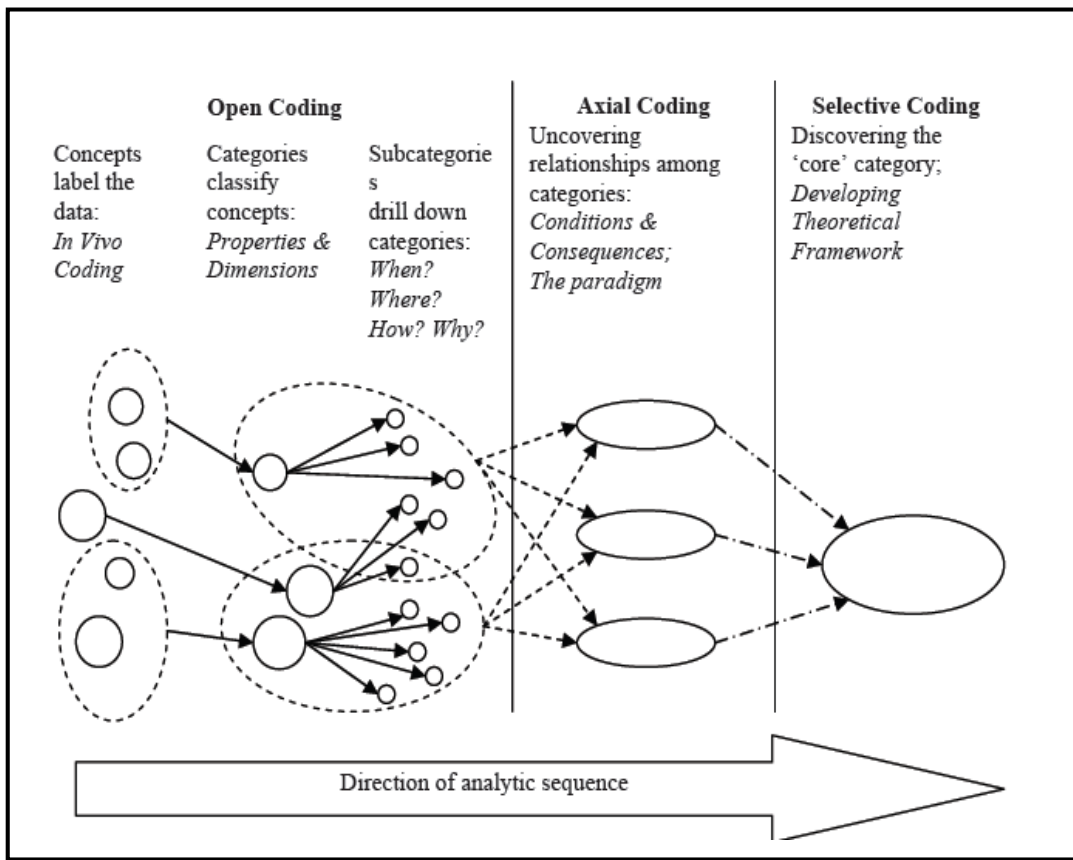
Figure 4.5 The three coding levels of data analysis in grounded theory research

4.7.2.1 Open coding

Corbin and Strauss (2008) define open coding as "the analytic process through which concepts are recognised and their properties and dimensions are found out in data" (p. 101). During this phase of coding, the researcher attempted to concentrate on codes that reflect action, and strove to continue to be open to potential directions shown by the data (Charmaz, 2006).

From this definition, it seems that the most important part of open coding is recognising properties and dimensions that can be the nodes of a conceptual network. In the coding phase, the analysis of the text provides initial themes or categories and, perhaps, subcategories, called properties, from the multiple sources of data assembled with the Nvivo 9 software. In this software, open

coding is called free nodes. A node is a categorisation of the data that is not yet associated with any other categorisations. The first step in open coding is to identify incidents. The next step is to group related incidents into concepts. The last stage is to form more abstract categories of related concepts (Glaser, 1992). Open coding occurs by selecting any noun, verb, or noun-and-verb combination which describes some actions and that potentially provides insight into the research questions (Sun, 2006). The data selected were stored under the coded phase and the link to the full record was maintained. Figure 4.6 illustrates this with an example of the coding of transcript data.
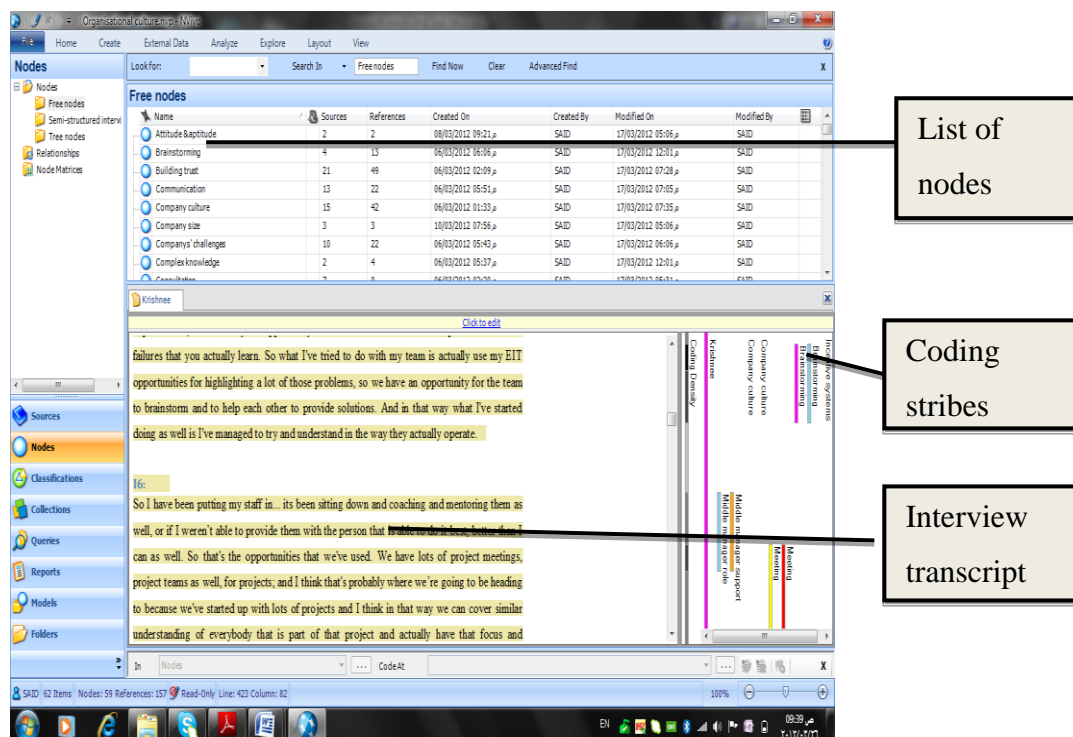
Figure 4.6 Nvivo being used to code transcript data

Transcripts were examined line-by-line, by which means the researcher became immersed in the data and initiated the naming stage. Line-by-line analysis allowed for grounded categories to be data-specified. Glaser and Strauss (2008) recommend that a relevant line be considered a sentence. Though in the interview transcripts it was sometimes difficult to distinguish the beginning and end of sentences, the grounded theory process provided the flexibility to choose lines of interviews rather than just full sentences for analysis. Open coding continued until saturation of categories was accomplished. Theoretical saturation of concepts is the point at which the data collection and analysis cycle can end as no additional

data can be found (Glaser & Strauss, 1967). A significant number of researchers confirm that sample size for grounded theory depends on the point of theoretical saturation (Glaser & Strauss, 1967; Goulding, 2002, Strauss & Corbin, 1998). Researchers cannot make a decision in advance regarding sample size. Rather, they must wait until they have immersed themselves in data collection and analysis. In this research, the researcher collected and analysed data concurrently, and reached saturation after conducting 17 interviews. After each interview the researcher reviewed the data and the emerging categories. Such review helped the researcher to identify the point of theoretical saturation. Notwithstanding this saturation, the researcher continued to finish analysing the interviews of all 25 interviewees. Accordingly, several theories were further tested with the participants, who provided important input into the theory developmentThe concepts were then grouped around larger ideas to create categories. An example of the transcribed interviews and open coding data analysis is located in Appendix L.

4.7.2.2 Axial coding

Axial coding is a process of connecting categories to their subcategories, termed "axial", because coding is carried out around the axis of a category, relating categories at the level of properties and then linking categories at the level of depth and breadth (Strauss & Corbin, 2008).

The axial coding process identifies a diversity of situations, actions, interactions, and their consequences, that are all related to a phenomenon. It also links themes to their subthemes through statements that give reasons for their relationships, and it entails looking for evidence in the data that discloses how the main themes are linked to each other (Glaser & Strauss, 2008). Through this process, fewer themes are expected to emerge than originally existed. Nvivo9 axial coding is called tree node coding. All free node open-coded data were reviewed and each free node piece of data was dragged and dropped into an appropriate tree node. Figure 4.7 illustrates the use of Nvivo to group codes.
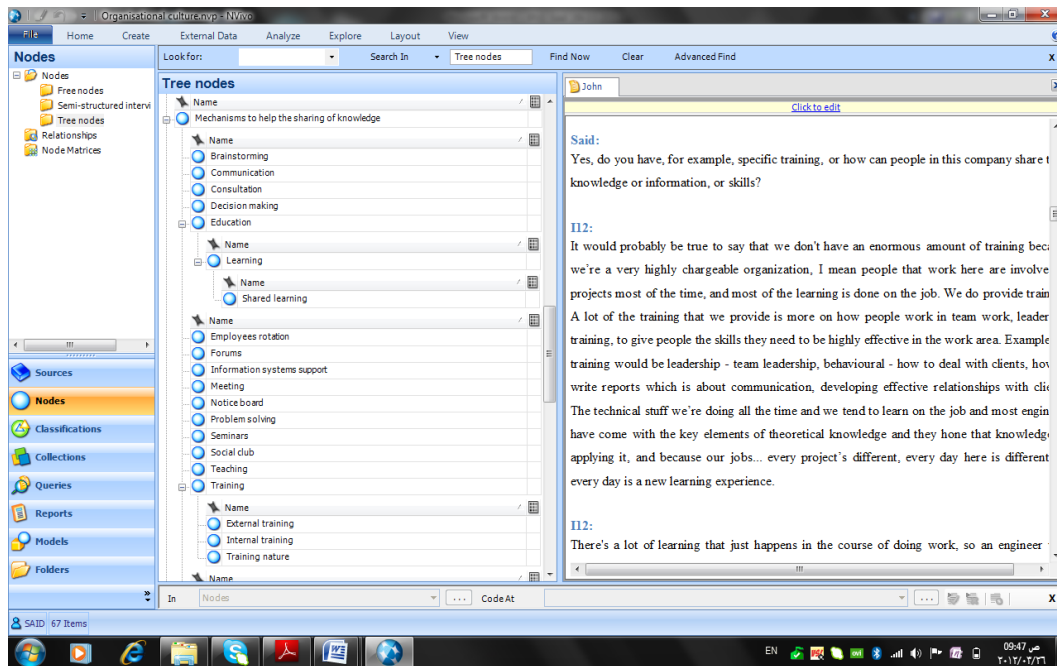
Figure 4.7 Nvivo being used to group codes

In this stage, the researcher began to explore the relationships between categories, using both inductive and deductive thinking in order to make connections between them. There are several methods by which researchers can use Nvivo to help them to organise their thinking in terms of axial coding. It can be used, to start with, to rearrange the node tree, tag cloud, and cluster analysis. These techniques were illustrated in Section Eight in more detail.

The selected core category was examined together with the rest of the categories in terms of relationships. Strauss and Corbin (2008) provide the following criteria for identifying the core category:

- It must be central; all other important categories must be connected to it.
- It must appear frequently in the data. When it does, there are indicators pointing to that concept everywhere or almost everywhere.
- The explanation that evolves for the links between the categories is logical and consistent.
- The name or phrase used to describe the core category should be sufficiently abstract. (p. 147).

Strauss and Corbin (2008) point out that the relationship between categories might result in the following: (a) causal conditions that impact the core phenomenon, (b)

strategies that derive from the core phenomenon, (c) contextual and intervening conditions that are specific and general situational factors impacting the strategies, and, (d) consequences that result from the strategies. Having defined these relationships, the initial model was created in Nvivo as a graphical representation and served as the model for the theory.

4.7.2.3 Selective coding

Selective coding was used as the final phase of the coding process to combine the categories around the core category and develop the theoretical framework. Corbin and Strauss (2008) describe diverse techniques for theoretically integrating the core and related categories, including writing a storyline, abstracting from a descriptive story, and creating diagrams that visually describe the relationships.

Through selective coding, a single core theme was selected. All other themes were related back to it. With the core theme as the vital idea, a single storyline was developed around which all other information was arranged (Charmaz, 2006). Once the researcher had chosen the central phenomenon, selective coding involved systematically relating it to other nodes. In general, this process might indicate some further refinement of other nodes, their properties, and dimensions. By this stage, much of the researcher's work entailed manipulating nodes: moving them, creating new ones, and amalgamating or dividing them (Gibbs, 2002). Nvivo selective coding began by coding up from the free nodes into even larger, broader tree nodes and, finally, mapping relationships, shaping the node system, listing nodes, and reporting the nodes. The process ended by creating a model that represents the data. Nvivo 9 created a graphical map of the model that linked the tree nodes and data to it. Figure 4.8 illustrates the use of Nvivo to organise themes.
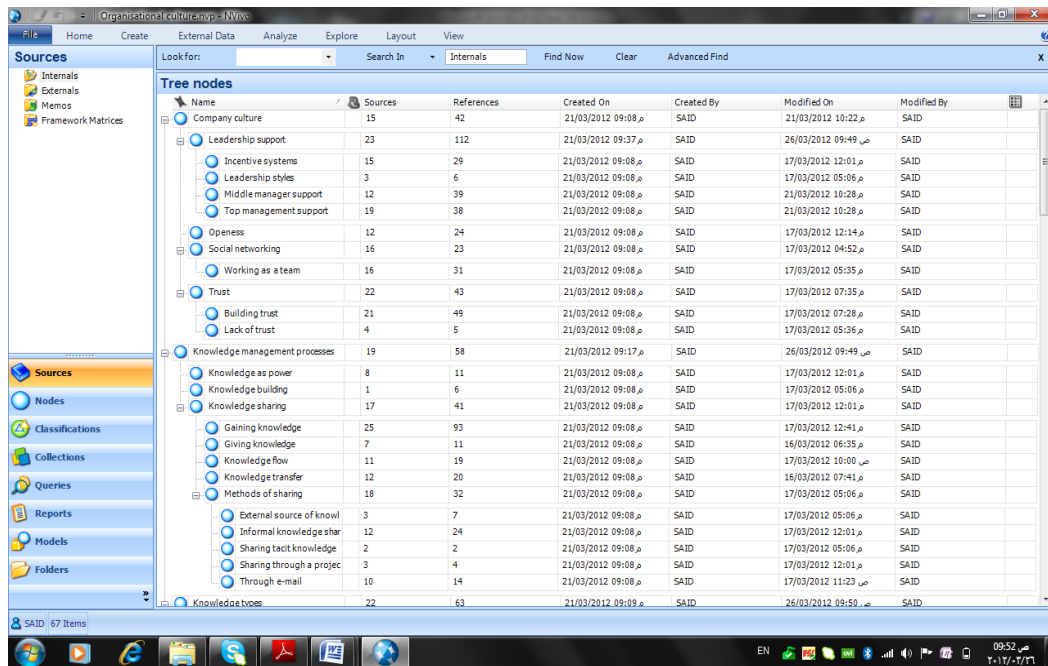
Figure 4.8 Nvivo being used to organise themes

4.8 Description of the data analysis

In this section, the researcher describes the selected data analysis methods for the interviews. The interview analysis procedures will be fully discussed and presented in the following subsections.

4.8.1 Analysing qualitative data

This section describes how the interview transcripts were analysed. It includes a description of the Nvivo software and the analytical processes used to develop a data-grounded theory of the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. The following subsection illustrates the reasons for using Nvivo software.

4.8.1.1 The software: Nvivo 9

In order to analyse data, the computer-assisted qualitative data analysis software, Nvivo was used to code the data. Nvivo is a useful data organisation tool that allows the researcher to manage the primary research data. It is an effective tool for storing, organising, and coding. In addition, such software allows the researcher to search for text data, enhancing theory generation. Therefore, Nvivo is expected to allow the researcher to work efficiently with large amounts of text.

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The package also allows the researcher to check links between concepts, themes and issues, in order to develop broader categories. Such links between categories become more visible when the researcher introduces hyperlinks and text formatting, thus becoming able to view the data as no longer static but dynamic (Bringer, Johnston, & Brackenridge, 2006). Moreover, Nvivo software has features designed to help with record keeping, and can double as an audit trail, which is useful for making the rigour and quality of the research clear. In addition, Nvivo provides diverse ways to organise research materials by themes or by people and places. This process is called "coding" (QSRInternational, 2012). Further, Nvivo has a range of queries, which proves useful to test ideas, explore patterns, or see connections.

Before doing any in-depth analysis, the researcher ran a sample word frequency query to gain insights into what people were saying. This insight was important to guide the focus of this analysis. The following sections illustrate how Nvivo was implemented to run a simplistic overview from the interviews.

4.8.1.2 Word Frequency Query

Word Frequency Query was used to examine which words were the most used when answering interview questions. The word frequency query was conducted, as an example, on all interview nodes to find up to 100 of the most frequently occurring words having a minimum length of seven letters, including stemmed words. The process of conducting such a query is illustrated here in a screen grab in Figure 4.9.
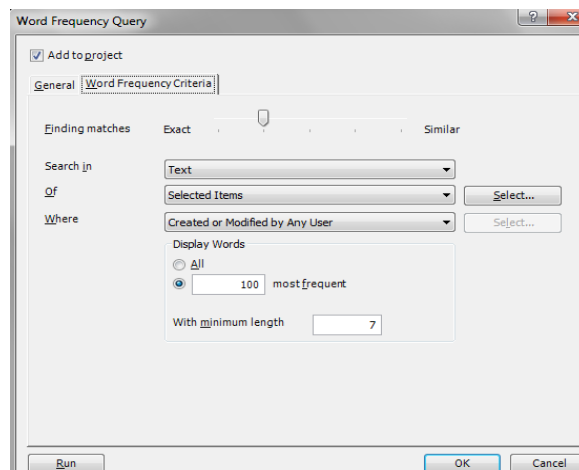
Figure 4.9 Dialogue box for a Word Frequency in Nvivo

A word frequency query can be illustrated in a table that includes the found words, the number of characters, the number of times a word occurs, and the frequency relative to the total words counted, and the list of similar words. The most mentioned words and similar words associated with them are presented in Table 4.5.

Table 4.5 Nvivo word query for interview nodes

Word	Length	Count	Weighted Percentage	Similar Words
Knowledgeable	13	768	1.10	knowledgeable, knowledge
Company	7	483	0.69	companies, company
Managing	8	439	0.63	managed, management, managements, manager, managers, managers', manages, managing
Training	8	419	0.60	trained, training, trainings
Information	11	402	0.57	informal, informally, information, informational, informed
Employees	9	393	0.56	employee, employees, employees'
Encourage	9	202	0.29	encourage, encouraged, encouragement, encourages, encouraging
Meetings	8	196	0.28	meeting, meetings
Sharing	7	196	0.28	sharing
Process	7	176	0.25	process, processed, processes, processing
Problem	7	172	0.25	problem, problems
Questions	9	162	0.23	question, questioned, questioning, questions
Different	9	161	0.23	difference, differences, different, differently
Engineers	9	149	0.21	engineer, engineering, engineerings, engineers
Development	11	145	0.21	develop, developed, developing, development, develops
Technical	9	143	0.20	technical, technically

For a more visualperspective, query results can be displayed in a tag cloud (see Figure 4.10) or a tree map (see Figure 4.11). Such visualisations help in seeing the frequency of words in relation to other words.

company development different employees encourage engineers information knowledgeable managing meetings problem process questions sharing technical training
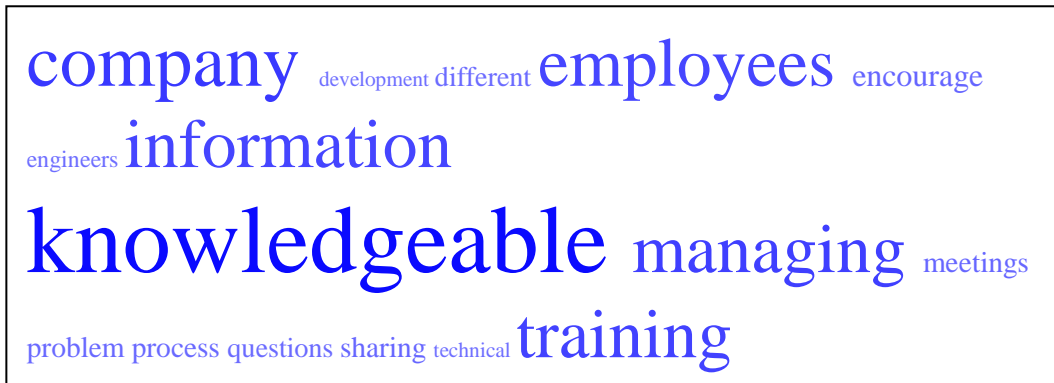
Figure 4.10 Nvivo Tag Cloud of Word Frequency Query

The researcher used a tree map to see patterns of coding in the interview transcripts, or to compare sources or nodes, based on their attribute values. Such a technique is useful to compare and contrast the amount of coding of interview sources and to identify sources with most coding references at specific nodes. In addition, with a tree map of nodes the researcher was able to compare the amount of coding at interview nodes, visualise prominent themes, and identify areas that required further exploration. Figure 4.11exemplifies a tree map of nodes.

Word Frequency Query

Knowledgeable	managing	information	encourage	process
			meetings	questions
Company	training	employees	sharing	different

Figure 4.11 Tree Map of Word Frequency Query

In the tree map above, knowledgeable, company, managing, and training have more frequent mention than the other words. Although a tree map and a tag cloud helped the researcher to visualise the data from a graphic perspective, they did not indicate the significance of the relationship between the terms. In order to get a better idea of the relative significance of that relationship, the researcher used cluster analysis; that can be displayed as a 3D cluster map, where the nodes in the cluster analys is are represented as points in space relative to the most frequently occurring words (see Figure 4.12 below).
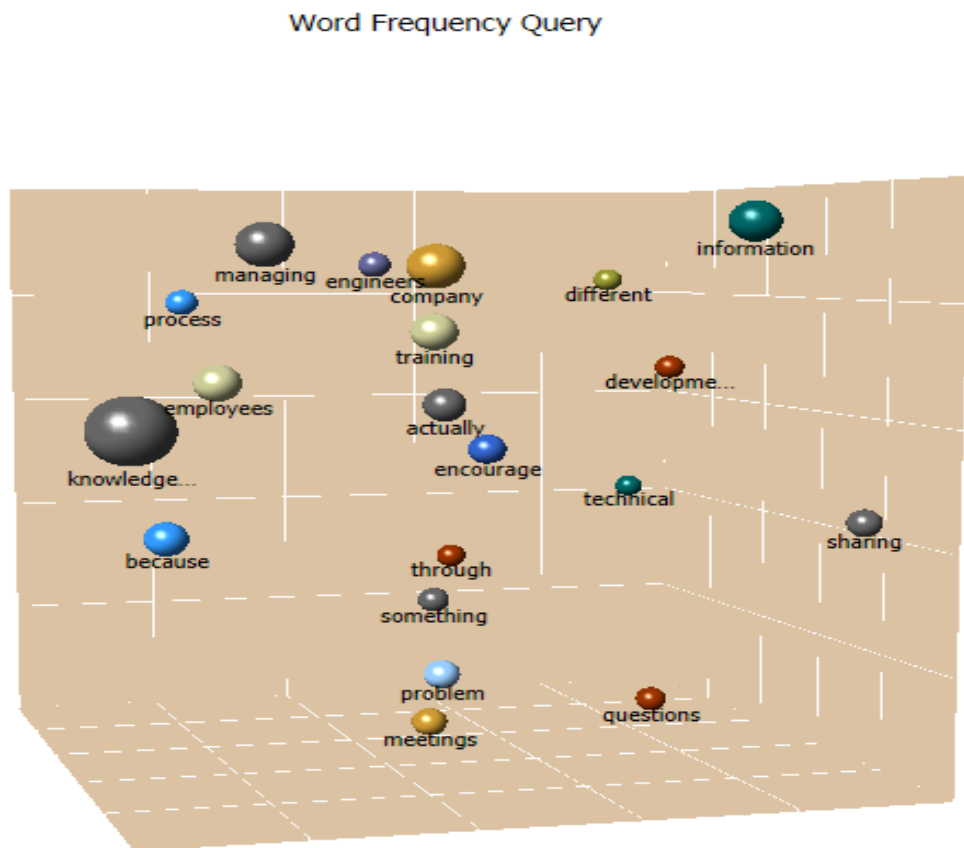
Figure 4.12 Cluster analysis of word frequency

As is shown in Figure 4.12, the most frequently mentioned word is "knowledgeable", which was one of the stem words in the original text search for "knowledge''; the diagram shows the relative significance of the most frequently mentioned terms to the most significant concept. According to the Pearson coefficient, the more the found words were correlated to the main words and their related stemmed words, the closer they were placed to each other in the diagram. As can be seen, the term "knowledgeable" is closely associated with the term

"knowledge", but also closely related with the words managing and information. The term is also related, to a lesser extent, to the words meetings and sharing.

The use of previous analysis helped the researcher to explore the use of language in the interviews, a useful starting point for further analysis. In addition, the insight gained through working with the data enabled development of the narrative report of the results.

4.8.1.3 Attribution in Nvivo

Nvivo software has the functionality to deal with metadata about the interviewees, organisations, or any other particular classification of cases. Using such classifications can be very helpful when making a comparison, as it allows searching within and across cases for very specific criteria. As a result, the researcher is able to analyse interview data from a more abstract perspective. In other words, it is challenging to merge a variety of ideas from different people into a single node, which means there is difficulty in comparing and contrasting the respondents' perspectives.

Hence, two sets of attributes were created for this research: one for the person interviewed, and one for the companies studied. The attributes used in the study are shown in Figure 4.13.
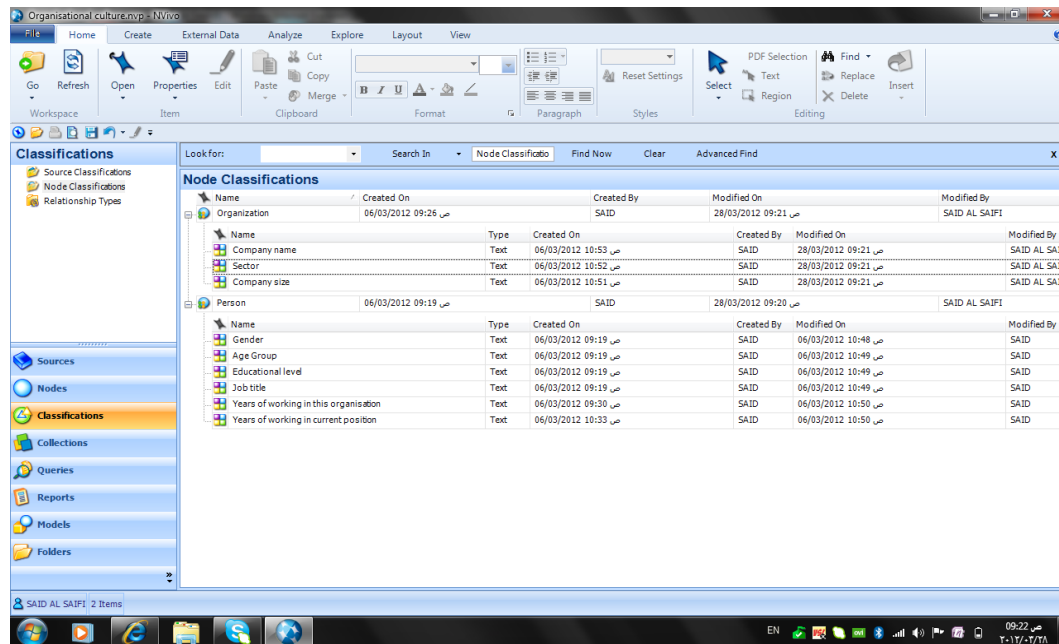
Figure 4.13 Screen grab of the Nvivo showing attributes used to describe companies and participants

4.8.1.4 Matrix Coding Queries

The Matrix Coding Query enables the researcher to create a table or matrix that compares different demographic groups in a topic. In other words, the number of words related to each specific criterion was placed in groups, and the software provided a count of how often that particular aspect or phenomenon was observed.

Such a query is a useful way of clarifying what different groups may have said about an experience or event, and comparing reactions across nodes, sets, sources, or other attributes (QSRInternational, 2012). Moreover, coding query is a good technique to explore coded text, to test ideas, or see the connection between the themes, topics, people, and places in a project (QSRInternational, 2012). Matrix coding query can be viewed as the first step in the process of developing a qualitative display that can tell the overall story of the interviews.

4.9 Issues of trustworthiness

This section deals with issues of trustworthiness in qualitative research. In fact, before discussing the issue of the trustworthiness of qualitative research, there is a need to illustrate the researcher's bias; hence, the following discussion.

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4.9.1 Researcher's bias

When explaining validity in the context of this study and in the wider sense intended, there is a need to recognise the influence that the researcher has on the research stages. Maxwell (2005) writes of such recognition in terms of researcher bias. He affirms that researcher bias can be found throughout the research process, from researchers' choice of the research topic, to the methods by which their thoughts and feelings influence the research stages; from the selection of methods, through to the discussion of the results. Particular attention was paid to guarding against analytical biases through thinking about methods of being objective with this research.

A conventional stage of research− reviewing the literature − was followed. Following that, a topic which the researcher considered a gap in the literature was developed. Moreover, an ethical review document was submitted for approval. In addition, interviewees were chosen according to criteria which entailed the inclusion of different perspectives. The participants were then questioned about the issues being explored. In addition, all issues related to research questions in conversations were covered. Moreover, the interviewees were encouraged to talk freely and expansively. Additionally, interview questions were relatively brief and easy to understand; it was then left to the interviewees to talk about the particular situation. Additionally, interview transcripts were submitted to the participants. These processes gave them the opportunity to examine, check, and validate the interviews. None of the participants had any concerns about interview transcripts. By and large, the interviewees concurred with the opinions recorded in their transcripts and confirmed their content. This process of the need for transparency helped to prevent any tendency to steer or guide the interviews in a preconceived manner, and allowed for the free flow of information from the interviewees.

4.9.2 Establishing trustworthiness

According to Streubert and Carpenter (2003), trustworthiness refers to the established validity and reliability of qualitative research. It is believed that it is accomplished when findings reflect, as accurately as possible, the meaning as explained by the respondents (Lincoln & Guba, 1985). Denzin and Lincoln (2005) suggest that trustworthiness does not occur naturally, but relies on the

thoroughness of the data collection, and the care the examiner exercises during the gathering, analysis, and explanation of data, to ensure that the sense of the responses has been preserved. Lincoln and Guba (1985) point out that trustworthiness comprises four components: credibility, transferability, dependability, and conformability. Table 4.6 shows a comparison of qualitative and quantitative research in terms of the terminology used.

Table 4.6 Comparison between the terminology of validity and reliability used in quantitative and qualitative research

Criteria	Quantitative research	Qualitative research	Author(s)
Reality creation	Internal validity	Credibility (authenticity)	(Denzin & Lincoln, 2005)
Applicability	External validity	Transferability (generalisability), (fittingness)	(Seale, 1999)
Consistency	Reliability	Dependability (auditability)	(Guba & Lincoln, 1985)
Objectivity or neutrality	Construct validity	Conformability	(Lincoln & Guba, 1985; White & Marsh , 2006)

In line with the goal of this study, Guba's model for creating trustworthiness in qualitative research is followed, because it is conceptually well developed and has been extensively used by many qualitative researchers, specifically business researchers, for a number of years.

4.9.2.1 Credibility

Credibility is basically concerned with ensuring that the research is carried out in a correct manner (Collis & Hussey, 2009). To ensure credibility, the researcher

must ensure that the meaning of what the interviewees say is recognised and described correctly (Holloway, 2005). Guba and Lincoln (1999) explain that credibility can be seen as "a check on the isomorphism between the enquirer's data and interpretations and the multiple realities in the minds of informants" (p. 147).

In order to enhance the credibility of qualitative research, two tactics can be implemented: prolonged engagementand peer critique (Collis & Hussey, 2009). These tactics are illustrated in the following sections.

Prolonged engagement

Prolonged engagement means spending sufficient time with subjects in order to recognise and, accordingly, eliminate any possible misunderstandings (Dillon, 2002). It is argued that prolonged engagement can lead to the achievement of diverse goals: learning the culture of an organisation, testing of misinformation, and building interpersonal trust between the interviewer and the interviewee (Lincoln & Guba, 1985). Prior to the main data collection phase of interviewing, some companies were visited several times in order to build up interpersonal trust and learn about their culture. Even though the researcher did not spend a long period of time in them, it was still helpful to be somewhat familiar with the companies that were being studied.

Peer and participant debriefing

Peer debriefing by a friend on a continuous basis is suggested to ensure that the subject is recognised and identified accurately. In this study, peer debriefing was carried out by means of my supervisors' critique, as well as that of Ph.D. colleagues.

Members' checks or participants' debriefing refers to the practice of systematically requesting feedback about data and researcher produced conclusions from participants (Thyer, 2010). Members' checks increase the study's credibility and transferability by decreasing reliance on sole-source data (Worthy, 2012). Moreover, the use of members was designed to strengthen the

degree to which the results of the study were conditions of the investigation rather than the researcher's biases, motivations, or interests.

In this study, a subgroup of research participants were invited via email, and then by phone, to contribute to the study as a member-checker and encouraged to provide feedback in order to enhance the conclusions reached by the researcher. The researcher organised two workshops during which the findings were presented to a subgroup of research participants. In preparation, six follow-up interviews were conducted at different organisational levels in two different companies. To be more specific, the researcher met with two top managers, three middle managers, and one frontline employee. During the first stage of the meeting, the research findings were summarised. Following that, research participants were asked to check whether such findings accurately explain the processes and experiences they went through in relation to the implementation of knowledge sharing. All participants confirmed that the research findings are a good reflection of the practice within their business.

4.9.2.2 Transferability

Transferability, also called generalisability, is the extent to which the results of one study are applicable to other circumstances (Seale, 1999) deemed to be sufficiently similar (Collis & Hussey, 2009). Transferability means that the findings of research should be applicable to many organisations which are similar to each other. In this study, in order to ensure broad representation of companies, a diverse range of companies was looked at. In addition, a rich, long, and extensive account of the time, place, context, and responses was supplied, so that readers can make their own decision regarding the applicability of the results, create their own explanations, and make personal judgments in terms of transferability to their own or other contexts (Seidman, 1998). Moreover, as the research was carried out on many different companies, research findings can be tested through replication in the same company and be expected to produce similar findings. Arguably, all inferences have some degree of transferability, and, as Teddlie and Tashakkori (2003) remind the reader, transferability is, therefore, relative. That is, no research inference is completely transferable to all environments, populations, or times.

4.9.2.3 Dependability

Dependability refers to the consistency of the investigative procedures employed in terms of whether they are systemic, carefully carried out, and well documented (Collis & Hussey, 2009). It is a criterion met through first being credible, and dependability cannot be present without credibility (Streubert & Carpenter, 2003). Consequently, in order to obtain dependability, there is a need to obtain credibility initially.

According to Holloway (2005), dependability has to do with consistency of results, which means that, if the research were repeated in a similar organisation or with the same respondents, the results would be the same. In order to achieve consistency in this research, a report was written after completing each interview, and the respondent was asked to check its accuracy. In addition, as Straub and Carison (1989) point out the pilot study technique is useful for assessing dependability and correcting problems. Here pilot tests were used to check whether the initial semi-structured research questions could adequately attain the research goals. As a result of the pilot study, vague questions and the interview design were revised. Moreover, a panel of three experts or judges was consulted. Finally, some researchers argue that, in qualitative research, if research generates convincing findings, then it is reliable (Golden- Biddle & Locke 1993; Maxwell, 2002).

4.9.2.4 Conformability

Conformability deals with making sure that the research procedure is fully described to make it possible for another researcher to judge whether the findings stem from the data gathered, and to examine whether they could be arrived at if the same data were analysed by another researcher (Collis & Hussey, 2009). According to Guba and Lincoln (1989), "Conformability is focussed on assuring that data, explanations, and outputs of inquiries are rooted in contexts and persons apart from the evaluator's imagination" (p. 243). It is said that, if a study demonstrates credibility and transferability, it can also be said to possess conformability (Streubert & Carpenter, 2003). In this research, in order to achieve high conformability, vague questions were revised by means of the pilot study. In addition, respondents' stories were elicited in their own settings. An audit trial as

a method of validating research discussion of the data was developed. Furthermore, peer debriefing was carried out by asking university colleagues to review the study procedures to ensure the congruence of the findings emerging from the raw data and their provisional explanations. In addition, participants were provided with the opportunity to examine and ensure the completeness and exactness of the interview transcriptions.

4.10 Ethical approval

This research was conducted with approval from, and in accordance with, the University of Waikato's Human Research Ethics Regulations (2011) (see Appendices D & E). These include standards for consent, confidentiality and anonymity, the right to withdraw from the study, avoidance of harm, and dissemination of findings. These standards will be explained in the following sections.

4.10.1 Consent

Informed consent means that potential research participants are fully informed about the procedures and risks entailed in the research and agree to take part in it (Trochim, 2005).

Before gathering data for this research, consent was obtained from the interview participants. The intent of this study was explained fully and in detail to the companies from initial contact to follow-up communication. Moreover, the purpose and details of the interviews were also set out clearly in the letter to the participants before the study was carried out. The consent form prepared for the participants is included in Appendix H. The participants had the option to become involved in the interview or not; there was no element of coercion or inducement to participate in the study. Each participant was asked to sign two copies of the consent form.

4.10.2 Confidentiality and anonymity

Polit and Hungler (1999) affirm that confidentiality means that no information that the participant divulges is made available to other people. This guarantee is expected to protect the privacy of participants. In this research, the researcher

made sure that, when interviewees described their experiences of being involved in termination of employment, the information given was not revealed.

The anonymity of a person or a company is protected by making it impossible to link features of data to a specific person or company. In this regard, names of individual participants were made anonymous. Special effort was made to protect the identities of those interviewed. The raw data were treated with extreme confidentiality, and had no company-specific information. In addition, confidential data and documents were kept in a safe place and managed carefully.

4.10.3 The right to withdraw from the study

The participants were informed that they had the right to refuse to participate in the research without explaining why, and to withdraw from it at any time without explanation. This right was explained to them prior to engagement in the study. This explanation was part of asking for informed consent (see Appendix H).

4.10.4 Avoidance of harm

Ethical standards necessitate that researchers do not put participants in circumstances where they may be at risk or subjected to physical and psychological harm in the course of their participation in the study (Trochim, 2005). In this research, physical harm is not recognised as a possible risk and psychological harm is eliminated through the voluntary nature of their participation.

4.10.5 Dissemination of results

Findings are to be disseminated in the form of a research report. This should not reveal the weaknesses of the organisations to readers, but should rather suggest improvements to working practice. The participants were informed that a copy of the results would be handed to the organisation if they required it. In addition, permission was sought to publish the research work in academic journals, without making any specific references to the organisations or the names of participants.

4.11 Chapter summary

This chapter has discussed the theoretical perspective on this research. Following that, this chapter discusses the design and development of the interview, the selection of the research sample, the procedures for conducting the interview, and the collection of data. Data analysis is then discussed. Furthermore, the issue of the trustworthiness of qualitative research is explained. Towards its end, this chapter also presents a review of the study from an ethical standpoint. The next chapter will present research findings.

Chapter Five: Findings

5.0 Introduction

The chapter concentrates on the findings of the research undertaken. The results presented are derived from the interviews conducted with all the participants who consisted of top management, middle management, and frontline employees. These interviews are the main source of data for this study. However, documents, as outlined in Chapter 4, were also reviewed. These documents were analysed and integrated with Nvivo software to support the data analysis when and where appropriate. Section 5.1 is a discussion on the grounded theory method of coding and analysis used to determine primary themes in the interview data. Section 5.2 illustrates the storyline of the nature of knowledge sharing in the studied companies. Section 5.3 illustrates how the research findings and analysis relate to social networks and knowledge sharing. Section 5.4 elaborates on the research findings on and analysis of interpersonal trust and knowledge sharing. Section 5.5 lays out where research findings and analysis concern management support and knowledge sharing. Section 5.6 summarises the research findings, based on the main research results on each of the three research questions presented in Chapter 1.

5.1 Grounded theory results

This section discusses grounded theory results. As a systematic process, the data analysis of grounded theory involves a standard format comprising three phases: (a) open coding, whereby categories of information are chosen; (b) axial coding, whereby the categories are interconnected; and, (c) selective coding, whereby a story is formed connecting the assembled categories. The results for each step are illustrated in the following sections.

5.1.1 Open coding

During this phase of coding, the researcher attempted to concentrate on incidents that reflect action, and strove to continue to be open to potential directions shown in the data. Data documents were examined line-by-line, by which means the researcher became immersed in the data and initiated the naming stage. The open

coding resulted in the recognition of 1,753 incidents that illustrate the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Such incidents were counted using Nvivo 9 software. The largest number of incidents recognised in one interview was 259, whereas the smallest was 104; the average number of incidents in all 25 interviews was 149. The incidents were then combined together into 48 groups to generate concepts, as illustrated in Table 5.1.

Table 5.1 Open coding concepts, ranked by number of incidents per concept

Concept Code	Concept Name	Number of Incidents
SNS	Structured knowledge sharing	421
SN1	Using multiple communication strategies	289
UNS	Unstructured knowledge sharing	146
SN2	Training	91
SN3	Learning and teaching	59
MS1	Encouraging participation in decision-making	51
IT1	Competence-based trust	48
SN4	Problem-solving networks	43
SN5	Brainstorming and problem solving	42
IT2	Engagement in communication	42
SN6	Relational dimension	40
IT3	Engagement in brainstorming and problem solving	38
IT4	Openness and credibility	37
IT5	Relationships	36
MS2	Provision of recognition	35
SN7	Informal networks	33
SN8	Consultation	26
IT6	Benevolence-based trust	25
SN9	Shared language	25
MS3	Being transparent and open	20

Concept Code	Concept Name	Number of Incidents
SN10	Shared narratives	18
IT7	Clarifying a set of values	18
IT8	Peer mentoring	16
SN11	Complex networks	14
SN12	Formal networks	13
SN13	Range of personal ties	12
SN14	Strong and weak ties	11
SN15	Complementary networks	10
SN16	Operational networks	9
MS4	Encouragement of communication	9
IT9	Clarity of targets and goals	9
MS5	Providing training or assigning others to do the training	8
MS6	Encouragement of training	7
SN17	Employee rotation	6
MS7	Encouragement of learning	6
IT10	Division between departments	6
IT11	Assurance of confidentiality	5
IT12	Mutual respect	5
MS8	Breaking down of barriers	4
IT13	Creating a "no blame" culture	4
IT14	Responsibility	4
IT15	Sense of vulnerability	3
MS9	Having flexibility	3
IT16	Team conflict	2
MS10	Encouragement to put knowledge into practice in the form of processes	2
MS11	Encouraging movement of employees	1
MS12	Building up of teams	1

The above concepts were then grouped into 18 categories as described in Table 5.2.

Table 5.2 Category groupings

Category Code	Category Name	Concepts Contained	Number of Incidents
A	Knowledge sharing nature	SN, UNS	567
B	Methods of building social networks	SN1, SN2, SN3, SN5, SN8, SN17	513
C	Types of social networks	SN4, SN7, SN11, SN12, SN15, SN16	122
D	Structural dimension of social networks	SN13, SN14	23
E	Relational dimension of social networks	SN6	40
F	Cognitive dimension of social networks	SN9, SN10	43
G	Competence-based trust and benevolence-based trust	IT1, IT6	73
H	Efforts of managers to facilitate knowledge sharing	MS1, MS2, MS4, MS5, MS6, MS7, MS8, MS10, MS11, MS12, MS13	124
I	Relational antecedents	IT2, IT3, IT4, IT5, IT8, IT11, IT12, IT16	181
J	Organisational antecedents	IT7, IT9, IT10, IT13	37
K	Management behaviours	MS3, MS9	23
L	Individual antecedents	IT14, IT15	7

5.1.2 Axial coding

In this stage, the researcher began to explore the relationships between categories, using both inductive and deductive thinking, in order to make connections between them. There are several methods by which the researcher was able to use Nvivo to assist him to organise his thinking in terms of axial coding. Nvivo can be used, to start with, to rearrange the node tree, tag cloud, and cluster analysis. This process allows the researcher to find a range of links and relationships amongst the data at all conceptual levels. For instance, those factors which appeared to be concentrated in the area of influencing interpersonal trust through relational antecedents (category I) were factors focused on: engagement in communication (concept IT2); engagement in brain storming and problem solving (concept IT3); openness and credibility (concept IT4); relationships (concept IT5); peer mentoring (concept IT8); assurance of confidentiality (concept IT11); mutual respect (concept IT12); and, team conflict (concept IT16).

5.1.3 Selective coding (storylines)

Once the central phenomena have been chosen, selective coding involves systematically relating it to other nodes. This coding might indicate some further requirement for refinement of other nodes; for example, their properties and dimensions may need to be filled out. At this stage, much of the work entails manipulating nodes: moving them, creating new ones, and amalgamating or dividing them (Gibbs, 2002). Selective coding was used as the final phase of the coding process to combine the categories around the core category and to develop the theoretical framework. The following sections illustrate the storyline for the above categories, as seen in Table 5.2. The following section initially sets out the storyline of the nature of knowledge sharing in the studied companies.

5.2 The nature of knowledge sharing

The research concentrated on exploring the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. These factors play a significant role in facilitating knowledge sharing. In order to understand this role, there is a need to discuss the nature of knowledge sharing. According to the data collected from semi-structured interviews and document reviews at the studied companies, the nature of knowledge sharing as a category

involves the highest number of incidents of those"reported" by all participants. Two related concepts can be the basis for division into two groups, namely, structured and unstructured knowledge sharing. The following subsection will initially set out structured knowledge sharing.

5.2.1 The nature of structured knowledge sharing

This subsection addresses the structured form of knowledge sharing. It provides details about the nature of knowledge sharing, and the factors that improve it.

Research findings illustrated that structured knowledge sharing takes place for the sharing of conceptual and systematic knowledge. In this kind of scenario, employees are typically provided with formal structures that help them to achieve company goals. Formal training is an example of a kind of structured programme that all studied companies have successfully adopted. In such training, the company provides and sets up the support structure, in order to ensure that employees have a clear goal and any support they might require for a successful relationship. Participants explicitly illustrated that such training is related to leadership, safety, and communication, and that the knowledge conveyed is mainly theoretical. Diverse examples of formal training were illustrated in the following quote:

> "Examples of training would be leadership − team leadership, behavioural – how to deal with clients, how to write reports, which is about communication, [and] developing effective relationships with clients."

According to the research analysis of the interviews, computer-mediated knowledge sharing is appropriate for sharing codified knowledge. For such types of knowledge, the main goals are to achieve structured knowledge objectives in the form of description of projects, and functional and technical output to clients, competitors, and the market. Additionally, it was found that online forums areavenues of support for the sharing of knowledge between employees. For instance, online discussion forums, which can be described as a web 2.0 technology, are employed for structured knowledge sharing among independent individuals. In such situations, different partners can create and share mutually

beneficial knowledge and innovative thinking. Other examples of structured knowledge sharing are structured meetings and organised problem- solving and brainstorming sessions. It seems that structured knowledge is commonly related to explicit knowledge, which is easily obtained by organising, searching, and retrieving structured knowledge.

In order to further facilitateknowledge sharing among employees, all employees in the studied companies tend to focus also on unstructured knowledge sharing. Such knowledge sharing is illustrated in the following subsection.

5.2.2 The nature of unstructured knowledge sharing

This section discusses the unstructured form of knowledge sharing. It provides details about the nature of it, and the factors that improve it.

Research findings illustrated that unstructured knowledge sharing can occur on a daily basis outside formal learning contexts. This knowledge is to a large extent tacit, and is not easily shared. What can help is employees sharing back and forth through learning and learning by doing, observing, and showing. An example mentioned by many participants is an in-house mentoring relationship in which two employees, without the support and guidance of the company, set up a developmental alliance. This forms communities of practice which concentrate on collaboration and knowledge sharing. As an illustration, apprenticeship requires close cooperation between the master and the apprentice. In this situation, the main focus is on dealing with technical, practical, and experimental knowledge, as unstructured knowledge is difficult to organise, search for, and retrieve. In addition, knowledge sharing also occurs in more informal arenas, such as spontaneous meetings or over cups of tea, dinners, lunches, and when commuting together to work or when responding to a client. In such circumstances, employees routinely capture, document, and share knowledge, which enables those with expertise to discuss particular topics with others in the company who can come, listen, and learn. As an example, one frontline employee explained how employees can share their knowledge, information or skills in a spontaneous way:

> *"As far as knowledge sharing goes in a really informal spontaneous*
> *way, like when a new person in my department needed a sample and it*

was actually not within the environmental division; the sample actually was down in organics; and so even by going down and showing them ...".

On a conscious level, employees might not be aware of the value of what they know, and they also may not know how to share it in an effective manner with the right person at the right time. This lack is part of the need to bring the whole knowledge base together. Table 5.3 is a comparison between structured and unstructured knowledge sharing.

Table 5.3 Comparison between structured and unstructured knowledge sharing

	Structured knowledge	**Unstructured knowledge**
Method of occurrence	Sharing of conceptual and systematic knowledge	On a daily basis, outside formal learning contexts
Mainly dealing with	Theoretical knowledge	Technical, practical, and experimental knowledge
Organising, searching for, and retrieval of knowledge	Easy	Difficult
Main knowledge sharing kind	Explicit knowledge	Tacit knowledge
Main method of sharing	Formally	Informally
Examples	Online forums, structured meetings, organised problem-solving and brainstorming sessions	Peer monitoring, and spontaneous meetings

5.2.3 Structured and unstructured knowledge sharing across organisational level

Research findings clarified that the degree of structure in the sharing of knowledge differs according to employees' positions. This finding is shown in

Figure 5.1 below, in which the horizontal axis represents the level of structured knowledge sharing, while the vertical axis represents the employee position (i.e., that of frontline employee, middle manager, or top manager). As illustrated, frontline employees tend to share less structured knowledge. As we move up the vertical axis to the level of middle manager, it appears that more structured knowledge sharing can occur. At the top of the vertical axis, the top manager can share even more structured knowledge. This finding suggests that top-level managers primarily deal with explicit knowledge through formal sharing mechanisms such as meetings, reports, information systems etc. The following quote by one top manager gives some examples of mechanisms commonly used by top managers to share knowledge in an informal manner.

> *"We use a lot of what you might call group email to share knowledge and direction. We have joint meetings with senior managers. Everybody knows the different forums that are available to actually go along and share information."*

Another quote by a middle manager discusses his role in formal education:

> *"I started educating the staff in how we should live our values and switch up our culture to accommodate those values."*

Figure 5.1 Level of structured knowledge sharing
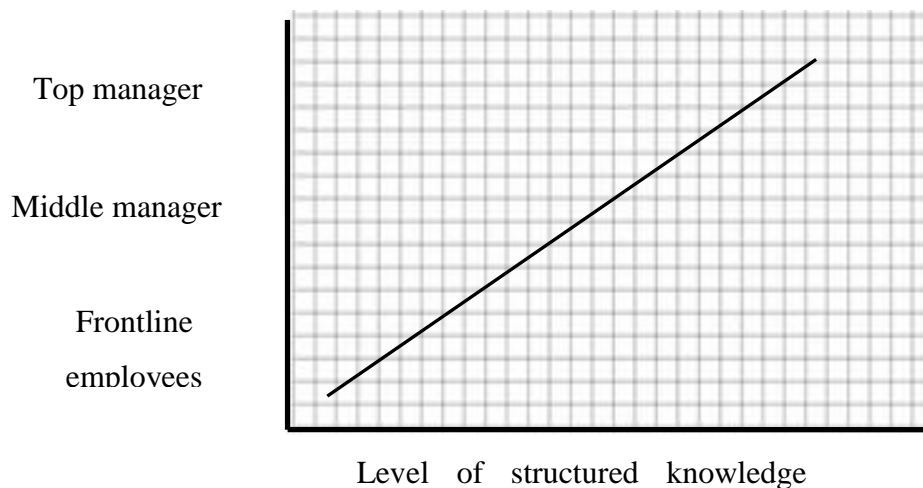
Figure 5.1 Level of structured knowledge sharing

As is illustrated in Figure 5.1, frontline employees tend, in the main, to share more unstructured knowledge that is mainly related to technical, practical, and experimental matters. As we move up the vertical axis to the level of middle

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manager, it seems that less unstructured tacit knowledge sharing can occur. At the top of the vertical axis, the top manager shares less knowledge that is unstructured, tacit, and shares knowledge of a mainly technical, practical, and experimental nature. One middle manager described one of his roles as follows:

> "So we allow that opportunity in these project meetings, where the brainstorming and the solutions actually come from the guys that are actually experiencing those problems."

It was also stated that middle managers can share knowledge informally. For example:

> "It's taken a long time to actually build my knowledge and a lot of that is done through experimentation, trial and error and just basically being around developing processes."

5.2.4 Section summary

To sum up, this section initially compared structured and unstructured knowledge sharing in the studied companies. With regard to structured knowledge sharing, the analysis of interview transcripts illustrated that this kind of sharing takes place for conceptual and systematic knowledge. In terms of unstructured knowledge sharing, the analysis of interview transcripts showed that this knowledge is, to a large extent tacit, and is not easily shared. Following that, the ways in which structured and unstructured knowledge sharing can occur at diverse organisational levels were illustrated.

Sections 5.3, 5.4, and 5.5 are devoted to elaboratingon critical factors that help employees to share their knowledge. The following subsections will start by illustrating research findings on the nature of the relationship between social networks and knowledge sharing.

5.3 Social networks and knowledge sharing

The main goal of this section is to present, examine, and interpret data and patterns obtained from the interviews conducted on, and observation carried out of, the nature of the relationship between social networks and knowledge sharing. The following data on incidents relateto the nature of the relationship between social networks and knowledge sharing. From the interview transcripts, 741

incidents from the 25 interview transcripts and observation emerged, including 17 main incidents groupings. These incidents are set out in Table 5.4.

Table 5.4 Open coding of social network concepts, ranked by number of incidents per concept

Concept Code	Concept Name	Sources	Number of Incidents
SN1	Using multiple communication styles	24	289
SN2	Training	19	91
SN3	Learning and teaching	20	59
SN4	Problem-solving networks	10	43
SN5	Brainstorming and problem solving	10	42
SN6	Relational dimension	21	40
SN7	Informal networks	14	33
SN8	Consultation	8	26
SN9	Shared language	12	25
SN10	Shared narratives	10	18
SN11	Complex networks	7	14
SN12	Formal networks	7	13
SN13	Range of personal ties	6	12
SN14	Strong and weak personal ties	7	11
SN15	Complementary networks	7	10
SN16	Operational networks	7	9
SN17	Employee rotation	6	6

The above concepts were then further grouped into six categories, as shown in Table 5.5.

Table 5.5 Category groupings of social networks

Category Code	Category Name	Concepts Contained	Sources	Number of Incidents
B	Methods of building social networks	SN1, SN2, SN3, SN5, SN8, SN17	25	513
C	Types of social networks	SN4, SN7, SN11, SN12, SN15, SN16	22	122
D	Structural dimension of social networks	SN13, SN14	12	23
F	Cognitive dimension of social networks	SN9, SN10	15	43
I	Relational dimension of social networks	SN6	21	40

The concept groupings that were derived from the above incidents were:

❖ **Types of social networks**: 129 incidentswere noted by 22 participants. These types are: informal, formal, operational, complex, complementary, and problem-solving networks.

❖ **Dimensions of social networks**: 106 incidentswere noted by 23 participants. These dimensions are: structural, relational, and cognitive.

❖ **Methods of building social networks**: 513 incidentswere identified by all participants. These methods include: using multiple communication styles, brainstorming and problem solving, learning and teaching, training, employee rotation, and consultations.

The following subsection is devoted to illustrating research findings regarding social network types.

5.3.1 Types of social networks

This section concerns types of social network that became evident from the analysis of research findings in the studied companies. These are the informal and

formal types, and types that are combinations of these. These types are nowillustrated.

5.3.1.1 Informal networks

Informal networks are those without formal structures that employees with a common area of interest, usually closely linked to their practice, can form. A significant number of participants commented on the significance of building and maintaining informal networks. This kind of social network can support the sharing of several kinds of expertise, such as that in business, functionality, and the processing of knowledge. An important feature of building informal networks is having an objective for setting up a connection. Examples are: asking for peer advice; needing someone to confirm results; giving knowledge; or, learning more about another employee's position. In these situations, employees can stipulate the means of translating local know-how into collective expertise. The comment below is an example in the words of a middle manger:

> "We have a lot of informal dotted lines that people form ... and if I can pass on or − mentor people into, you know, improving their performance − ... and during that process we pass on, sort of, knowledge."

Another middle manager showed that the link between employees through informal networks can be achieved, not only inside company, but outside company as well. This idea is illustrated by the following quote:

> "Spray drying courses and membrane courses, they are normally re-establishing principles that you already know but it's also a chance to network with other people outside of your industry and just see what trends they are doing."

5.3.1.2 Formal networks

In formal networks, individuals or groups of employees work together on a common concern through following a formalised structure. Many participants mentioned that this kind of network not only aims to achieve the sharing and aggregation of existing explicit or tacit knowledge, but also the creation of new knowledge and the application of it. In addition, formal sharing channels such as

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series of structured meetings, external consultancy, forums, formal learning, training, and seminars and conferences may build and develop social interaction. The following quote from a frontline employee gives an example of formal networks:

> *"When I meet a lot of technologists, we get to see each other face-to-face, sit together, discuss about things sometimes, ask them what they're doing [for example] about the tests, and discuss how we should do things sometimes."*

5.3.1.3 Informal and formal networks

The analysis of research findings identified several other network types that are combinations of informal and formal network types. These are operational, complementary, problem-solving, and complex social networks.

Operational networks were commonly described in the context of the routine tasks assigned to specific groups of employees and related to specific aspects such as management, customer services, research and development, or the technical aspect. These groups of employees tend to form their own social networks. The goal of operational networking is to encourage collaboration between employees who need to engage with tasks to accomplish day-to-day company goals. This point is illustrated by one frontline employee in the following quote:

> *"It's really important [that] everyone's job has an element of day-to-day routine, and that's where your skills become really key ... and building from that collaborative social interaction."*

Complementary networks involve cooperation between employees carrying out complementary tasks, and exist for the sake of two or more connected tasks, the outcomes of which are collectively implemented. Such networks are relatively more significant between staff of different backgrounds and diverse departments of the company who connect to pool their knowledge and complement one another to achieve a common objective. This connection is expected to broaden employee perspectives. It helps them to tackle their work from diverse angles rather than concentrating solely on the issues of their specific department's function. The dissimilarities within complementary networks generate surplus

"glue" in networks and create the potential to specialise in and exploit complementary skills. For example, one top manager said that sales and marketing employees tend to work collaboratively to achieve common goals that can strengthen social networks.

In problem-solving networks, participants of the network support other employees by giving them special guidance on particular business or technical problems. One response, given by only one individual, is worthy of note, as it suggests that this kind of network can ensure collaborative learning among employees which, in turn, enables them to better deal with other staff concerns and come up with different solutions. Such collaboration can provide opportunities for staff to build and strengthen social networking. Those staff members that are most important in the problem-solving network are thought by their work colleagues to be the best work-connected problem solvers. In addition, problem-solving networks contribute to companies' competence and ensure a valuable learning output in the company. One top manager shared the following example of problem-solving networks that exist in his company:

> *"We'd carry out a problem-solving exercise: pull [in] all the people involved, carry out a problem-solving exercise, try to identify the root cause of the issue; then, from there, we develop a shared learning and communicate it out to everyone who might be in that situation."*

In complex networks, employees are embedded in a wider and more complex network structure. The entire network is broken down intospecific clusters in which groups of employees who have similar characteristics form specific networks based on either their backgrounds or ethnic groups. Notwithstanding, based on the settings of the networks, each group of employees also has the capability to link and share knowledge with other groups outside their communal cluster. In fact, complex networks not only to link employees within a company, but also to create some links with other employees outside it. One top manager mentioned the nature of complex networks in the following quote:

> *"I think the clear thing for us here is [that] there's teams and there's teams within teams, so it's very comprehensive."*

These types of social network and their links with social interaction, knowledge sharing, and outcomes are summarised in Figure 5.2
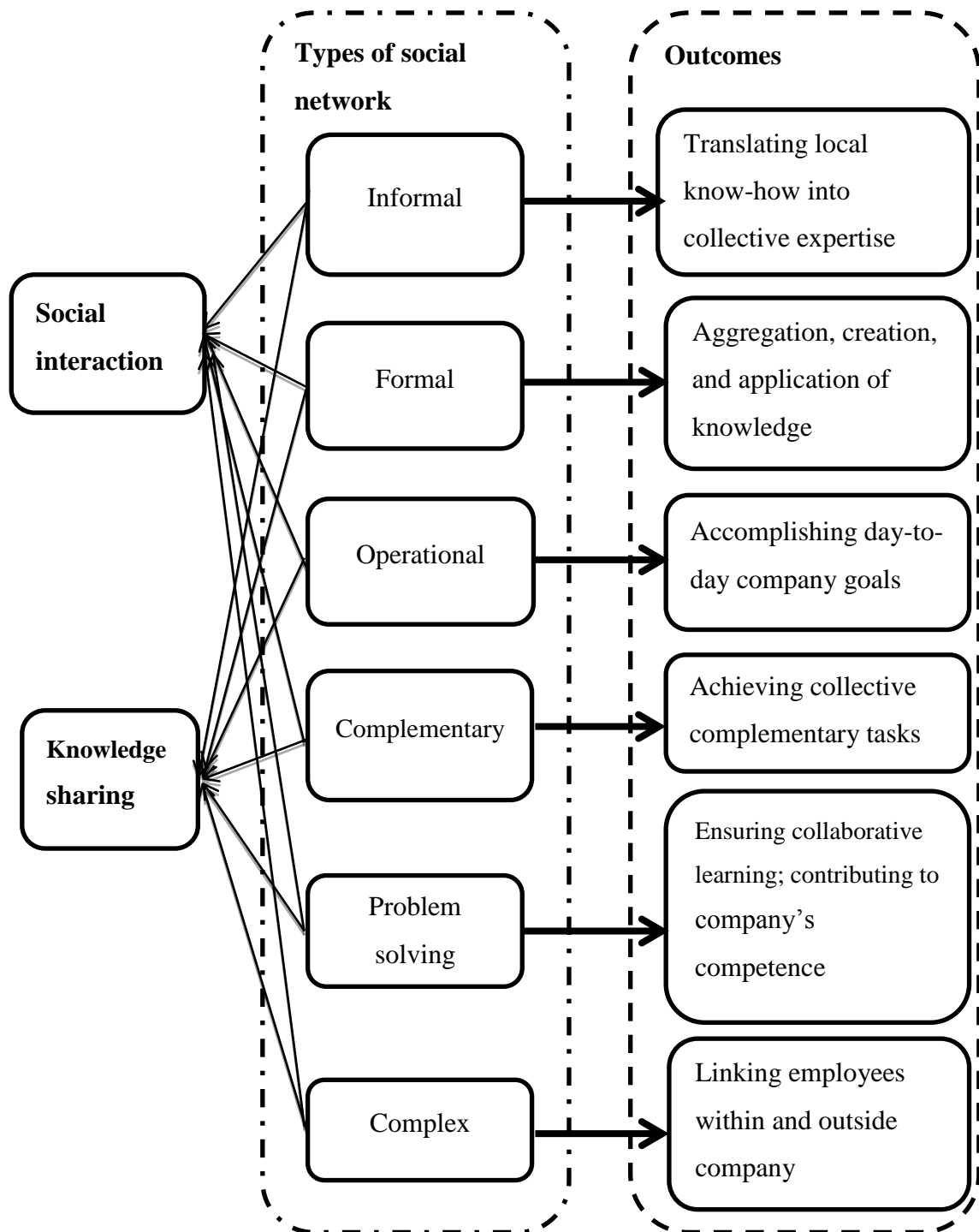
Figure 5.2 Model of social network types and their links with social interaction, knowledge sharing, and outcomes

5.3.2 Dimensions of social networks

This section illustrates how knowledge moves within networks and how social interaction affects this movement. To achieve this goal, the researcher adopted Nahapiet and Ghoshal's (1998) three dimensions of social networks. These dimensions are: structural, relational, and cognitive, and are outlined in the following subsections.

5.3.2.1 Structural dimension

The structural dimension of social networks entails the pattern of relationships among the network actors (Nahapiet& Ghoshal, 1998). In this research, the researcher analysed this dimension in terms of strong personal ties and the range of social ties.

Strong and weak personal ties

The term "strong social networks" refers to direct interaction and extensive communication, such as that with friends and workmates (Hansen, 1999). In this study, more than a quarter of the participants implicitly said that, in order to develop and sustain strong ties between employees, there is a need for much time and psychological energy. For instance, frontline employees in the companies studied spend a great amount of time accomplishing specific tasks, such as working together in various projects. This personal contact allows employees to foster strong ties, as well as gain technical, practical, or experimental knowledge from each other. In addition, in all the studied companies, employees can break daily routine by engaging in some informal staff activity not related to daily work but more related to cultural concerns, for example, involvement in social clubs and social activities. Such activities foster the building of cohesive social interaction between employees. Moreover, it was found that knowledge sharing can be divided into four levels based on the receiver's level of knowledge; that is, the levels of the novice, the competent, the expert, and the proficient. Graduates, as they play the novice role, for instance, have strong ties with workmates because they are working with them in the same department. This point is illustrated in the following quote:

> *"The graduates have their own CEO and officers for various things*
> *.... Some of the things they get involved in [are] with community*

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projects, their own training and their own social activities, which help

to build a strong interaction."

Range of personal ties

A network's range refers to the variety of group affiliations and the possible access afforded by the network to information and resources from different and distant subgroups (Burt, 1992). Six participants illustrated that having staff members, who are well linked, are building and maintaining social contact between diverse employees, and are using range of personal ties, is vitally important for effective knowledge sharing to thrive. The following quote by one top manager is instructive:

"When you're doing a developing of something, we always try to have

the stakeholders from the whole company involved, so we try to

consider all stakeholders when we're developing something so that

there's a broad range of guys looking at it."

5.3.2.2 Relational dimension

"The relational dimension of social networks" refers to assets that are related in employee relationships (Nahapiet & Ghoshal, 1998). Within the relational dimension, aspects of trust came out particularly strongly in the data. From this result, we can deduce that, for employees to build a high level of trust, there is a need to build a partnership with other employees, specifically, those who work at the same level, so that trust is based on long-term relationships. Partnering, although useful in promoting trust, is not seen as the only form of contact in which trust can be built. The nature of the relational dimension is illustrated in more detail in section 5.4.2.2.

5.3.2.3 Cognitive dimension

The cognitive dimension refers to the resources which provide shared meaning and understanding among the network members (Nahapiet & Ghoshal, 1998). In this research, two facets of the cognitive dimension were found: shared language and shared narrative.

Shared language

A shared language is the precondition for the shared context necessary for the social exchange process (Nahapiet & Ghoshal, 1998). Shared language goes beyond the language itself; it includes "the acronyms, subtleties, and underlying assumptions that are the staples of day-to-day interactions" (Lesser & Storck, 2001, p. 836).

Research findings revealed that 40% of participants implicitly indicated that shared language influences, in many ways, the sharing of expertise. First, language has a significant function in building and sustaining social networks between employees. With it, employees can seek, discuss, and transfer knowledge. Hence, there is a need to get the right information in the right language and right context, in order to avoid change of context when knowledge comes down through the company. In addition, language helps employees to make sense with words that have contextually specific meanings. For example, technical employees tend to use words that carry specific meanings that are not necessarily known by other employees in different departments. In this case, such employees have their own cognitive model to build and use specific terminologies in their domain, so that the exchange and transfer of knowledge can enhance quality.

Shared narrative

In addition to the occurrence of shared language, around half of the participants illustrated that employees can share narratives, such as stories, working issues, family issues, etc. These activities enhance knowledge sharing in an informal manner and can build a strong bond between employees.

5.3.3 Factors influencing social networks and knowledge sharing

This section concerns factors influencing social networks and knowledge sharing in the studied companies. These factors include using multiple communication strategies, brainstorming and problem solving, learning and teaching, training, employee rotation, and consultation.

5.3.3.1 Using multiple communication strategies

Observation and the analysis of interview transcripts reveal that employees in the studied companies are exposed to multiple communication strategies to build knowledge sharing. These strategies can be divided into three groups, namely, personalisation strategies, codification strategies, and strategies of both. In fact, codification and personalisation strategies were initially developed by Hansen et al., (1999). These strategies are explained in the following subsections.

Codification strategy

In the use of codification strategy, employees do not share their knowledge with one another directly but through diverse communication technologies. Information technologies in this situation become the conduit through which knowledge sharing happens.

A significant number of participants mentioned diverse information system tools that enable the open sharing of knowledge, for example, email systems, the Internet, intranets, online forums, knowledge-based systems, and knowledge repositories. Email systems, coupled with the Internet, have allowed employees to share knowledge with other employees irrespective of their location. Thus, the Internet facilitates contact between employees that seek knowledge and those who possess it, by supporting discussion groups through the use of diverse databases that enable discussions.

Around half the participants stressed the role of online forums to bring vital knowledge to workers and, in some situations, employees of implementation teams. What was clearly seen in the studied firms is that such forums bring diverse benefits. First, by dealing with day-to-day problems, employees help each other to build social interaction. In addition, by solving problems in a public forum, employees can create a common comprehension of techniques and solutions to different problems. Moreover, online forums are not only related to solving problems, but can also enable employees to build and share their knowledge and skills. Typical comments included this one:

> *"We've got online forums where you can ask questions. People come*
> *back, we can search that forum, it gets moderated, things get sorted,*

so we can actually use the intelligence and the experience and the knowledge of the person."

Personalisation strategy

In personalisation strategy, knowledge is acknowledged as associated with its source but shared and created through face-to-face interaction. In such situations, there is a direct sharing of knowledge between the knowledge senders and receivers in a conversational style.

It was noted by many participants that, in order to build and sustain social interaction, there is a need for face-to-face engagement, especially if the knowledge is complex or hard to share in an email. An important feature of face-to-face engagement is that feedback to the sender can be accomplished directly through diverse communication styles, for example, visually, verbally, and by means of sound, textual materials, and nonverbal gestures and body language, all of which play important roles during the process of knowledge sharing. Such face-to-face interaction gives employees the opportunity for collective knowledge sharing and the development of individual thoughts.

Data indicated that face-to-face forums can exist both internally and externally. Internal face-to-face forums ensure that people have the right understanding and receive the right messages about jobs. External face-to-face forums are mainly related to company clients. Internal forums can be quite informal, but external forums need a little more skill and effort to make sure that they stay on the right level and have the right level of friendliness and respect. The environment of face-to-face forums helps to create aworkplace that is efficient, effective, productive, inspiring, and team-oriented.

Another example of personalisation strategy is participating in seminars and conferences. Examples of these facilitating knowledge sharing and social networks were provided by eight participants. In fact, seminars and conferences are organised, in the first place, to bring a group of people together to achieve diverse objectives. These people are supposed to have some common interest, experience, knowledge, skills, or expertise. Participation in various seminars or

conferences − internal and external − allows employees to enhance presentation and discussion, to provide effective knowledge, and to strengthen targeted knowledge sharing. In these situations, the roles of knowledge producer and knowledge user might change as various chances are given for all participants to share their knowledge or simply transfer it, because some seminars and conferences are built to create heightened interaction with the audiences to enhance knowledge sharing.

On the other hand, some seminars or conferences are mainly useful for transferring knowledge between the sender and receiver. In addition, networking, relationships, building and establishing contacts with clients, and work opportunities can all be achieved through attending seminars or conferences. The advantage of applying these activities to share knowledge is the high commonality that often exists among participants, allowing easy communication, and the two-way flow of knowledge. The challenge here is ensuring that participators can experience this commonality, and correctly communicate in a collaborative manner. One top manager described one of his roles in this way:

> *"We send people on seminars for networking, relationship building and establishing contacts with clients and work opportunities."*

Apart from the above examples that emerged from the analysis of interview transcripts, around two thirds of the participants agreed that meetings can play an important role in supporting knowledge sharing and in building social networks. In meetings, employees can be brought in from different departments to deal with any specific issue. In fact, if people have their turn at contributing to the meetings, two things are achieved. One is that it makes them become involved in the meeting, and the other is that it improves their ability to stand up in front of their co-workers and talk. This, in turn, improves their confidence and makes them comfortable doing so. Such meetings can help to get feedback regarding how company strategy and results are going. One middle manager shared this perspective as he talked about the role of a meeting in knowledge sharing among employees:

> *"The respecting each other, the performing together and the driving customer success is something that is aligned with the KPIs as well as*

the EIT meetings: [the goal is] to ensure that the behaviour is kept
and people are recognised for that behaviour. And the sharing of the
knowledge happens in those meetings as well."

A significant number of participants said, and illustrated, that meetings between employees can occur at diverse levels. For instance, there can be meetings between employees who work in the same level (i.e., meetings between top managers, or between middle managers, or between frontline employees), or meetings between those at different levels (i.e., a meeting between the top and middle managers, between the top manager and frontline employees, or between top and middle managers and frontline employees). These kinds of meetings and the levels of tacit and explicit knowledge sharing involved are illustrated in Figure 5.3 below.

The high interaction between employees who work at the same level can enhance the personalisation of their social interactions. This can give rise to tacit and explicit knowledge sharing. The hierarchical distance between top managers and frontline employees might otherwise inhibit explicit and tacit knowledge sharing.

	Top manager	Middle manager	Frontline employees
Top manager	High	Moderate	Low
Middle manager	Moderate	High	Moderate
Frontline employees	Low	Moderate	High

Figure 5.3 Types of meeting and the level of sharing knowledge among employees

The above matrix illustrates that all frontline employees have their own meetings. Any issue they cannot be resolved on a given shop floor is passed on to the foreman and, hence, to the next level of management, which has its own meeting pattern. If they cannot resolve issues, they are expected to put the issues to the senior management. For example, one frontline employee provided an example:

> "All the shop floors have a daily meeting programme. Any issues from [these] that they cannot resolve on the shop floor are escalated to the foreman and to the next-level management, who also have their own meeting pattern."

Codification and personalisation strategies

As can be inferred from the name of this strategy, it is one that occurs through the use of information technology that can act as a channel through which employees can directly share their knowledge with each other. The researcher found that, in one company being studied, employees tend to gain and share knowledge through the use of videoconferencing. Through this, knowledge senders and receivers share in the same occasion and have a social context for their interaction. Such an application permits audio and visual knowledge sharing between employees at the same time, which ultimately leads to the experience of greater cross-office knowledge sharing. It is a useful technique to enhance knowledge sharing as a replacement for face-to-face meetings that would require extensive travel to meet other employees. All in all, the research findings showed that, irrespective of whether knowledge sharing is mediated or non-mediated, employees do not just sharing knowledge, but also are employing a useful technique to help employees share contextual and psychological antecedents as well. One middle manager was very clear in stating the importance of videoconferencing in enabling knowledge sharing.

> "I think it's really good, because you can see the person and they can see you and they can hear you, so it makes it more effective to be able to just see the person communicating."

5.3.3.2 Brainstorming and problem solving

Ten participants indicated that brainstorming and problem solving can play a significant role in supporting knowledge sharing and in building social networks.

In brainstorming sessions, employees can sit together to deal with a specific problem in a creative way. During these sessions, employees have a chance to illustrate their perspectives, critique specific methods, modify specific techniques, and improve ideas. Based on the research findings, it would appear that there are diverse steps for brainstorming and problem solving, which are: defining the problem, understanding its root cause, debating a number of different solutions, and taking action.

During the first stage of brainstorming and problem solving, an inductive and deductive thinking process takes place among employees within a company. This process is not just to facilitate inquiry, but, equally importantly, it allows employees to narrow down the scope of the topic. As illustrated in Figure 5.4, knowledge giving and receiving are required between top managers, middle managers, and frontline employees to interactively recognise the precise problem as a step towards finding a way of dealing with it. Once the scope of the topic is identified, a series of meetings is required to explore it in depth. This idea is elaborated on by one middle manager in the following quote:

> *"So [the committee included] everybody that needed to partake and drive whatever needed to happen in the next week. So, through that committee, they met on a daily basis or, more often, the first day to discuss and delegate out to other people from that."*

Another middle manager illustrated that, through problem solving and brainstorming, social interaction between employees can occur. This point is mentioned in the following quote:

> *"I think it's a very good way of getting social interaction because the guys can say what they want to say at the meetings and then we kind of do a little brainstorm and problem solving."*

The main objective of the next step is understanding the root cause of the issue. Once a topic has been understood, brainstorming will take place through diverse meeting activities. These can be achieved through debating a number of different options. Following that, there is a need to make a decision on the correct action that will effectively solve the problem. Alternatively, if the problem is not easy to

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address, a preventative action will need to be considered. These steps are summarised by one top manager in the following quote:

> *"It's taking information about something that's happened in the past, understanding the root cause of what's happened and, then, putting in place some corrective action or preventative action."*

From the findings two basic aspects of knowledge sharing appeared: giving and gaining. These are shown in Figure 5.4.
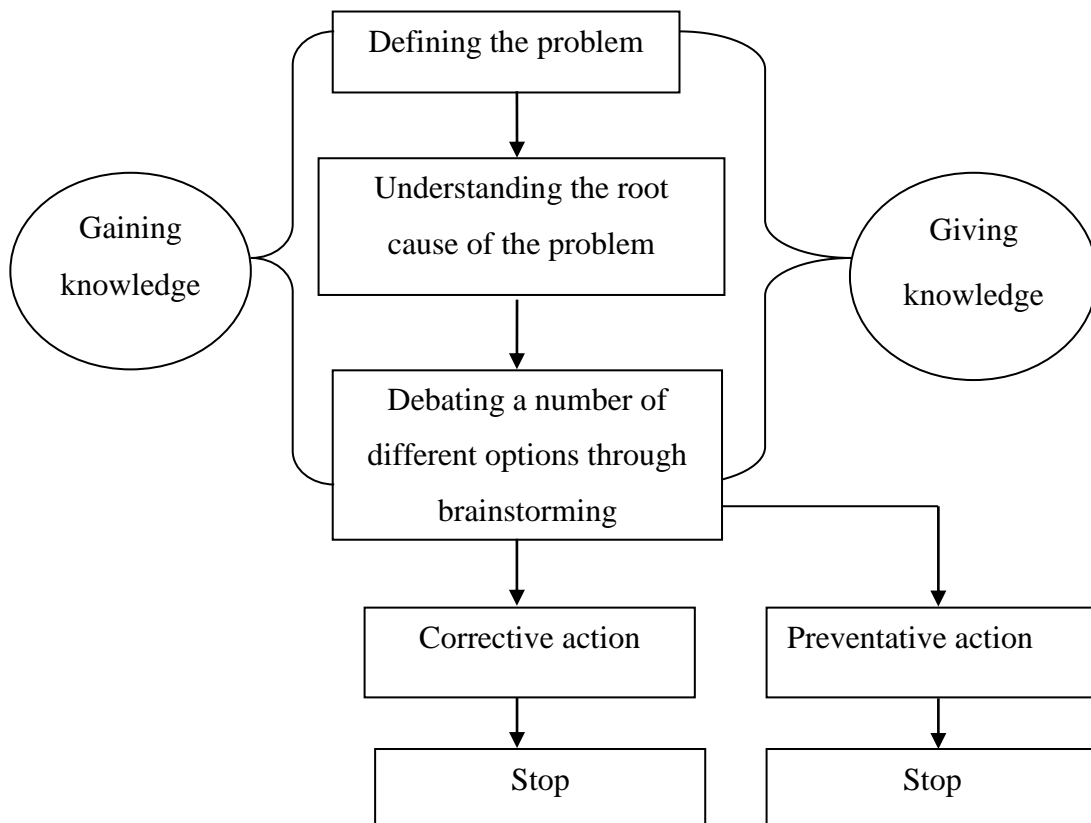
Figure 5.4 Brainstorming and problem-solving processes in the studied companies

Seven participants stated that problem solving requires a collaborative working arrangement between employees and cross-functional teams. Hence, the following quote:

> *"If you want to problem solve effectively, you need the biggest group or the widest effective group possible."*

Another participant emphasised that, through knowledge sharing, problems can be solved. He made this statement:

"So it's really important to share knowledge to find out what the problem is and then how to fix it and, also, how that's gonna affect other departments and those flow-on effects."

In such a collaborative problem-solving process, the requirement is to answer employee questions and discuss diverse solutions. This interaction can provide an opportunity for employees to internalise the knowledge related to the proposed questions. In addition, employees can propose solutions offered by other employees in order to externalise their knowledge. Throughout the discussion that takes place during a problem-solving exercise at a meeting, more knowledge can be shared in an efficient and timely manner, which leads to more effective knowledge sharing. In reality, in 80% of the companies investigated, some sort of cross-functional team was part of employees' daily operations. The comments relating to cross-functional teams were reflections on what top managers need to do to be able to effectively facilitate knowledge sharing through the use of a problem-solving process. For instance, in one studied company a gas crisis was mentioned that greatly affected the work within the company. In that situation, top management formed a committee to deal with the crisis. A committee involves diverse groups of people such as engineers, production people, the CEO, and managers. So through such a committee, groups of employees met on a daily basis to discuss and generate a solution. This example illustrates how each group of employees can externalise its expertise to find a solution to a given situation. In the end, the problem can be solved from the group-level perspective. This example also illustrates that, through the process of dealing with problems, knowledge can be built and created. Furthermore, solutions to such problems could be shared with other divisions or branches. Moreover, through meeting activities, social networks among company employees can be developed and further expanded.

5.3.3.3 Learning and teaching

A significant number of participants indicated that, in the course of sharing, a number of learning and teaching opportunities will be created. Within companies, employees learn about collaborative teaching partners, team meetings, and formal and informal collaboration. These collaborative knowledge-sharing processes that

exist within companies make learning between employees and within the support network possible. As Figure 5.5 shows, learning does not only entail learning inside companies; there are external sources of learning that are brought to a company, such as learning from past experience. In other words, for learning to be more effective, it is important for social networking between employees to make it happen.

This model of the development of knowledge sharing is divided into four levels, based on the receiver's levels of knowledge, namely, the novice, competent, expert, and proficient levels. The following quote by one top manager is worth noting:

> *"We have developed four different levels of knowledge sharing from novice to expert, and the expectation is that ... the competent would teach the novice, [the] proficient teach the competent and the expert teach the proficient technicians."*

As laid out in Figure 5.5, at the bottom of the trapezoid, the novice has mainly explicit knowledge, while the sign "-" means that he or she has less tacit knowledge. Hence, novices do not have the same types of knowledge as the other group of receivers. It seems that there is a difference between the kinds of knowledge for each level. Accordingly, those at each level tend to immerse themselves in tacit and explicit knowledge sharing to compensate for its weakness, which can be accomplished through learning and teaching.

In this model, a novice can share more explicit and less tacit knowledge with a competent employee, in order to reach a higher level of knowledge, such as practical or complex knowledge. In addition, an expert holds more tacit than explicit knowledge. Therefore, he or she is likely to share more tacit knowledge. This sharing can be achieved through teaching other employees who are less expert, such as those at the competent and novice levels. The highest level of an employee's knowledge is the proficient level, at which employees have a high proportion of tacit knowledge, which is thus more likely to be shared, is than explicit knowledge, with those on other levels. This level can be developed more and more through social interaction. Figure 5.5 also shows that the opposite

process to learning is that of teaching. This directional knowledge moves downstream from proficient to novice. The following quote from one frontline employee describes how novices can enter into and build up social interaction with more knowledgeable employees, such as those at the competent, expert, and proficient levels:

> *"I'm a graduate and my manager put me through learning from more knowledgeable employees. There's also other opportunities ... through support network."*

Another example illustrated that, when employees start working, they mainly have theoretical knowledge, which is mainly related to explicit knowledge. In this situation, through learning, social networks can be augmented. This is mentioned by one middle manager in the following quote:

> *"Most engineers have come with the key elements of theoretical knowledge and they hone that knowledge by applying it, so every day is a new learning experience that can be augmented through social interaction."*

One middle manager described how more knowledgeable employees can teach novice engineers. He said:

> *"So most of our employees are degree-qualified engineers of various levels, so we would start with graduate engineers; we'd teach them up for 3 years, they become engineers, then we move [them] through [the stages of] senior engineers through lead engineering."*
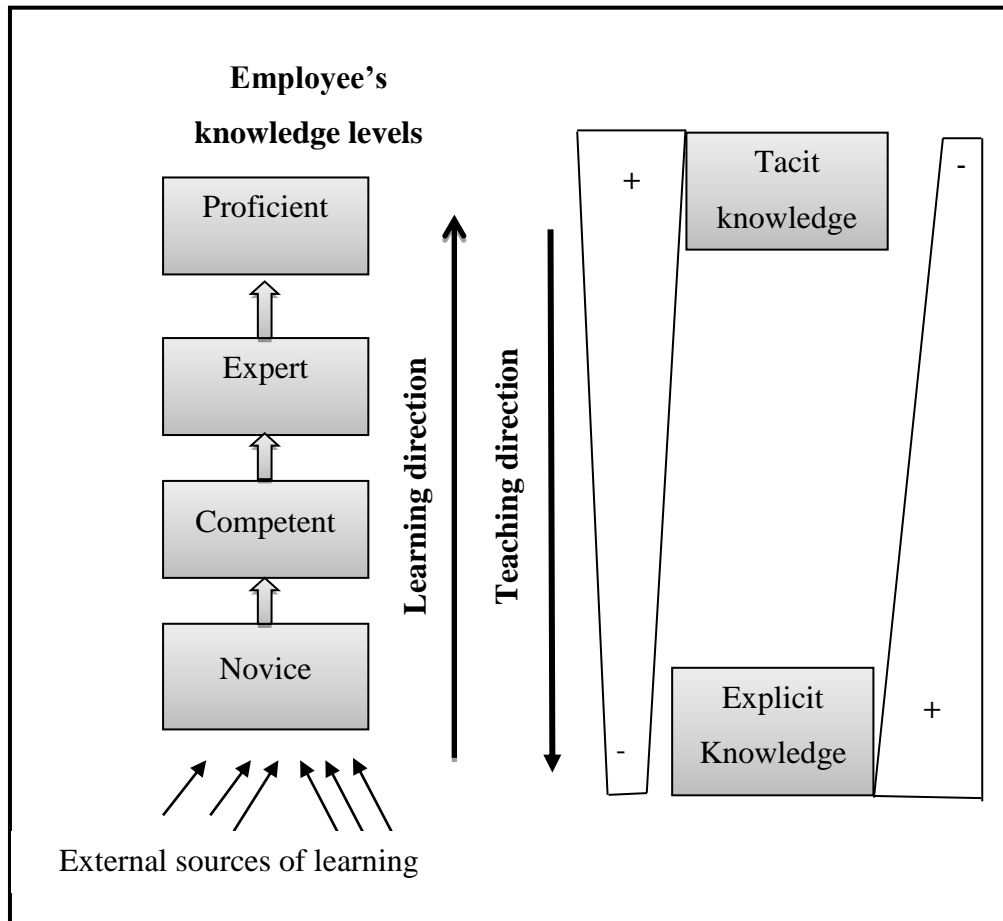
Figure 5.5 Employee's knowledge levels and the direction of learning and teaching

Research findings illustrated that learning can occur through collective action by employees at all organisational levels. This kind of learning is supporting by doing, observing, and showing. An example of it, as mentioned by two frontline participants, is dealing with a contaminated sample, a situation where employees can learn from each other and continue to learn in order to deal with similar issues. In this way, employees can re-experience what is documented in the manuals and guides.

5.3.3.4 Training

According to the data collected in the studied companies, training can be classified under two types, that is, internal and external training. These types are illustrated in Table 5.6 and further illustrated below.

Table 5.6 Comparison between internal and external training and their links with knowledge sharing

	Internal training	External training
Main goal	Training employees inside a company	Sending employees to receive training outside their company
Types	Informal and formal	Formal
Subdivisions	Peer monitoring, cross training, invited external trainer	Expert training
Main role of learning	Learning by doing, listening, showing	Learning by listening
Main kind of knowledge	Tacit	Explicit
Main kind of knowledge sharing	Sharing tacit knowledge	Sharing explicit knowledge
Examples	Technical training, practical training, experimental training	Explicit knowledge regarding leadership, management, communication, etc.

Internal training

This kind of training can be provided within the main physical location of a company. Ideally, the main goal of internal training is enhancing tacit knowledge, that is, the experimental knowledge, technical knowledge, etc., of employees. A significant number of participants stated that this kind of training can take the forms of peer training, cross training, and inviting experts from outside a company. Peer training can allow new employees to buddy up with expert employees inside a company. It can lead to increased communication, build social ties, and enhance cooperation, all of which are vital for stimulating knowledge sharing. The following interview transcript extracts provide evidence of the role of peer training in knowledge sharing:

"When I first started here, we were buddied up with a senior person, so I've got a buddy and if I have any questions or anything I can ask him anything about technical difficulties."

Cross-training can enhance knowledge sharing among staff from different departments within a company. A number of participants believed that internal training can be either informal or formal.Formal training can occur through meeting with team leaders or inviting in experts from outside the company. Informal training can occur even during a tea or lunch break by means of someone speaking; this kind more effectively creates dialogue between employees and, hence, allows explicit knowledge sharing to thrive. One middle manager shared the importance of training in which informal knowledge sharing is the norm:

"Once people have developed their technical competencies, then there will be [a] relationship, helping people to relate to people, so there's not necessarily formal training, but it's kind of a growth and development aspect that people need to learn."

External training

External training was mentioned by only six participants as being a means to facilitate knowledge sharing and build social interaction. This kind of training can be brought about by sending employees outside their company to initially gain knowledge from the outside and then share it when they come back. Such training is useful, especially to gain explicit knowledge from trainers and then have it combined, edited, or processed for the formation of new knowledge. The new explicit knowledge is then disseminated among the people of the organisation. Individuals exchange and combine knowledge through diverse mechanisms such as meetings and telephone conversations. Such mechanisms can help also to build social interaction. Hence the following quote by one of top manager:

"External training can be quite good for meeting other people and for building social interaction."

5.3.3.5 Employee rotation

Employee rotation entails the shifting of employees across different tasks to optimise their exposure to a variety of knowledge. In this way, employees are

drawn together from diverse departments of the company to pool their knowledge and complement one another. One top manager referred to this perspective by saying:

> *"What I'm doing in operations, at least, is moving people around a bit now and creating opportunities for people to move, so that we had people moving across different functions, into different roles within the manufacturing space."*

Six participants were of the view that job rotation can accomplish benefits for employees. The first benefit is that employee rotation will increase employees' accumulation, not just of explicit, but also of tacit knowledge. Additionally, the policy of job rotation was employed with another goal: that of enhancing both individual knowledge and the group's tacit knowledge (know-how). Moreover, the movement of employees to different tasks enhances their capabilities to build new expertise and determine the areas in which they can best use their creativity. Furthermore, an employee who is prepared to function in a variety of jobs will bring breadth and depth of cross-functional knowledge to the company. As noticed in field interviews, job rotation not only helped employees promote tacit, practical, complex knowledge, but was also equally important in making either explicit or tacit knowledge more fluid and easier to put into practice. Work design based on rotation of work rather than hierarchical distribution of roles reinforces staff members' motivation to share their knowledge, especially when beginning new jobs. These findings suggest that job rotation can broaden employee perspectives so that they implement their work from diverse angles rather than just concentrating on the issues of their specific department's function.

5.3.3.6 Consultation

The analysis of research findings revealed that the objective of consultation policy is to generate and optimise a consultative culture within and outside a company. Around a third of participants illustrated the role of consultation in the area of knowledge management and building social networks. Consultation helps to fill diverse gaps in companies through the provision of advice when the company is being overcome with different problems. In addition, consultation not only helps

to remedy company weaknesses in information, but is also useful for gaining skills. One top manager described the role of consultation in the following way:

> *"We're looking for consultation to bridge, if you like, our weaknesses and the skill level that we have on site. And, also, we use them a lot just to challenge what we're doing through a deep discussion, which helps in improving the level of interaction."*

As examples, many participants named and described different forms of consultation, specifically, internal, external, bilateral, and multilateral. Internal consultation can be achieved through consulting employees within a company. Such consultation can occur, for example, when a novice technician consults an expert technician to provide help. External consultation can be accomplished by consulting an expert from outside a company in a formal manner. External consultation can be targeted at, for instance, the judicial sector, the city council, or a stakeholder. Bilateral consultation is a method of discussion of ideas between employees who share common goals. Multilateral consultation is a method of discussing ideas among employees who share a common goal.

5.3.4 Section summary

This section illustrated research findings on the the nature of the relationship between social networks and knowledge sharing. Section 5.3.1 identified types of social networks. Section 5.3.2 illustrated their dimensions. Section 5.3.3 concerned methods of building them.

5.4 Interpersonal trust and knowledge sharing

The main goal of this section is to present, examine, and interpret data and patterns obtained regarding the nature of the relationship between interpersonal trust and knowledge sharing. A total of 298 incidents emerged from the 25 interview transcripts, document reviews, and observation, including 16 main incidents groupings. These incidents are set out in Table 5.7.

Table 5.7 Open coding concepts of interpersonal trust, ranked by number of incidents per concept

Concept Code	Concept Name	Sources	Number of Incidents
IT1	Competence-based trust	16	48
IT2	Engagement in communication	15	42
IT3	Engagement in brainstorming and problem solving	9	38
IT4	Openness and credibility	14	37
IT5	Relationships	13	36
IT6	Benevolence-based trust	12	25
IT7	Clarifying a set of values	7	18
IT8	Peer mentoring	10	16
IT9	Clarity of targets and goals	3	9
IT10	Division between departments	4	6
IT11	Assurance of confidentiality	5	5
IT12	Mutual respect	3	5
IT13	Creating a "no blame" culture	3	4
IT14	Responsibility	1	4
IT15	Sense of vulnerability	2	3
IT16	Team conflict	2	2

The previous concepts were then further grouped into four categories, as illustrated in Table 5.8.

Table 5.8 Category groupings of interpersonal trust

Category Code	Category Name	Concepts Contained	Sources	Number of Incidents
G	Competence-based trust and benevolence- based trust	IT1, IT6	20	73
J	Organisational antecedents	IT7, IT9, IT10, IT13	13	37
I	Relational antecedents	IT2, IT3, IT4, IT5, IT8, IT11, IT12, IT16	24	181
L	Individual antecedents	IT14, IT15	3	7

The following concept groupings were derived from the above incidents:

❖ **Competence-based trust and benevolence-based trust**: 73 incidents were noted in 20 transcripts.

❖ **Organisational antecedents**: 37 incidents were mentioned by 13 participants. They listed these organisational antecedents that influence trust: clarifying a set of values; creating a "no blame" culture; clarity of targets and goals; and, division between departments.

❖ **Relational antecedents**: 182 incidents were identified by 24 participants. They encompassed: openness and credibility; relationships; peer mentoring; assurance of confidentiality; engagement in communication; engagement in problem solving; mutual respect; and, team conflict.

❖ **Individual antecedents**: Seven incidents were identified in three transcripts. These involve responsibility and a sense of vulnerability.

The following subsection illustrates competence-based and benevolence-based trust.

5.4.1 Competence-based and benevolence-based trust

Competence-based trust exists on the basis of reliability and competence (Ko, 2010). In this study, more than half the participants illustrated that knowledge receivers require a relatively large amount of competence-based trustworthiness in the providers of that knowledge in order to place their trust in them. Such trustworthiness means that, potentially, they are likely to be more involved in diverse activities such as peer training, brainstorming and problem solving, and decision-making. For example, when frontline employees require specific technical skills, they will ask for such skills and trust only the most competent employees. This is a statement of an example from a frontline employee:

> *"If you want to get information or if you want to get a job done, you need people, and when it comes to working on projects, you can't really move on until you've got information from a certain person."*

In the interviews, seven frontline employees and middle managers collectively mentioned diverse reasons that lead employees to place their trust in other, specific employees. Five frontline employees illustrated the fact that employees can rely on each other because they have different experiences, and some jobs can be very specific and can very easily have an impact on other areas. The following quote from a frontline employee illustrates why employees tend to rely on each other:

> *"We rely on each other because we all have different experiences within our company. I think that we do all rely on each other because some of our jobs can be very specific to our areas, but they could have an impact on other areas very easily as well."*

In addition, two middle managers illustrated the fact that employees need to rely on other employees to get further confirmation. In order to do so, there is a need to involve other employees who are more knowledgeable in the relevant area. The following quote from a middle manager is an example of competence-based trust:

> *"Any document or drawing that is issued must be confirmed and it must be approved, so you can't do anything on your own; you must involve other knowledgeable people."*

The above findings illustrate that trusting in an employee's ability is more significant when the knowledge is difficult to codify or is tacit in nature. This is an important finding, due to the fact that much value-added knowledge found in companies is often technical, practical, or experimental. In order for employees to share their explicit and tacit knowledge, they must be willing to help and well experienced in the specific, relevant domain.

The analysis of field interviews, interview notes, and observation revealed two kinds of competency, namely, technical and managerial competency. Managerial competency is high for top and middle managers, while it is low for frontline employees. Conversely, the amount of technical, experimental, and practical knowledge is high for frontline employees as opposed to middle and top managers. Frontline employees win high levels of competence-based trust for the sharing of technical, experimental, and practical tacit knowledge, whereas top and middle managers win a high level of competence-based trust on managerial knowledge. The following quotes are representative of those made by frontline employees:

> *"I usually discuss issues regarding my work with my workmates because I trust them with everything. They have got such a broad range of technical knowledge."*

Another frontline employee said:

> *"Me, as being an electrical engineer, I know very little about management issues. So I'm heavily reliant on information about management to be supplied to me from my managers."*

On the other hand, benevolence-based trust exists on the basis of sentiments, genuine care, honesty, and personal attachments (Ko, 2010). This kind of trust is more likely to be linked with strong ties (Glaeser, Laibson, Scheinkman, & Soutter, 2000).

The analysis of interview transcripts illustrated that when the knowledge sought is easy and straightforward, an employee does not need to have a large amount of competence-based trust in the knowledge source, but might need to have benevolence-based trust, and might be content with that, even though the

employee sharing the knowledge might not be very able to provide beneficial knowledge regarding a specific topic. In addition, one middle manager illustrated that, if employees are in urgent need of gaining knowledge, they may ask others to get it from another employee, but, in doing so, need to trust that the other employee will not be intentionally giving the wrong knowledge.

It seems that benevolence-based trust allows one to query a colleague in-depth without fear of damage to reputation. This situation commonly occurs when the sender and receiver of knowledge have the same level of knowledge. From a middle managers' point of view, newcomers of a company ask each other about dealing with some item of experimental knowledge. Conversely, some employees are not keen to give other employees their knowledge, due either to the fear of giving incorrect or misleading knowledge, or to confidentiality reasons. In this situation, benevolence-based trust is expected to be low. This is illustrated by a frontline employee in the following quote:

> *"I guess each role in the company has their own responsibilities and one of them is definitely being discreet, which means there are some things that you need to tell your staff but there are some things that you need to keep to yourself, which is confidential."*

A significant number of participants mentioned that competence- and benevolence-based trust increases the ability of employees to work together collaboratively. Hence, trust can lead to improvement in the performance of the group, both in terms of effectiveness and efficiency. In terms of effectiveness, by relying on one another employees can achieve a successful output. In terms of efficiency, employees can achieve high-quality results without waste of time or money. Thereby, employees believe that they do not need to protect themselves against co-workers in the organisation, and that belief leads to higher work performance.

The previous findings suggest that facilitating knowledge sharing is more than simply putting employees together in a meeting room or sending them to gain knowledge from outside the company boundaries. It is about creating a culture in which employees are capable of recognising whether their peers are both

knowledgeable and motivated to share their expertise to the benefit of other employees. Without building a sense of ability and benevolence-based trust between employees, a company will struggle to take advantage of its employees' knowledge. A comparison between competence-based trust and benevolence-based trust is set out in Table 5.9.

Table 5.9 Comparison of competence-based trust and benevolence-based trust

	Competence-based trust	**Benevolence-based trust**
Level of knowledge between sender in relation to receiver	High, different	Similar
Main methods of occurrence	Sharing explicit and tacit knowledge	Sharing explicit and tacit knowledge
Reason of risk	Lack of knowledge	Lack of motivation
Examples	Peer training, problem solving, decisionmaking	Newcomers in a company ask their new workmates about dealing with experimental knowledge

Although it is very clear that there are two types of interpersonal trust, competence- and benevolence-based trust, research findings could not differentiate between the factors that impact these types. Generally speaking, both types of trust can, in turn, influence diverse factors of interpersonal trust in general.

The following subsection covers research findings regarding factors influencing trust, and captures the respective perspectives of top managers, middle managers, and frontline employees.

5.4.2 Factors influencing interpersonal trust

This section is about factors influencing interpersonal trust and knowledge sharing. The description of these methods concentrates on organisational,

relational, and individual factors. These factors are illustrated in the following sections.

5.4.2.1 Organisational factors

This research found four organisational factors that influence interpersonal trust. These are: clarifying a set of values; creating a "no blame" culture; clarity of targets and goals; and, division between departments. These factors are considered in the following subsections.

Clarifying a set of values

Values can be defined as an individual's personal beliefs about how he or she "should" or "ought" to behave in their social environments (Meglino & Ravlin 1998, p.354). In this study, a quarter of the participants confirmed that clarifying a set of values can build interpersonal trust. According to this finding and analysis of the document review, four values of building interpersonal trust were identified. These are: having a cooperative spirit; doing what is right; challenging boundaries; and, "making it happen". A cooperative spirit was described by one top manager as working together to achieve company goals. Cooperation means turning away from attention on the "I" of my own concerns, goals, or requirements to the "we" of how we accomplish our task collectively. In other words, there is a focus on ignoring the "I", which refers to the language of distrust, and concentrating on the "we", which refers to the language of collaboration and working as a team.

An example of a situation where such a value is relevant is when there is a need to ensure that the newcomers in a company have beliefs and values that fit the profile of a successful person connected to that company. If the person has values that are not related, or has displayed reluctance to be involved in a collaborative team, the individual possibly should not be hired. People should be employed both for their technical skills and for their ability to work with a team spirit and fit in with the values and environment of the company. One top manager mentioned the diverse criteria that need to be applied to hire employees in this quote:

> *"We're looking for people who have a team culture, and that's what you want to hire into the company ... someone who can actually work as a team."*

Doing what is right refers to maintaining the highest ethical standards at all times. It is about dealing with others as they want us to deal with them. Challenging boundaries refers to looking to the future through concentration on the customer perspective. It is mainly about solving problems, inventing and improving through learning from successes and mistakes. Making it happen is related to doing what you say you are going to do. This outcome can be achieved through the delivering of exceptional results. As identified explicitly, if employees are living these values, trust can be expected to come, not just between employees, but also in terms of organisational trust. In such a situation, an environment of knowledge sharing can be built.

Creating a "no blame" culture

Only three participants mentioned that the need to build trust between employees can be achieved through the organisation'shaving a "no blame" culture. This cultural attribute can be achieved through concentration on behaviour changes from all. One middle manager commented:

> *"When you actually ensure that you are creating a culture of no blame, you can trust everybody because they're not going to look at me as an individual but they're gonna look at the problem that I bring to the fore."*

It seems that a high level of interpersonal trust, together with a "no blame" culture, is needed, and one in which mistakes must be tolerated. This organizational culture of tolerance can ensure the sharing of knowledge in such a manner that improvements are based on facts and data rather than on viewpoints. In addition, in order to provide a safe culture, one free of blame, there is a need to create a tolerance for failure and for learning through trial and error. The "no blame" culture can lead to collaboration between workers to achieve specific goals when these workers might otherwise feel exposed by their mistakes. Hence the following quote from a middle manager:

> *"When we bring the two groups together, we actually ensure that we are creating a culture of no blame; rather, we are looking at the problem ... we would actually create that culture that says: you can trust everybody."*

On the other hand, the researcher did find that, in one studied company, high levels of mistrust exist among workers who work in different departments. Such distrust promotes competition, and "I" versus "we", or "us" versus "them" attitudes. In order to deal with such uncertainty, top management encourages employees from different departments to break down their "silo" mentality and habits, and to mingle with each other. This is illustrated in the following quote:

> *"Operations planning brings the different groups together and gets them in the same room and gets them to start talking about common issues. Its primary purpose is matching demand and supply, but it will have a secondary benefit of breaking down some of these silos and opening up some more trust."*

Clarity of targets and goals

Three interviewees mentioned that one powerful means of enhancing trust is to establish projects in a way that initiates a commonly held vision of the employees'goals, and clarification of the required targets. For example, one manager described a kind of scenario in which he tends to give clear directions when nominating employees to work on a project. This communication can be done through explaining why the project is needed and the duration of time needed to complete it. In this way, employees can gain a clear understanding of the project and have a clear direction to follow; as a result, more and more interpersonal trust between employees is developed in order to complete the project. One top manager considers setting clear targets and direction to be the responsible way to build interpersonal trust, saying:

> *"My direct reports rely on me more than they will, right now, just for providing, I guess, that shape that I'm talking about: clarity of direction in a business context. And that's all about setting clear direction and clear targets."*

Conversely, lack of clarity about goals and the means of achieving them give rise to employees struggling to gain insights into a "hidden" target. In such a situation, staff members end up working independently, without clear direction and with little chance for improvement. It is not easy to build interpersonal trust in an atmosphere of such uncertainty.

Division between departments

In this study, it was found that, in one company, the division between departments had the potential to decrease the level of trust between employees. A top manager offered some examples of lack of trust between different departments:

> *"In some areas, there isn't the trust that there should be. I mean, there's a bit of a divide between sales, marketing, commercial, and the operations side; sort of like 'us and them'."*

When employees feel there are perspectives different from those their team has, they are typically not willing to devote time and effort to the achievement of their main objective. Hence, team bonding that is significant for building trust can be negatively impacted when departments have different perspectives on any issue. One top manager discussed the reasons why some employees from different departments do not trust each other in the following quote:

> *"Commercial probably think that operations is about driving down cost and not really being too focused on customers, and operations on the other hand aren't particularly trusting of the commercial sides."*

Although there is a lack of bonding between individuals who work in different departments, the level of trust in members within the team is high in all the studied companies. An example of this trust is seen in this comment by one of the top managers:

> *"If we go down to the operational employee team, it works quite closely and they all trust each other and they work very closely together. They won't necessarily be trusting of the group who operate in stores or logistics."*

Apart from these findings regarding division between departments, one participant indicated that another reason for lack of interpersonal trust is the conflict between old and new school perspectives which can impede employees' building of trust

and hence hinder the development of knowledge sharing. This idea is illustrated in the following quote from one of the middle managers:

> "Obviously, there's a lot of people that come from the old school, and it is still the blame game."

5.4.2.2 Relational behaviour

Under the heading of relational factors, the researcher found eight factors that influence interpersonal trust. These are: openness and credibility; relationships; peer mentoring; assurance of confidentiality; engagement in communication; engagement in problem solving and brainstorming; mutual respect; and, team conflict. These factors are illustrated in the following subsections.

Openness and credibility

Research findings illustrated that employees are encouraged to be open to observation, critique, and feedback in order to build and develop a more open, transparent, and team-oriented culture. In addition, the participants viewed openness in terms of not being afraid to share knowledge, nor of disclosing mistakes. Moreover, some participants viewed their openness to give their knowledge as a win-win situation. That is, by explaining something to somebody else, employees can gain much benefit in terms of going through the whole process, as doing so improves knowledge building as well. It seems that transparency and openness are highly interrelated and lead to an open and conversational atmosphere and a spirit of cooperation. This finding is illustrated in the following quote:

> "Well I think it's a big thing because if you know that someone else is open with you, or you're open with them, there's likely to be more of an open conversation atmosphere and cooperation."

Five top and middle managers illustrated that trust can be built by creating an open door policy under which employees are encouraged to assist each other to achieve organisational goals. The following quote froma top manager illustrates how openness leads to building interpersonal trust:

> "The key thing for building trust in here is open door policy and questioning guys on whether they're living the values or not."

Another top manager mentioned that putting in place a process called sales, marketing, and operations planning (SMOP) allows employees from different departments to talk about common issues. The objective of this process is not only matching demand and supply, but also breaking down the tendency towards silence and opening people up. This approach is illustrated in the following quote:

> *"Its primary purpose is matching demand and supply, but it will have a secondary benefit of breaking down some of these silos and opening up, I guess, opening up some more trust."*

Employees stressed that they tend to be open-minded when handing over knowledge because this situation opens up anopportunity to learn new information or skills. In addition, such openness allows employees to gain understanding of how other parts of the company operate. Hence, employees have a very positive atmosphere in which to ask questions, which ultimately leads not only to success at an individual level, but also at the team and organisational levels. If a staff member has a problem, he or she is free to ask every other employee about it, even those in a high managerial position, and can certainly expect to receive an answer or assistance. This type of behaviour as a value will be deeply embedded in the culture of an organisation that encourages the sharing of knowledge. Concentration on being open results in the willingness of workers to build interpersonal trust and share knowledge. This willingness can create a community in which staff can openly share and develop strong rapport. One middle manager talked, in the following quote, of how openness and trust lead to results on time, in a correct manner:

> *"Generally, we're quite open and trusting and, generally, we need to be that way because the drivers in this organisation are quite pressured for results on time... [and] because this will help employees to share their knowledge."*

Three middle managers also explained that openness to disclose valuable knowledge enriches an employee's credibility. Commonly, employees ascribe credibility to a person when they see a consistency between their words and their actions. If the actions and words do not match, the first employee cannot build up trust in that particular person. Additionally, openness and credibility are the result

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of strong values that entail the said credibility in regard to mind-sharing with others. This mind-share concept empowers everyone so that it demolishes the barriers to knowledge sharing.

Relationships

More than half of the participants mentioned that the more operational employees there are, the more rapidly they need to build trust. Staff amongst whom trust is built rapidly concentrate mainly on task-based relationships or day-to-day operation-based relationships. They are quite willing to trust one another on the basis of readily observable, role-related characteristics. In addition, middle managers commonly focus on projects and multi-project-based relationships. The top manager commonly places emphasis on strategic relationships. These levels are illustrated in Figure 5.6.
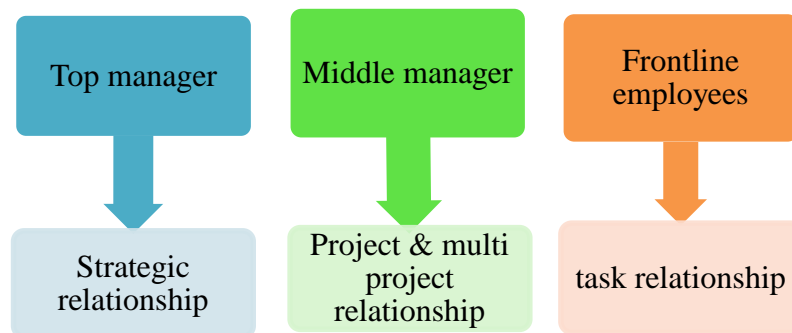
Figure 5.6 Trust-building levels and organisational levels

From these findings we can deduce that, for employees to build a high level of trust, there is a need to build a partnership with other employees, specifically those who work at the same level, so trust is based on long-term relationships. Partnering, although useful in promoting trust, is not seen as the only form of interpersonal trust building. In addition, some new employees are able to build relationships, especially during the induction process, in which trust can be built and developed.

The findings illustrate that a trusting attitude alone does not lead to trust unless it is combined with an action to translate the trust. What this means is that interpersonal trust needs to be expressed by creating a continuous relationship

between employees. Hence, in order for employees to share their knowledge, information, or skills, there is a need for a high degree of interpersonal trust and a strengthening of relationships with one another.

Peer mentoring

The analysis of field interviews revealed that peer mentoring relationships can support a high level of socialisation for new employees. Individuals being peer mentored and their peer mentors discover new interactions with each other in which peer advice can play a significant role in building trust. Many participants illustrated that this kind of mentoring relationship enables knowledge sharing to take place which enhances knowledge flow between employees. Peer mentoring can be more effective and efficient when it generates a more formal and developmental relationship between an experienced employee and a less experienced one. Much of the knowledge that the peer mentor has is tacit, local, and learned from personal experience. Sharing tacit knowledge requires a strong relationship between the mentor and the mentored. As it is, it seems that peers commonly try to obtain knowledge horizontally in the company from other staff instead of vertically.

To build interpersonal trust, many interviewees showed their commitment in terms of being involved in peer mentoring that allows them to expand a variety of skills and develop their ability to comprehend each other's meaning. One middle manager mentioned that, through peer mentoring, employees can build interpersonal trust:

> *"There's a level of trust that is developed between the mentor and the mentee if you like, or the leader and the team member, and that's, I think, where the trust comes in."*

Assurance of confidentiality

Five participants mentioned that, for there to be a high level of trust, employees must avoid disclosing knowledge to people not authorised to access it. In order to ensure the confidentiality of other employees, there is a need to protect all sensitive information regarding the organisation and its employees at every stage, from the initial outcome stage through to transfer and storage of that information.

Such information is subject to the company's privacy policy and must be carefully managed. One middle manager spoke in this way regarding the issue of confidentiality:

> *"If you're having a dealing with an employee, making sure that you keep that confidential so that people don't feel that their business is everyone's business…"*

The previous findings suggest that when an employee is asked for specific knowledge, the asker must deal with the interaction as being confidential, because failure to do so violates that employee's trust. There is a problem, however, if employees feel that it is not safe to divulge such knowledge, as the knowledge they may be reluctant to share could help to deal with an issue effectively. However, participants frequently mentioned that such reluctance in most knowledge sharing can be overcome if employees feel secure that confidential knowledge will not be disclosed to other employees. One frontline employee indicated that employees who kept sensitive information to themselves were perceived as more trustworthy, as seen in the following quote:

> *"There are some things that you need to tell your staff but there are some things that you need to keep to yourself, which is confidential. So, I guess it's the same at most of the places − all the information gets passed on unless it's confidential."*

Engagement in communication

Observation and the analysis of interview transcripts and document review clarified that interpersonal trust between employees in the studied companies is built through diverse channels. These channels can be classified as informal and formal. The role of informal channels in building interpersonal trust is now outlined.

Informal communication

More than half of the participants stressed the role of informal communication in building interpersonal trust. This kind of communication can occur either within the company or outside it. Regardless of the location, a number of participants mentioned that this kind of communication can achieve various benefits for

employees. Firstly, informal communication builds the bond between employees. Such bonds create a belief that each employee has some level of concern for the other employees. Secondly, it helps to create a convivial environment in which people get to know each other. In addition, informal communication permits employees to learn more about each other.

According to one participant and the researcher's observation, it was found that in one studied company, to enhance a high level of informal communication between employees, there is a focus on open-disk design in the workplace. This is a situation in which informal communication can lead to building interpersonal trust. Notwithstanding, the focus on such a policy should not be at the expense of staff requirements for sufficient confidentiality, especially when dealing with sensitive tasks. Further, such a policy might lead to some employees wasting time communicating with other employees rather than achieving required tasks.

Formal communication

This kind of communication was suggested by only two participants as a method of building interpersonal trust. One example mentioned was structured meetings. In such meetings, employees can have an open discussion that is upfront and honest. This point is illustrated by one middle manager in the following quote:

> *"We try to bring all the members concerned into a meeting and have an open discussion. So it is a good opportunity to develop trust between employees."*

As can be deduced from the previous findings, this kind of communication can increase the amount of information available and provide added opportunities for people to build more and more trust, hence enhancing the level of knowledge sharing.

Engagement in brainstorming and problem solving

More than one third of the participants illustrated the fact that engagement in problem solving and brainstorming can build interpersonal trust. The analysis of field interviews revealed that interpersonal trust is not only about how employees work collaboratively when work is going well, but, equally significantly, how they work together to deal with problems effectively. In the abstract, employees

who do not fully trust each other are not considered able to find a way to deal with a problem. This is due to different perspectives among employees regarding what the best solution to the problem at hand is.

The analysis of interview transcripts disclosed that some problems are complicated and not easy to address. Therefore, there is a need to collectively solve them. This collaboration cannot take place without a high degree of trust between employees at different organisational levels. In these circumstances, employees can exchange relevant information and skills, and determine whether other employees are keen to permit others to influence their decisions. Hence, there is a concentration on being a "problem solving culture" rather than a "blame culture". The cost of problems is greatly reduced and the ability to rely on specific persons who can deal with them effectively is greatly improved in a climate where employees can freely share knowledge as soon as they become aware of problems. Here is what one frontline employee had to say on the subject:

> *"There's a lot of reliance, like, if you have a problem, you generally know who to talk to, cause you rely on that person to be on top of that area."*

Mutual respect

Three participants indicated that employees have great respect when they have reason to feel secure and when there is high value placed on relationships. In such an environment, employees can engage in dialogue concerning the direction the business is taking and get reactions to their input. This idea is illustrated by a middle manager in this quote:

> *"So for people to build trust, it's got to be respecting each other, so that's what they try and get people to live by."*

Another middle manager mentioned that there are diverse cultures within companies in New Zealand. Therefore, there is a need to respect ethnic diversity in order to build strong mutual trust between employees and, ultimately, encourage a culture of sharing knowledge. This is illustrated in the following quote:

> *"It attempts to have a 'no blame' culture and it attempts to encourage respect between people, and it also attempts to respect ethnic diversity."*

Team conflict

Only two participants mentioned that conflict between employees in different departments is one reason for lack of trust between employees. Such conflict gives rise to distrust that raises impediments in the knowledge sharing environment. This quote illustrates this:

> *"We do often have clashes between group sales and marketing; this causes the biggest friction which influences trust negatively."*

In such absence of trust, specifically, when conflicts increase, some employees start blaming each other or completely ignoring the condition that causes the conflict, instead of resolving the problem. Notwithstanding, such conflict is to be expected in a diverse team that comprises knowledgeable employees who have different areas of expertise and expectations. However, there is a need to manage and solve such disagreement so that they do not have a negative influence. One middle manager said he was committed to building trust because he recognised its value in the workplace in general and in knowledge sharing, stating specifically:

> *"I have actually made them comfortable enough and I think they're all comfortable with each other to actually bring their problems to the front, and I think when you actually ensure that you are creating a culture of no blame…"*

5.4.2.3 Individual factors

Under the heading of individual factors, the researcher found that what influences trust are responsibility and a sense of vulnerability. These areas are illustrated in the following subsection.

Responsibility

Responsibility in this context means that employees trust those who are completely responsible for their values, beliefs, and behaviours, and who are keen to be held accountable for their actions as well as their words (Marshall, 2000).

Research findings showed that, when employees are given responsibility and someone trusts them, it builds the trust between employees and they expect one another to do what they say they will do. How one frontline employee emphasised the role of responsibility in building trust is seen in this quote:

> *"I guess you get given responsibility, and you know you've got to trust each other, and when you've got to trust other people that have a lot more responsibility, and when you're given responsibilities, people trust you."*

Sense of vulnerability

Two participants noted that employees increase their vulnerability when they elect not to control another's behaviour in order to protect their own interests. Employees can increase their vulnerability in this way by making themselves rely on the other person's actions or by choosing an employee to represent the views of others. Such employees can be reluctant to be open with other employees and would feel afraid to share their expertise with them. One middle manager makes this point in the following quote:

> *"If people are fearful that there's not enough work or that work will run out or that their future job is in jeopardy, then they will often tend to hold knowledge to themselves in order to retain power."*

When employees develop the fear of losing a competitive advantage, it can be extremely difficult for them to build trust with each other. Two interviewees identified that the feeling of insecurity makes it impossible for trust to thrive, which ultimately impedes the sharing of knowledge between employees. This particular situation is depicted by one of the middle managers in the following quote:

> *"Some people are uncomfortable because they get insecure by passing on that knowledge. So they try and keep it inside."*

5.4.3 Section summary

This section has been devoted to presenting research findings on the nature of the relationship between interpersonal trust and knowledge sharing. This section began by illustrating competence-and benevolence-based trust and their links to knowledge sharing. Following on, three groups of factors that influence

interpersonal trust were identified. These are organisational, relational, and individual groups of factors. This research found four organisational factors. These are: clarifying a set of values; creating a "no blame" culture; clarity of targets and goals; and, division between departments. Under the heading of relational factors, the researcher found eight factors that influence interpersonal trust. These are: openness and credibility; relationships; peer mentoring; assurance of confidentiality; engagement in communication; engagement in brainstorming and problem solving; mutual respect and, team conflicts. Under the heading of individual factors, the researcher found that two factors influence trust: responsibility, and a sense of vulnerability.

5.5 Management Support and Knowledge Sharing

The main goal of this section is to present, examine, and interpret data and patterns obtained from the interviews, that is to say, patterns of influence coming through management support from top and middle management that have an impact on knowledge sharing. The following incidents from the data relate to the impact of management support on knowledge sharing. One hundred and forty-seven incidents emerged from the 25 interview transcripts. Twelve main incident groupings emerged. These incidents are illustrated in Table 5.10.

Table 5.10 Open coding concepts of management support, ranked by number of incidents per concept

Concept Code	Concept Name	Sources	Number of Incidents
MS1	Encouraging participation in decision-making	21	51
MS2	Provision of recognition	11	35
MS3	Being transparent and open	10	20
MS4	Encouraging of communication	5	9
MS5	Providing training or assigning others to do the training	4	8
MS6	Encouragement of training	4	7
MS7	Encouraging learning	3	6
MS8	Breaking down of barriers	3	4
MS9	Having flexibility	3	3
MS10	Encouragement to put knowledge into practice in the form of processes	1	2
MS11	Encouraging movement of employees	1	1
MS12	Building up of teams	1	1

These concepts were then further grouped into two categories, as illustrated in Table 5.11.

Table 5.11 Category groupings of management support

Category Code	Category Name	Concepts Contained	Sources	Number of Incidents
K	Management behaviours	MS3, MS9	11	23
H	Efforts of managers to facilitate knowledge sharing	MS1, MS2, MS4, MS5, MS6, MS7, MS8, MS10, MS11, MS12	22	124

The concept groupings that were derived from the above incidents were:

❖ **Management behaviours**: 23 incidents were explicitly mentioned by 11 participants. These incidents involved being transparent and open, and having flexibility.

❖ **Efforts of managers to facilitate knowledge sharing**: 124 incidents were identified by 22 participants. The efforts of managers to facilitate knowledge sharing are: encouraging participation in decision-making; provision of recognition; breaking down of barriers; building up of teams; training, or assigning others to do the training; encouragement of training; communication; learning; putting knowledge into practice in the form of processes; and, movement of employees.

The results are further illustrated in the next sections.

5.5.1 Management behaviours

Research findings illustrated diverse management behaviours which fit the criteria of being transparent and open, and being flexible. These characteristics are here illustrated.

5.5.1.1 Being transparent and open

Transparency is an authentic openness to others about one's feelings, beliefs, and actions (Goleman, Boyatzis, & McKee, 2002, p. 47). This research showed that if managersare transparent and open, interpersonal trust can be built through organising a meeting rhythm of daily, weekly, and monthly meetings for employees and managers to update each other while dealing with priorities and determining how they align with objectives. Such meetings allow for a reciprocal relationship between the manager and employees that includes dialogue. The concentration on being open results in the worker's willingness to share knowledge.

Five top and middle managers explained that in order to develop trust between their followers and themselves as managers, they must be honest and open in communication. All stated that they wanted their employees to be upfront and honest with them, which would ultimately optimise knowledge sharing between employees and leaders. Through transparency and openness, staff can pay close attention to the meaning of the knowledge that is being shared. This focus can create a community in which staff can openly share and develop rapport and thus produce a stronger knowledge sharing culture. The following quote from a middle

manager illustrates how leaders' openness and transparency can lead employees to be more open with their leaders:

> *"If leaders operate with an openness and a transparency and they've gained the respect of their people, then people will open up."*

In addition, the analysis of interview transcripts illustrated that listening to each other is a significant way to model transparency. One middle managerstated that middle managers' willingness to listen to their employees has assisted in their own effective knowledge sharing capabilities. Willingness to listen to other staff members also builds up social interaction. Through social interaction and managers' exercise of their ability to model listening skills with employees, they are able to make some required changes. From this viewpoint, employee social interaction can elicit their displays of openness. An example of the relationship between social interaction and openness can be found at an operational level for employees and at the level of management. At an operational level, employees work together much of the time to carry out diverse activities in order to accomplish their task effectively. For instance, they can be involved in peer training, brainstorming and problem solving. These relationships not only exist at an operational level, but also at all organisational levels. Thus, management teams openly provide opinions and ideas to deal with problems or to come up with new knowledge. Most management teams in the studied companies have the same practices, which are mainly related to an open door policy that allows employees to communicate with each other and, hence, they are environments in which openness thrives.

5.5.1.2 Having flexibility

Three participants stated that managers need to be flexible with regard to carrying out required strategies. This flexibility allows the process of knowledge sharing to flow smoothly. Astute managers, when they ran into drawbacks, thus comprehended that the way to success is not always easy. They were able to appreciate key components of the environment, take advantage of the dynamic nature of the situation, and adjust their steps towards the best direction. In such situations, managers can be effective if they know how to adapt and be flexible and tolerant with regard to whatever changes might need to be considered. This

finding suggests that managers adopting a flexible style implement multisignal communication to enhance knowledge sharing. Such managers are fairly flexible in working through matters to achieve the desired outputs. One middle manager described an example of this style in the following quote:

> *"One of our organisational values is that we care for our people, and that's all people, so, as managers, if there is anything untoward or not going quite right, I mean, we would need to step in and pick that up and be flexible to do the right thing, which enhances the sharing of knowledge between staff [members]."*

5.5.2 Efforts of managers to facilitate knowledge sharing

Research findings clarified that top and middle managers can play a significant role in supporting knowledge sharing. These roles are: encouraging participation in decision-making; provision of recognition; breaking down of barriers; building up of teams; training, or assigning others to do the training; encouragement of training; communication; learning; putting knowledge into practice in the form of processes; and, movement of employees. The following subsection will initially illustrate the role carried out by managers in which they participate with employees in decision-making.

5.5.2.1 Encouraging participation in decision-making

The analysis of interview transcripts clarified that most managers encourage employees to share knowledge through active participation in the decision-making process. Hence, sharing decision-making with other workers not only enables employees to collaborate with the decision-makers, but also allows them to adequately comprehend the issue; in turn, this approach gives them the chance to make relevant comments for the decision-makers to consider. In fact, during the process of collective decision-making, knowledge can be shared between top and middle managers and frontline employees.

As can be seen in Figure 5.7 below, three rectangles illustrate the direction of decision-making, the direction of knowledge flow, and the general types of knowledge at each level. As is shown in rectangle 1, knowledge can flow downstream from top managers to middle managers, and then ultimately to

frontline employees. In such situations, the decision is made at the level of top management, whose role is to pass the decision on to the middle manager. In the same way, the middle manager is required to pass the decision on to the frontline employees. Most knowledge at top management level is strategic knowledge, which usually encompasses a very broad perspective that involves organisational, cultural, and environmental factors, as well as tangible aspects, such as information technology capabilities. One frontline employee mentioned that decisions can be made at a top level of a company:

> *"In large companies, the companies like to open lines or links [so] that it is possible that employees assist with decision-making, but in reality it doesn't happen. Decisions get made and you get told about it, or, 'this is the direction we're heading in.'"*

The levels of decision-making among employees and their links to knowledge managementare summarised in Figure 5.7 below.
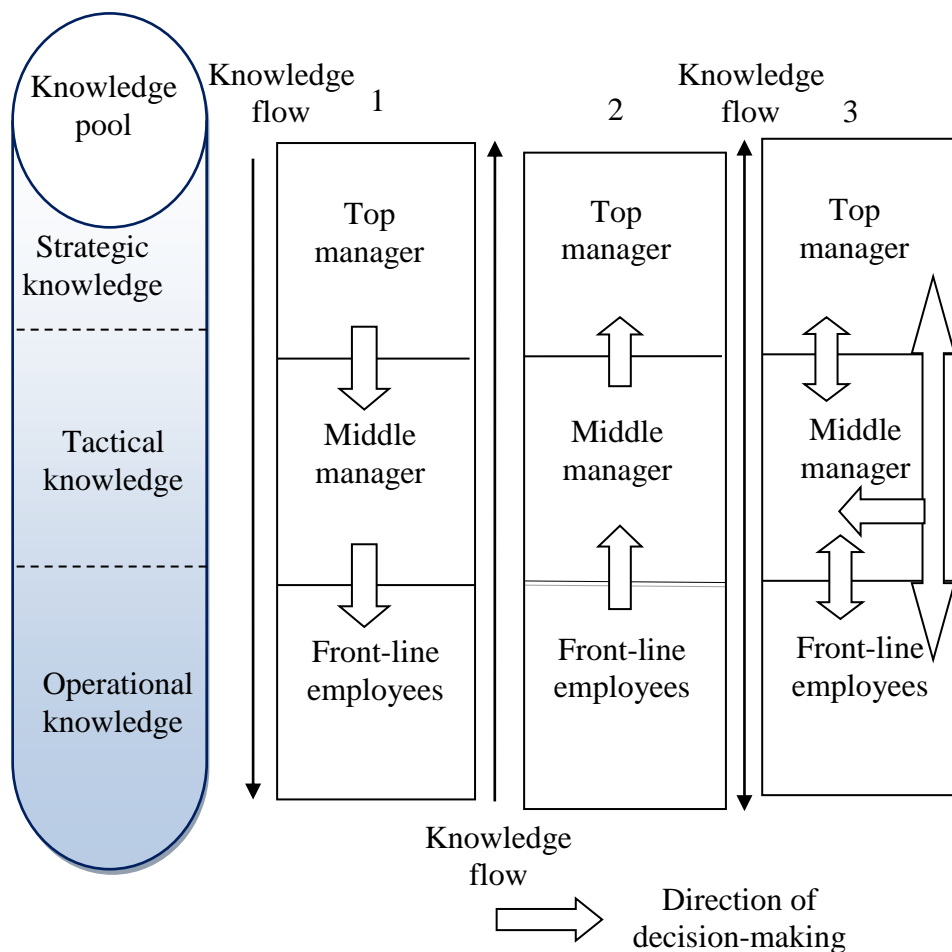
Figure 5.7 Model of levels of decision-making among employees and their links to knowledge management

Additionally, rectangle 2 illustrates that knowledge can flow upstream from frontline employees to the middle manager and then, ultimately, to the top manager. In such a situation, the decision is made at the lower level. The role of frontline employees is to pass the decision on to the middle manager. In the same way, the middle manager is required to pass on to top management decisions that are made at the operational level. Hence, the middle manager can act as a conduit to pass decisions both upstream and downstream. The main knowledge at the level of frontline employees is in the area of operational knowledge. One middle manager mentioned that there is an element of a bottom-up flow of knowledge which is supported by managers. This process is illustrated by one of top manager in the following quote:

> *"There's an element of bottom-up flow of knowledge .... So we must give our employees the ability to make a decision and back them in being able to make that decision."*

Furthermore, rectangle 3 illustrates that knowledge can flow in both directions, upstream and downstream. In such a pattern of flows, decisions can be made, leading to a collective decision between top and middle managers and frontline employees. Then the senior management sit down and sees how much commonality there is and how much of this they can bring together, and then the decision is made as a collective expression of what all parties think. The third rectangle illustrates that decision-making cannot be made within a top-down structure only or a bottom-up structure only, because, in some circumstances, there is a need to look at decision from a tactical point of view in terms of what the concerns are, while, in other circumstances, there is a need to challenge the tactical team to look at the situation from an operational point of view. However, there can also be a need to shift the concerns to a strategic level. In this situation, there is a need to make a decision from different points of view, taking into account causes and effects and impacts. Hence, there is a need to share decision-making to get a much broader, richer picture of the situation.

As is shown in rectangle 3, knowledge can flow in all directions among frontline employees, middle managers, and the top managers, requiring strategic knowledge, operational knowledge, and tactical knowledge. Top management

teams acknowledged that the success of knowledge-sharing activities depends on the participation of a wide range of staff, such as middle managers, team managers, frontline managers, coordinators, and other divisions. Hence, sharing decision-making with other workers not only enables employees to collaborate with their decision-maker, but also allows them to adequately comprehend the issue, and this understanding gives them the opportunity to make relevant comments for decision-makers to consider. In fact, during the process of collective decision-making, knowledge can be shared between top and middle managers and frontline employees. Employees in the interviews frequently mentioned that the constant and close involvement of those diverse knowledge actors could not have been supplied in the absence of the upper leader of the team, who is responsible for managing all of those staff. One of the top managers mentioned that decisions are made at appropriate levels, so that the magnitude of a decision people make depends on how far down accountability is driven. This is illustrated in the following quote:

> *"The senior management will sit down and see how much commonality there is and how much we can actually bring it all together, and then our decision is made as a collective of what we think is most important to focus on."*

5.5.2.2 Provision of recognition

Research findings illustrated that the most effective incentive provided by management is recognition. The following remark by a middle manager indicates this point well:

> *"I think the most effective incentive is recognition that people do it and recognition by managers that it's important. I think that's the most effective way, so that you're encouraging an environment in which people are willing to share."*

On the other hand, the researcher in this study found no evidence to support the role of managers as providers of monetary rewards to enhance knowledge sharing. This is the view of many managers on monetary incentivisation, as the companies examined have not sought a short-term win in terms of financial rewards; instead, and more importantly, these managers reported that they do not tend to see

behavioural changes when employees are told how and why they should change behaviour. This is shown in the following quote from one middle manager:

> *"I'm not very much a person that would even go down the financial reward recognition [path] because I think that's demeaning the actual change."*

In this regard, diverse methods were used by managers in the studied companies to provide recognition. For example, employees who have adept skills and the ability to produce and share new knowledge should be used as examples so that other employees can learn from their expertise. Some participants saw managers as enabling knowledge sharing in an especially energetic and proactive style. Managers have found particular solutions and vary the methods by which their staff are compensated. One form of recognition is to post workers' names in the firm's weekly news. This encourages them to supply innovative ideas and share best practices within their company. By raising staff awareness of the advantages of knowledge sharing through augmented recognition, firms might be able to deal better with workers who are uncomfortable because of a concern that their position may be threatened if they pass on knowledge.

Most managers mentioned that they value employees as significant contributors of knowledge. This knowledge can be put into practice through using expert employees as examples that other employees can learn from. Moreover, the interviewees agreed that managers are effective in promoting knowledge sharing by means of their direct and indirect support for the tasks related to it. However, while diverse kinds of recognition of knowledge sharing are in place in the studied companies, one problem is that there is no formal incentive system to optimise knowledge sharing among staff.

5.5.2.3 Encouragement of communication

Research findings illustrated that the management team can encourage employees to communicate with each other, either formally or informally, so as to deal with specific problems. As a great deal of knowledge resides in individual staff members, the management team can play a critical role in encouraging social interaction for the sharing of such knowledge through diverse activities. These

include social activities, meetings, peer advice, and mentoring. Through implementing such activities, many benefits can be achieved. Firstly, through participation in diverse social activities, employees can build and maintain a high level of trust. Secondly, social activities can build bonds between employees that create a belief that each employee has some level of concern for every other employee. Thirdly, social activities create a convivial environment in which people get to know each other and, ultimately, build interpersonal trust. Managers need to be aware that, in a truly encouraging environment, managers do not demand that knowledge flows through the chain of command. Rather, they should encourage vertical and horizontal interaction and not be concerned with losing perceived competitive advantage. The following quote is representative of the comments that some of the top managers made:

> *"I encourage everybody to communicate with everybody else, so we have a weekly meeting; everyone speaks for three minutes about what's going on in their space."*

Part of encouraging communication is having informal conversations with employees, team leaders, middle managers, and top managers. Top managers provided this communication as another example of how they encourage the sharing of knowledge in an informal manner. An example is presented in the following quote:

> *"We do other things as well, like, we have, I guess, some more informal stuff; so we have a social club and we're encouraging participation in that."*

5.5.2.4 Providing training or assigning others to do the training

Four middle managers reported that they have a responsibility to train employees, or assign others to do the training on how employees are to work. They need to bring the employees to the knowledge of what is involved and expected in the part of the process which they have to carry out, and what they are responsible for.

What they said regarding the nature of the training they provide is that it focuses mostly on: how people work in teams; leadership training; how to deal with clients; and, how to write reports. In addition, the research findings illustrated that

the role of managers is not only to encourage formal training, but also to encourage informal training. This can be accomplished through a peer mentoring programme. Further, four middle managers clearly explained that they invested in coaching programmes about holding one another responsible in the area of adhering to company values.

This coaching is vital as, if the manager and staff share the same values and internalise them, the tie between the manager and staff will be powerful indeed. In such an environment, employees will share their knowledge with each other without trying to prevent or control their behaviour in order to do so. The following quote exemplified this idea by showing how one of the middle managers was willing to spend time and effort to train employees in developing behaviour in accordance with company values:

> *"One of our organisational values is that we care for our people, and that's all people, so as managers, if there is anything untoward or not going quite right, I mean, we would need to step in and pick that up and coach people to do the right thing."*

5.5.2.5 Encouragement of training

Four top managers revealed that one of the roles of a management team is to encourage training, which could help to leverage knowledge around the company and enhance the sharing of knowledge. For instance, one management team spent a great deal of time to encourage employees to learn through formal and informal training programmes. The time and effort made by managers contributed to the expansion of not only individual knowledge but, equally importantly, group knowledge and company knowledge. The following quote exemplified this finding by showing how one middle manager was willing to spend time and effort to train employees in developing behaviour:

> *"So as managers, if there is anything untoward or not going quite right, I mean, we would need to step in and pick that up and coach people to do the right thing."*

In addition, one research finding described the role of the management team as being not only to encourage formal training, but also to encourage informal

training. This can be accomplished through a peer mentoring programme. This training programme encourages employees to share their expertise in day-to-day practice. Respondents mentioned that this type of programme can help them in terms of how employees can find knowledge, as to which method best facilitates knowledge sharing, and whom to ask regarding a specific kind of knowledge.

5.5.2.6 Encouraging learning

Three middle managers mentioned that middle-level leaders' practices are mainly concentrated on the social construction of learning. The role of the middle manager as an enabler of the sharing of knowledge is vital in facilitating the collective learning capability of the company. In the role of enabler, the middle manager must have highly developed learning and interpersonal skills. These skills play a significant part in enabling the company to produce a suitable environment that motivates employees to learn, which, in turn, generates an atmosphere of knowledge sharing. As one middle manager put it:

> *"I would say that the biggest incentive to learn is simply the establishment of the correct cultural environment within which learning can be freely done and information can be easily shared."*

Research findings illustrated that shared learning can occur by means of taking the findings of root cause analysis (i.e., root cause analysis that is done by the company) and communicating them to everyone. By doing so, middle managers encourage employees to prevent accidents from occurring. Senge (2006) mentions that learning is not an empowering practice but a vision. That is, a sense of shared learning takes place within a normative system of meaning that is specified by leaders. This technique encourages employees to build and expand their expertise and, ultimately, share their knowledge. Sharing through the learning relationships between employees is reinforced by the values imbibed from one organisation's positive thinking course. Here is what one of the middle managers stated was his experience:

> *"I put everybody through a positive thinking course. It was about attitude, it was about how your words become your actions and your actions become behaviours, and it's all value-driven."*

Another role of middle managers is creating opportunities for employees to learn and share their expertise, especially when they restrict themselves by not knowing something. This is the ground that the following quote covers:

> *"I believe that people are their worst enemies when they restrict themselves and they think they don't know something. It's my objective to motivate them, to show them that they actually have got that."*

In such a situation, employees can build knowledge and, ultimately, share what they do know. In order to help to transfer knowledge within and outside a company's boundaries, a formal system of shared learning can be used to send it all around different sites. A shared-learning system involves how data is collected, saved, analysed, and turned into information that can support employees' learning from others.

5.5.2.7 Breaking down of barriers

The analysis of interview transcripts showed that managers can break down organisational and personal barriers that impede employees'sharing of knowledge. Dealing with organisational barriers can be achieved through reengineering company processes, whether at a micro- or at macro-level. Such reengineered processes have two significant goals: breaking down hierarchical obstacles to quick decision-making, and opening up new horizontal channels for cross-unit knowledge sharing. Such goals are necessary in order to draw isolated employees and company departments into participation in dynamic social interaction. Moreover, one top manager illustrated that his company has gradually made a great effort to reduce the reluctance of employees to share their expertise by breaking down cultural barriers that separate employees from each other.

It was also obvious during field interviews that not all the studied companies have the collaborative culture that enables the sharing of knowledge to thrive. As the researcher found, in one company, there were definitely some divisions between finance, marketing, and other departments. Nevertheless, trust was built into the structure of the firm, and long-term interpersonal bonds were mentioned as being essential to enabling knowledge sharing, alleviating the disagreements, and smoothing out the methods for risk-taking. This situation suggests that it is

necessary to force the process of knowledge sharing in order to initiate a process of transformation from a hostile atmosphere to a more collaborative, knowledge sharing atmosphere. The following quote illustrates an example of this method of dealing with knowledge sharing barriers:

> *"Putting a process in place called sales and operations planning. That will bring the two groups together and get them in the same room and get them to start talking about common issues."*

5.5.2.8 Encouragement to put knowledge into practice in terms of processes

Research findings showed that managers need to encourage employees to put their knowledge into practice in terms of a process in such a way that it will be easily accessedby other employees within the company. To this end, middle-level managers can help build systems that enable the transformation of knowledge into processes in a smooth and reliable manner. This step is necessary due to the fact that, in some situations, know-how does not necessarily come from experience, but can be found in written organisational procedures. One middle manager described his responsibility as:

> *"Any one of my employees leaves or whatever or passes on, then I have a process that I can put another person in and have as much knowledge as I can have gained from the previous person for them to pick up and run with."*

An example of a measure mentioned to encourage the putting of knowledge into processes is company projects. In this regard, middle-level managers have a responsibility to support project team members so that they can concentrate on procedural knowledge instead of product knowledge. In particular, middle-level managers should encourage project teams to think about the best way of dealing with problems they may encounter, and acknowledge possible methods that would lead to success in dealing them, which can be done either by referring to other previous projects or just by learning from the expertise of other employees. In fact, once knowledge is put into a process, the knowledge and practice can spread to where they are required.

5.5.2.9 Building up of teams

Only one middle manager illustrated that building up of teams can lead to knowledge sharing. To achieve this, the middle manager will need to build team bonds through team-building exercises and intensive social networks with the goals of building trust, of mutual respect, and of everyone understanding the required goals. One important aspect of these is to grasp how a company operates and how different employees in different divisions can be connected together to accomplish the company objectives.

These findings suggest that managers can play a role in aligning their team's actions to specific purposes, ensuring that the right resources and people are available to the team, and managing the team's internal relationships.

5.5.2.10 Encouraging movement of employees

The analysis of research findings illustrated that the greater the job rotation, the more knowledge sharing created among staff. Job rotation makes employees better linked between cross-functional departments. It can be achieved through the bringing together of employees from diverse departments to pool their knowledge and complement one another. Rotation can be expected to broaden employee perspectives so as to enable them to implement their work from diverse angles rather than just concentrating on the issues of the specific functions of their departments. One middle manager related this perspective by saying:

> *"We do, in most teams, have quite a lot of rostering that goes on, so*
> *people need to move throughout different tasks, so we try and not have*
> *it that just one person knows everything about one thing."*

5.5.3 Section summary

This section has illustrated research findings on the nature of the relationship between management support and knowledge sharing. Section 5.5.1 illustrated management behaviours in the studied companies. Section 5.5.2 elaborated on research findings regarding the efforts of top and middle managers to facilitate knowledge sharing.

5.6 Summary of research findings

This research has explored the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Summary of research findings in this section is based on the main research results about each of the three research questions presented in Chapter 1 and further discussed in this chapter. The following sections will summarise research findings regarding the first research question.

5.6.1 Findings relating to research question 1

Research question 1 aimed to investigate the following:

RQ1: What is the nature of the relationship between social networks and knowledge sharing?

The findings to this research question and its related subquestions are summarised below.

5.6.1.1 Factors influencing social networks and knowledge sharing

This section concerns factors influencing social networks and knowledge sharing in the studied companies. These methods are: the use of multiple communication strategies; brainstorming and problem solving; learningand teaching; training; employee rotation; and, consultation. These methods are summarised below.

Using diverse communication strategies

Observation and the analysis of interview transcripts reveal that employees in the studied companies are exposed to diverse communication strategies that influence social networks and knowledge sharing. These strategies can be divided into three groups, namely, personalisation strategies, codification strategies, and strategies of both. In using codification strategy, employees do not share their knowledge directly with one another, but do so through a wide range of communication technologies. Participants illustrated that diverse information system tools enable the open sharing of knowledge (i.e., email systems, Internet, intranet, online forums, knowledge-based systems, and knowledge repositories).

In using personalisation strategy, knowledge can be shared and created through face-to-face interaction. In such situations, there is a direct sharing of knowledge between the knowledge senders and receivers in conversational style. An example of personalisation strategy is one described by participants as optimising knowledge sharing and social networks, namely, participation in seminars and conferences. Another example that emerged from the analysis of interview transcripts is meetings between employees, which can occur at various levels. Speaking specifically, what the research findings indicated is that the hierarchical distance between top managers and frontline employees might otherwise inhibit explicit and tacit knowledge sharing. On the other hand, the high interaction between employees who work at the same level can enhance the personalisation of their social interactions. This interaction can give rise to tacit and explicit knowledge sharing. Research findings also illustrated that employees tend to gain and share knowledge through the use of videoconferencing, which combines personalisation and codification strategies.

Brainstorming and problem solving

Participants indicated that problem solving can play a significant role in supporting knowledge sharing. Based on the research findings, diverse steps for brainstorming and problem solving emerge; these are: defining the problem; understanding its root cause; debating a number of different solutions; and, taking action. The results of the interviews also revealed that brainstorming and problem solving through collaborative work between employees and cross-functional teams can play a significant role in building social networks.

Learning and teaching

Learning and teaching can play an important role in facilitating knowledge sharing. Research findings illustrated that learning not only entails learning inside companies, but also that there are external sources of learning that are brought to a company, such as past experience. The results of this study also revealed that the role of learning and teaching is not only related to enhancing knowledge sharing between employees, but also to facilitating social networks among them. In other words, for learning to be more effective, it is important for there to be interaction between employees to make it happen. Data indicated that knowledge sharing can

be divided into four levels based on the receiver's level of knowledge, namely, the novice, competent, expert, and proficient levels. Under this classification, a novice can share more explicit and less tacit knowledge with a competent in order to reach a higher level of knowledge, while a proficient can share more tacit knowledge than explicit knowledge. For example, one company illustrated that when engineers graduate from university, they work as graduated engineers, in which role they can apply their theoretical knowledge learnt at university, or follow an instruction manual. A competent learner knows how to select or arrange a plan by following both context-independent and context-bound rules (Gherardi, Nicolini, & Odella, 1998). This idea suggests that novice and competent learners deal mainly with rule-based and explicit knowledge. In comparison, individuals with higher levels of experience commonly have a stronger ability to comprehend and find solutions to problems through learning from past experiences and related knowledge (Dreyfus & Dreyfus, 1986). The competencies of the skilled employees and experts allow them to deal with complex problems and be more committed to problem-solving activities.

Training

Participants said that training can play a significant role in facilitating social networks and knowledge sharing. According to the data collected in the studied companies, that training can be achieved internally (i.e., peer training and cross-training) and externally. Peer training employees can allow them to share their knowledge through learning by doing, listening, and showing. Research findings also illustrated that most knowledge that can be shared through peer training is tacit in nature. As illustrated by research findings, this kind of training can lead to increased communication, stronger social ties, and enhanced cooperation, which are vital in order to stimulate knowledge sharing. Research findings showed that cross-training can enhance knowledge sharing among staff members from different departments within a company. External training is especially useful to gain explicit knowledge from the trainer.

Employee rotation

Employee rotation will increase the exposure of employees not just to explicit knowledge but to tacit knowledge as well. In addition, findings indicated that the

movement of employees to different tasks enhances their ability to build up new expertise and determine the areas in which they can best use their creativities. Findings also illustrated that employee rotation permits new and old employees to find out more about each other and, hence, enhances social interaction.

Consultation

According to the data collected in the studied companies, consultation helps to fill diverse gaps in companies through providing advice when they are being wrestling with different problems. In such conditions, consultation not only helps to bridge company weakness in information, but is also useful for gaining skills. Research findings also illustrated that consultation can take different forms, namely, internal and external, bilateral, and multilateral. Moreover, research findings showed that consultation can support social networks and knowledge sharing.

5.6.2 Findings relating to research question 2

Research question 2 aimed to investigate the following:

RQ2: What is the nature of the relationship between interpersonal trust and knowledge sharing?

The findings on this and its related subquestions are summarised below.

5.6.2.1 Competence-based and benevolence-based trust

Research findings indicated that, in the case of competence-based trust, the knowledge receivers need to have a relatively large amount of competence-based trust in the providers of the knowledge in order to place their trust in them. Diverse factors were illustrated which would drive the knowledge seeker to choose knowledge providers when dealing with a difficult problem. These factors are related to different experiences between employees; some jobs can be very specific and very easily influence other areas. In addition, employees need to rely on other employees to get confirmation, especially when dealing with experimental, practical, and technical knowledge.

Research findings illustrated two kinds of competency, namely, technical and managerial. The amount of trust each employee invests in these different referents may vary from one to another. An example from the analysis of the interviews is that frontline employees have a high level of competence-based trust placed in them when sharing mainly tacit (i.e., practical, technical, experimental) knowledge, whereas top and middle managers have a high level of competence-based trust placed in them when sharing managerial knowledge.

On the other hand, when the knowledge sought is easy and straightforward, a staff member does not need to have a large amount of competence-based trust in the knowledge provider, but might need benevolence-based trust. The study found that benevolence-based trust increases the ability of employees to work together collaboratively. Drawing upon this point, it might be argued that, in the context of this study, there tended to be unit grouping in which knowledge sharing could thrive among the employees who worked at the same level. For example, frontline employees who work in the same department tend to be close to each other, in which context mutual trust can be developed.

5.6.2.2 Factors influencing interpersonal trust

Research findings illustrated diverse methods of building trust among employees. These are related to organisational, relational, and individual factors. These factors are summarised in the following subsections.

Organisational factors

Four organisational factors that influence interpersonal trust were found. These are: clarifying a set of values; creating a "no blame" culture; clarity of targets and goals; and, division between departments. The researcher identified four values that enhance interpersonal trust. These values are: having a co-operative spirit; doing what is right; challenging boundaries; and, making it happen. Creating a "no blame" culture can be achieved through a belief that mistakes must be tolerated. This tolerance can ensure the sharing of knowledge in an appropriate manner so that improvements are based on facts and data instead of on viewpoints. Clarity of targets and goals can be accomplished through establishment of projects in a way that initiates a commonly held vision of the

employee's goals and clarification of the required targets. The division between departments had the potential to decrease the level of trust between employees. Hence, team bonding, which is so important for building trust, can be negatively impacted when departments have different perspectives on any issue.

Relational factors

Under the heading of relational factors, the researcher found eight factors that influence interpersonal trust. These are: openness and credibility; relationships; peer mentoring; assurance of confidentiality; engagement in communication; engagement in brainstorming and problem solving; mutual respect; and, team conflict.

In terms of openness and credibility, it was found that interpersonal trust can create an open door policy under which employees are encouraged to assist each other to achieve organisational goals. Interview results indicated that some management teams explained that an employees' openness in disclosing valuable knowledge enriches their credibility. Employees stressed that they tend to be open-minded when handing out knowledge, because this opens up an opportunity to learn new information or skills. In addition, such openness allows employees to gain understanding of how other parts of the company operate.

According to the data collected in the studied companies, social relationships have a vital influence on connecting employees, and that these relationships help employees to develop confidence in each other, thereby supporting knowledge sharing and the development of mutual trust. A significant number of participants made it clear that the more operational employees there are, the more rapidly they need to build trust. Such staff members are mainly concentrated on task-based relationships or day-to-day operation-based relationships. In addition, middle managers commonly focus on projects and multi-project-based relationships. Top managers commonly place emphasis on strategic-based relationships.

The analysis of field study data suggested that those being peer mentored discover new behaviours with one another in which peer advice can play a significant role in building trust. In addition, this research found that the knowledge of the peer

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mentor is tacit, local, and learned from personal experience. To build interpersonal trust, many interviewees showed their commitment in terms of being involved in peer mentoring that allows them to expand a variety of skills and develop their ability to comprehend each other's meaning.

Assurance of confidentiality is required from employees so that they may avoid disclosing knowledge to people not authorised to access it. With regard to such knowledge, there is a need to protect all sensitive information regarding the organisation and its employees, from information about initial outcomes through to that about transfer and storage. In addition, this research also found that, when an employee is asked for specific knowledge, the asker must deal with it as being confidential, because not doing so violates that employee's trust.

Engagement in communication is an important predictor of interpersonal trust, thus underpinning a one-way relationship between the two variables. The study also illustrated that to enhance a high level of informal communication between employees, there could be a focus on open-disk design in the workplace in which informal face-to-face communication can lead to the building of interpersonal trust and, hence, strengthen the level of knowledge sharing. In addition, this study also revealed that open-disk design should not be at the expense of staff requirements for sufficient confidentiality, especially when dealing with sensitive tasks.

Engagement in brainstorming and problem solving can influence interpersonal trust. The interview results showed that interpersonal trust is not only about how employees work collaboratively when work is going well, but, equally significantly, about how they work together to deal with problems effectively. Research findings also disclosed that some problems are complicated and not easy to address. Therefore, there is a need to solve such problems collectively. This collaboration cannot take place without a high degree of trust between employees at diverse organisational levels in which context employees can exchange relevant information and skills.

Research findings revealed that employees have high respect when they have

reason to feel secure and there is high value placed on relationships. In such an environment, employees can engage in dialogue concerning the direction the business is taking and get reactions to their input. Another finding of this study was that there are cultural diverse cultures within companies in New Zealand. Therefore, there is a need to respect ethnic diversity in order to build strong, mutual trust between employees and, ultimately, encourage a culture of sharing knowledge.

Team conflict between employees in different departments is one factor that impacts interpersonal trust negatively. Such conflict gives rise to distrust that raises impediments in the knowledge-sharing environment. In such absence of trust, specifically when conflicts increase, some employees start blaming each other or completely ignoring the condition that causes the conflict instead of resolving the problem. Notwithstanding, such conflict is to be expected in a diverse team that comprises knowledgeable employees who have different areas of expertise and expectations.

Individual factors

Under individual factors, the researcher found that responsibility and a sense of vulnerability influence interpersonal trust. Employees with a high level of trust do not tend to play games to get decisions made as if they own their jobs, but comprehend their major and minor abilities and, hence, engage other employees to get the work done. In such situations, giving employees responsibility and trusting them builds trust between employees, and they expect one another to do what they say they will do.

In addition, participants noted that employees increase their vulnerability when they elect not to control another's behaviour in order to protect their own interests. Employees can increase their vulnerability in this way by making themselves rely on the other person's actions or by choosing someone else to represent the views of others. Such employees can be reluctant to be open with other employees and feel afraid to share their expertise with them due to the development of the fear of losing a competitive advantage.

5.6.3 Findings relating to research question 3

Research question 3 aimed to investigate the following:

RQ3: What is the nature of the relationship between management support and knowledge sharing?

The findings to this research question and its related sub-questions are summarised below.

5.6.3.1 Efforts of managers to facilitate knowledge sharing

Research findings clarified that both top and middle managers can play a significant role in supporting knowledge sharing. The roles of managers to facilitate knowledge sharing are: breaking down of barriers; building up of teams; provision of recognition; provision of training or assigning others to do training; encouragement of training; participation in decision-making; communication; learning; putting knowledge into practice in the form of processes; and, movement of employees. These roles are summarised below.

Encouraging participation with employees in decision-making

Managers encourage employees to share knowledge through active participation in the decision-making process. In such situations, decisions are made at top management level; these are mainly decisions based on strategic knowledge and it is the role of top managers to pass such decisions on to the middle manager. In addition, knowledge can flow upstream from frontline employees to middle managers and then, ultimately, to top managers. In such situations, decisions are made at the lower level. Research findings also illustrated that knowledge can flow in both directions: upstream and downstream. Thus, decisions can be made that lead to collective decisions by top and middle managers and frontline employees. Hence, sharing decision-making with other workers not only enables employees to collaborate with their decision-maker, but also allows them to adequately comprehend the issue, and this understanding gives them the opportunity to make relevant comments for decision-makers to consider.

Provision of recognition

Research findings illustrated that the most effective incentive provided by management is recognition; it plays a significant role in facilitating knowledge sharing. The researcher in this study found no evidence to support the value of the role of top or middle managers as providers of monetary rewards to enhance knowledge sharing. Most managers mentioned that they value employees as significant contributors of knowledge. This is the view of many managers, as the companies examined have not sought a short-term win in terms of financial rewards; instead, more importantly, these managers reported that they do not tend to see behavioural changes.

Encouragement of communication

Research findings illustrated that management teams can encourage employees to communicate with each other, either formally or informally, so as to deal with specific problems. As a great deal of knowledge is embedded in individual staff members, top management can play the critical role of encouraging formal social interaction involving such knowledge. Research findings showed that, besides formal communication, informal communication can be encouraged by managers.

Providing training or assigning others to do the training

Middle managers reported that they have a responsibility to train employees, or assign others to do the training, in how employees are to work. They need to bring the employees to the knowledge of what is involved and expected in the part of the process which they have to carry out, and what they are responsible for. What they said regarding the nature of the training they provide is that it covers mostly: how people work in teams; leadership training; how to deal with clients; and, how to write reports. In addition, the research findings illustrated that the role of middle managers is not only to encourage formal training, but also to encourage informal training. This can be accomplished through a peer mentoring programme.

Encouragement of training

The analysis of interview transcripts revealed that one of the roles of management teams is to encourage training, as doing so could help to leverage knowledge

around the company and enhance the sharing of it. On the other hand, a shortage of managerial direction can restrict knowledge sharing. Since knowledge sharing is effectively both voluntary and a new knowledge-gaining behaviour for some people who might need training and continuous encouragement, clear instructions seem to be a necessary precondition for successful sharing at all organisational layers (Ives et al., 2000). Research findings also indicated that the role of the management team is also to encourage informal training. This too can be accomplished through a peer mentoring programme.

Encouraging learning

The role of managers as enablers of knowledge sharing is vital to the collective learning capability of the company. Research findings also illustrated that, when managers do generate a culture of learning, followers are more likely to ask questions if they are unsure about something. Such learning can occur by means of taking the findings of root cause analysis (i.e., root cause analysis that is done by the company) and communicating them to everyone. By doing so, middle managers encourage employees to prevent accidents.

Breaking down of barriers

The analysis of interview transcripts showed that managers can break down organisational and personal barriers that hinder employees from sharing their knowledge. Dealing with organisational barriers can be achieved through reengineering company processes. Such reengineered steps have two significant goals: breaking down hierarchical obstacles to quick decision-making, and opening up new horizontal channels for cross-unit knowledge sharing. Another role of managers is breaking down cultural barriers that separate employees from each other. Generally, such barriers stem from a perspective of an individualistic rather than a collectivistic culture of employees.

The putting of knowledge into practice in terms of processes

Research findings showed that managers need to encourage employees to put their expertise into practice in the form of a process, in such a way that it will be easily accessed by other employees within the company. As noticed in the field interviews, this can be accomplished through displaying knowledge in step-by-

step posters on walls, or through using information technology. The researcher also argues that the role of leader is not only essential to decision-making, but also helps in building systems that enable knowledge to be set down in processes in a more effective manner. Notwithstanding this point, one barrier to putting knowledge into the form of processes is that there is an unspoken part of knowledge which is related to its tacit element.

Building up of teams

According to the data collected in the studied companies, managers need to build team bonds through team building exercises and intensive social networks, with the goal of building trust and mutual respect and of everyone comprehending the required goals. One important aspect of that is grasping how a company operates and how different employees in different divisions can be connected together to accomplish the company objectives.

Encouraging movement of employees

Managers can play the role of encouraging employees to share knowledge by moving them to different tasks. Such practice is expected to broaden their perspectives and enable them to implement their work from diverse angles rather than just concentrating on the issues related to their specific department's function.

Chapter Six: Discussion and Summary of Research Findings

6.0 Introduction

In the previous chapter, the findings on how knowledge sharing is related to social networks, interpersonal trust, and management support have been described and analysed. Discussion of these findings is now presented in Chapter 6. To be more specific, this chapter links the findings to published literature, specifying where this research confirms, extends, or contradicts previous research. In addition, this chapter elaborates the new contributions that have not been previously published. Section 6.1 begins with a discussion on the findings of the first main research question, "What is the nature of the relationship between social networks and knowledge sharing?". This section initially discusses research findings regarding types of social networks. Following that, dimensions of social networks are discussed. At the end of this section, factors influencing social networks and knowledge sharing are discussed.

Section 6.2 then discusses the findings on the second research question, "What is the nature of the relationship between interpersonal trust and knowledge sharing?". This section starts by illustrating how competence- and benevolence-based trust impact knowledge sharing. Then, diverse factors influencing interpersonal trust are discussed. These factors are organisational, relational, and individual.

Next, section 6.3 follows with discussion on the findings on the third research question, "What is the nature of the relationship between management support and knowledge sharing?". This section starts by discussing management behaviours that emerged from the analysis of interview transcripts. Following that, the efforts of top and middle managers that facilitate knowledge sharing are discussed.

Section 6.4 relates to the development of the research model, and research findings on the other factors for knowledge sharing and the relationships amongst them.

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The following section will discuss research findings on the nature of the relationship between social networks and knowledge sharing.

6.1 Research discussion of the nature of the relationship between social networks and knowledge sharing

This section discusses the findings about the nature of the relationship between social networks and knowledge sharing, which were described in detail in Chapter 5. The structure of this sectionis as follows:

Section 6.1.1 Types of social network

Section 6.1.2 Dimensions of social networks

Section 6.1.3 Factors influencing social networks and knowledge sharing

The following section discusses research findings on types of social networks.

6.1.1 Types of social network

The analysis of research findings reveals diverse types of social networks in the studied companies. These are the informal and formal types and types that are combinations of both. These types are now discussed.

The first kind of social interaction is through informal networks. This kind of social network can play a significant role in supporting the sharing of knowledge. This finding is in line with many previous findings that concentrated on informal relations as mechanisms for knowledge sharing (Chang & Harrington, 2003; Cross & Parker, 2004; Morton et al., 2004; Sturdy, Schwarz, & Spicer, 2006; Tsai, 2002; Verburg & Andriessen, 2011). It is also in line with Bhatt (2002), who indicated that staff commonly form their own informal communities of expertise within which they can gain essential knowledge. Examples from the analysis of research findings are: asking for peer advice; requiring someone to confirm results; peer mentoring; and, learning more about other employees' positions. By means of these activities, employees can stipulate the means of translating local know-how into collective expertise. By these methods, it is also possible to produce an effective result of encouragement for informal interaction (Fahey & Prusak, 1998). As a result of such interaction, sharing what they know, employees are expected to learn from each other.

The second type of social interaction is through formal networks. This kind of network is not only aimed at sharing and aggregation of existing explicit or tacit knowledge, but also the creation of new knowledge and the application of it. This finding partly confirms that of Nonaka (1994), who depicted formal sharing mechanisms, such as procedure, formal language, and the exchange of handbooks to ensure that people share their explicit knowledge. Other studies illustrated that a culture which ensures that explicit knowledge is shared does not prevent the sharing of tacit knowledge (Durbin, 2011; Taminiau, Smit, & de Lange, 2007). Further studies conducted by Durbin (2011), and Musiolik and Markard (2011) illustrate that formal networks can lead to the creation of new knowledge.

This study has identified other types of social network that combine formal and informal networks. These types are: operational, complementary, problem-solving, and complex networks. Moreover, this study has illustrated how these types can lead to the building and sustenance of social networks and, ultimately, the enhancement of knowledge sharing. It is difficult to link these findings to previous literature, because little research has been published in this field.

6.1.2 Dimensions of social networks

This section illustrates how knowledge moves within networks and how social interaction affects this movement. To achieve this goal, the researcher has adopted Nahapiet and Ghoshal's (1998) model of three dimensions of social networks. These dimensions are structural, relational, and cognitive, and are outlined in the following discussion.

6.1.2.1 Structural dimension

The researcher has used Nahapietand Ghoshal's (1998) classification of the structural dimension of social networks, which consists of strong and weak personal ties, and the range of social ties. Research findings illustrated that strong personal ties can build knowledge sharing. This finding is consistent with that of Makela (2007), who explained that the richness of ties can generate multiple opportunities for interpersonal communication and provide a wider base for knowledge sharing. Another study confirmed that the willingness to share knowledge can be explained by close and frequent interaction between individuals

(Chiu et al., 2006). In addition, it is found that the strength of business relationships, rather than the strength of social relationships, plays a significant part in the sharing of private and public knowledge within organisations (Marouf, 2007). On the other hand, it is found that lack of strong and dense ties can explain hesitance to share knowledge (Dai, 2012).

Research findings also indicated that having a staff that has a range of personal ties is vitally important in order for effective knowledge sharing to thrive. This finding, to some extent, confirms what was found by Sherif, Munasinghe, and Sharma (2012), who indicated that the social networks of individuals assuming multiple roles beyond their organisation displayed a different structure from the networks of those who assumed roles limited to their organisations. This finding means that individuals who have multiple roles can build a wide-ranging social network. Reagans and McEvily (2003) further argue that the breadth of a person's network and ties to dissimilar knowledge pools improves their capability to convey complicated thoughts. In addition, an individual who spreads his or her network contacts across multiple pools bridges gaps between individuals in the larger community of knowledge and, accordingly, is exposed to various kinds of knowledge.

6.1.2.2 Relational dimension

Research findings showed that, for employees to build a high level of trust, there is a need to build partnerships with other employees, specifically, with those who work at the same level so that trust is based on long-term relationships. The researcher does not plan to discuss this section here, as the discussion will be embedded in the section on relational factors that influence interpersonal trust.

6.1.2.3 Cognitive dimension

In this research, two facets of the cognitive dimension were found; these are shared language and shared narrative. Research findings revealed that shared language influences the situation for the sharing of expertise in many ways. First, language has a significant function in building and sustaining social networks between employees. According to Wasko and Faraj (2004), shared language has the capability to affect individuals' attitudes towards sharing, discussing, and

adopting information. Under such conditions, language reflecting a common viewpoint becomes a significant instrument used by individuals to express and communicate in an effective and efficient manner (Tsai & Ghoshal, 1998). This is also in line with the findings of Chua (2002), who made it clear that language has a direct and significant function in social relations, because it is the means by which people can discuss, ask questions, and provide opinions. Another study found that being part of certain communities and sharing the same language and culture permits people to communicate with a common tongue, which smooths the development of knowledge sharing (Dai, 2012). An example from the interview transcripts is that technical employees tend to use words that carry specific meanings that are not necessarily known by other employees in different departments. In these conditions, illustrated by Dai (2012), members related to social networks that share the same language are possibly more able to improve high degrees of cognitive social capital.

In addition to the use of shared languages, participants illustrated that employees can share narratives such as stories, working issues, family issues, etc. These activities enhance knowledge sharing in an informal manner and can build a strong bond between employees. This finding is consistent with that of Orr (1996), who described narrative in the form of stories enabling the exchange of practice and tacit experience among service technicians. In addition, Manu and Walker (2006) show that shared narratives are examples of the sharing of a specific problem, placing it under examination so that the context, as well as the story, is analysed together with alternative outcomes which are offered to provide a rich understanding for those concerned. This is an example in action of that which is explained as the socialisation step by Nonaka and Takeuchi (1995) in their theoretical framework of tacit to explicit knowledge creation.

6.1.3 Factors influencing social networks and knowledge sharing

This section discusses factors influencing social networks and knowledge sharing in the studied companies. These factors are: using multiple communication strategies; brainstorming and problem solving; learning and teaching; training; employee rotation; and, consultations. These factors impact knowledge sharing

positively as illustrated in the sign "+" in Figure 6.1 and are further discussed in the following sections
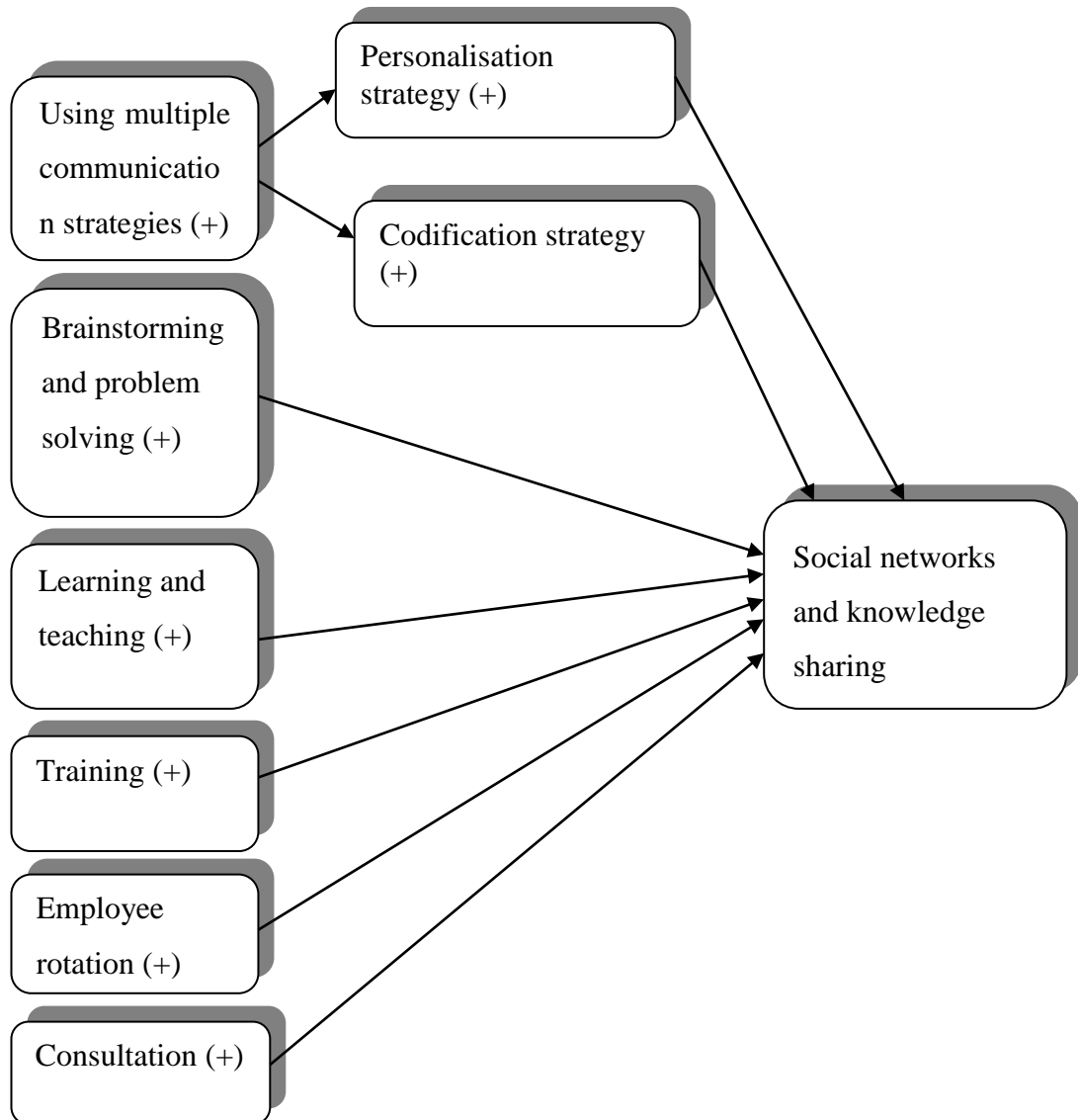
Figure 6.1 Model of factors impacting social networks and knowledge sharing

6.1.3.1 Using multiple communication strategies

This research has illustrated three communication strategies that influence social networks and knowledge sharing. These strategies are codification, personalisation, and a combination of these. They are discussed below.

In using codification strategy, employees do not share their knowledge directly with one another but through diverse communication technologies. This finding is in line with that of much previous research which illustrates the role of

information technology tools in facilitating the sharing of knowledge (Alavi & Leidner, 2001; Alazmi & Zairi, 2003; Allee, 1997; Bock et al., 2005; Fairuz et al., 2008; Hariharan, 2005; Hendriks, 1999; Wong, 2005). Useful tools, such as email and other collaboration systems, are considered to be among the most important tools through which individuals are able to reach advanced levels of knowledge and, ultimately, share knowledge (Al-Ma'aitah, 2008). Bhatt, Jatinder, and Kitchens (2005) confirm that information system tools, including email, can open up many doors for discussion and knowledge sharing through the exchange of ideas and personal experiences. Another study found that collaborative technologies such as email can have a positive effect on knowledge sharing (Kock & Davison, 2003). This research also shows that, when combined with appropriate social processes, collaborative technologies may foster knowledge sharing.

In using personalisation strategy, knowledge can be shared and created through face-to-face interaction. Thus, there is a direct sharing of knowledge between the knowledge senders and receivers in conversational style. This finding confirms those of Argote (1999), and Cross and Borgatti (2000), who perceive that personalisation provides a rich medium for communication, as it involves the use of individuals as a mechanism for the sharing of knowledge. Other studies illustrated specifically that face-to-face social interaction shapes a channel of communication which makes tacit knowledge sharing in particular easier (Noorderhaven & Harzing, 2009; Prencipe & Tell, 2001).

Another example of a communication channel that emerged from the analysis of interview transcripts is meetings among employees; these can occur at diverse levels. Although there are some previous studies that identify the role of personalisation strategy in social interactions, they have not been conducted explicitly within the context of knowledge sharing across three levels of positions: top managers, middle managers, and frontline employees. Specifically speaking, what the research findings indicated is that the hierarchical distance between top managers and frontline employees might inhibit explicit and tacit knowledge sharing. To some extent, this finding is in line with that of Sali and Williams (2010), who found that the adoption of meetings might not be very realistic for

senior managers and employees, as the distance between employees in high managerial positions and other employees impedes a high degree of social interaction between them. On the other hand, the high social interaction between employees who work at the same level can enhance the personalisation of their social interactions. In line with this finding, Dai (2012) recognised that these relationships set a psychological environment that is conducive to knowledge sharing. Drawing upon this point, it might be argued that, in the context of this study, there tended to be unit grouping among the employees who work at the same level. For example, frontline employees who work in the same department tend to be close to each other, in which context social networks can be developed.

Research findings also highlighted that employees tend to gain and share knowledge through videoconferencing. Although there are some studies (i.e., Egbu & Botterill, 2002; Yoo & Ginzberg, 2003) that indicate the role of videoconferencing in transferring knowledge across vast distances, these studies do not address the issue of knowledge sharing. Therefore, this study makes a contribution to the existing literature by illustrating the role of videoconferencing in knowledge sharing and in initiating social networks among employees.

6.1.3.2 Brainstorming and problem solving

Participants indicated that problem solving can play a significant role in supporting knowledge sharing. This finding is consistent with the recent explanation of the knowledge-based theory of the company offered by Nickerson and Zenger (2004), who argue that individual knowledge and abilities are improved through dealing with problems. Liao (2002) described this link further by explaining that knowledge can be implemented as a means of assistance for recognising the circumstance, creating plan(s), making decisions, and garnering the findings of the problem solving that has been done. In addition, knowledge sharing has been linked to diverse desirable outcomes involving problem solving (Ipe, 2003; Nonaka & Takeuchi, 1995) which are the essentials for building social networks.

The results of the interviews also revealed that brainstorming and problem solving through collaborative work between employees and that cross-functional teams

can play a significant role in enabling social networks. To some extent, this finding is in line with that of Jermann and Dillenbourg (2008), who emphasise that collaborative problem solving occurs through the dialogue between partners. Another study described how collaborative networks enhance the capacity to deal with problems by increasing social networks (Putnam, 1995). Moreover, Putnam (2001) illustrated how actors with large informal networks have the advantage when it comes to setting up collaborative problem solving, in the context of which new relationships can be developed. Moreover, the studies of Cross and Parker (2004), and Charan (1999) clarify that networking in groups improves knowledge of how networks function. This is why collaboration is significant across functional, social, demographic, and organisational boundaries. In line with the research findings, Gorry (2008) found that, in a networking structure, knowledge sharing will be aimed at problem solving and cooperation between employees. In order to focus it thus, there is a need for teamwork and collegiality, which are advantageous when it comes to the aim of gaining knowledge (Jetz et al., 2012).

This study is not only confirmatory of previous studies but also expands what has been previously identified. This end has been achieved through the development of a model of brainstorming and problem solving. This model suggests diverse steps in brainstorming and problem solving, which are: defining the problem; understanding its root cause; debating a number of different solutions; and, taking action. Although there are diverse models of brainstorming and problem solving, and some are within the context of knowledge management (i.e., Juan et al., 2006; Wei et al., 2012), these models, collectively, do not elucidate how brainstorming and problem solving help to strengthen knowledge sharing. In addition, this research has illustrated that, in each step of problem solving, the giving and gaining of knowledge can be accomplished in which social networks can take place. Although many previous researchers illustrated that problem solving can play a critical role in enhancing knowledge sharing (de Toni &Nonino, 2010; Jermann & Dillenbourge, 2008; Klerkx &Proctor, 2013; Nickerson & Zenger, 2004), they do not identify problem-solving processes as a mechanism for enabling social networks. In addition, these researchers did not explicitly illustrate knowledge giving and receiving in each step of problem solving.

6.1.3.3 Learning and teaching

A significant number of participants indicated that learning and teaching can play an important role in facilitating knowledge sharing. This finding confirms that of Matzler and Mueller (2011) and Swift, Balkin, and Matusik (2010), who found that an individual's learning orientation has a significant, positive effect on knowledge sharing because the motivation to improve one's own skills in order to deal with difficult conditions necessitates learning, for which knowledge sharing is the prerequisite. Another study recognised that the sharing of knowledge of practices and initiatives commonly forms a vital element of knowledge management programmes in terms of individual learning (Riege, 2005). Rowley (2000) goes further by illustrating that it is not only important that individuals get knowledge and skills from the learning process, but also that they are capable of digesting and implementing these skills as actions.

For this research project, a new model has been built that involves knowledge levels and the direction of learning and teaching. This model shows that learning not only entails learning inside companies, but also learning from external sources that are brought to a company, such as past experience. This finding is supported by Roth (2003), who suggests that individual learning comprises both learning from past experience and sharing viewpoints of the current moment. According to Jones, Herschel, and Moesel (2003), the steps of effective learning, by means of knowledge sharing among an organisation's employees, allow members to reflect on the effects of their behaviours and actions and to gain viewpoints from the environment in which they operate in order to respond to it with more correct approaches.

This study not only confirms what has been illustrated in the literature regarding the significant, positive effect of learning on knowledge sharing, but also expands on it regarding the role of learning and teaching in facilitating social networks. In addition, this research links knowledge-sharing types to the direction of learning and teaching. In other words, for learning to be highly effective, it is important that interaction among employees occurs to make it happen. In line with this finding, there is a growing body of research focusing on social networks as a locus of learning (Liebeskind et al., 1996; McEvily & Zaheer, 1999; Rhee, 2004).

It has been argued that social networks facilitate learning by promoting the rapid transfer of information among members (Rhee, 2004). According to experimental findings, learners who were assigned to social interaction supported by knowledge sharing flows were able to achieve better in terms of learning outputs (Chao, Hwu, & Chang, 2011). However, individuals may find social networks to be a less useful as a source of information when the information available in social networks is not relevant to their interests (Rhee, 2004).

Research findings illustrated that knowledge sharing can be divided into four levels based on the receiver's level of knowledge, namely, the novice, competent, expert, and proficient levels. Under this classification, a novice can share more explicit and less tacit knowledge with a competent in order to reach a higher level of knowledge, while proficients can share more tacit than explicit knowledge. According to Dreyfus and Dreyfus (1986), individuals at beginner levels are only capable of realising and comprehending easy clues in the context of problems, and acknowledgea very limited amount of features in problems that are similar to those they have experienced. Hildreth and Kimble (2002) illustrated that novices will not be expected to share articulated knowledge, but will improve their own tacit knowledge by being involved in the practice of it. For example, in one company, it was illustrated that, when engineers graduate from university, they work as graduated engineers, in which role they can apply the theoretical knowledge learnt at university or follow instruction manuals. A competent learner knows how to select or arrange a plan by following both context-independent and context-bound rules (Gherardi et al., 1998). This discussion suggests that novice and competent learners deal mainly with rule-based and explicit knowledge.

In comparison, individuals with higher levels of experience commonly have a stronger ability to comprehend and find solutions to problems through learning from past experiences and related knowledge (Dreyfus & Dreyfus, 1986). The competence of skilled people and experts allows them to deal with complex problems and be more committed to problem-solving activities. This point is illustrated by Polanyi (1967), who said that "we know more than we can tell," and his concept of tacit knowledge as knowledge which is concealed and

subconscious for the knower. Applying the concept of tacit knowledge from this perspective implies that most implicit knowledge is related to expert levels.

6.1.3.4 Training

Participants indicated that training can play a significant role in facilitating knowledge sharing and social networks. Scholars argue that the implementation of training may inculcate in staff the value of knowledge sharing and enhance social interaction skills that are vital for it (Fong et al., 2011; Kang, Kim, & Chang, 2008). Another study showed that, during training, an open organisational climate is created through interactive discussions, contributing to staff members' knowledge sharing (Gronroos, 2000). Through training, staff are expected to gain new skills and knowledge, implement them on the job, and share them with other employees (Noe, 2005), which, in turn, enhances social networks. Another study indicated that training activities might also assist in building relationships by enhancing interaction and creating a common language among staff (Kuvaas, Buch, & Dysvik, 2012).

According to the data collected in the studied companies, training can be achieved internally, for example, through peer training and cross-training, and externally. Employees undergoing peer training can share their knowledge through learning by doing, listening, and showing. Many studies illustrated that peer training provides job-related and technical knowledge (Eby, 1997; Ensher, Thomas, & Murphy, 2001; Young & Perrewe, 2004). In such situations, a mechanism for sharing jobs linked to knowledge can be set up (Borredon & Ingham, 2005; Eby, 1997; Eddy, Tannenbaum, Lorenzet, Smith-Jentsch, 2005; Ensher et al., 2001). Research findings also illustrated that most knowledge that can be shared through peer training is tacit in nature. This finding confirms that of Norris et al. (2003), Scott and James (2008), Swap, Leonard, Shields, & Abrams, (2001), and Young and Perrewe (2004), who found that the knowledge shared by peer mentors is not recorded in any database, procedure manual, or formal training programme. This conclusion means that the main knowledge shared through peer training is tacit. This finding is consistent with the findings of Ramirez and Li (2009) that knowledge exchange takes place as staff members are trained to use new equipment and, in turn, teach others. As illustrated by the research findings, such

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training can lead to increased communication, build social ties, and enhance cooperation, all of which are vital for the stimulation of knowledge sharing. This finding is consistent with the findings of Carla (2011), Eby (1997), Scott andJames (2008), and Trautman (1999), who illustrated that peer mentors engage in several social behaviours to share job-related knowledge. Such behaviours are related to defining mentoring relationships, managing communication, and developing a clear plan.

Research findings showed that cross-training can enhance knowledge sharing among staff from different departments within a company. To some extent, this finding is in line with that of Cabrera and Cabrera (2005), who found that team-based training will assist in building relationships that are important in supporting knowledge sharing. This study also illustrated that cross-training will optimise knowledge sharing among staff from diverse areas through increasing interaction and supporting social ties, as well as through enhancing staff members' awareness of the demands of different jobs. This researcher argues that this kind of training can enhance knowledge sharing behaviours effectively. External training is useful especially for gaining explicit knowledge from trainers. This finding is in line with that of Norris et al. (2003), who elaborate that much explicit knowledge is linked to "know what" through formal training. In the context of formal social networks and training courses, staff are helped to share knowledge (Chen & Cheng, 2012; Ramirez & Li, 2009).

6.1.3.5 Employee rotation

Research findings illustrated that employee rotation will increase the exposure of employees, not just to explicit knowledge, but also to tacit knowledge. This finding partly confirms that of Aelmans (2008), who clarifies that the rotation of staff across departmental boundaries enhances tacit knowledge sharing. Another study goes further by illustrating that the plan of job rotation has been executed with the goal of enhancing both individuals' knowledge and teams' collective know-how (Hong, China, & Vai, 2008).

In addition, research findings indicated that the movement of employees to different tasks enhances their capabilities to build new expertise and determine the

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areas in which they can best use their creativity. To some extent, this finding is in line with that of Hong, China, and Vai (2008), who described how, through job rotation, employees can build experiences which might well enhance career development. This study also indicates that one benefit of job rotation is that individuals can use knowledge and skills from other staff members. In addition, individuals can expand their insights into problems from diverse angles instead of just concentrating on the concerns of their specific department's function. Moreover, Eby, Butts, and Lockwood (2003) reveal that job rotation plays a significant role by providing employees with the opportunity to increase their knowledge base and further develop new skills.

Research findings also illustrated that employee rotation permits new and old employees to know more about each other. This finding describes how social networks can be built. This finding is consistent with Gherardi, Nicolini, & Odella (1998), who illustrate that employee rotation can lead to the building of social interaction between employees and participation in the development of mutual understanding. Eby et al. (2003) go further by illustrating how employee rotation can create opportunities to build internal and external networks. This study also indicates that the role of employee rotation is not only to promote implicit knowledge but, equally importantly, to facilitate the development of mutual relationships. On the other hand, Aelmans (2008) affirms that informal interaction can be hampered by the lack of employee rotation.

6.1.3.6 Consultation

According to the data collected on the studied companies, consultation helps to fill various gaps in companies through the provision of advice when they are being overwhelmed by different problems. This finding, to some extent, is in line with that of Chen and Cheng (2012), who found that an atmosphere of open communication will enhance discussion and consultation among staff, thus helping to make knowledge sharing achievable. Also, research findings, to some extent, are in line with those of Fishbein and Ajzen (2010), who uphold that, through engagement in consultations and conversations with other employees, information sharing and processing can be achieved and can shape beliefs and preferences, which, in turn, affect employees' behaviour and decisions.

Research findings also identified that consultation can take different forms, namely, internal, external, bilateral, and multilateral. The researcher found only one study that supports the role of external consultation in seeking knowledge and facilitating social networks. Henry (2001) explained that external consultation allows knowledge to expand beyond the walls of the organisation in terms of including outside perspectives on issues. Through this interaction with the external environment, social interaction can be developed inside it.

In addition, all these types of consultation can help to build informal, formal, problem-solving, operational, complex, and complementary networks. Even though Crossley (2010), and Pescosolido (2006) have already found that informal and subjectively meaningful social relationships, through consultations, build a network of social interaction, little attention has been given to consultation types and their link to building these types of social networks. Another study clarified that consultation is critical, especially for junior employees; it can provide them with opportunities to explain their emotional frustration about any social activities that are not related to the required goals (Lin, 2007).

6.2. Research discussion of the relationship between interpersonal trust and knowledge sharing

This section builds up a picture of what is known as competence- and benevolence-based trust, and factors influencing interpersonal trust in the studied companies. The following subsection discusses research findings regarding competence- and benevolence-based trust.

6.2.1 Competence and benevolence based trust

What this research shows is that, in regard to competence-based trust, the knowledge receiver requires a relatively large amount of competence-based trust in the providers of the knowledge, in order to place their trust in them. In support, Levin and Cross's (2004) study found that if knowledge recipients trust a knowledge provider's competency and trust his/her ideas, they are more likely to gain and act on that knowledge. Under such conditions, by sharing and developing thoughts, by testing and validating assertions, by becoming involved in brainstorming and problem solving and by generally striving to become more and

more competent, the employees are able to engage in the mutual development of both their own knowledge and the company's pool of expertise. By means of this ongoing process, staff members can engage in the development of trusting relations, while simultaneously developing whatever knowledge it takes to be competent (Nahapiet & Ghoshal, 1998).

Research findings identified a range of factors that might drive knowledge seekers to choose particular knowledge providers when dealing with difficult problems. One factor is that employees need to rely on each other for further confirmation, especially when dealing with experimental knowledge. This finding is confirmed by Lesser et al. (2002), and Yang and Farn (2009), who found that, when knowledge is not easy to confirm, the receiver needs a relatively large amount of competence-based trust in the sender. In order to place this trust in the sender, there is a need to involve other employees who are more knowledgeable in that area. Other factors are related to different experiences in relationships between employees, and some jobs can be very specific and can very easily make an impact on other areas. It is hard to link these factors with the previous literature due to the dearth of literature available on it.

This research identifies two kinds of competency, namely, technical and managerial competency. The amount of trust each employee invests in these different referents may vary from one employee to another. This research finding is in line with that of Floyd and Lane (2000), who revealed that different positions in organisational hierarchy are associated with specific expectations for the position holders' contribution to organisational tasks and, thus, are associated with different roles. An example from the analysis of the interviews is that frontline employees have a high level of competence-based trust placed in them to share mainly tacit (i.e., practical, technical, and experimental) knowledge, whereas top and middle managers have a high level of competence-based trust placed in them to share managerial knowledge. This conclusion is, to some extent, supported by Witteloostuijn and Wegberg (2006), who clarify that day-by-day implementation of team tasks is much more a function of trust between operational-level employees than of the trust placed in top managers. On the other hand, the roles of

top management might be assumed to be dominated by managerial tasks, such as ratifying or directing (Floyd & Lane, 2000).

On the other hand, when the knowledge sought is easy and straightforward, a staff member does not need to have a large amount of competence-based trust in the knowledge provider, but might need benevolence-based trust. To a certain extent this confirms the findings of Glaeser, Laibson, Scheinkman, and Soutter, (2000), that suggested if an employee is in urgent requirement of information he or she may ask for help from another member to get this information, but in doing so he or she trusts that person will not intentionally do harm through giving misleading information even if (s)he has the opportunity to do so.

The study identified that benevolence-based trust increases the ability of employees to work together collaboratively. This finding is to some extent in line with that of Glaeser et al. (2000), who found that employees who have high benevolence-based trust are more likely to build strong ties. In regard to this manifestation of benevolence-based trust, those who share common goals and values tend to perceive each other in a positive light (McKnight et al., 1998). Drawing upon this idea, it might be argued that, in this research's context, there tend to be unit groupings among employees who work at the same level in which knowledge sharing can be further developed.

6.2.2 Factors influencing interpersonal trust

This section discusses factors influencing trust among employees. Discussion focuses on organisational, relational, and individual factors. Even though these factors have been identified by many researchers (i.e., Atkins, 2012; Baiden, Price, & Dainty, 2006; Dalkir, 2011; Emelo, 2012; Holste & Fields, 2010; Huang, Gattiker, & Schwarz, 2008; Jetz et al., 2012; Katsamakas, 2007; Keast & Mandell, 2009; Rosli & Hussein, 2008; Solitander, 2011; Whipple, 2011), they do not illustrate how these factors, in an integrative way, influence interpersonal trust and, hence, knowledge sharing. Speaking specifically, the results of this study expand the theoretical foundations for interpersonal trust and knowledge sharing. The following subsection is devoted to discussion of organisational factors that influence knowledge sharing. These factors are illustrated in Model 6.2, and

further discussed in the following sections. In this model, the sign "+" means that a factor influences interpersonal trust positively, while the sign "-" means that a factor impacts it negatively.
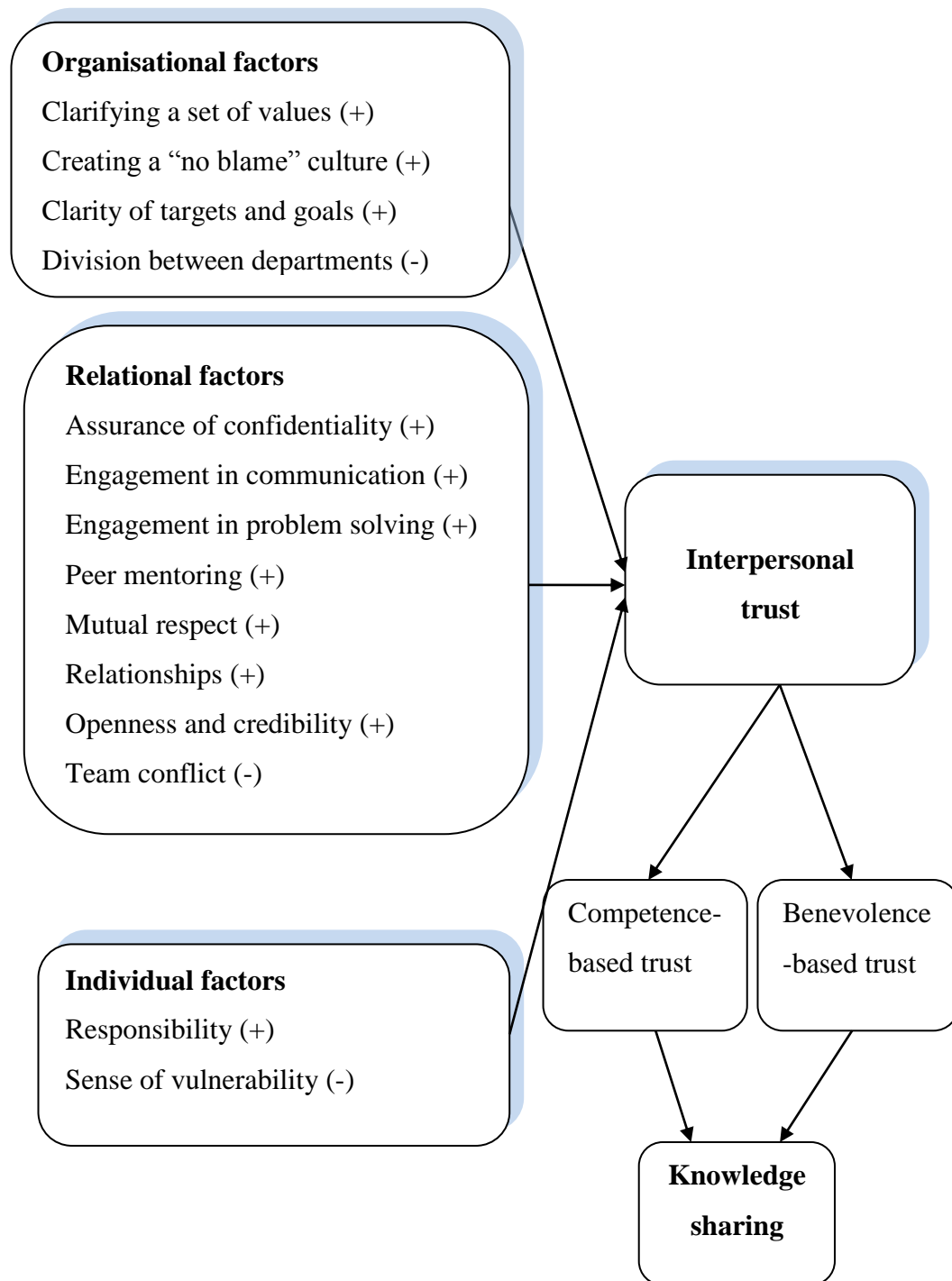
Figure 6.2 Model of factors impacting interpersonal trust and knowledge sharing

6.2.2.1 Organisational factors

This research found four organisational factors that influence interpersonal trust. These are: clarifying a set of values; creating a "no blame" culture; clarity of targets and goals; and, division between departments. These factors are considered in the following discussion.

Clarifying a set of values

According to the findings, four values influencing interpersonal trust were identified. These are: having a cooperative spirit; doing what is right; challenging boundaries; and, "making it happen". The first is in accordance with Sveiby and Simons (2002), who posit that, in general, a climate of trust and collaboration can improve knowledge sharing. Another group of studies (Alavi et al., 2006; Chen & Huang, 2007; Fiol & O'Connor, 2005; Jones, Cline, & Ryan, 2006; Tiwana, 2002) found that team orientation and collegiality are favourable values that strengthen the level of interpersonal trust which, in turn, enhances knowledge sharing. Doing what is right refers to maintaining the highest ethical standard at all times. This kind of value is mainly related to mutual respect. It is partly supported by Holste and Fields (2010), and Mellewigt, Madhok, and Webel (2004), who found trust is grounded in mutual respect and shared interests. Challenging boundaries refers to looking to the future in terms of concentration on the customer perspective, which is mainly about solving problems, inventing, and making improvements through learning from successes and mistakes. It is difficult to link all these findings to previous literature, because little seems to have been published on the way in which challenging boundaries influences interpersonal trust. The fourth value is related to doing what you say you are going to do. This finding is partly related to those of Abrams et al. (2003) in a study which revealed that the upholding the value of integrity can build interpersonal trust and, ultimately, knowledge sharing. On the other hand, many researchers found that the absence of certain values, attitudes, and beliefs impacts the sharing of knowledge negatively (Bechky, 2003; Tagliaventi & Mattarelli, 2006).

Creating a "no blame" culture

Creating a "no blame" culture can positively impact interpersonal trust. That means turning from the attention on the "I" of my concerns, my goals, or my requirements to the "we" of how we accomplish our task collectively. This finding is confirmed by Baiden, Price, and Dainty (2006), who mention that a "no blame" culture is a vital indicator of a practice of team integration. In addition, Dulaimi, Ling, Ofori, and De silva, (2002) outline the significance of the generation of a "no blame" culture: it could support employees in improving on and experimenting with new thoughts. Such a culture also encourages initiatives that work towards the joint resolution of problems, as it can influence employees so that they work together in a spirit of trust, and, hence, share their knowledge.

Research findings also illustrated that a high level of interpersonal trust with a "no blame" culture in which mistakes must be tolerated is needed. This culture can ensure the sharing of knowledge in a feasible manner. This finding is partly consistent with that of Crease (2004), who suggested that trust is the willingness of a person, group, or community to tolerate without fear the actions of another person or institution which can affect their own actions. Also, it is argued that the association between trust and tolerance is likely to be stronger, since trust and tolerance both become more closely connected with each other (Rydgren, Sofi, & Hällsten, 2013).

Clarity of targets and goals

Research findings showed that interpersonal trust can be encouraged through clarity of targets and goals. To some extent, this finding is in line with that of Solitander (2011), who substantiates the claim that commitment and trust can be built up through detailed discussions about what the organisation expects, discussions carried out by becoming involved effectively in a network. This can be achieved by explaining the common targets and goals fully. This research also showed strong evidence that discussions about common targets and goals assisted the building of trustful relations. This research finding is also partly consistent with that of Johnson and Johnson (1995), who suggested in more detail that, in order to build trust, there is a need to clarify general expectations early on and analyse particular expectations in depth, in order to disclose and negotiate dissimilarities

in expectations. This researcher argues that such actions involve revealing both information and knowledge.

Research findings illustrated that one powerful means of enhancing trust is to establish projects in a way that initiates a commonly held vision of each employee's goals and clarification of the required targets. This finding, to some extent, is similar to those of Khalfan, McDermott and Swan (2007), who go further by illustrating that the project team comprehends the role of all of the employees in it and their individual or organisational goals, and, furthermore, calls for appreciation of the challenges they might experience. Clarity of project goals is highlighted by Khalfan et al. (2007) as forming a basis of trust for two significant reasons. The first is that it permits the generation of shared goals in a context in which each employee can be viewed as achieving a joint task instead of viewing his or her own role as unrelated to those of the rest of project team. The second is the generation of "mutual understanding" in which the project team members understand each other's positions.

Conversely, research findings indicated that lack of clarity of goals and the means of achieving them might give rise to employees struggling to gain insights into a 'hidden' target. Such lack of clarity creates confusion and distraction and, hence, the trust people once had in one another is eroded (Reina & Reina, 2009). This means that it is not easy to build interpersonal trust; there is an atmosphere of uncertainty. In fact, lack of clarity of goals has a negative impact not only on interpersonal trust but also knowledge management activities (Chun & Rainey, 2005).

Division between departments

It is found that division between departments impacts interpersonal trust negatively. In low-trust conditions, the members in a group will direct their abilities towards individual objectives instead of the group's objectives (Dirks & Ferrin, 2001), and task conflict within a group is explained in a negative manner and, accordingly, affects the bonds in relationships (Dirks & Ferrin 2001; Salas, Sims & Burke, 2005).

Apart from these findings on how division between departments has a negative impact on interpersonal trust, one participant indicated that another reason for lack of interpersonal trust is the conflict between old- and new-school perspectives. Such conflicts can arise from diversity, such as dissimilarities in beliefs (Olson, Parayitam, & Bao, 2007), behaviours, expectations about leadership practices, team norms, attitudes towards hierarchy, senses of time, and communication methods (Duarte & Snyder, 2001; Herbsleb & Moitra, 2001); they can also arise from dissimilarity in geography (Newell, David, & Chand, 2007), and from cultural distance (Ali-Babar, Verner, & Nguyen, 2006; Newell et al., 2007).

6.2.2.2 Relational behaviour

Under the heading of relational factors, the researcher found eight factors that influence interpersonal trust. These are: openness and credibility; relationships; peer mentoring; assurance of confidentiality; engagement in communication; engagement in brainstorming and problem solving; mutual respect; and, team conflict. The following subsection offers a discussion of research findings regarding openness and credibility.

Openness and credibility

The results of the interviews indicated that interpersonal trust can create an open door policy under which employees are encouraged to assist each other to achieve organisational goals. This finding is confirmed by Ennis and McCauley (2002), Jassawalla and Sashittal (1999), and Rosli and Hussein (2008), who affirm that openness acts as a window through which employees can look to determine the level of trust which should be invested in other employees. In such a situation, when staff are open, they generate a culture in which the focus is on building interpersonal trust. In addition, it is found that most trust-related research concurs that the trustee's competence within a specific domain, and openness in business dealings play vital roles (Brownlie & Howson, 2005; Luhmann, 2000).

The interview results indicated that some management teams explained that an employee's openness to disclose valuable knowledge enriches his or her credibility. In such circumstances, employees ascribe credibility to people when they see a consistency between their words and their actions. This finding

confirms that of Abrams et al. (2003), who suggest that managers can encourage the freedom to decide what should be done regarding a specific issue both by their own actions and by holding others accountable for this behaviour. Moreover, managers can also realise that nurturing a knowledge-friendly culture with an environment of openness for knowledge sharing creates an atmosphere where people are motivated to share knowledge and see the advantages of sharing their perspectives with other employees. This research finding also, to some extent, is in line with that of Cabrera et al. (2006), who examined openness to experience and found it to be positively associated with individuals' knowledge sharing.

Relationships

The results from the study indicated that social relationships have a vital influence on connecting employees, and that these relationships help employees to develop confidence in each other, thereby supporting mutual trust and the development of knowledge sharing. This finding is consistent with that of Abrams et al. (2003), Dalkir (2011), Gargiulo and Ertug (2006), Katsamakas (2007), Levin and Cross (2004), Lucas (2005), and McEvily et al. (2003), who argue that interpersonal trust can be a powerful enabler of knowledge sharing in active relationships. Also, when trust exists, people are more willing to listen to and absorb each other's knowledge (Andrews & Delahaye, 2000; Tsai & Ghoshal, 1998) and, hence, develop relationships with each other.

Research findings also illustrated that the more operational employees are, the more quickly they need to build trust. This kind of staff are mainly concentrated in task-based relationships or day-to-day operation-based relationships. In addition, the middle manager commonly focuses on projects and multiproject-based relationships. Top managers commonly place emphasis on strategic relationships. Such findings suggest that different positions at the organisational level are related to specific expectations in relation to the role holder's contribution to the organisational activities (Floyd & Lane, 2000). The organisational roles of employees, in turn, influence their insights and mode of functioning. Zaheer, Loftrom, and George (2002) mention that "Individuals at higher and lower hierarchical levels see the world in qualitatively different methods" (p. 348). Speaking specifically, employees who work at lower levels are

responsible for the efficient implementation of daily tasks (Zaheer et al., 2002). Trust at the operational level would, therefore, be demonstrated through the collaborative agendas set forth by the management in order to implement the day-to-day operations. In addition, Floyd and Lane (2000), explain that the role of top management can range from that of commander, which is related to formulating strategy, to that of sponsor, which is associated with recognising initiatives emerging from below (Hart, 1992). Accordingly, the top manager can base his or her relationships on strategy. In line with this finding, Dai (2012) recognised that these relationships set a psychological environment that is conducive to knowledge sharing. Another study identified that social trust can be viewed as a vital determinant of voluntary behaviours such as knowledge sharing (Inkpen & Tsang, 2005).

Peer mentoring

The analysis of the field study data suggested that peer mentoring leads to employees' discovery of new behaviours with one another in which peer advice can play a significant role in facilitating interpersonal trust. To a certain extent, these findings confirm that of Arena, Lazaric, and Lorenz (2006), whose study suggests that training policies contribute to the building of trust by means of a method even more significant than those considered in this study, in that it expanded the range of workers' know-how. This process had the added influence of increasing the degree of activating cooperation between employees within the firm and helping to disseminate knowledge. More recently, Atkins (2012) says that mentoring relationships are the basis of trust and that they underpin the generative process.

Surprisingly, this study is inconsistent with other studies in that it found the level of trust to be negatively connected to the levels of mentoring put in place. For example, Malhotra and Murnighan (2002) affirm that the emergence of trust needs relatively low levels of mentoring. In the same vein, Gabriel, Rossella, and Robert (2004) show that trust in a party is related to a reduction in the screening of knowledge received from that party. Another study of 71 teams, that of Langfred (2004), revealed that trust was significantly and strongly a negative predictor of monitoring.

Assurance of confidentiality

This research identified that, for there to be a high level of trust, employees must avoid disclosing knowledge to people not authorised to access it. In such situations, there is a need to protect all sensitive information regarding the organisation and its employees. This finding confirms that of Barnard (2003), who elaborated that sharing sensitive material is more secure when confidentiality can play a significant role in interpersonal trust. Ideally, such confidentiality leads to an increasing interest in understanding each other, and in sharing this understanding by whatever means are available (da Corrêa, 2008).

In addition, this research also identified the fact that, when an employee is asked for specific knowledge, the asker must deal with it as being confidential, because not doing so violates that employee's trust. This finding, to some extent, is in line with that of Abrams et al. (2003), who explain that assurance of confidentiality is important in the advice-seeking context. In such circumstances, if employees feel that it is not safe to distribute information, they might withhold facts that could assist in finding a solution for a problem.

Engagement in communication

Research interviewees frequently mentioned that engagement in communication is an important predictor of interpersonal trust, thereby underpinning a one-way relationship between the two variables. This study is, to some extent, in line with de Ridder (2006), who has postulated that communication is a precedent for trust. Effective communication is a vital ingredient for trust between employees at different organisational levels. In addition, Huang, Robert, Liu, and Gu (2008) examined the influence of diverse communication channels on the formation of trust between boundary-spanning individuals. It was found that face-to-face communication has more comprehensive influence in terms of enabling the building of interpersonal trust. Moreover, Zakaria, Amelinckx and Wilemon (2004) affirm that developing communication between members can lead to trust, which can be maintained by actions.

The study also found that, to reach a high level of informal communication between employees, there must be a focus on open-disk design in the workplace,

in which informal face-to-face communication can lead to interpersonal trust and, hence, strengthen the level of knowledge sharing. In support, Al-Alawi, Marzooqi, and Mohammed (2007) affirm that open-disk policy is effective in simplifying communication between staff and knowledge sharing.

In addition, this study also revealed that open-disk design should not be at the expense of staff requirements for sufficient confidentiality, especially when dealing with sensitive tasks. To some extent, this finding is in line with that of Al-Alawi et al. (2007), who found that the best way to enhance communication is through emphasising open-disk design in the workplace. This study also illustrated that, despite the significant role of communication between colleagues, excessive interaction might cause some employees to waste time socialising with each other rather than accomplishing their tasks, which, in turn, harms interpersonal trust.

Engagement in brainstorming and problem solving

Based on the interview results, engagement in problem solving and brainstorming can influence interpersonal trust. This finding confirms that of many researchers (i.e., Argote, Ingram, & Levine, 2000; Tsoukas, 1996; Whipple, 2011) who suggest that a high level of trust is required for effective problem solving and more effective communication systems. Therefore, the level of trust must rise even higher as staff continue their quest to comprehend problems and make sense of their overall requirements. Bringing knowledge to bear is understood to mean actualising knowledge resources in regard to a problem in a timely manner (Argote, Ingram, & Levine, 2000; Tsoukas, 1996).

The interview results showed that interpersonal trust is not only about how employees work collaboratively when work is going well, but, equally significantly, about how they work together to deal with problems effectively. In line with Gorry (2008), this study found that, in a networking structure, the sharing of knowledge is to be aimed at problem solving and cooperation between employees. In order for this to be so, there is a need for teamwork and collegiality, which are advantageous for the aim of gaining knowledge (Jetz, McPherson, & Guralnick, 2012). In addition, Abrams et al. (2003) illustrate that many key

situations in organisations are inherently vague, and resolution of the problem requires it to be initially framed, so as to ensure that the right problem is being solved. In order to do so, there is a need to deal with such problems collectively.

Mutual respect

Research findings revealed that employees enjoy high respect when they have reason to feel secure, and when high value is placed on relationships. Such a situation can be achieved through an environment of trust. This finding, to some extent, is consistent with that of Holste and Fields (2010), who suggest that trust between workers is best improved through solid respect for each other's professional capabilities. In addition, this study found that most people, even those who are not close friends with an individual, can trust and respect him/her as a co-worker. Another study found that relational trust that is founded in mutual respect and shared interests can effectively allow these two foundations to complement or supplement each other (Das & Teng, 1998; Mellewigt, Madhok, & Webel, 2004).

Another finding of this study was that there cultural diversity in the studied companies. Therefore, there is a need to respect ethnic diversity in order to build strong mutual trust between employees and, ultimately, encourage a culture of sharing knowledge. To some extent, this research finding is in line with that of Zahra, Yavuz, and Ucbasaran (2006), who confirm that the social norm of respect for others' property rights should encourage staff to put forward ideas for new business ventures, magnifying the positive impact of relational trust on these initiatives.

Team conflict

Research findings illustrated that conflict between employees in different departments is one factor that impacts interpersonal trust negatively. To some extent, this finding is in line with those of De Dreu and Gelfand (2008), and Karolak (1998), who illustrate that it is commonly not easy to maintain trust when conflicts exist between individuals and groups. That being so, a lack of mechanisms for dealing with conflict is a threat to the development and preservation of trust (Jarvenpaa & Leidner, 1999; Kanawattanachai & Yoo, 2002).

Such team conflict impacts team performance negatively. This can be a result of not accomplishing the outcomes that were collectively agreed on among employees. This finding confirms that of De Dreu and Weingart (2003), and Salas et al. (2005), who found that team conflict affects team performance negatively, and that, hence, productivity and quality also suffer. In addition, Moe and Smite (2007) carried out an empirical study on four software projects in order to understand the causes and effects of interpersonal trust in the area of global software development. All these projects reported that lack of trust affected team performance and led to decline in product quality and team achievement.

6.2.2.3 Individual factors

Under the heading of individual factors, the researcher found that what influences interpersonal trust are responsibility and a sense of vulnerability. The following subsection is a discussion of research findings.

Responsibility

Research findings demonstrated that when employees are given responsibility and someone trusts them, it builds the trust between employees. This finding, to some extent, confirms that of Marshall (2000), who illustrates that full responsibility comes from a strong sense of self, of one's competence, and a realistic sense that the trials in life can be successfully examined and resolved by formal discussion. Another study found that empowering individuals generates a culture of generous sharing of knowledge that is done very often, and that eventually achieves organisational goals on a large scale (Emelo, 2012). Another study goes further by illustrating that a collaborative process of establishing clarity of responsibility builds trust across organisations involved in cross-boundary information sharing (Pardo, Gil-Garcia, & Burke, 2008).

Conversely, Robinson and Sharp (2004) argue that absence of trust would affect the sense of responsibility, and a team thus affected would doubt that they can, as a whole, live up to the required business values. In addition, in an environment of lack of trust, staff exhibited lack of commitment to the work being carried out. Another study found that lack of commitment can cause staff to ignore their responsibilities and decrease collaboration with other employees (Dorairaj, Noble,

& Malik, 2012). These researchers suggest that, in the absence of a good atmosphere for building trust through responsibility, knowledge sharing is not expected to thrive.

Sense of vulnerability

Research findings revealed that some employees are not keen to share their knowledge with other employees, due either to the fear of giving incorrect or misleading knowledge or to confidentiality reasons. In such conditions, employees can be reluctant to be open with other employees and feel afraid to share their expertise with them. This facet of trust could be related to the fear of losing face that Ardichviliet al. (2003) identified as one of the main barriers to knowledge sharing. Among the reasons for some employees being reluctant to share knowledge is the fierce competition in today's market. Because of high competition, employees worry about their competitive advantage and prefer not to share knowledge. A widely accepted proverb is "Knowledge is power" (Li & Scullion, 2006). Accordingly, when employees acquire new knowledge, they argue that it is the key to their success and are, therefore, likely to hoard rather than share it. Another possible reason is that many people do not want to share the knowledge that they have acquired through many days of hard work.

6.3 Research discussion of the nature of the relationship between management support and knowledge sharing

The main goal of this section is to discuss interview data on the nature of the relationship between management support and knowledge sharing. The following sections contain discussion of research findings regarding management behaviours.

6.3.1 Management behaviours

The analysis of this research showed that divers management behaviours which fit the criteria of being transparent and open, and flexible.These behaviours are now discussed.

6.3.1.1 Being transparent and open

Research findings showed that if managers are transparent and open, interpersonal trust can be built through the creation of an open door policy under which employees are encouraged to assist each other to achieve company goals. In support of this finding, it is found that transparent managers take the discussion one step further and illustrate to their employees why or how problems became problems (Vogelgesang & Lester, 2009). This researcher argues that, through this step, managers use the problem as an opportunity to share related information. In such situations, managers make themselves vulnerable through information sharing with employees.

The analysis of research findings illustrated that, through transparency and openness, staff can share their knowledge freely. This focus can create a community in which staff can openly share and develop rapport and, thus, produce a stronger knowledge-sharing culture. This finding is in line with that of Anantatmula (2008), who found that, by communicating clearly and effectively, managers can establish an environment of openness and transparency. In a situation like this, a work environment where employees are keen to share knowledge can be created. Another study elaborated that open communication is important for the nurturing of human relationships and knowledge sharing (Gray & Larson, 2005). Organisational culture that facilitates open and transparent communication among employees can lead to optimisation of collaboration and knowledge sharing at all hierarchical levels of the organisation (Anantatmula, 2008).

6.3.1.2 Having flexibility

Research findings illustrated that having flexibility will allow the process of knowledge sharing to flow smoothly. This finding is consistent with what is reported by Kauppila, Rajala, and Jyrama (2011), who clarify that leaders' flexibility can make the entire knowledge-sharing organisation less dependent on individual staff. Another study affirmed that, if flexibility is provided to employees, they will be more likely to gather pieces of knowledge from workmates around the company as required and to share their own knowledge (Emelo, 2012). In such a condition, reciprocity can play a significant role for

knowledge senders and receivers. Another study highlighted that flexibility facilitates sharing and collaboration between employees (O'Dell & Grayson, 1998). On the other hand, a centralised structure can lead to difficulty in communication and in frequent sharing of ideas due to the fact that it consumes time and causes distortion of ideas (Pemberton & Stonehouse, 2000). The decreased flexibility in such an organisational structure can result in restricted knowledge sharing.

6.3.2 Efforts of managers to facilitate knowledge sharing

The results illustrated that during the process of knowledge sharing, management support was not provided by top managers only, but that middle managers can also play vital roles. These roles are: encouraging participation in decision-making; provision of recognition; breaking down of barriers; building up of teams; training or assigning others to do the training; encouragement of training; communication; learning; putting knowledge into practice in the form of processes; and, movement of employees. These roles are illustrated in Figure 6.3 and further discussed in the following sections. In this model, the sign "+" means that a factor impacts knowledge sharing positively.

Figure 6.3 Model of efforts of management support on knowledge sharing
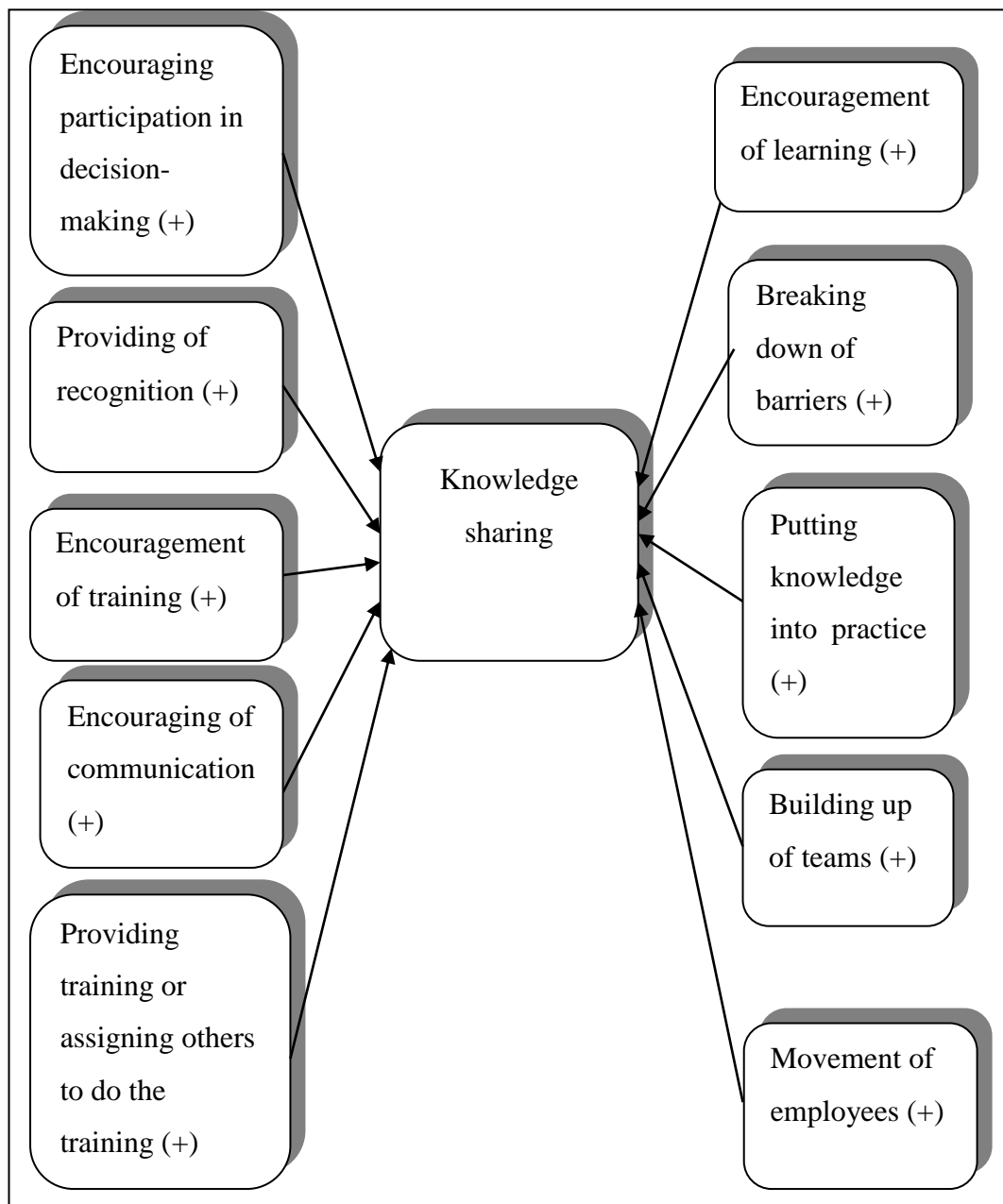
6.3.2.1 Encouraging participation with employees in decision-making

According to the data collected in the studied companies, knowledge can flow in both directions, upstream and downstream. Therefore, decisions can be made culminating in collective decisionsby top and middle managers and frontline employees. This finding is in line with that of Gzara-Yesilbas and Lombard (2004), who suggest that knowledge sharing leads to improvement in collaborative decision-making. Another study found that when a leader models and becomes involved in participative decision-making, there are more

opportunities for employees to share their knowledge (Locke, Alavi, & Wagner, 1997). Another study explained that leader expectations and supportive behaviours are significant in shaping a behavioural context in which employees share what they know through collaborative decision-making (Carmeli & Waldman, 2010). More recently, another study explained that the role of collaborative decision-making is not only to aim to increase the quality of decision making processes, but also to enhance the acceptance of knowledge that is thus shared (Arduin, Grundstein, & Sabroux, 2011).

Aside from the previous finding, decisions which are mainly those involving strategic knowledge, can be made at the top organisational level, and the role of these managers is to pass the decision on to middle managers. Much previous literature illustrates the role of top management in the context of the leadership and improvement of the culture of organisations (Bixler, 2002; Ellis &Rumizen, 2002; Ribiere & Sitar, 2003). In addition, Roveda and Vecchiato (2006) found that those people who work in higher managerial positions, in particular, design the future of organisations and express their target goals which steer the activities of their staff. Speaking specifically, Pitcher and Smith (2001) concluded that top-level leader teams that enable integrative decisions are more effective in producing effective results, because they get knowledge from diverse cognitive viewpoints and allow a more comprehensive and creative analysis of strategic options (Pitcher & Smith, 2001).

As is shown by research findings, knowledge can flow upstream from frontline employees to middle managers and then, ultimately, to top managers. In such a situation, decisions are made at the lower level. To some extent, this finding is in line with that of Rogers and Peccoud (2012), who illustrate that frontline staff make critical decisions every day regarding their daily work. This researcher has illustrated that, to create a frontline employee capable of excelling at making and implementing decisions, there is a need: to set out a clear vision and clearly define responsibility; to hire employees with the right skills and attitudes; to provide the right tools; and, to motivate employees through creating an effective culture that enables the creation of concrete decisions and, ultimately, the sharing of such decisions with other employees.

This research is not only consistent with previous research on the topic of the role of management support in enabling knowledge sharing through active participation with employees in decision-making, but has also built a new model (see Figure 5.7) that elucidates the levels relevant to the decision-making model, the direction of decision making, and the direction of knowledge flow, and general types of knowledge that flow between top and middle managers and frontline employees.

6.3.2.2 Provision of recognition

Research findings brought to the fore that managers need to be on the alert. If an employee comes up with a new idea, the firm must take it into consideration by enabling the sharing of knowledge. In alignment with this finding, Copeland (1998) suggests that managers facilitate knowledge sharing and also set up reward programmes in which knowledge can flow easily. Another study gained the insight that encouragement from management for knowledge sharing was positively related to actual knowledge sharing (Connelly & Kelloway, 2003). This research finding is also consistent with the speculation that the support of management has a positive impact on the implementation of knowledge management (Davenport & Prusak, 1998; Lin, 2011; Wong, 2005). Additionally, Davenport and Prusak (1998) also agree that one of the five knowledge management principles that can help to make fusion produce successful outputs is the encouragement provided by rewards and the directing of knowledge sharing toward a common objective.

The researcher in this study found no evidence to support the role of top or middle managers as providers of monetary rewards to enhance knowledge sharing. This finding confirms what has already been found, i.e., that using incentives is not as universally effective as proposed. In fact, there are intrinsic obstacles to knowledge sharing. Under the conditions of internal competition for rewards, status, and promotions (Menon & Pfeffer, 2003), workers usually regard their unique knowledge as a form of power to use to safeguard their situations within the organisation (Ba et al., 2001). Another study revealed that much employee work motivation is not so externally driven as to be driven by monetary reward (Gostick & Elton, 2007).

6.3.2.3 Encouragement of communication

Research findings indicated that management teams can encourage employees to communicate with each other, either formally or informally, to deal with specific problems. As a great deal of knowledge is embedded in individual staff members, top management can play a critical role in encouraging formal social interaction around such knowledge. This finding confirms that of the study of Wai and Chai (2008), who explained that the role of management in knowledge sharing is to encourage formal communication. For example, staff can be encouraged to share knowledge through formal methods such as seminars, formal meetings, conferences, etc.

Research findings showed that, besides formal communication, informal communication can also be encouraged by managers. This finding is in line with that of Wai and Chai (2008), who found that top managers play an important role in facilitating knowledge sharing between employees through informal activities. Another study's insight was that support from management for the sharing of knowledge and perceptions of positive social communication had a positive relation to the sharing of knowledge (Connelly & Kelloway, 2003). Accordingly, such support can cause work to be done faster and more cheaply because of knowledge sharing; this effect enhances efficiency and quality (Battersby, 2004; Wai & Chai, 2008).

6.3.2.4 Providing training or assigning others to do the training

Middle managers reported that they have a responsibility to train employees or assign others to train them in how they are to work. In alignment with this finding, (Beck & Boehm, 2003) suggest that through providing training, managers can incorporate their expertise into their decision-making and organisations can add rigour to processes, a provision which is commonly recognised as the art of accomplishing organisational goals (Beck & Boehm, 2003). Through training, if employees bring issues to managers, managers are able to share their knowledge. In fact, training seems to be a clear precondition for successful sharing in all organisational layers (Ives, Torrey, & Gordon, 2000). In Bell's (2002) book *Managers as Mentors*, he illustrates that, through training, an atmosphere of knowledge sharing between the manager and employees can be created. Other

studies found that the involvement of managerial staff in training, together with strong prior socialisation, can assist them in sharing what they know (Checkland et al., 2011; Lazazzara, Karpinska, & Henkens, 2011).

6.3.2.5 Encouragement of training

The analysis of the interview transcripts revealed that one of the roles of management is to encourage training which could help to leverage knowledge around the company and enhance the sharing of it. This finding is in line with the findings of Fong et al. (2011), who substantiate the claim that training can play a significant role in enabling knowledge sharing. Research findings also reinforce the view of Ramirez and Li (2009) that training has a significant effect which enhances the sharing of knowledge, as it enables staff to collect and share new knowledge. Accordingly, organisations' managers should acknowledge this valuable result by enabling training, which allows the free flow of knowledge (Fong et al., 2011), and can be seen as a premise for the attainment of competitive advantage (Phan, 2008). On the other hand, a shortage of managerial direction can restrict knowledge sharing. Since knowledge sharing is effectively both voluntary and a new knowledge-gaining behaviour for those who might need training and continuous encouragement, clear instructions seem to be a clear precondition for successful knowledge sharing at all organisational layers (Ives et al., 2000).

Research findings indicated that the role of the management team is also to encourage informal training. This can be accomplished through a peer mentoring programme. This finding is consistent with that of prior studies (Cameron, 2002; Roth, 2003) which elaborate on the need for managers to play mentor and enabler roles in order to facilitate a successful culture of knowledge sharing.

6.3.2.6 Encouraging learning

The role of managers as enablers of knowledge sharing is vital in facilitating the collective learning capability of the company. According to MacNeil (2003), if management manages knowledge through information flow, then the managers' responsibility is to strongly influence learning. This responsibility is particularly strong if they have a role encouraging knowledge-sharing, and helping to build

individualised, fragmented learning into a collective capability. On the other hand, Dyerson and Mueller (1999) also found that, in the absence of collective knowledge among knowledge experts, an environment of learning in isolation can be created, which discourages the sharing of knowledge. In such conditions, many researchers believe that, since knowledge is not spread to other employees, then individuals will learn separately, without willingness to share their expertise (Kim, 1993; MacNeil, 2001, 2003).

Research findings also revealed that when managers do generate a culture of learning, followers are more likely to question what they think because they may be unsure. To some extent, this finding is in line with that of Bass (1995), who affirms that managers enhance individuals' learning by encouraging them to question assumptions, take intelligent risks, and come up with creative observations. By means of the sharing of knowledge, managers intellectually encourage employees to expand their knowledge. In addition, sharing through asking questions facilitates a culture of knowledge sharing (Ke & Wei, 2008). Another study found that leadership can play a significant role in guiding learning within the organisation and enables a philosophy of continuous improvement-based knowledge sharing (Pemberton, Stonehouse, & Francis, 2002).

6.3.2.7 Breaking down of barriers

The analysis of interview transcripts showed that managers can break down organisational and personal barriers that are an impediment to employees' sharing knowledge. Dealing with organisational barriers can be achieved through reengineering company processes. Such reengineered steps have two significant goals: breaking down hierarchical obstacles to quick decision making, and opening up new horizontal channels for cross-unit knowledge sharing. In line with this finding, Davenport and Stoddard (1994), Hammer (1996), and Janson (1993) mention that frequent communication is vital for successful implementation of reengineering because sharing information and empathising with employee concerns can help to minimise resistance. Another study observed that, through the overcoming of hierarchical barriers, a culture that encourages collaboration and knowledge sharing can be created (Von Krogh, 2003; Zhang & Faerman, 2007). Moreover, Grant (1996) shows that managers can redesign work structures

by forming work groups in which employees can maintain a high level of interaction.

Another role of managers is breaking down cultural barriers that separate employees from each other. Generally, such barriers stem from an individualistic perspective in employees rather than a collectivistic culture. The probable explanation to this phenomenon may lie in the fact that the major characteristic of individualism seems to be the separateness of oneself from others (Kagitcibasi, 1997; Markus & Kitayama, 1991). Such features do not encourage employees to share knowledge among themselves. In dealing with such barriers, Carlile (2004) found that managers have a responsibility to navigate and negotiate boundaries, mainly cultural ones, to make knowledge sharing happen. This finding is partly supported by Birkinshaw, Bessant, Delbridge (2006), who found that obstacles to building social interaction can exist because of the different values and requirements of different demographic groups, in response to which managers need to overcome the barriers.

6.3.2.8 Encouragement to put knowledge into practice in the form of processes

Research findings showed that managers need to encourage employees to put their knowledge into practice in the form of processes in such a way that it will be available to and easily accessed by other employees within the company. To some extent, this finding is in accordance with that of Pfeffer and Sutton (2000), who suggest that through putting knowledge into practice in the form of processes, several goals can be achieved. The first is that managers want to learn "how" in terms of detailed steps and behaviours, rather than "why" in terms of philosophy of overall guidance for putting knowledge into practice. As noticed in the field interviews, this dissemination of knowledge can be accomplished through publishing knowledge step-by-step on wall posters or through using information technology. This researcher confirmsthat this goal is focused on building systems that enable knowledge to be exchanged into process in a more effective manner (Pfeffer & Sutton, 2000). Notwithstanding, this researcher affirms that one barrier to putting knowledge into practice in the form of processes is that there is an unspoken part of knowledge which is related to the tacit element of knowledge.

6.3.2.9 Encouraging movement of employees

Managers can play the role of encouraging employees to share knowledge by moving them to different tasks. Such movement, according to Levine and Gilbert (1998), could comprise movements across units, cross-functional meetings, and cross-group meetings. To some extent, this finding is consistent with that of Nonaka and Takeuchi (1995), who found that implementing job rotation can facilitate knowledge transfer and movement throughout the organisation. Moreover, Swart and Kinnie (2003), and Eriksson and Ortega (2006) found that, through rotation of employees between projects, staff can increase their tacit knowledge sharing, especially that related to technical skills.

Research findings also illustrated that rotating employees is expected to broaden their perspectives to, in turn, enable them to implement their work from diverse angles rather than just concentrating on the issues of their specific departmental functions. To some extent, this finding is in line with that of Gherardi etal. (1998), and Wiig (2004), who illustrate that, through movement of employees, social interaction can be built up and supported, and mutual comprehension and shared practices can be developed. Another study found that, through establishment of job rotation, employees can routinely engage in cross-functional knowledge sharing (Jansen, Van den Bosch, & Volberda, 2005).

6.3.2.10 Building a better team

Research findings illustrated that managers need to build team bonds through team-building exercises and intensive social networks. In support of this finding, Rosen, Furst, & Blackburn (2006) note that team-building activities are important for team success and, ultimately, for knowledge sharing. Another study claimed that team building is required for middle managers to lead change (Floyd & Wooldridge, 1994). In particular, Huang and Newell (2003) say that managers have to motivate team members to think about procedural problems that face the team and acknowledge possible methods of overcoming them. Another study, Burt (1992), clarifies that organisations can leverage their existing knowledge sharing through building teams that enhance the sharing of knowledge. The research findings, to some extent, are also in agreement with those of Nonaka and Toyama (2002), who affirm that managers play a critical role as knowledge

activists because they both generate a knowledge vision and assume an enabling role in building a supportive context for knowledgesharing.

6.4 An integrative model of the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing

This study concerns the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Generally speaking, it seeks answers to the following major research questions:

❖ **What is the nature of the relationship between social networks and knowledge sharing?**

❖ **What is the nature of the relationship between interpersonal trust and knowledge sharing?**

❖ **What is the nature of the relationship between management support and knowledge sharing?**

Based on the literature review and the initial model (Figure 3.1), this research explored the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. These factors were chosen for consideration following an intensive review of the literature which suggested a number of antecedents that might influence knowledge sharing in organisations. These antecedents are significantly related to the enabling of knowledge sharing.

The revised model (see Figure 6.4) is a good model of the data from the current study for many reasons. First, the terminology used in the developed model was based on interviewee perceptions of the significant factors that influence their knowledge sharing. To be more specific, the researcher found that the support of knowledge sharing is not necessarily implemented by top management, as middle management or even team leaders can play a significant role. Hence, it was decided to focus on support of knowledge sharing from management, as such support involves diverse people to make knowledge sharing happen. In addition, the researcher decided to leave interpersonal trust and social networks as illustrated in the initial model. Second, nearly half of the participants in the

studied companies stressed the role of openness in facilitating knowledge sharing within their companies. Therefore, the researcher decided to include openness in the fully developed theoretical model. Third, the initial model did not include any relationships between the studied factors which help to ultimately develop knowledge sharing. The analysis of interview transcripts revealed that social networks can lead to openness. Furthermore, openness influences interpersonal trust positively. Hence, the researcher decided to include in the developed research model the relationships between social networks and openness, social networks and interpersonal trust, and openness and interpersonal trust (see Figure 6.4).

To be more specific, this research found six factors influencing social networks and knowledge sharing positively. These factors are: using multiple communication strategies; brainstorming and problem solving; learning and teaching; training; employee rotation; and, consultations. In order to confirm the previous findings on social networks, follow-up interviews were conducted with six participants from two companies. All the participants agree that building social networks can be achieved by means of the previously outlined factors. An example is presented in the following quotation:

> *"The social networks factors are really important. I am looking to*
> *your results I am very much agree with every things you saying."*

In addition, research findings illustrated 11 factors influencing interpersonal trust positively. These factors are: clarifying a set of values; creating a "no blame" culture; clarity of targets and goals; openness and credibility; relationships; peer mentoring; assurance of confidentiality; engagement in communication; engagement in brainstorming and problem solving; mutual respect; and, responsibility. On the other hand, research findings clarified three factors that influence interpersonal trust negatively. These factors are: division between departments; team conflict; and, a sense of vulnerability. The previous factors' influence on interpersonal trust was confirmed by several of the participants in the follow-up interviews. The words of one top manager confirm the factors influencing interpersonal trust when he says:

"A big focus for us is trust and building interpersonal trust within our people and it is interesting to know that. I agree with that; interpersonal trust factors, particularly the positive factors, and also those negative factors, such as, team conflicts and sense of vulnerability, certainly both of those will destroy trust."

Moreover, research findings elaborated a range of management roles in supporting knowledge sharing. These roles are: encouraging participation in decision-making; provision of recognition; breaking down of barriers; building up of teams; training or assigning others to do the training; encouragement of training; communication; learning; putting knowledge into practice in the form of processes; and, movement of employees.The previous findings are illustrated in Figure 6.4. The follow-up interview data supports that previously revealed regarding the efforts of management teams in facilitating knowledge sharing, and the interviewees paid more attention to the role of management in building a sense of team as a factor in enhancing knowledge sharing between employees. This particular situation is depicted by one of the middle managers in the following quotation:

"I agree with all the previous factors. I think management's role is to build a sense of team, and building the environment is important to allow knowledge sharing to thrive."

Figure 6.4 An integrative model of the impact of social networks, interpersonal trust, and management support on knowledge sharing
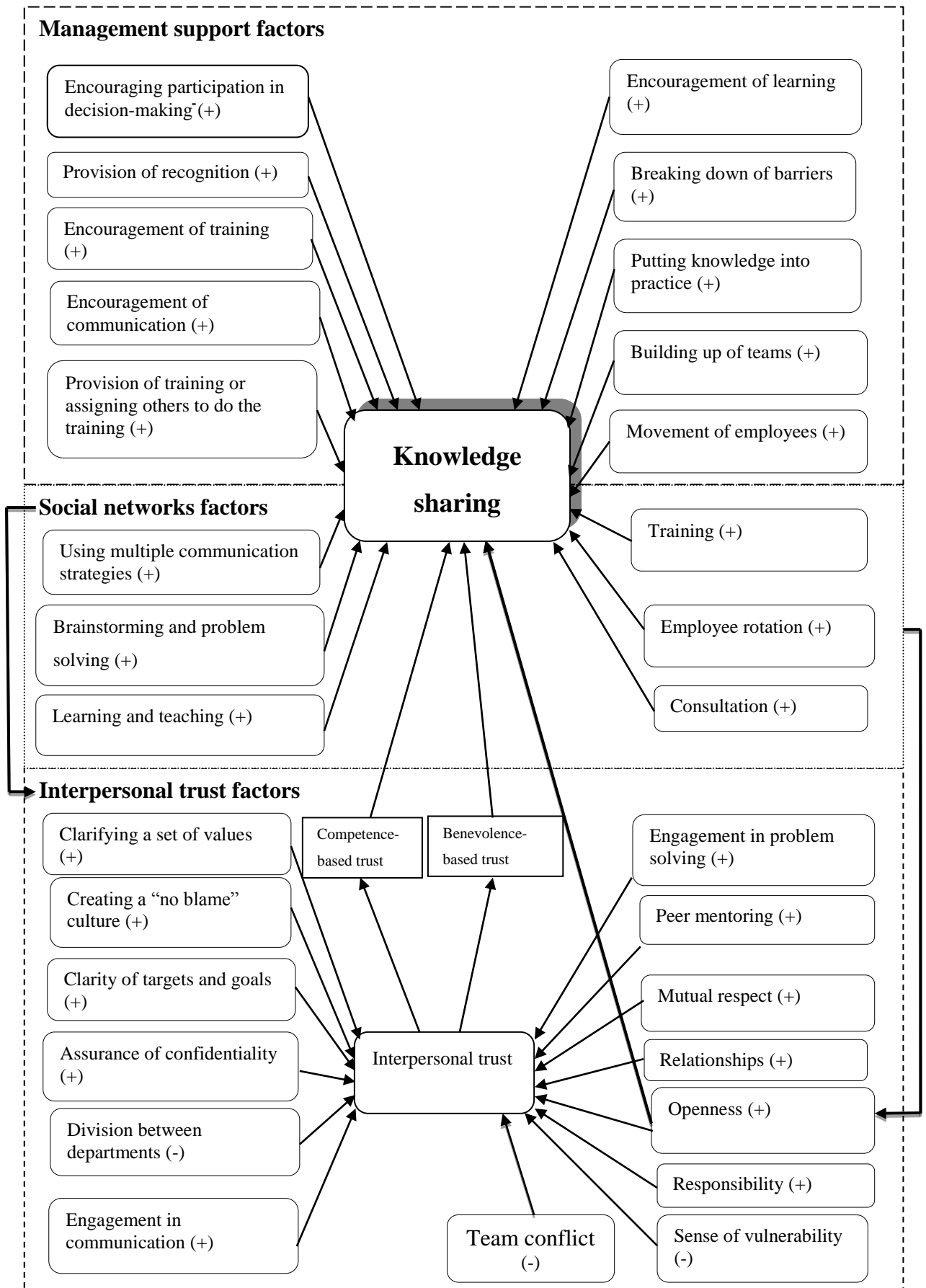
Chapter Seven: Conclusions, Implications, Limitations, and Future Research

7.0 Introduction

In this chapter, conclusions, implications, limitations, and prospects for future research are presented. Section 7.1 presents some important conclusions about the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Section 7.2 will discuss the main contributions to and implications for both academics and practitioners. Section 7.3 will provide a discussion of the limitations of this research. Section 7.4 will suggest possible streams for future research which have been identified from this research.

7.1 Conclusion

Past research has shown that by implementing knowledge sharing an organisation can maintain its long-term competitive advantage. Yet many knowledge-sharing initiatives end without achieving their stated objectives, in part because of an inadequate understanding of the nature of the critical success factors that enable knowledge sharing, and how they influence such sharing. Hence, this research explores the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing.

This research addressed the first research question, "What is the nature of the relationship between social networks and knowledge sharing?", by outlining diverse factors that influence social networks and knowledge sharing. These factors are: the use of multiple communication strategies; brainstorming and problem solving; learning and teaching; encouragement of training; employee rotation; and, consultation.

The second research question, "What is the nature of the relationship between interpersonal trust and knowledge sharing?", outlined factors influencing interpersonal trust: these include organisational, relational, and individual factors. This research found four organisational factors that influence interpersonal trust. These are: clarification of a set of values; creation of a "no blame" culture; clarification of targets and goals; and, division between departments. Moreover, eight relational factors that influence interpersonal trust were clarified. These are: openness and credibility; relationships; peer mentoring; assurance of confidentiality; engagement in communication; engagement in brainstorming and problem solving; mutual respect; and, team conflict. Two individual factors were also found: responsibility, and a sense of vulnerability. Furthermore, research findings showed that both competence- and benevolence-based trust influence knowledge sharing.

Last but not least, answers to the third research question, "What is the nature of the relationship between management support and knowledge sharing?", show that both top and middle management can play significant roles in facilitating knowledge sharing. These roles encompass: encouraging participation in decision-making; provision of recognition; breaking down of barriers; building up of teams; training or assigning others to do the training; encouragement of training; communication; learning; putting knowledge into practice in the form of processes; and, movement of employees. This study has met its goals by addressing all of the research goals and questions specified in the first and third chapters.

7.2 Contributions and implications of this research

The contributions and implications for both academics and practitioners are organised in four sections:

1. The nature of the relationship between social networks and knowledge sharing
2. The nature of the relationship between interpersonal trust and knowledge sharing
3. The nature of the relationship between management support and knowledge sharing

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4. An integrative model of the relationship between social networks, interpersonal trust, management support, openness and knowledge sharing

They are discussed below.

7.2.1 The nature of the relationship between social networks and knowledge sharing

This research provides four major research contributions for both academics and practitioners in the area of social networks and knowledge sharing by its identification of six types of social network, and development of three models. The first one relates brainstorming and problem solving, the second to knowledge levels and the direction of learning and teaching, and the third to factors influencing social networks and knowledge sharing. These models are discussed below.

The first contribution is that this research has identified and discussed six types of social network. To be more specific, it has not only identified formal and informal social networks, which are illustrated broadly in previous literature, but has also expanded on previous research by identifying other types. These types are operational, complementary, problem-solving, and complex networks. Moreover, this study has put forth a model that illustrates how these types can lead to the building and sustenance of social networks and, ultimately, the enhancement of knowledge sharing. In addition, this research has identified diverse outcomes from each of the above types.

The second contribution is that of developing a model of brainstorming and problem solving. This model suggests brainstorming and problem solving involve a number of steps; these are defining the problem, understanding the root cause of it, debating a number of different solutions, and taking action. In addition, this research has illustrated that, in each step of problem solving, the giving and gaining of knowledge can be accomplished in social networks. Although there are diverse models of brainstorming and problem solving, with some falling within the context of knowledge management (i.e., Juan, Manuel, & Alberto, 2006; Wei

et al., 2012), these models, collectively, do not elucidate how brainstorming and problem solving help to strengthen knowledge sharing. In addition, these researchers did not explicitly illustrate knowledge giving and receiving in each step of problem solving.

The third contribution is that this research is presented together with a model of knowledge levels and the direction of learning and teaching. This model divides knowledge sharing into four levels based on the receiver's level of knowledge. These are the novice, competent, expert, and proficient levels. This model suggests that those at each level tend to immerse themselves in tacit and explicit knowledge sharing to compensate for their weakness through learning and teaching. This contribution not only confirms what is illustrated in the previous literature regarding the significant, positive effect of learning on knowledge sharing (Matzler & Muller, 2011; Swift, Balkin, & Matusik, 2010), but also expands on it regarding the role of learning and teaching in building social networks. In addition, this research links knowledge-sharing types to the direction of learning and teaching. This finding contributes to an understanding of how explicit and tacit knowledge can be shared, based on the receiver's level of knowledge.

The fourth contribution is that this research has involved the development of a model of knowledge sharing that illustrates the nature of the relationship between it and social networks in the studied companies. This relationshipis grounded in the use of multiple communication strategies, brainstorming and problem solving, learning and teaching, training, employee rotation, and, consultations. These findings contribute to an understanding of how these factors influence social networks and knowledge sharing.

The findings of this research have many implications for both practitioners and organisations. These findings are expected to help practitioners to comprehend the big picture and scope of the steps they take in business. The capability to see knowledge sharing from a holistic perspective is expected to help practitioners to comprehend how it is included in diverse organisational activities and how social networks can be developed. In addition, through social networks, practitioners can

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leverage work groups for knowledge sharing, by which means cost savings can be achieved. Another implication for practitioners is that support from organisations is required to ensure that social networks receive enough support so that knowledge sharing processes are accomplished.

7.2.2 The nature of the relationship between interpersonal trust and knowledge sharing

There are two areas in which this study can contribute to a better understanding of the nature of the relationship between interpersonal trust and knowledge sharing.

The first contribution is that this research identifies two kinds of competency, namely, technical and managerial competency. To be more specific, this research illustrated managerial competency is high for top and middle managers, while it is low for frontline employees. In addition, this research identified diverse factors that would drive the knowledge seeker to choose knowledge providers when dealing with a difficult problem. These factors are related to different experiences between employees; additionally, some jobs can be very specific and can very easily have an impact on other areas. In addition, employees need to rely on other employees to get confirmation, especially when dealing with experimental knowledge. This finding will enable employees and managers to construct appropriate types of trust, based on their positions, experiences, and job requirements.

The second contribution is the exploration of a model of factors influencing interpersonal trust. This model elaborates on how interpersonal trust can be achieved through different integrative factors: i.e., organisational, relational, and individual. Even though these factors have been identified by many researchers (i.e., Atkins, 2012; Baiden et al., 2006; Dalkir, 2011; Emelo, 2012; Holste & Fields, 2010; Huang et al., 2008; Jetz et al., 2012; Katsamakas, 2007; Keast & Mandell, 2009; Rosli & Hussein, 2008; Solitander, 2011; Whipple, 2011), they do not illustrate how these factors, in an integrative way, influence interpersonal trust and, hence, knowledge sharing. Moreover, the model provided here of factors influencing interpersonal trust clarified that three factors, namely, division between departments, team conflict, and a sense of vulnerability, influence

interpersonal trust negatively. Speaking specifically, the results of this study expand the theoretical foundations for interpersonal trust and knowledge sharing. It should come as a somewhat of a surprise that a single study has rarely dealt with theoretical and empirical research on how diverse factors influence interpersonal trust, and how benevolence- and competence-based trust influence knowledge sharing. Therefore, the researcher argues that the results of this study provide baseline data that acts as a source of general guidance for practitioners, to guide their actions through deeper understanding of the diverse factors that influence interpersonal trust and, hence, help to optimise a culture of knowledge sharing.

7.2.3 The nature of the relationship between management support and knowledge sharing

The findings on the nature of the relationship between management support and knowledge sharing make two contributions to academic literature.

Firstly, as identified in the previous literature, management support for knowledge sharing has been thoroughly discussed (Hsu, 2006; Hwang & Kim, 2007; Nonaka & Toyama; 2005; Sher & Lee, 2004). However, understanding of the role of managers in putting knowledge into practice in the form of processes is limited. Moreover, this research confirms the importance of the role of management in encouraging participation in decision-making; provision of recognition; breaking down of barriers; building up of teams; training or assigning others to do the training; encouragement of training; communication; learning; and, movement of employees

Secondly, as found by Carmeli and Waldman (2010), supportive managers can play a significant role in shaping a behavioural context which entails decision-making processes in which employees can share their expertise effectively and efficiently. Other researchers illustrate that, through leaders' encouraging participation in decision making, the flow of new ideas and collaboration within the team can be promoted (Sarin & McDermott, 2003). This research expands on previous research through the creation of a model that elucidates the level relevant to the decision making model, the direction of decision making, and the direction

of knowledge flow and general types of knowledge that flow between top and middle managers and frontline employees.

These findings have significant practical implications for managers, through which they are expected to gain a deeper comprehension of the knowledge sharing culture of their companies and a clearer picture of what kind of factors influence a company's culture, and of where their priorities should be placed in order to change the culture towards a knowledge sharing one. Implications also exist for practitioners managing knowledge sharing within an organisation in terms of getting precious information on how to improve current practice and contribute to the development of their organisation's social structure, thus driving knowledge sharing effectiveness. In addition, managers should modify their management behaviours to enable employees to share their knowledge.

7.2.4 Model of the nature of relationships between social networks, interpersonal trust, management support, openness, and knowledge sharing

This study makes two sets of contributions to the existing body of knowledge in the area of knowledge management. The first set is theoretical contributions. The second is practical in nature, resulting in guidelines for practitioners in the area of knowledge management.

This study contributes to the theoretical arena of knowledge management in the following ways. The first theoretical contribution to research comes from the theoretical framework illustrated in this research, which has been heavily influenced by academic literature. In this research, three factors have been explored: these are social networks, interpersonal trust, and management support. However, in order to understand knowledge sharing activities, there is a need to understand how knowledge sharing occurs in practice. The ultimate outputs bridge the academic and the practical and, thus, give the reader a better picture of what is reported in previous literature and how knowledge sharing happens in reality. Consequently, a decision based on the analysis of interview transcripts was made by the researcher to add openness as another exploring factor. In addition, the relationships between each area of emphasis and knowledge sharing

were also included in the theoretical framework. To be more specific, this research has put forth a comprehensive model of the nature of the relationships between social networks, interpersonal trust, management support, openness, and knowledge sharing. Moreover, based on this theoretical model, a survey questionnaire comprising 28 items was developed (see Appendices N, O, P).

In addition to the theoretical contributions, this study will also have practical implications for practitioners. Firstly, the results on relationships between social networks, interpersonal trust, management support, openness, and knowledge sharing may provide practitioners with new ideas on how to improve current practices, or even warnings against particular practices in certain contexts. All of these ideas can potentially be used to improve the current practice of practitioners. Secondly, practitioners must take into consideration the fact that knowledge sharing can happen only when individuals are motivated to share their existing knowledge. Therefore, practitioners must be attentive to facilitating positive perceptions of knowledge sharing among individuals by indicating to them that their knowledge sharing makes a significant contribution to their performance. Thirdly, practitioners of developing and sustaining knowledge sharing should focus on enhancing employees' positive feelings toward social exchange, which precedes knowledge-sharing behaviours. Fourthly, another implication of this study is that practitioners could be informed of the critical success factors that enable employees to share knowledge with one another effectively.

7.3 Limitations of the study

Although this study contributes to the body of research in the domain of knowledge management, specifically, the research on the nature of the relationships between social networks, interpersonal trust, management support, openness, and knowledge sharing, it suffers from four limitations, described as follows.

The first is that not all factors that influence knowledge sharing were explored. The research focused on only three of them. These were social networks, interpersonal trust, and management support. Researchers of other factors might

have had different perceptions than the researcher. Hence, there is a need to further explore such perceptions.

The second limitation is that the scope of the exploration has focused only on individuals' sharing of knowledge from the viewpoints of top and middle managers and frontline employees. Arguably, however, to understand the full picture of knowledge sharing within companies, there is a need to consider the fact that facilitating knowledge sharing is a complex challenge; other factors, such as those of teams, organisations, and the interorganisational level, need to be considered in an integrative way in practice. Knowledge sharing at the collective level might not be the same as knowledge sharing at the individual level. Therefore, there is a need to take a comprehensive view of not only individual knowledge sharing, but also group, organisational, and interorganisational knowledge sharing.

The third limitation is the coverage of the empirical investigation, which is of manufacturing companies in the North Island of New Zealand. In fact, during data collection, the researcher contacted 20 companies to conduct his interviews. In the event, responses came from five relatively large companies. Consequently, the findings can be generalised only in the context of those companies. Other companies might have a different approach to knowledge sharing, and, accordingly, future research may deal with the situations of small- and medium-sized companies.

The fourth limitation is that research findings and discussion has been based on the researcher's interpretation and analysis. Such findings may be interpreted differently by other researchers. In addition, all the interviews were implemented by the researcher in order to make sure the richness that emerged from them, such as facial expression and tone, was taken into consideration. The possibility of bias is, importantly, increased under such situations. However, great attention was paid to reducing this bias.

The above limitations may affect interpretation and generalisation of the findings. As is common in research, this study has raised more questions than it has

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answered and some fruitful areas of further research related to this study are discussed in the next section.

7.4 Directions for Future Research

Various recommendations for future research can be made. They are related to four main areas: knowledge sharing and social networks, interpersonal trust, and management support respectively, and, fourthly, the influence of all three on knowledge sharing. The following subsections shed light on future research possibilities that relate to the nature of the relationship between social networks and knowledge sharing.

7.4.1 Research relating to social networks and knowledge sharing

With regard to the nature of the relationship between social networks and knowledge sharing, there are four recommendations worthy of further research.

The first concerns the exploration and testing of social network types and their influence on knowledge sharing. This research identified six types of social network. These types are informal, formal, problem solving, consulting, operational and complementary networks. Future research should identify how these types influence knowledge sharing. Research from the multifaceted perspective of social networks could provide an alternative understanding and insights into knowledge sharing. In addition, future research should seek to operationalise the variables of social network types and build instruments to measure them. Such instruments could be used to look for correlations between these variables and knowledge sharing. The use of such instruments could be developed to show the strength and direction of the relationships between the variables. Such testing would be invaluable in advancing theory.

Research should also consider the statistical testing of dimensions of social networks. This research offered insights into the structural, relational, and cognitive dimensions of social networks by applying an interpretive methodological lens. Additional methodological approaches might contribute to deep understanding of the relationships between these dimensions and knowledge sharing. The researcher proposes that, in further studies, a survey should be

conducted to compare diverse business and governmental organisations in which causal relationships between these three dimensions would be further investigated. Such comparison may yield some interesting findings and help to further elaborate the underlying theory.

The fourth recommendation is to further explore and test methods that influence social networks and knowledge sharing. This research identified six factors influencing them. These factors are: using multiple communication strategies, brainstorming and problem solving, learning and teaching, training, employee rotation, and consultation. Future research could focus on exploration of other factors influencing social networks and knowledge sharing between employees. Exploring and testing these methods would provide useful input regarding how social networks can be built, in which an effective culture of knowledge sharing can be created.

Another potentially fruitful field of research concerns the extension of the scope of this research by looking at the influence of social networks on facilitating explicit and tacit knowledge sharing in diverse cultures. A significant number of researchers argue that national culture plays a significant role in enabling or embedding knowledge sharing. It would be beneficial to conduct a study to illustrate and test how social networks in relation to the culture of sharing differ from one culture to another. In order to do so, some efforts might be made to develop a measure of attributes of organisational culture in diverse organisational contexts. These attributes are gaining face, saving face (Chow et al., 2000; Hwang et al., 2003), individualism-collectivism (Hofstede, 1991, 2001), and high and low context communication (Hall, 2000; Thatcher, 2004). Such attributes are commonly seen as basic values that distinguish members of different cultural groups from one another. Conducting such a study would provide useful insights into the cultural issues implicated in the sharing of explicit and tacit knowledge, especially when a knowledge seeker and provider come from different national cultures, as well as provide insight into the mechanism of dealing with cultural difficulties when sharing knowledge in a cross-cultural business context.

7.4.2 Research relating to interpersonal trust and knowledge sharing

With regard to the relationship between interpersonal trust and knowledge sharing, there are three recommendations which need to be explored in future studies.

The first recommendationis continuously examining and testing the conceptual model of building interpersonal trust. This research identified three methods of building interpersonal trust among employees. These are concentrated on organisational factors, relational factors, and individual factors. As illustrated at the outset of conducting this research, its main goal was to explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing, and it is, therefore, worthwhile to extend this research through statistical testing of these factors influencing interpersonal trust and knowledge sharing. Examining the relationships in this area would deepen understanding of how these factors facilitate or impede knowledge sharing, not only from the perspective of individuals, but also perspectives at the group and organisational levels.

Secondly, future research should explore and compare competence-based and benevolence-based trust in other organisational contexts. For instance, a comparative study of interpersonal trust between employees in large and small organisations is worth considering. Another example is a comparative study of interpersonal trust between employees who work in nonprofit organisations and those working in highly competitive organisations. Such studies would provide employees, especially those who are keen to move from one company to another, with significant feedback regarding working environments.

The third recommendation is further exploration of barriers to building interpersonal trust that influence knowledge sharing. One goal of conducting this research was to explore how interpersonal trust can be built in order to enhance knowledge sharing. As seen in this research, many factors block the building of a good atmosphere of interpersonal trust among individuals, groups, and organisations, and block their knowledge-based practices; furthermore, many

other factors create an effective culture of knowledge sharing, but these were not discussed in depth in this study. During the data collection, the researcher found that, in some companies, the level of trust was not as it should be, especially between marketing and sales. This research describes three factors that influence interpersonal trust negatively. These factors are division between department, team conflict, and a sense of vulnerability. The researcher acknowledges that other factors which did not emerge from the analysis of research findings can influence interpersonal trust negatively, but that may be useful to consider these in future research, and to lead to effective practice. Such a study would provide insights into how managers and practitioners improve current practice.

7.4.3 Research relating to management support and knowledge sharing

In terms of management support and knowledge sharing, two recommendations have emerged from the research.

The first recommendationis to further explore and test management behaviours that enhance knowledge sharing. The analysis of this research shows that the particular management behaviours in the studied companies that appear effective are being transparent and open, and being flexible. Future research should expand on this study by taking into account other dimensions of management behaviours that enable knowledge sharing between employees. Also, future research could fruitfully explore and examine this issue, based on cross-level analysis that encompasses diverse managerial levels. Such a study could provide managers with insights into management behaviours that enable employees to share their knowledge. Such insights would allow managers to improve their managerial practices.

Another potentially fruitful field of research would concern the extension of the scope of this research by looking at how knowledge sharing is influenced at different managerial levels. In this research, the researcher started to explore how top management influences knowledge sharing. During data collection, a significant number of interviewees illustrated that not only is support for knowledge sharing implemented by top management, but that middle managers

can also play a significant role in enabling it. Therefore, the researcher decided to ask employees about this role. However, this research is not devoted to exploration of how other managers (i.e., frontline employees' managers and team leaders) support knowledge sharing. In the current study, no attempt was made to compare perceptions of management support for knowledge sharing at different levels of the organisational hierarchy. A comparative study of management support across managerial levels would be, therefore, useful in order to monitor its strength at different levels and, accordingly, facilitate a more integrative way of knowledge sharing.

7.4.4 Research relating to social networks, interpersonal trust, and management support, and knowledge sharing

This research identifies five recommendations for future research on the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing.

The first recommendation is replication of this study in other organisations, including public and private sector organisations. This research is devoted to exploring the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing in five companies in New Zealand. Therefore, further studies are needed to cover other service sectors and industries and to cover other nations. In addition, this research is based on the viewpoints of top and middle management and frontline employees. It could be useful to carry out research with a larger number of employees from a greater variety of companies and positions.

The second recommendation is to extend the dimensions studied in this research. Specifically speaking, future research should consider using richer operationalisations of key constructs which reflect their multidimensional nature. For example, other dimensions of knowledge sharing and, respectively, social networks, interpersonal trust, and management support all need to be further explored. In terms of social networks, interpersonal trust, and management support, there is a need to explore the nature of the individual and the group in a cohesive and coherent way. In terms of knowledge sharing, there is a need to

further explore knowledge sharing at group and organisation level in an integrative way.

The third recommendation is to consider developing and extending more elaborate measures in order to form a richer understanding of the nature of the relationship between social networks, interpersonal trust, management support, and the sharing of knowledge. In this research, the researcher developed an initial measure for this relationship. This measure was developed based on top and middle managers' and front line employees' perspectives. It is necessary to test its validity and reliability before major implementation. Then, this extended measure could be applied in a variety of industries in order to help them to find, through the analysis of the factors involved in the theoretical model and the interrelationships between them, what practices they should be concentrating on. Thus, the extended model will become an analytic model which can be utilised by organisations to identify important factors that influence employees to share their knowledge more. To be more specific, comprehending the way in which the culture of an organisation affects employees' knowledge sharing, and the strength of the effect is important. In addition, there is a need to consider additional measurable variables for testing, which could comprise:

- The impact of social networks, interpersonal trust, and management support, and the nature of knowledge sharing (tacit and explicit).
- Social networks, interpersonal trust, and openness as motivators and inhibitors (internal and external), and their impact on employees' knowledge sharing.
- A more critical perspective on knowledge sharing, questioning its role in improving working conditions, and on the role of social networks, interpersonal trust, management support and openness, in general.

The fourth recommendation is that additional critical and significant factors of knowledge sharing need to be considered and investigated. During the initial stage of conducting this research, the researcher focused on only three critical factors. These are social networks, interpersonal trust, and management support. During the data collection stage, the researcher added openness. The main reason for doing so is that a significant number of employees illustrated that openness can

play a critical role in the culture and, hence, enable knowledge sharing between employees. Conducting such research in different organisations and countries might yield factors other than these.

The fifth recommendation is to explore the similarities and differences between service and manufacturing organisations in the area of the nature of the relationships between social networks, interpersonal trust, management support, openness, and knowledge sharing. The scope of this research is concentrated on manufacturing companies. Both types of organisation could be an area worthy of further study. This is important because the current literature does not really differentiate and define the similarities and differences between the two types.

7.5 Concluding remarks

This doctoral journey has had a special meaning, significance, and relevancy to the researcher's professional aspirations as an educator. This journey has taken him through the use of the qualitative study. Despite the ordinary challenges of lacking research experience, navigating using gut feelings, and sometimes learning even during weekends, the road was worthwhile. The researcher's greatest gain was appreciation for the great amount of work that is required to produce quality research. He feels that, given his current knowledge, if he had to do it all over again, he would have changed the design to that of a mixed method study. This change in scope and focus would have enabled him to better understand, complement, elaborate on, and confirm the findings.

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Appendices

Appendix A: The nature of previous research related to social networkings and knowledge sharing

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Al-Alawi et al., 2007	Organizational culture and knowledge sharing: Critical success factors	Interpersonal trust, communication between staff, information systems, rewards, and organizational structure	Questionnaire
Alam, Abdullah, Ishak, & Zain, 2009	Assessing knowledge sharing behaviour among employees in SMEs: An empirical study	Commitment, reward systems, culture, social interaction, trust, and technology	Questionnaire
Bosua & Scheepers, 2007	Towards a model to explain knowledge sharing in complex organizational environments	Social networks	Case study/ Interview
Chow & Chan, 2008	Social networks, social trust and shared goals in organizational knowledge sharing	Social networks and shared goals	Questionnaire
Connelly & Kelloway, 2003	Predictor of employees' perceptions of knowledge sharing culture	Perception of management support, social interaction culture, and technology	Questionnaire

Author(s)/ year	Title	Factors / organisational culture factors	Research methods
Ding, Ng, & Cai, 2007	Personal constructs affecting interpersonal trust and willingness to share knowledge between architects in project design teams	Interpersonal trust, ability, attitude, and social interaction	Case study, In-depth interview
Huang, 2009	Knowledge sharing and group cohesiveness on performance: An empirical study of technology R&D teams in Taiwan	Trust, social ties, network ties, and collective mind	Questionnaire
Kelloway & Barling, 2000	Knowledge work as organisational behaviour	Transformational leadership, job design, social interaction, organisational culture, ability, motivation, and opportunity	No
Kim & Lee, 2006	The impact of organizational context and information technology on employees	Visions and goals, trust among employees, and social networks	Questionnaire
Kotlarsky & Oshri, 2004	Social ties, knowledge sharing and successful collaboration in globally distributed system development projects	Team social ties	Interview

Author(s)/ year	Title	Factors / organisational culture factors	Research methods
Liao, 2006	A learning organization perspective on knowledge-sharing behavior and firm innovation	Open-mindedness, shared vision, trust, commitment to learning, and communication	Questionnaire
Marouf, 2007	Social networks and knowledge sharing in organizations: A case study	Strength of ties	Questionnaire
Park, 2005	Critical attributes of organizational culture promoting successful KM implementation	Trust, sharing information freely, working closely with others, and making friends at work	Questionnaire
Vera-Munoz, Ho, & Chow, 2006	Enhancing knowledge sharing in public accounting firms	Information technology, formal and informal interaction, and rewards systems	No
Vithessonthi, 2008	Social interaction and knowledge sharing behaviors in multinational corporations	Social interaction, interpersonal trust, interpersonal commitment, and perceived interpersonal support	Questionnaire
Wang et al., 2006	Knowledge sharing and team trustworthiness: It's all about social ties!	Team interaction, social relationships, and strength of social ties	Interview

Author(s)/ year	Title	Factors / organisational culture factors	Research methods
Yi, 2009	A measure of knowledge sharing behaviour: Scale development and validation	Organizational communication, personal interaction, and communities of practice	Questionnaire

Appendix B: The nature of previous research related to interpersonal trust and knowledge sharing

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Al-Alawi, Al-Marzooqi, & Mohammed, 2007	Organizational culture and knowledge sharing: Critical success factors	Interpersonal trust, communication between staff, information systems, rewards, and organizational structure	Questionnaire
Alam, Abdullah, Ishak, & Zain, 2009	Assessing knowledge sharing behaviour among employees in SMEs: An empirical study	Commitment, reward systems, culture, social interaction, trust, and technology	Questionnaire
Bakker et al., 2006	Is trust really social capital? Knowledge sharing in product development projects	Capability trust, benevolence trust, and integrity trust	Questionnaire
Chakraborty, Sarker, & Sarker, 2010	An exploration into the process of requirements elicitation: A grounded approach	Collaboration, trust, mental models, cognition, and boundary conditions	Interview
Choi, Kang, & Lee 2008	The effects of socio-technical enablers on knowledge sharing: An exploratory examination	Trust, intrinsic rewards, extrinsic rewards, and knowledge management systems quality	Questionnaire

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Ding, Ng, & Cai, 2007	Personal constructs affecting interpersonal trust and willingness to share knowledge between architects in project design teams	Interpersonal trust, ability, attitude, and social interaction	Case study, In-depth interview
Gupta, 2008	A comparative analysis of knowledge sharing climate	Integrity, respect for the individual, trust, team spirit, innovation, creativity, consciousness of cost and time, and commitment to total quality	Questionnaire
Holste & Fields, 2010	Trust and tacit knowledge sharing and use	Affect-based and cognition-based trust	Questionnaire
Huang, 2009	Knowledge sharing and group cohesiveness on performance: An empirical study of technology R&D teams in Taiwan	Trust, social ties, network ties, and collective mind	Questionnaire
Huang et al., 2008	The impact of leadership style on knowledge-sharing intentions in China	Affect-based trust, citizenship behavior, cognition-based trust, consideration, initiating structure, knowledge sharing, and leadership style	Questionnaire

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Kang et al., 2008	The impact of knowledge sharing on work performance: An empirical analysis of the public employees' perceptions in South Korea	Organizational learning culture, organizational structure, employee training, reward systems, support from top management, openness in communication, cooperative relationships, and mutual trust	Questionnaire
Kim & Lee, 2006	The impact of organizational context and information technology on employees	Visions and goals, trust among employees, and social networks	Questionnaire
Liao, 2006	A learning organization perspective on knowledge-sharing behavior and firm innovation	Open-mindedness, shared vision, trust, commitment to learning, and communication	Questionnaire
Lin, 2006	Impact of organizational support on organizational intention to facilitate knowledge sharing	Organizational perceptions of innovation, characteristics with perceived relative advantage, perceived compatibility, and interpersonal trust	Questionnaire

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Lin, 2007	To share or not to share: Modeling tacit knowledge sharing, its mediators and antecedents	Organizational commitment, trust in co-workers, justice, and cooperativeness	Questionnaire

Appendix C: The nature of previous research related to management support and knowledge sharing

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Anantatmula, 2008	Leadership role in making effective use of KM	Leadership	No
Connelly & Kelloway, 2003	Predictor of employees' perceptions of knowledge sharing culture	Management support, social interaction culture, and technology	Questionnaire
Cabrera, Collins, & Salgado, 2006	Determinants of individual engagement in knowledge sharing	Self-efficacy, openness to experience, perceived support from colleagues and supervisors, organizational commitment, job autonomy, knowledge management systems, and rewards	Questionnaire
Huang, Robert, Liu, & Gu, 2008	The impact of leadership style on knowledge-sharing intentions in China	Affect-based trust, citizenship behavior, cognition-based trust, consideration, initiating structure, knowledge sharing, and leadership style	Questionnaire

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Kelloway & Barling, 2000	Knowledge work as organisational behaviour	Transformational leadership, job design, social interaction, organisational culture, ability, motivation, and opportunity	No
Kulkarni et al., 2006/2007	A Knowledge management success model: Theoretical development and empirical validation	Organisational support, explicit knowledge use, perceived usefulness of knowledge sharing, incentive, knowledge management systems, and user satisfaction	Questionnaire
Lakshman, 2007	Organizational knowledge leadership: A grounded theory approach	Leadership generally with knowledge management	Interview/ grounded theory
Lee et al., 2006	Effects of managerial drivers and climate maturity on knowledge-management performance: Empirical validation	Reward, top management support, and IT service quality	Questionnaire

Author(s) / year	Title	Factors / organisational culture factors	Research method(s)
Lin, 2007	Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions	Expected organizational rewards, reciprocal benefits, knowledge self-efficacy, and enjoyment in helping,	Questionnaire
Ling et al., 2009	Knowledge sharing in an American multinational company based in Malaysia	Rewards, and top management support	Questionnaire
Lin & Lee, 2004	Perceptions of senior managers toward knowledge-sharing behaviour	Senior managers' intentions toward knowledge sharing, attitudes toward knowledge sharing, and subjective norms about knowledge sharing	Questionnaire
Srivastava, 2001	Antecedents and effects of knowledge sharing in teams: A field study	Personality traits, goal difficulty, team efficacy, leadership behaviours, and team incentives	Questionnaire
Stoddart, 2001	Managing intranets to encourage knowledge sharing: Opportunities and constraints	Information technology, organisational learning, and information management	Questionnaire

Appendix D: Application for Ethical Approval

Application for Ethical Approval

Outline of Research Project

Waikato Management School

Te Raupapa

THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

Template:

Use clear and simple language. Avoid technical terms wherever possible.

Please allow **at least two weeks** for your application to be reviewed by the WMS Ethics Committee

You must gain ethics approval prior to the commencement of data collection for your research project

See <u>How to fill out the form</u> for guidance.

---

1. Identify the project.

Title of Project: The nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing.

Researcher(s) name and contact information:

Researcher: Said Abdullah Al-Saifi

Email: <u>sasa4@waikato.ac.nz</u>

Address:19 Earlswood Ave, Hamilton East, Hamilton 3216

Supervisor's name and contact information (if relevant)

Dr. Stuart Dillon (Chief supervisor)

Email: <u>stuart@waikato.ac.nz</u>

Dr. Peter Sun (supervisor)

Email: <u>petersun@waikato.ac.nz</u>

Professor Bob McQueen (supervisor)

Email: <u>bmcqueen@waikato.ac.nz</u>

Anticipated date to begin data collection

Approximately 12-08-2011

2. Describe the research.

2.1 Briefly outline what the project is about including your research goals and anticipated benefits. Include links with a research programme, if relevant.

The research explores the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Specific attention will be given to the following dimensions which are: Social networks, interpersonal trust, and management support. Further dimensions may be added if they emerge from the exploratory component of the research. This study will attempt to address the following research questions:

❖ What is the nature of the relationship between social networks and knowledge sharing?

❖ What is the nature of the relationship between interpersonal trust and knowledge sharing?

❖ What is the nature of the relationship between management support and knowledge sharing?

❖ What other factors that influence sharing and how?

To be more specific, the purpose of this research is to confirm that the dimensions identified from the literature are relevant to practice, to identify any further dimensions that may not have emerged from the literature review, and to gain insights into practice that will help in understanding how such relationship exist. In particular, I am looking to identify the specific "acts'' that occur (e.g. management support acts) in order to establish some link between management support and knowledge sharing. Current research, says very limited in the practical sense about how knowledge sharing improved in organisations.

2.2 Briefly outline your method.

In order to explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing, semi-structured interviews will be undertaken. These exploratory interviews will be undertaken with employees from approximately 5 organisations, with five

interviews being conducted in each organisation. Therefore, a total of twenty five interviews will be carried out.

2.3 Describe plans to give participants information about the research goals.

Targeted individuals will be contacted initially by email. This contact will outline the goals of the research and what is being requested of them. This will be followed up approximately one week later with a phone call to determine if the participant is willing to be involved and to answer any questions they might have. If I do not receive enough positive replies I will use my personal contacts in order to invite others to participate. Following that I will contact willing participants by e-mail in order to organise an interview time.

2.4 Identify the expected outputs of this research (e.g., reports, publications, presentations), including who is likely to see or hear the reports or presentations on this research.

This research is part of my Ph.D. thesis and the researcher hopes to publish this research in suitable journals. Data will only be seen by the researcher and supervisors. Any published research will be in aggregate form and participants, and their organizations will not be recognizable.

2.5 Identify the physical location(s) for the research, the group or community to which your potential participants belong, and any private data or documents you will seek to access. Describe how you have access to the site, participants and data/documents. Identify how you obtain(ed) permission from relevant authorities/gatekeepers if appropriate and any conditions associated with access.

Physical location(s): New Zealand.The interviews will be conducted any where in the North Island.

The group or community: Executives, managers, and lower-level employees.

Access: Access will be obtained through the method described in 2.2 above.

Identify how you obtain(ed) permission: Direct contact will be made with the prospective participant.

3. Obtain participants' informed consent, without coercion.

3.1 Describe how you will select participants (e.g., special criteria or characteristics) and how many will be involved.

An initial list of prospective organisations to contacts has been prepared. Over the coming weeks this will be further developed. With help from my supervisors, I will prioritise this list. I require agreement from individuals from 5 organisations with approximately five interviews being conducted in each organisation. I will make sure these 25 participants provide a good mix of ages, experience, gender etc.

3.2 Describe how you will invite them to participate.

This will be via e-mail and follow up telephone calls.

3.3 Show how you provide prospective participants with all information relevant to their decision to participate. Attach your information sheet, cover letter, or introduction script. See document on informed consent for recommended content. Information should include, but is not limited to:

- **what you will ask them to do;**
- **how to refuse to answer any particular question, or withdraw any information they have provided at any time before completion of data collection;**
- **how and when to ask any further questions about the study or get more information.**
- **the form in which the findings will be disseminated and how participants can access a summary of the findings from the study when it is concluded.**

Please see the following attachments for more detail:

- ❖ Information sheet

❖ Consent form

❖ Interview protocol

3.4 Describe how you get their consent. (Attach a consent form if you use one.)

For the interviews, a consent form will be used (see attached).

3.5 Explain incentives and/or compulsion for participants to be involved in this study, including monetary payment, prizes, goods, services, or favours, either directly or indirectly.

No incentives will be provided.

4. Minimise deception.

4.1 If your research involves deception – this includes incomplete information to participants - explain the rationale. Describe how and when you will provide full information or reveal the complete truth about the research including reasons for the deception.

No deception will be employed.

5. Respect privacy and confidentiality

5.1 Explain how any publications and/or reports will have the participants' consent.

It will be elucidated from the beginning that the outcome of the research will be a thesis and academic journal papers and that participants' consenting to participate means agreeing for the information they provide to be used for these goals, unless they withdraw before the data collection process is completed.

5.2 Explain how you will protect participants' identities (or why you will not).

Information will be seen only by the researcher and supervisors. Organisations will be referred to by code. Participants will be described in very general terms (e.g. "she was a public sector manager", or "this was a middle manager in a private sector firm").

5.3 Describe who will have access to the information/data collected from participants. Explain how you will protect or secure confidential information.

The data will only be seen by the researcher and his supervisors.

6. Minimise risk to participants.

'Risk' includes physical injury, economic injury (i.e. insurability, credibility), social risk (i.e. working relationships), psychological risk, pain, stress, emotional distress, fatigue, embarrassment, and cultural dissonance and exploitation.

6.1 Where participants risk change from participating in this research compared to their daily lives, identify that risk and explain how your procedures minimize the consequences.

No risk involved.

6.2 Describe any way you are associated with participants that might influence the ethical appropriateness of you conducting this research - either favourably (e.g., same language or culture) or unfavourably (e.g., dependent relationships such as employer/employee, supervisor/worker, lecturer/student). As appropriate, describe the steps you will take to protect the participants.

Participants will not be known to the researcher.

6.3 Describe any possible conflicts of interest and explain how you will protect participants' interests and maintain your objectivity.

No conflict of interest foreseen in this research.

7. Exercise social and cultural sensitivity.

7.1 Identify any areas in your research that are potentially sensitive, especially from participants' perspectives. Explain what you do to ensure your research procedures are sensitive (unlikely to be insensitive). Demonstrate familiarity with the culture as appropriate.

Do not foresee any cultural sensitivity issues in the research.

7.2 **If the participants as a group differ from the researcher in ways relevant to the research, describe your procedures to ensure the research is culturally safe and non offensive for the participants.**

Not relevant.

Appendix E: Ethical Application

Research Office
Waikato Management School
The University of Waikato
Private Bag 3105
Hamilton 3240
New Zealand

Amanda Sircombe
Research Manager

Phone +64 7 838 4376
Fax +64 7 838 4063
Email amandas@waikato.ac.nz
www.management.ac.nz

THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

MANAGEMENT SCHOOL
Te Raupapa

10th March 2011

Said Abdullah Al-Saifi
19 Earlswood Avenue
Hamilton 3216

Dear Said

Ethical Application WMS 11/33
The impact of organisational cultural on the knowledge management processes

As per my earlier email the above research project, as outlined in your application, has been granted Ethical Approval for Research by the Waikato Management School Ethics Committee.

Please note: should you make changes to the project outlined in the approved ethics application, you may need to reapply for ethics approval.

Best wishes for your research

Regards,

Amanda Sircombe
Research Manager

Appendix F: Information sheet and consent form

The nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing

Information sheet

Dear Participant:

My name is Said Al Saifi. I am currently a postgraduate student at the University of Waikato, as a candidate for a Ph.D. in Management Systems. I would like to invite you to participate in the research I am conducting on the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. Please read this information sheet carefully before deciding whether or not you want to participate in this study.

The objective of this study is to explore the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. You may not be familiar with these terms but that does not preclude you from participating because all organisations manage knowledge but in many different ways. You have been selected as a suitable candidate to conduct an interview with. If you kindly give your permission, your involvement will be through a semi-structured interview.

Please note that no recognisable data about any individual will accompany any specific comments made by them. The interview will take a maximum of one hour and with your permission the interview will be recorded. The location and time of the interview will be arranged with you at your earliest convenience. A copy of the transcript from the interview will be provided to you also upon request.

The data collected from the interview will be utilised for my doctorate thesis and subsequent publications. It will be stored securely in a safe place, and only my

supervisory panel and I will be able to access it. At the end of the study, any personal information will be destroyed except for any raw data, on which the results of the research depend.

You are under no obligation to accept this invitation. If you decide to participate, you have the right to decline to answer any particular question, withdraw from the study at any time, ask any questions about the study at any time during participation, and moreover, you will be providing information on the understanding that your name or organisations name will not be used.

The project has been reviewed, judged to be low risk, and approved under delegated authority for the University of Waikato ethics committee.

If you have any questions, queries, or doubts about the study, please feel free to contact my supervisors:

Researcher's Name and Contact Information:
Said Al Saifi, Department of Management Systems, Waikato Management School
Mobile Phone: 0212129691, email: sasa4@waikato.ac.nz

Supervisor's Name and Contact Information:
Dr. Stuart Dillon (Chief supervisor)
Phone (647) 838 4234, email stuart@waikato.ac.nz
Dr. Peter Sun (supervisor)
Phone (647) 838 4283, email petersun@waikato.ac.nz
Prof. Bob McQueen (supervisor)
Phone (647) 838 4126, email bmcqueen@waikato.ac.nz

Thank you very much for your cooperation

Kind regards,
Said Al Saifi
Candidate for Ph.D. in Management Systems

Appendix G: Interview protocol for research project

Interview profile

Participant Code:

Location of interview:

Date (day/month):

Time of interview: From   to

Duration of interview: minutes

Comments:

Introduction

First of all, I would like to thank you for agreeing to participate in this research project. Your help is very much appreciated. My name is Said.

As you may be aware from the previous contact on setting up this appointment, I am conducting a study about the nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing. I'm doing this research as part of my Ph.D. thesis at the University of Waikato in New Zealand. But before we begin the interview, I would like you to read this information sheet. [*Hand information sheet to participant*]. It provides further details about the research, such as what it is about, how the information is to be collected and used, what your rights as a participant are, and so on. Please feel free to ask questions if there is anything you are not clear about.

I would like to assure you that everything you tell me will remain confidential. I will not use your name or any identifying information relevant to your organisation in any report for this study. At this time, I would also like to ask your permission to record this interview. Doing so will let me concentrate totally on what you have to say and not on note taking. The tape will be erased immediately after transcription. So is it okay if I record the interview? Thank you so much.

Another thing before we start is this: I would like to remind you that you can decline to answer any question. Do you have any questions for me before I start? Okay, here is a consent form that gives a summary of what I just said. [*Hand a consent form to participant*]. I just need you to read and sign it please.

Shall we start?

Waikato Management School
Te Raupapa

THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

The nature of the relationships between social networks, interpersonal trust, management support, and knowledge sharing

Consent Form for Participants

I have read the **Information Sheet for Participants** for this study and have had the details of the study explained to me. My questions about the study have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I also understand that I am free to withdraw from the study at any time, or to decline to answer any particular questions in the study. I agree to provide information to the researchers under the conditions of confidentiality set out on the **Information Sheet**.

I agree to participate in this study under the conditions set out in the **Information Sheet** form.

Signed: _____

Name: _____

Date: _____

Researcher's Name and contact information:

My contact details at Waikato University is email sasa4@waikato.ac.nz, otherwise, my mobile number is 0212129691

Supervisor's Name and contact information:

Dr. Stuart Dillon, phone (647) 838 4234, email stuart@waikato.ac.nz

Dr. Peter Sun, phone (647) 838 4283, email petersun@waikato.ac.nz

Prof.Bob McQueen, phone (647) 838 4126, email bmcqueen@waikato.ac.nz

Appendix I: Interview Questions

General questions

1. Could you please tell me what your work experience is?
2. What are the key responsibilities of your job?
3. What types of knowledge are important for jobs in this organisation?

Knowledge sharing

4. Tell me about how knowledge sharing happens in your organisation.
5. When employees in your organisation have worked under unfamiliar conditions, how have they proceeded to gain the knowledge they needed in order to do their work well?
6. Have any of the employees attended training programmes, workshops, or seminars? If so, what did they learn? What kind of knowledge was shared?

To probe deeper into issues of interest, follow up questions such as these may be asked:

- Can you tell me more about that?
- Can you explain how?

The next set of questions is designed to help us to understand certain practices linked to the sharing of knowledge.

Interpersonal trust and knowledge sharing

7. Do you feel that the employees in your organisation rely on each other?
8. Explain what your organisation does to promote trust between employees.
9. Who do you turn to when employees in your organisation need to gain new knowledge? Why him/her/them?

To probe deeper into issues of interest, follow up questions may be asked, such as:

- Can you give me some examples?
- Can you explain how?

Management support and knowledge sharing

10. Does management ask any of your colleagues at work to help them to make decisions? Explain how.

11. How does top management encourage experienced colleagues to share their knowledge with new employees?

12. Does top management provide employees with incentives, such as training, bonus pay, promotion, recognition, gifts, letters of commendation, etc., as reward for sharing knowledge? Explain how.

13. In your organisation, what incentives are the most effective for encouraging knowledge sharing? Explain why.

To probe deeper into issues of interest, follow up questions may be asked, such as:

- Are there other behaviours which you personally engage in to facilitate knowledge sharing in your organisation?

- Can you give me some examples?

- Could you please further explain or say a little more about that?

Social networks and knowledge sharing

14. Over the previous weeks, were there any conditions under which you turned to someone else with relevant knowledge to learn what you needed to? Would you describe some examples?

15. In what way did they share their knowledge? (through communication, meetings, private discussion, etc.?)

16. How do your employees share what they know with their co-workers?

To probe deeper into issues of interest, follow up questions may be asked, such as:

- What else does the organisation do to enhance social interaction between employees?

- Could you please further explain or say a little more about that?

- Can you explain how?

Transition: It's been great to hear the opinions you've shared. I'll be analysing the information you and others have given me and submitting a draft report to the organisation in six months. I'll be happy to send you a copy to review at

that time if you are interested. In the last part of the interview, I would like to
ask a few demographic questions.

[Record the time at which the interview ends]
[Complete the interview profile as soon as possible after the interview.]

Appendix J: Demographic data

Background information

Please circle the appropriate number to answer the following questions.

Gender	1. Male	2. Female	
Age group	1. 20-29	2. 30-39	3. 40-49
	4. 50-59	5. Over 60	

Highest educational level	1. High school	2. Diploma
	3. Bachelor's degree	4. Postgraduate certificate/Diploma
	5. Master's degree or equivalent	6. Higher than Master's degree

How long have you been working in this organisation?	1. Less than one year	2. 1-5 years	3. 6-10 years
	4. 11-20 years	5. More than 20 years	

How long have you been working in your current position?	1. Less than one year	2. 1-5 years
	3. 6-10 years	4. 11-20 years
	5. More than 20 years	

Your job title

Your organisation's size (Please estimate the total number of employees in your organization)

Other organisations worked in (where applicable):

Thank you for your participation in this study. I am grateful for your help. If you have any questions, please feel free to contact me.

Appendix K: Summary of the Interviewees

Name	Company	Age Group	Job title	Years of working in this organisation	Years of working in current position
A1	A	40-49	Top manager	1-5 years	1-5 years
A2	A	30-39	Middle manager	6-10 years	less than one year
A3	A	40-49	Middle manager	less than one year	11-20 years
A4	A	50-59	Front line employee	11-20 years	11-20 years
A5	A	20-29	Front line employee	1-5 years	1-5 years
B1	B	50-59	Top manager	1-5 years	1-5 years
B2	B	50-59	Middle manager	1-5 years	1-5 years
B3	B	40-49	Middle manager	More than 20 years	1-5 years
B4	B	30-39	Front line employee	11-20 years	less than one year
B5	B	20-29	Front line employee	1-5 years	1-5 years
C1	C	40-49	Top manager	1-5 years	1-5 years
C2	C	50-59	Middle manager	More than 20 years	less than one year
C3	C	50-59	Middle manager	1-5 years	less than one year
C4	C	20-29	Front line employee	less than one year	less than one year
C5	C	30-39	Front line employee	1-5 years	1-5 years
D1	D	40-49	Top manager	More than 20 years	6-10 years
D2	D	30-39	Middle manager	6-10 years	6-10 years
D3	D	40-49	Middle manager	1-5 years	1-5 years
D4	D	20-29	Front line employee	less than one year	less than one year
D5	D	50-59	Front line employee	1-5 years	1-5 years
E1	E	40-49	Top manager	1-5 years	1-5 years
E2	E	40-49	Middle manager	6-10 years	1-5 years
E3	E	30-39	Middle manager	6-10 years	1-5 years
E4	E	30-39	Front line employee	less than one year	less than one year
E5	E	40-49	Front line employee	1-5 years	1-5 years

A: Dairy company   B: Dairy company   C: Mining company   D: Engineering design company   E: Analytical testing laboratory company

Appendix L: Example of grounded theory data analysis

The following is a short example of how the data was obtained from the interview transcripts. It illustrates how the grounded theory analysis coding was adapted to produce data that directly links to the research questions.

The example uses a short extract from one interview. This extract has been selected because it does not involve any identifiable reference to the interviewee and his/her company. This example is simple, intended to clarify the processes used. Because of its brevity, the set of incidents, concepts, categories, etc. is only a fraction of those that emerged from the entire data analysis.

Transcript Extract

The following transcript extract demonstrates the coding procedures implemented.

Open Coding

The first step in open coding is to identify incidents. Incidents identified in the example extract are highlighted and numbered below.

Said:

What does ...... Company do in order to promote trust between employees?

I6:

I think from a point of viewof trust, **I have actually made them comfortable enough** (1), and **I think when you actually ensure that you are creating a culture of no blame, rather looking at the problem and not the person, and finding solutions for the problem and not judging the person** (2), is when we would actually create that culture that says: **you can trust everybody because they're not going to look at me as an individual, but they're gonna look at the problem that I bring to the fore** (3). So, maybe, to evolve that **we need to praise people for the problems that they actually thought of mentioning** (4). I think there are lots of people that have evolved to that level where it is sitting there, **but obviously there's a lot of people that come, as I said, from the old school and it is still the blame game** (5); and **we need to shift them** (6) and **we need to make them realise that playing the**

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blame game is actually causing problems for both the areas rather than the otherarea (7)**,** where **lets sort the problem out because it resolves and creates a better environment for everybody** (8).

Said:

Who do you turn to when you need to learn new knowledge or information, or skills?

I6:

It depends on the situation that I am in. **I would go to whomever I think has got the best knowledge to actually teach me to get better at it** (9). **I'm also of the opinion that you can never be an expert at anything** (10)**; there's always somebody that would be able to challenge you** (11), and **you've gotta be able to be challenged and open to taking it to the next level** (12), because that's what conscientious improvement is about. Its about **opening people up to challenge** (13), **creating an environment and a culture that challenges you a bit; not challenge you negatively, but challenge you to evolve to a higher level** (14). It's what that challenge is and **people's differences of opinion that you actually get better at what you do** (15).

Said:

Why do you return to other employees in order to share knowledge?

I6:

I think so, I think it's my responsibility as the senior manager to ensure... firstly, it's probably me and my value stream as well; I always have been a manager that **shared my knowledge so that I could actually allow people to impart themselves and get to a better-level state** (16). Because **I believe that people are their worst enemies when they restrict themselves and they think they don't know something** (17), **it's my objective to motivate them, to show them that they actually have got that ability** (18) because if I have the lesser they do; its just, I

think, sometimes putting a square peg in a round hole, because it's taking that person from that, you know, the square peg from the round hole and putting them in a square rather than a round hole. **It's just placing them for their skill sets rather than the fact that they don't have the ability** (19), so, **I think, to challenge them** (20) and **to continually discuss things** (21).

* The previous transcript is edited to protect confidentiality

The identified incidents are then given relevant descriptive names as shown below.

1. Making employees comfortable	12. Openness to challenge
2. Creating a "no blame" culture	13. Openness to challenge
3. Problem focus	14. Creating a positive culture
4. Praise people	15. Differences of opinion
5. Old school perspective	16. Employees "impartment"
6. Changing employees' perspective	17. Knowledge restriction
7. Effects of blame culture	18. Motivate employees' ability
8. Problem solving encouragement	19. Placing employees for their skill
9. Competence-based trust	20. Challenge employees
10. Competence-based trust	21. Continuous discussion
11. Openness to challenge	

The next step was to group related incidents into concepts. The list of concepts is presented below. The original incidents are shown in brackets.

a. Making employees comfortable (1)

b. Creating a "no blame" culture (2, 3, 7)

c. Praise employees (4)

d. Old school perspective (5)

e. Changing employees perspective (6)

f. Problem solving encouragement (8)

g. Competence-based trust (9, 10, 11, 12, 13, 15, 18, 19, 20)

h. Creating a positive culture (14)

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    i.   Employees "impartment" (16)

    j.   Knowledge restriction (17)

    k.   Continuous discussion (21)

The last stage of open coding is to form more abstract categories of related concepts. These are shown below including (in brackets) the original incidents that are within them.

    a.   Making employees comfortable (1)

    b.   Creating a "no blame" culture (2, 3, 7,14)

    c.   Provision of incentive systems (4, 16)

    d.   Old school perspective (5)

    e.   Changing employees' perspective (6)

    f.   Problem solving encouragement (8)

    g.   Competence-based trust (9, 10, 11, 12, 13, 15, 18, 19, 20)

    h.   Knowledge restriction (17)

    i.   Continuous discussion (21)

Axial Coding

In axial coding, the categories and their properties are linked to each other to recognise relationships and to relate them to the research questions of the study. This commonly only involves a renaming or classifying of categories. These are now termed phenomena. The categories contained within each are shown in brackets.

The identified phenomena are:

    ❖ Factors influencing interpersonal trust (creating a "no blame" culture, old school perspective, knowledge restriction).

    ❖ Competence based trust (competence based trust).

    ❖ The effects of management to facilitate knowledge sharing (making employees comfortable, provisionof incentive systems, problem solving, continuous discussion, changing employees' perspective).

Relating these to the research questions we get:

Q7. Do you feel that the employees in your organisation rely on each other? Can you give me some examples?

Associated phenomenon: Factors influencing interpersonal trust.

Q9. Who do you turn to when employees in your organisation need to gain new knowledge? Why him/her/them?

Associated phenomenon: Competence-based trust.

Q11. How does top management encourage experienced colleagues to share their knowledge with new employees?

Associated phenomenon: The effects of managementto facilitate knowledge sharing.

Selective Coding

Selective coding is the last stage of the coding process and comprises the development of stories from the phenomena identified. Selective coding is best accomplished when substantial data exists and so, for that reason, the story presented below is particularly limited; it is based only on the short extract of the single interview. Given that the "core" categories used to formulate the stories were previously identified (as phenomena) during the axial coding, all that is needed to complete the selective coding is to write a few sentences for each "core" category such than the story may then be formulated. Descriptive sentences derived from the "core" categories are shown below. In fact, research questions cannot be addressed from only a single transcript.

Q7.   There's a lot of people that come from the old school and it is still the blame game.

I think that when you are creating a culture of no blame, look at the problem rather than the person.

Q9.   I'm also of the opinion that you can never be an expert at anything.
There's always somebody that would be able to challenge you.

You've gotta be able to be challenged and open to taking it to the next level.

Q11.   We need to praise people for the problems that they actually thought of bringing forward.

Appendix M: Covering letter

The Nature of the Relationships between Social Networks, Interpersonal Trust, Management Support, and Knowledge Sharing
Information sheet

Dear Sir/Madam,

My name is Said Al Saifi. I would like to invite you to take part in a survey which I am conducting as a candidate for a Ph.D. in Management Systems at the University of Waikato. The objective of this study is to examine the impact of social networks, interpersonal trust, and management support on knowledge sharing.

This survey is divided into two sections. The first asks about some items regarding the impact of social networks, interpersonal trust, and management support on the sharing of knowledge. The second seeks personal data about respondents. The survey takes no more than 20 minutes of your time to complete.

The data collected from the survey will be utilised for my doctorate thesis and subsequent publications. It will be stored securely in a safe place, and only my supervisory panel and I will be able to access it. At the end of the study, any personal information will be destroyed except for any raw data, on which the results of the research depend.

The project has been reviewed, judged to be low risk, and approved under delegated authority for the University of Waikato ethics committee.

Researcher's Name and Contact Information:

Said Al Saifi, Department of Management Systems, Waikato Management School
Mobile Phone: 0212129691, email: sasa4@waikato.ac.nz

Supervisor's Name and Contact Information:

Dr. Stuart Dillon (Chief supervisor),

Phone: (647) 838 4234, email stuart@waikato.ac.nz

Dr. Peter Sun (supervisor)

Phone (647) 838 4283, email petersun@waikato.ac.nz

Prof. Bob McQueen (supervisor)

Phone (647) 838 4126, email bmcqueen@waikato.ac.nz

<center>**Thank you very much for your cooperation**</center>

Kind regards,

Said Al Saifi

Candidate for Ph.D. in Management Systems

Appendix N: Survey questionnaire

Please indicate the extent to which you agree or disagree with each of the following statements. Circle a number from 1-5 that represents your level of agreement where 1 = strongly disagree and 5 = strongly agree. <u>Please ensure that you answer all questions.</u>

N	Items	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1	Our organisation's members have a very good relationship in general.	1	2	3	4	5
2	Our organisation's members are close to each other.	1	2	3	4	5
3	Our organisation's members communicate with other employees through multiple forum styles.	1	2	3	4	5
4	Our organisation's members share diverse knowledge through social activities.	1	2	3	4	5
5	Our organisation's members have a strong tie with each other.	1	2	3	4	5
6	Our organisation's members have a wide range of social interaction with each other.	1	2	3	4	5
7	Our organisation's members use understandable communication patterns during their discussion.	1	2	3	4	5
8	Our organisation's members use understandable narrative forms when they deal with work issues.	1	2	3	4	5
9	Our organisation's members share knowledge to solve work problems.	1	2	3	4	5
10	Our organisation's members are involved actively in brainstorming sessions.	1	2	3	4	5
11	Our organisation's members share training expertise with other employees.	1	2	3	4	5
12	Our organisation's members involve themselves actively in scheduled meetings.	1	2	3	4	5

N	Items	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
13	Our organisation's members share their knowledge in informal social activities.	1	2	3	4	5
14	Our organisation's members help each other to learn the skills they need.	1	2	3	4	5
15	Our organisation's members are confident in their ability to provide knowledge that other members consider valuable.	1	2	3	4	5
16	Our organisation's members can rely on each other.	1	2	3	4	5
17	Our organisation's members protect all sensitive knowledge about other employees.	1	2	3	4	5
18	Our organisation's members have a clear and consistent set of values that governs the way they do business.	1	2	3	4	5
19	Our organisation's members are tolerant about mistakes.	1	2	3	4	5
20	Our organisation's members build a partnership to achieve work goals.	1	2	3	4	5
21	Our organisation's members show a great deal of respect.	1	2	3	4	5
22	Our organisation's members are very trustworthy.	1	2	3	4	5
23	Our manager encourages participative decision making.	1	2	3	4	5
24	Our manager breaks down barriers to knowledge sharing.	1	2	3	4	5
25	Our manager encourages open communication in our working groups.	1	2	3	4	5
26	Our manager provides recognition for knowledge sharing.	1	2	3	4	5
27	Our manager encourages employees to share learning.	1	2	3	4	5
28	Our manager provides training or assigns others to do the training.	1	2	3	4	5

Thank you very much for your cooperation,,,

Appendix O: Demographic data

Please circle the appropriate number to answer the following questions.

| **Gender** | 1. Male | 2. Female |

| **Age group** | 1. 20-29 | 2. 30-39 | 3. 40-49 |
| | 4. 50-59 | 5. Over 60 |

Highest educational level

1. High school
2. Diploma
3. Bachelor's degree
4. Postgraduate certificate/Diploma
5. Master's degree or equivalent
6. Higher than Master's degree

How long have you been working in this organisation?

1. Less than one year
2. 1-5 years
3. 6-10 years
4. 11-20 years
5. More than 20 years

How long have you been working in your current position?

1. Less than one year
2. 1-5 years
3. 6-10 years
4. 11-20 years
5. More than 20 years

What is your position in the organization?

1. Top manager
2. Middle manager (your subordinate are general employees)
3. First line supervisor (your subordinate are general employees)
4. Employee (you don't need to supervise other people)

Thank you for your participation in this study. I am grateful for your help. If you have any questions, please feel free to contact me.