

**AN EXPLORATION OF INTER-FIRM  
KNOWLEDGE TRANSFER  
IN MULTINATIONAL ORGANISATIONS**

---

---

Christine Durrant

A thesis submitted to Auckland University of Technology  
in partial fulfilment of the degree of Master of Business  
Studies.

# TABLE OF CONTENTS

	Page
<b>LIST OF TABLES</b>	vi
<b>LIST OF DIAGRAMS</b>	vi
<b>LIST OF GRAPHS</b>	vii
<b>ATTESTATION OF AUTHORSHIP</b>	viii
<b>ACKNOWLEDGEMENTS</b>	ix
<b>ABSTRACT</b>	x
<b>PART 1</b>	
<b>INTRODUCTION AND BACKGROUND</b>	
<b>CHAPTER 1.0</b>	
<b>INTRODUCTION</b>	2
1.1	4
THE MOTIVATION BEHIND THIS THESIS	
1.2	5
OUTLINE OF THIS THESIS	
<b>CHAPTER 2.0</b>	
<b>LITERATURE REVIEW</b>	
2.1	8
INTRODUCTION	
2.2	8
WHY KNOWLEDGE IS A STRATEGIC ASSET	
2.2.1	8
The Resource-Based View	
2.2.2	9
The Knowledge-Based View	
2.2.3	10
Network Knowledge	
2.2.4	10
Network Management	
2.2.5	11
Summary	
2.2	12
KNOWLEDGE CONCEPTS	
2.3.1	12
Data, Information, Knowledge	
2.3.2	13
The Characteristics of Knowledge	
2.4	15
THE PROCESS OF KNOWLEDGE CREATION	
2.4.1	15
Socialisation, Externalisation, Combination, Internalisation Process Model	
2.4.2	19
Intellectual Capital	
2.5	20
ORGANISATIONAL LEARNING	
2.6	22
ORGANISATIONAL ROUTINES	

2.7	KNOWLEDGE TRANSFER	26
2.7.1	Understand Knowledge Transfer	26
2.7.2	The Nature of Knowledge	27
2.7.3.	Richness of Communication Channels	28
2.7.4	Motivation to Transfer Knowledge	29
2.7.5	Absorptive Capacity	32
2.7.6	Organisational Context	34
2.8	SUMMARY	36

### **CHAPTER 3.0 RESEARCH DESIGN**

3.1	INTRODUCTION	37
3.2	THE RESEARCH FOCUS	37
3.3	RESEARCH OBJECTIVES	38
3.3.1	Motivation to Transfer Knowledge	38
3.3.2	Richness of Communication Channels	39
3.3.3	Absorptive Capacity	40
3.3.4	Organisational Context	40
3.3.5	Knowledge Transfer	41
3.4	RESEARCH FRAMEWORK	42
3.5	ETHICAL ISSUES	44
3.6	MANAGEMENT OF LIMITATIONS	45
3.7	SUMMARY	47

### **PART 2 QUALITATIVE RESEARCH**

#### **CHAPTER 4.0 QUANTITATIVE METHOD AND PREPARATION FOR DATA ANALYSIS**

4.1	INTRODUCTION	49
4.2	SELECTION OF PARTICIPANTS	49
4.3	DATA COLLECTION	50
4.3.1	Questionnaire Development	50
4.3.2	Pre-testing	51
4.3.3	Electronic Questionnaire	52

4.4	DATA CONVERSION	52
4.5	RELIABILITY AND VALIDITY	53
	4.5.1 Reliability	53
	4.5.2 Validity	56
4.6	OUTLINE OF DATA ANALYSIS	58
4.7	PARAMETRIC AND NON-PARAMETRIC TESTS	60
4.8	SUMMARY	61

## **CHAPTER 5.0      QUANTATITIVE DATA ANALYSIS AND RESULTS**

5.1.	INTRODUCTION	62
5.2.	DATA FREQUENCIES	62
	5.2.1 Motivation to Transfer Knowledge	63
	5.2.2 Richness of Communication Channels	64
	5.2.3 Absorptive Capacity	65
	5.2.4 Knowledge Transfer	66
5.3	EXPLORING RELATIONSHIPS BETWEEN VARIABLES	67
5.4	MULTIPLE REGRESSION	69
	5.4.1 Data Assumptions	70
	5.4.2 Stepwise Regression	73
5.5	ORGANISATIONAL CONTEXT	75
	5.5.1 Culture	76
	5.5.2 Improvements	77
	5.5.3 Relationships between Firms	77
5.6	SUMMARY	78

## **PART 3                      QUALITATIVE RESEARCH**

### **CHAPTER 6.0      QUALITATIVE METHOD**

6.1	INTRODUCTION	81
6.2	SELECTION OF PARTICIPANTS	81
6.3	RESEARCH FRAMEWORK	81
	6.3.1 Motivation to Transfer Knowledge	83
	6.3.2 Richness of Communication Channels	83

6.3.3	Absorptive Capacity	83
6.3.4	Knowledge Transfer	84
6.3.5	Organisational Context	84
6.4	DATA COLLECTION	85
6.5	DATA ANALYSIS	87
6.6	RELIABILITY AND VALIDITY	89
6.6.1	Reliability	89
6.6.2	Validity	89
6.7	SUMMARY	90

## **CHAPTER 7.0      QUALITATIVE RESULTS**

7.1	INTRODUCTION	91
7.2	BACKGROUND INFORMATION	91
7.3	MOTIVATION TO TRANSFER KNOWLEDGE	92
7.3.1	Group Identity	92
7.3.2	Encouragement	94
7.4	RICHNESS OF COMMUNICATION CHANNELS	95
7.5	ABSORPTIVE CAPACITY	97
7.5.1	Experience and Expert Knowledge	97
7.5.2	Similarities	98
7.5.3	Resource	99
7.6	KNOWLEDGE TRANSFER	99
7.6.1	Evidence of Knowledge Transfer	99
7.6.2	Knowledge Transfer Patterns Based on Preferences	101
7.7	ORGANISATIONAL CONTEXT	102
7.7.1	Facilitation of Knowledge Transfer	102
7.7.2	Improvements	103
7.7.3	Relationships	103
7.8	SUMMARISED QUALITATIVE RESULTS	104
7.8.1	Motivation to Transfer Knowledge	104
7.8.2	Richness of Communication Channels	105
7.8.3	Absorptive Capacity	106
7.8.4	Knowledge Transfer	107

**PART 4 DISCUSSION, BUSINESS IMPLICATIONS AND CONCLUSION**

**CHAPTER 8.0 DISCUSSION AND BUSINESS IMPLICATIONS**

8.1	INTRODUCTION	110
8.2	MOTIVATION TO TRANSFER KNOWLEDGE	110
	8.2.1 Power Play	112
	8.2.2 Encouragement	112
8.3	RICHNESS OF COMMUNICATION CHANNELS	113
8.4	ABSORPTIVE CAPACITY	115
8.5	KNOWLEDGE TRANSFER	116
8.6	ORGANISATIONAL CONTEXT	117
8.7	BUSINESS IMPLICATIONS	119
	8.7.1 Strategic Focus	119
	8.7.2 Leadership	119
	8.7.3 Process	120
	8.7.4 Focus on People	120
	8.7.5 Measurement	121
8.8	SUGGESTIONS FOR FUTURE RESEARCH	121

**CHAPTER 9.0 CONCLUSION 123**

**REFERENCES 125**

**APPENDIX 1 137**

**APPENDIX 2 139**

**APPENDIX 3 142**

**APPENDIX 4 148**

**APPENDIX 5 150**

## LIST OF TABLES

	Page
Table 2.1: Lundvall's Classification	14
Table 2.2: Contrasts-Knowledge Management and Organisational Learning	23
Table 2.3: Overlaps-Knowledge Management and Organisational Learning	24
Table 2.4: Consistency-Knowledge Management and Organisational Learning	25
Table 4.1: Example of Question Development	50
Table 4.2: Cronbach Coefficient Alpha Values	55
Table 4.3: Spearman's Rank Order Correlations for Validity	56
Table 4.4: Statistical significance level of difference between job function	58
Table 4.5: Outline of Data Analysis - MTK, RC, Grp ID and E	59
Table 4.6: Outline of Data Analysis – Organisational Context	60
Table 5.1: Frequency Data for Motivation to Transfer Knowledge	63
Table 5.2: Frequency Data for Richness of Communication Channels	64
Table 5.3: Frequency Data for Absorptive Capacity	65
Table 5.4: Frequency Data for Knowledge Transfer	66
Table 5.5: Spearman's Rank Order Correlations, Explore Relationships	68
Table 5.6: Culture - Theme and Category	76
Table 5.7: Improvements – Theme and Category	77
Table 5.8: Relationships – Theme and Category	78
Table 6.1: Interview Questions	86

## LIST OF DIAGRAMS

Diagram 2.1: From Data to Knowledge	13
Diagram 2.2: SECI Process Model	16
Diagram 2.3: Intellectual Capital Model	19
Diagram 2.4: Relationship between Individual and Organisational Knowledge	21
Diagram 3.1: Research Framework-Quantitative and Qualitative Methods	43
Diagram 4.1: Summated Scales	54
Diagram 6.1: Research Framework-Qualitative Method	82
Diagram 6.2 Coding System	88

## LIST OF GRAPHS

Graph 5.1: Normality Plot of Variables against KT	70
Graph 5.2: Partial Regression Plot for KT and MTK	71
Graph 5.3: Partial Regression Plot for KT and E	71
Graph 5.4: Partial Regression Plot for KT and RC	71
Graph 5.5: Histogram - Frequency and Standardised Residual	72
Graph 5.6: Scatter Plot	73

## ATTESTATION OF AUTHORSHIP

I hereby declare that this thesis is my own work and that to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the qualification or any other degree or diploma of a university or other institution of higher learning, except where due acknowledgement is made in the acknowledgments

.....

Christine Durrant

## ACKNOWLEDGEMENTS

I would like to express my gratitude to a number of people for the part they played in the completion of this thesis. A special thank you to Martie-Lousie Verreynne, your confidence in me has helped me stay focused on this thesis. You have offered me your untiring support and you provided advice that helped me through some difficult times. I would like to thank Andrew McConchie for his ability to see what was needed and offer sound guidance on how to reach the goals that were set for this thesis. Thank you for pushing and challenging me. I wish to acknowledge Dave Perry and Stuart Young for their expert assistance and advice.

Also I am grateful to the organisations that help make this thesis possible. First, I am indebted to both the organisations that participated in this research. The time they gave that made this research possible is truly appreciated. Second, a thank you to the Auckland University of Technology for awarding me a scholarship, this assistance motivated me to seek a high level of academic achievement.

Finally a special thank you to my husband and family for endured my many years of study. You have offered untiring support and I cannot thank you enough.

## ABSTRACT

This thesis explores knowledge transfer between firms in multinational organisations. The subject of knowledge transfer is undisputedly important because knowledge is the essence of competitive advantage. In addition, multinational organisations are believed to be more effective at facilitating inter-firm knowledge transfer.

The theoretical framework of this thesis is based on four constructs of knowledge transfer: motivation to transfer knowledge; richness of communication channels; absorptive capacity and organisational context. The research uses both quantitative and qualitative methods to explore these constructs. The research confirms the positive relationship between these constructs. Importantly, it highlights three knowledge transfer levels namely: pooling; assimilation; application and integration of knowledge into the multinational organisation. The research shows that knowledge must move through each of these levels if the focus is knowledge creation, these levels not to be treated as isolated but in fact overlapping. The research also found that high levels of espoused motivation are not always supported by proactive knowledge transfer behaviours. It demonstrated that at a certain level of knowledge transfer encouragement becomes less important than other motivational factors.

Importantly, the multinational needs to manage knowledge transfer. To do this, the nature of knowledge must be considered and there needs to be an understanding that *ad hoc* knowledge transfer patterns can inhibit knowledge being transferred to where it may be needed. The research highlights how important it is for multinational inter-firm knowledge transfer to begin with the individual and then move to the organisation. The individual needs to have the necessary attitudes and ability to understand the benefits. Also, they need to understand that knowledge is not transferred through acceptance alone, but needs to be implemented. This means the multinational must provide strategic direction and structure that facilitates the movement of knowledge across the multinational organisation. Knowledge transfer routines must be managed to allow knowledge to move to where it can create unique knowledge because it is this unique knowledge that can be a strategic benefit to the organisation.

## Chapter 1.0 INTRODUCTION AND BACKGROUND

*'Knowledge has emerged as the most strategically-significant resource of the firm' (Grant, 1996, p.375)*

A key element of creating and sustaining competitive advantage for a multinational organisation (MNO) is its ability to capture knowledge across the organisation without the risk of market exposure (Bartlett & Ghoshal, 1991; Gupta & Govindarajan, 2000a). In today's business world it is possible for a network of interdependent relationships to link the success of an individual firm with the success of other firms, pushing the knowledge focus across the boundaries between firms (Dyer & Nobeoka, 2000; Dyer & Singh, 1998; Gupta & Govindarajan, 2000a; Zack, 1999). Such relationships of interdependence result in a social complexity that is distinctive (Bartlett & Ghoshal, 1991). The development of multidimensional competencies and perspectives provide a unique pool of knowledge that is by nature rare, non-substitutable and valuable, as other firms cannot easily imitate this knowledge (Grant, 1996; Lam, 1997). The importance of knowledge transfer is further magnified and effective knowledge transfer becomes increasingly critical as competition between firms intensifies (Bhagt, Kedia, Harveston & Triandis, 2002).

Bresman, Birkinshaw and Noble (1999) suggest that knowledge transfer within a MNO presents a different situation from an alliance, joint venture or knowledge transfer between independent firms. In a MNO the relationships developed to support knowledge transfer are considered enduring and the mode of governance is the MNO hierarchy, not the market. This thesis explores how MNOs transfer knowledge and some of the organisational issues that determine the effectiveness of the process.

Knowledge is generated in all parts of the organisation and the process of knowledge management concerns obtaining the best possible value from this knowledge (Quintas, 2002; Dyer & Singh, 1998). Literature suggests that knowledge management is about the routines that support learning (Levitt & March, 1998; Huber, 1991; Quintas, Lefrere & Jones, 1997; Demarest, 1997). Also, that knowledge transfer is dependent on the following constructs: motivation to transfer knowledge (Dyer & Nobeoka, 2000; Grotenhuis & Weggeman, 2002; Gupta & Govindarajan, 2000a); richness of communication channels (Ghoshal & Bartlett, 1990; Gupta & Govindarajan, 2000a);

absorptive capacity (Cohen & Levinthal, 1990; Dyer & Nobeoka, 2000; Gupta & Govindarajan, 2000a; 2000b; Szulanski, 1996); organisational context (Adler & Kwon, 2002; Dyer & Nobeoka, 2000; Nonaka, 1994; von Krogh, Ichijo & Nonaka, 2000; Fahey & Prusak, 1998); and the interrelationships between these constructs (McGaughley, 2002; Demarest, 1997; Bontis, 1999).

This thesis takes the above constructs and their effect on knowledge transfer into account, and asks the following question in order to explore the knowledge transfer phenomenon within MNOs:

**How does motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context influence inter-firm knowledge transfer in MNOs?**

At this point it is important to note that the focus of the knowledge transfer activity in this research relates to the sending and receiving of ‘know how’ knowledge. ‘Know how’ knowledge involves the knowledge of skills, competencies, and a firm’s routines (Lundvall, 1996). Inherent in the nature of these items, is a uniqueness which creates sustainable competitive advantage for a firm (Kogut & Zander 1992). Evidence exists that the management of this type of knowledge is extremely important since it is difficult to transfer because it is embedded in personal experience, values, beliefs and organisational influences. For these reasons ‘know how’ knowledge is valuable, rare and difficult to substitute (Nonaka & Takeuchi, 1995; Simonin, 1999). Further discussion on ‘know how’ and other types of knowledge will be included in chapter two of this thesis.

This thesis will focus on the process of knowledge transfer and the organisational factors that determine its effectiveness, motivated by the link between improved performance and knowledge transfer (Sveiby, 1997; Dyer & Nobeoka, 2000). The importance that should be placed on knowledge transfer performance measurement is recognised. However, performance measurement is considered a complex topic, one which is outside the scope of this thesis. In particular, this thesis is interested in the development of knowledge transfer behaviours and the organisational processes and systems that support an organisations performance management. In the following section the motivation for this research is explained further.

## **1.1. THE MOTIVATION BEHIND THIS THESIS**

The primary motivation behind this thesis is that knowledge is a key strategic resource that should be captured to give a firm strategic advantage. This is accomplished by facilitating the transfer of knowledge between individuals, groups and firms. Much of the research to date (Bontis, 1999; Bontis, Chua Chong Keow & Richardson, 2000; Dyer & Nobeoka, 2000; Grotenhuis & Weggeman; 2002; Gupta & Govindarajan 2000a; Lam, 1997; Simonin, 1999; Zander & Kogut, 1995) reveals a profusion of work. For example, first, Dyer and Nobeoka (2000) propose that the reason for Toyota's knowledge transfer success lies in viewing knowledge as the property of the group. Second, Simonin (1999) addresses the role that knowledge ambiguity plays in inhibiting knowledge transfer in international strategic alliances. Third, Gupta and Govindarajan's (2000a) investigation into knowledge transfer in MNOs shows a positive association between knowledge transfer, the motivational disposition to transfer knowledge, the richness of communication channels and a firm's capacity to absorb the incoming knowledge. However, all of these authors indicate that there is still a wealth of knowledge to be gained through further investigation of the knowledge transfer phenomenon.

Both the social science research literature (Hussey & Hussey, 1997; Jarvis, 1999) and the knowledge transfer literature (Dyer & Nobeoka, 2000; Gupta & Govindarajan, 2000a) note the importance of understanding the relationship between theory and practice and support the need to investigate business practice. The goal, to provide useful findings to assist businesses to implement improvements to knowledge transfer practices. This research collects data from two MNOs who expressed an interest in the application of the research findings to their organisation. Both of these MNOs exhibited exemplary business success, presenting a suitable situation for the researcher to explore knowledge transfer in a multinational setting. This thesis focuses on exploring the academic theory while being able to provide practical advice to the workplace.

When compared to alliances and the market, MNOs are recognised as having superior inter-firm knowledge transfer routines (Almeida, Song & Grant, 2002; Gupta & Govindarajan, 2000a). It is not unreasonable to suspect that there will be many reasons

for the superiority of a MNO over alternative organisations. Also, that these MNOs recognised the need for improve knowledge transfer efficiency. Almeida et al. (2002) found in their research, that the eight MNOs interviewed all expressed this need. This thesis provides the opportunity to better understand why MNOs have superior inter-firm knowledge transfer routines.

In summary, the research in this thesis is based on the understanding that knowledge transfer in a MNO is critical to an organisation's success, and that there is a need for more empirical investigation of knowledge transfer in MNOs. To conduct this research, the researcher had access to two exemplary MNOs. Further, the literature identifies the constructs: motivation to transfer knowledge, richness of communication, absorptive capacity and organisational context as integral to effective knowledge transfer, providing a solid foundation to develop this research.

## **1.2 OUTLINE OF THIS THESIS**

This thesis is organised into four parts. The first part introduces the research and explains why and how the research includes both quantitative and qualitative aspects. The second part presents the quantitative research. The third part the qualitative research. The fourth part brings the results from the research together to form the discussion, business implications and conclusions.

## **PART 1 INTRODUCTION AND BACKGROUND**

### **Chapter 2.0 Literature Review**

In the second chapter the literature relating to knowledge transfer is reviewed, beginning with the literature on knowledge as a source of competitive advantage for a firm. The review then examines the basic concepts of knowledge and knowledge creation to prepare the reader for the discussion on the relationship between knowledge management and organisational learning. Finally, consideration is given to the constructs used to form the framework for the research design, namely the motivation to transfer knowledge, the richness of communication channels, a firm's absorptive capacity, and the organisational context in which knowledge transfer takes place.

### **Chapter 3.0 Research Method**

The research methodology is explained in chapter three. First, it explain how the quantitative research is based on constructs identified in the literature and second, that qualitative research is based on the same constructs with the addition of issues for further research that were identified in the quantitative research. The purpose of the research is clarified along with the research paradigm, ethical issues and the management of the research limitations.

## **PART 2 QUANTITATIVE RESEARCH**

### **Chapter 4.0 Quantitative Method**

A discussion is provided on the quantitative research methodology and data collection techniques utilised in this research. This includes the operationalised objectives that were used to develop the questionnaire and selection of participants. Next, the chapter focuses on preparation of data for analysis, which involves the data conversion, the development of measures, and the testing for reliability and validity of these measures. Then, the chapter outlines the data analysis method.

### **Chapter 5.0 Quantitative Results**

The quantitative research data are presented. These data are analysed by examining data frequency. Then Spearman's Rank Order correlations are used to look at the relationships between the variables. Next, multiple regressions is used to better understand how the independent variables affect the level of the dependent variable, knowledge transfer. Finally, the free-text answers are analysed using qualitative techniques.

## **PART 3 QUALITATIVE RESEARCH**

### **Chapter 6.0 Qualitative Method**

A discussion is provided on the qualitative research method and the data collection techniques used in this research. The research framework used for the quantitative is extended to accommodate the qualitative analysis. Finally, the method used for data analysis and some discussion on validity and reliability are provided.

### **Chapter 7.0 Qualitative Results**

The qualitative results from the interview transcripts are presented against the main research constructs: motivation to transfer knowledge; richness of communication channels; absorptive capacity; knowledge transfer; and organisational context.

## **PART 4 DISCUSSION, BUSINESS IMPLICATIONS AND CONCLUSIONS**

### **Chapter 8.0 Discussion and Business Implications**

The results of the analysis are discussed and the business implications of these findings presented. The limitations of the research findings are acknowledged and explained and recommendations that build on the research findings are offered for future research.

### **Chapter 9.0 Conclusions**

A summary is given of the research and the conclusions to this thesis are presented.

## **Chapter 2.0 LITERATURE REVIEW**

### **2.1 INTRODUCTION**

This chapter reviews the relevant literature relating to strategic management, knowledge management, organisational learning, knowledge creation and knowledge transfer. All of these literatures have something to contribute to the understanding of knowledge transfer in a multinational context. The literature review is structured to first answer the question of why knowledge is considered a valuable strategic asset. Then, the basic concepts about knowledge, pertinent to knowledge transfer, are reviewed in order to establish an understanding of the types of knowledge that hold the most strategic value. Since knowledge transfer is essential for knowledge creation, two popular models of knowledge creation are reviewed and compared. These models are selected because they present knowledge creation from differing perspectives. The literature on organisational learning is also reviewed so that we may understand how knowledge creation moves from individual learning to organisational learning. From this literature emerges the concept that knowledge management can be viewed from the perspective of learning routines. The concept of learning routines is investigated further by making a comparison of the organisational learning and knowledge management literature. To complete the picture, knowledge transfer is identified as an essential aspect of knowledge management routines and the focus turns to knowledge transfer and the issues that surround it in a multinational context.

### **2.2 WHY KNOWLEDGE IS A STRATEGIC ASSET**

The main focus of this thesis is knowledge transfer, because knowledge is an important asset used by organisations to attain their goals and establish their position in the market place. This section provides a brief overview of four literatures that contribute to the importance of this view and what it means for MNOs.

#### **2.2.1 Resource-based View**

It was not until the 1990's (Teece, Pisano, & Sheun, 1994) that a real understanding of the power of unique knowledge to create a sustainable competitive advantage was understood. In the early 1980's the idea that a competitive advantage could be

sustainable was not considered a priority (Porter, 1980; Rumelt, 1984). The models that were developed saw rents flowing from privileged market positions and focus on the external environment (Romer, 1995). Examples of this are Porter's (1980) competitive forces model and Shapiro's (1989) strategic conflict model. Both of these models see organisations within the same industry as controlling the same strategic resources. They see these resources as completely mobile and the organisations following similar strategies based on the view that competitive advantage is not sustainable (Bontis, 2000). They fail to see organisations as repositories of unique knowledge that is difficult to copy, preventing valuable resources from being disseminated to competitors (Bontis, 2000; Kogut & Zander, 1992, 1996).

The view that knowledge could create a sustainable competitive advantage was finally realised in the development of the resource-based view, by Wernerfelt (1984), Barney (1986), Prahalad and Hamel (1990) and Teece et al. (1994). The resource-based view argues that an organisation's capabilities and competencies have intangible elements which provide unique sources of competitive advantage for an organisation that are difficult to substitute, replicate, imitate or transfer to other organisations (Barney 1986; Prahalad & Hamel, 1990; Teece et al., 1994; Wernerfelt, 1984).

### **2.2.2 Knowledge-based View**

By the 1990s it was realised that knowledge is the intangible element responsible for providing this unique source of competitive advantage. Knowledge was identified as pivotal to resource development and embedded in organisational capabilities and competencies (Teece, et al., 1994), organisational culture (Barney, 1996) and relationship specific investments (Dyer & Singh, 1998). This knowledge-based view envisages organisations as knowledge stores and recognises knowledge creation as the basis of sustainable organisational capabilities (Davenport & Prusak, 1998; Grant, 1996; von Krogh, Ichijo & Nonaka, 2000). The knowledge-based view recommends that to create a competitive advantage an organisation must create new knowledge or intellectual capital while at the same time utilise existing knowledge for survival (Stewart, 1997).

### 2.2.3 Network Knowledge

Knowledge as a strategic asset must be transferred to where it is needed and organisations must work together to set up links and working relationships through which knowledge can be transferred (Seufert, von Krogh & Bach 1999; Tsai 2001). In an organisation both knowledge stores and knowledge creation are the result of social interaction between the organisation's members (Dyer & Nobeoka, 2000). Within MNOs collaboration is often driven by the strategic logic to move knowledge between firms within the MNO to take advantage of each other's knowledge and to achieve synergistic benefits not attainable in the external market place (Cohen & Levinthal, 1990; Kogut & Zander, 1996). These collaborations establish a network that is founded on personal or technical organisational interconnections that have elements of interdependence, autonomy, co-operation, competition (Seufert et al., 1999) and a flexible learning structure (Huber, 1991; Nohria & Ghoshal, 1997).

### 2.2.4 Network Management

The ability to utilise knowledge as a strategic asset requires networks to be managed (Dyer & Nobeoka, 2000). It follows, that this refers to the management of the processes by which knowledge is created, transferred and utilised\_ (Quintas et al., 1997). Unfortunately, unmanaged knowledge may not always flow to the areas where it is needed (Bontis, 2000). Knowledge management's role is to be aware of items that can effect knowledge creation, transfer and utilisation and manage these items to direct knowledge flow. The items highlighted in the literature are as follows:

- **Network Position.** Past empirical research shows that a firm's network position affects that firm's access to knowledge (Tsai, 2001). Tsai (2001) and Szulanski (1996) show that firms that hold a central position in the network have greater access to knowledge. Toyota, aware that network centrality is an advantage, seized the opportunity to use firms in a central position to begin the knowledge transfer process. These firms were encouraged to share knowledge openly to set the example for other firms (Dyer & Nobeoka, 2000).

- **Large Firms with Greater Knowledge Stocks.** Gupta and Govindarajan (2000a) show that knowledge stocks of greatest value in a network are more than likely to be held by the larger firms. Being aware of this, Toyota manages this by designing network routines to move knowledge from these large firms out to other firms in the group who could leverage value from this knowledge (Dyer & Nobeoka, 2000).
- **Knowledge Transfer Activity.** A positive link exists between the amount of network activity a firm is involved in and its ability to relate to and absorb the knowledge available (Tsai, 2000). As Nohria and Ghoshal (1997) point out, network activity takes time to establish. Toyota, aware of this, manages the momentum of knowledge transfer between firms in the network to ensure that this ability to absorb knowledge reaches its full potential (Dyer & Nobeoka, 2000). Part of managing this momentum is to allow sufficient time for both parties to make mutual adjustments. Mutual adjustments help the parties find shared understanding, develop trust and shared identity, which then gives them increasing confidence with future knowledge transfer (Nohria & Ghoshal, 1997).
- **Contextual Dependency.** These relationships developed through mutual adjustments and the resulting similarity of practices can also create link exclusivity. The link between the parties may exclude others in the network (Tsai, 2000) and create a contextual dependency between the parties with regular knowledge transfer (Kogut & Zander, 1992). This suggests that an understanding of strategic relatedness and relationships between firms would help firms to design and manage network structures.

### 2.2.5 Summary

The need to transfer and leverage knowledge in a MNO starts at the strategic level with the purpose of developing and maintaining competitive advantage for the firm. In a MNO the knowledge manager's role is to enable knowledge creation by promoting knowledge transfer across the MNOs boundaries so knowledge is accessible to all. Central to the promotion of knowledge transfer is the management of the network of

relationships that provide the social context necessary to create a sense of shared identity within the network.

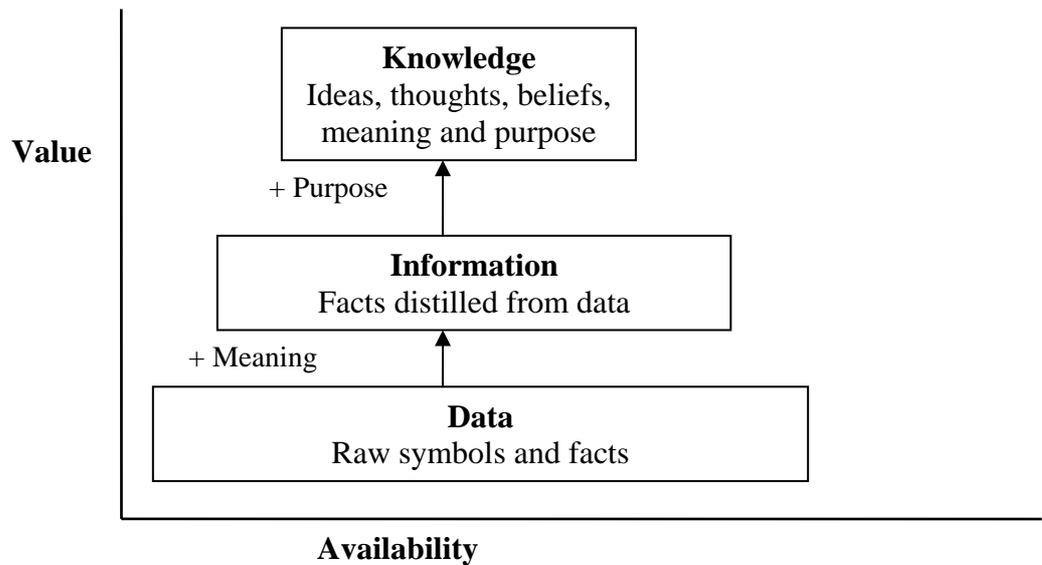
## **2.3 KNOWLEDGE CONCEPTS**

As mentioned in section 2.2.2, from a strategic perspective the complexities in knowledge make it a valuable strategic asset. Highlighting these complexities Nonaka et al. (2000) comments that knowledge is context specific, humanistic and with active and subjective natures. To improve the understanding of these complexities, the basic concepts about: data; information and knowledge; and the characteristics of knowledge are now discussed.

### **2.3.1 Data, Information, Knowledge**

Much of the literature on knowledge classification recognises the confusion that can be created if there is no clear distinction between data, information and knowledge management. This study follows the general consensus in the literature that data and information can be captured, stored and transmitted in digital form but knowledge is located in individuals or collectives and embedded in routines, systems and tools (Quintas et al., 1997; Blumentritt & Johnston, 1999).

To explain this further, Davidson and Voss (2002) differentiate data, information and knowledge by placing them in a hierarchy of value (see diagram 2.1) with knowledge at the top, followed by information and with data placed at the bottom. Boisot (1998); Roberts (2000) and Zack (1999) support this approach. They explain that data, while readily available, holds no inherent meaning. Also, that information is data holding relevance and purpose, and knowledge is information holding relevance and purpose to create meaning. Information only becomes knowledge when individuals apply their own experience and contextual understanding to information through action (Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995).

**Diagram 2.1: From Data to Knowledge**

Source: Davidson & Voss (2002)

Many attempts have been made to define knowledge. For example, Davenport and Prusak (1998) list some of the components that contribute to knowledge as based on experience, namely: the ability to distinguish what may work; the ability to recognise a match with other information; the ability to deal with its complexity; and the ability to utilise knowledge to create evolving concepts. Beckham (1997) sees knowledge as ‘reasoning about information to actively guide task execution, problem solving and decision making’. Van der Spek and Spijkervet (1997) define knowledge as ‘a whole set of insights, experiences and procedures which therefore, guide the thoughts, behaviours and communication of people’. Sveiby (1994; 1997) sees knowledge as the capacity to act. These definitions confirm that knowledge is dynamic, context specific and is captured in time. Even though these definitions are valuable, a description of the nature of knowledge will be more meaningful to this study.

### 2.3.2 The Characteristics of Knowledge

The most simplistic approach to defining the characteristics of knowledge was proposed by Polanyi (1967) and later reiterated by others such as Nonaka and Takeuchi (1995) who made the distinctions between explicit and tacit knowledge. Explicit knowledge is knowledge that is easily codified and shared; an example of this is product specifications. In contrast, tacit knowledge is personal, rooted in values and routines

and is difficult to share, for example, presentation skills (Polanyi, 1967). In the knowledge management literature tacit knowledge is referred to as knowledge that has not or cannot be accurately formalised or made explicit, in other words, the intangible knowledge. There are two dimensions to tacit knowledge, namely the technical dimension that encompasses skills and competencies and the cognitive dimension, consisting of things such as beliefs and values (Nonaka & Takeuchi, 1995). In addition, the knowledge management literature does not assume that transforming knowledge into an explicit form makes it objective (Nonaka & Takeuchi, 1995). As Maula (2000) explains, explicit knowledge can be quite irrational or ambiguous because our personal knowledge influences what we see as specific and we cannot be sure our explicit knowledge represents reality.

Table 2.1 represents a popular approach to knowledge classification from the knowledge management literature. This approach breaks knowledge down into four operational categories, namely ‘know how’, ‘know who’, ‘know what’ and ‘know why’ (Lundvall, 1996). ‘Know what’ is about facts, ‘know how’ about skills and competencies, ‘know why’ about the principles and laws and ‘know who’ about who knows what.

**Table 2.1: Lundvall’s Classification**

<b>Lundvall Classification</b>	<b>Knowledge</b>
Know what	About facts
Know how	About the skills and actions needed for the task
Know why	About the principles and laws
Know who	About who knows what and how

Source: Lundvall (1996)

The main focus of the knowledge management literature is ‘know how’, the knowledge of skills and actions. ‘Know how’ knowledge holds many tacit elements. These elements are found in the ideas, commitment, relationships and experience behind the knowledge (Cohen & Levinthal, 1990; Huber, 1991; Kogut & Zander, 1995; Polanyi, 1967). Both Szulanski (1996) and Simonin (1999) highlight the fact that the tacit

content in knowledge can make it harder to understand and requires more social interaction before those involved have a similar understanding. These authors see this knowledge as knowledge with impact, because it is the transfer of these tacit elements and that give knowledge its unique nature and strategic value.

The multinational knowledge transfer literature further defines 'know how' knowledge as complementary or as substitutive (Gupta & Govindarajan, 2000a). They describe complementary knowledge as knowledge that flows with less resistance as it complements existing knowledge. They explain that substitutive knowledge often meets greater resistance because it replaces other knowledge. This resistance is often greater if the knowledge it replaces is perceived to serve the task well.

An awareness of the nature of knowledge and how it affects knowledge flows and creation is integral to effective knowledge management. For example, the knowledge management literature highlights the need to recognise the tacit elements in knowledge so that it can be managed by using sufficient social interaction to ensure its transfer (Lam, 1997; Nonaka & Takeuchi 1995; Simonin, 1999). This social interaction provides the forum for the explicit and tacit element of knowledge to interact. Fahey and Prusak (1998) explain that people shape knowledge creation in a firm by allowing tacit knowledge to interact with explicit knowledge so it can be captured, assimilated, created and internalised into the organisations knowledge base. This process is discussed in the subsequent section.

## **2.4 THE PROCESS OF KNOWLEDGE CREATION**

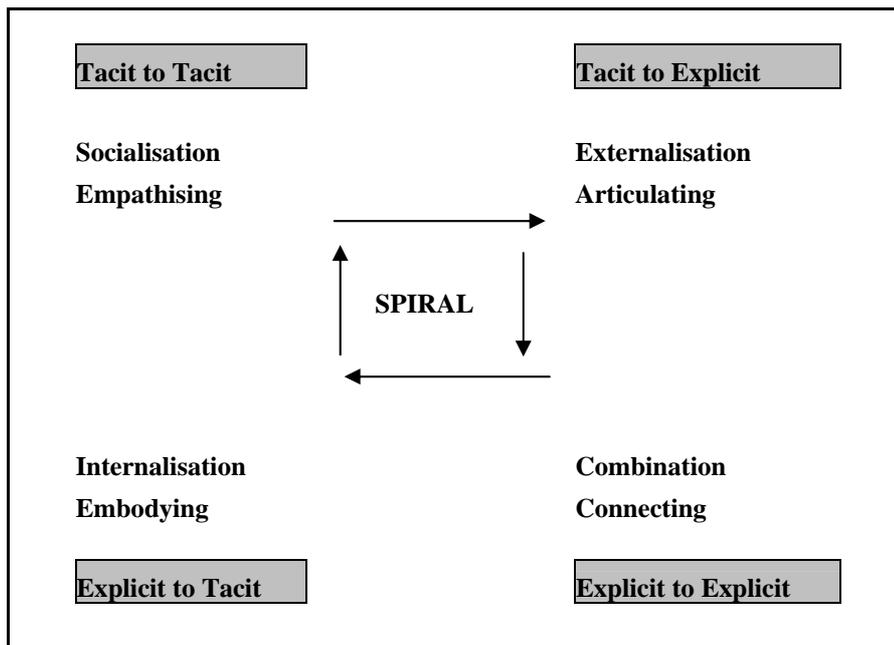
Knowledge transfer is a fundamental part of the interaction between tacit and explicit knowledge in knowledge creation. The models that could be found, namely Nonaka and Takeuchi's (1995) conventional theory of knowledge creation and the concept of intellectual capital (Stewart, 1997), provide an insight on the role of knowledge transfer in knowledge creation. These models are explained next.

### **2.4.1 Socialisation, Externalisation, Combination, Internalisation Process Model**

Nonaka and Takeuchi (1995) and Nonaka, et al. (2000) explains knowledge creation as a spiraling process of complex interaction between explicit and tacit knowledge.

Nonaka, Toyama and Konno (2000) use this concept in the Socialisation, Externalisation, Combination, Internalisation or the SECI Process Model (diagram 2.2), which presents the basis of knowledge creation as socialisation (interaction), group commitment (externalisation) and internalisation (actions, practice and new learning). The SECI Process Model is now discussed with reference to other authors who support this knowledge creation model.

**Diagram 2.2: SECI Process Model**



Source: Nonaka, Toyama and Konno (2000)

- **Socialisation.** Several authors stress the social construct in knowledge development (Demarest, 1997; Nonaka & Takeuchi 1995; Schein 1993). In the SECI Process model the social construct of socialisation plays a dominant role in tacit knowledge sharing. Socialisation or self-transcendence is considered fundamental to sharing tacit knowledge. Argyris and Schon (1978), Schein (1993; 1996), and Senge (1990) encouraged knowledge sharing through social interaction. They see socialisation as creating a shared understanding that will motivate a group to collaborate, thus facilitating knowledge flow for the benefit of the group.

In practice socialisation involves interaction between players, each individual with their own capacity to act. This interaction takes various formal and informal forms (Sveiby, 1994, 1997) such as formal face-to-face meetings or telephone conferences, spur of the moment phone calls, or informal conversation while passing in the corridor. Gupta and

Govindarajan's (2000a) empirical research show that effective knowledge creation is very much dependent on formal and informal expectations of individuals, individual role constraints or freedom, organisations culture and structure, systems and leadership. Therefore, socialisation can be either hindered or facilitated by these factors.

- **Externalisation.** The process of externalisation requires the expression of the tacit knowledge in forms that can be understood by others so that it can be integrated into the group. Parties aim to reach a joint understanding of the meaning and value through dialogue or reflection (Graumann 1990; Nonaka & Takeuchi, 1995; Senge, 1990). Nonaka and Konno (1998) see externalisation as supporting the ability to express ones knowledge in an explicit form, while at the same time, transmitting the tacit elements to the listener. This mostly involves expression with language through metaphors, analogies, concepts, hypotheses or models (Emig, 1983; Nonaka, et al., 2000).
- **Combination.** Knowledge combination occurs when explicit knowledge becomes more explicit by sorting, adding and combining with other explicit knowledge (Nonaka & Takeuchi, 1995). Nonaka, et al. (2000) summarise the factors that constitute combination as acquisition and integration, synthesis and processing, and dissemination. Acquisition and integration take place as data and information is gathered together and sorted. Synthesis and processing occurs as documents and databases are developed. Dissemination occurs as this knowledge is presented to others.
- **Internalisation.** Finally, new knowledge is internalised into an organisation's tacit knowledge through incorporation of both tacit and explicit knowledge into organisational practices (Nonaka & Konno, 1998). Nonaka and Takeuchi (1995) see this as the 'learning by doing' phase that creates an understanding of the meaning of the experience behind the knowledge. Pfeffer and Sutton (2000) stress the need to action knowledge through application and exploitation so that the knowledge is processed and integrated into the organisations existing knowledge base.

The SECI Process Model portrays knowledge creation as a dynamic process of complex interactions between each phase (Nonaka & Takeuchi, 1995). The spiral becoming amplified as the interaction between tacit and explicit knowledge moves up through the levels from individual level to organisational level and even across organisational

boundaries (Nonaka, et al., 2000). This SECI Process Model highlights the importance of interaction between individuals to develop a shared understanding between groups so that both the tacit and explicit elements in knowledge can be shared within and across organisational boundaries.

Nonaka and Konno (1998) recognise this process as context specific and introduce the concept of 'ba'. 'Ba', described as the shared space or context that serves as a foundation for knowledge creation. 'Ba' is an ever-changing context within which individuals interact with each other, a space where data, information and knowledge can come and go and continuously evolve. 'Ba' is a space where knowledge is not just passed on but where knowledge is also created. For example, a space with mutual obligations, shared experiences and shared aspirations. The concept of 'ba' is a Japanese concept, based on close, long term relationships that sits well in the Japanese culture (Ray, 2002). In Western cultures 'ba' could be viewed more as the network of relationships and strategic relatedness (Ray, 2002). In either culture 'ba' facilitates the flow of knowledge, in particular the flow of tacit knowledge.

Nonaka (1994) comments that the SECI Process model allows for what Argyris and Schon (1974) describe as double loop learning. Double loop learning involves the questioning and reflection of existing understanding. Nonaka (1994) claims the model calls for exchange of ideas and questioning of perspectives.

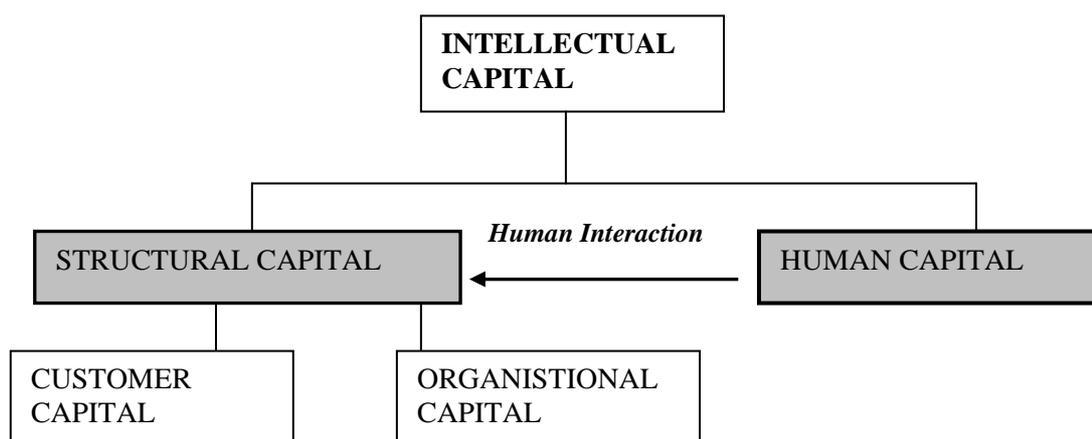
The literature suggests that the SECI Process Model can be considered as accurate but not complete. It fails to identify the fact that implicit knowledge can be converted to an explicit form (Polanyi, 1967) and the impact of situational orientations (Lam, 1997). Furthermore, Nonaka and Takeuchi's experience is with Japanese firms (Nonaka, 1994) and the model appears to ignore the differences in social and business practice in other countries. Lam (1997) identifies that in some firms knowledge may not flow freely between the hierarchical levels or between the individual, group and organisational level. The model could possibly be better explained if it was represented at three levels namely individual, group and organisation. Authors such as Argyris and Schon (1974), Crossan, Lane and White (2000) and Popper and Lipshitz (2000) recognise that knowledge creation occurs at these three levels. This would then show the interaction between these levels and the four modes of knowledge conversion in the SECI Process Model i.e. socialisation, externalisation, combination and internalisation.

In contrast to the SECI Process Model is the Intellectual Capital (IC) model. The knowledge creation concept in the IC model is based on the Western concept of asset values and evolved from the recognition that an organisation's intangible assets or intellectual capital make up an important part of an organisation's market value. This model is discussed next.

### 2.4.2 Intellectual Capital

The main headings in the Intellectual Capital (IC) model are presented in diagram 2.3. This shows intellectual capital categorised as consisting of human capital that can be described as knowledge that goes home with the employee and structural capital that is the knowledge embedded in the systems and processes of the firm. Structural capital is then split further into customer and organisational capital. Both customer and organisational capital involve human interactions that develop relationships or what can be termed social capital (Edvinsson, 1997; Stewart, 1997; Sveiby, 1997). The IC model focuses on actively leveraging human and customer capital into structural capital that may be capitalised (Edvinsson, 1997).

**Diagram 2.3: Intellectual Capital, from Human Capital to Structural Capital**



Source: Adapted from Edvinsson (1997)

Both McAdams and McCreedy (1999) and Bontis, et al. (2000) criticise the IC model as being too restrictive because of its mechanistic nature and failure to recognise the social

context involved in learning and intellectual capital creation. Authors such as Adler and Kwon (2000), and Coleman (1998) refute this argument. They recognise the social context involved in social capital includes relationships supported by trust, beliefs, rules and social networks. Nahapiet and Ghoshal (1998) express a similar view and believe that it is social capital that facilitates the creation of IC. Human interaction makes up the network of relationships that form structurally embedded knowledge and the types of relationships that form these links are relationship embedded knowledge. Similarly, Edvinsson (1997, p372) sees IC as ‘a relationship issue not a thing, not an objective, but intangible knowledge that needs to be managed.’ In this sense the focus on socialisation is found in both the SECI Process Model and the IC model making the IC less mechanistic.

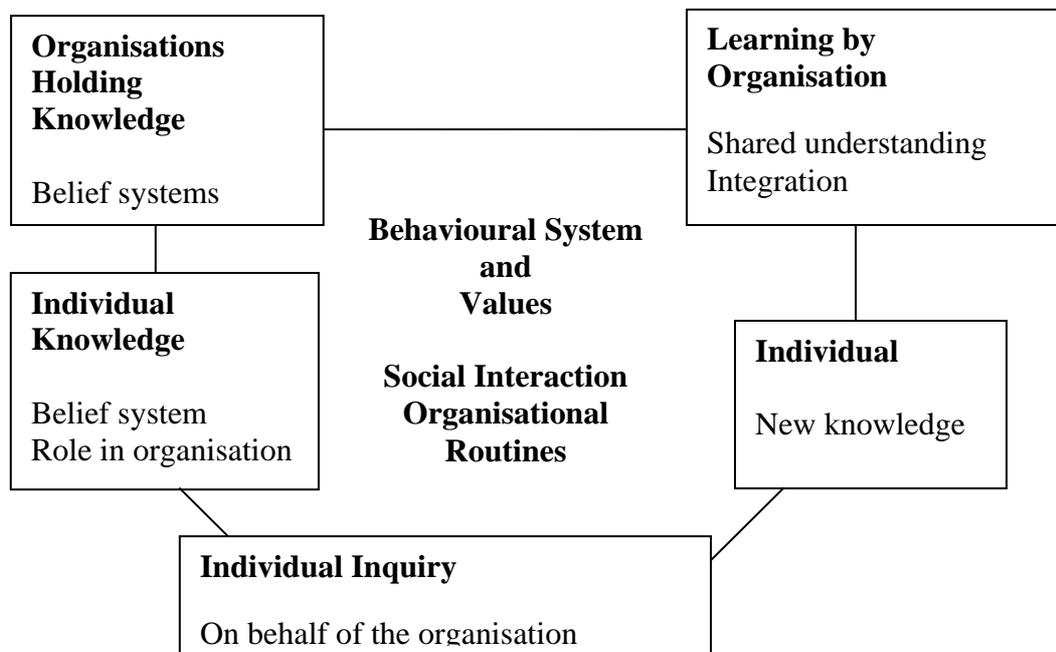
In conclusion, both models highlight the need to create the optimal social context for human interaction to allow the interaction between tacit and explicit knowledge. Both models recognise knowledge creation as a dynamic process, knowledge creation being amplified by the dynamic of interaction between employees within a learning environment. Before the literature is reviewed to better understand how to manage the knowledge creation process, it is necessary to understand how firms learn, that is, how organisational learning occurs (Kim 1993; Nonaka & Takeuchi, 1995).

## **2.5 ORGANISATIONAL LEARNING**

This thesis is not concerned with definitional issues around organisational learning. Rather it focuses on what is relevant to knowledge transfer, namely, how firms learn. The literature on organisational learning takes various views to how firms learn. For example, Huber (1991) takes the view that information is the determinant of organisational learning and information must be distributed widely to enhance the learning process. Whereas, Nonaka and Takeuchi (1995) focus on the need to create a space where learning can take place, Argyris and Schon (1974) and March and Olsen (1975) focus on the cognitive processes that effect learning. Argyris and Schon (1974) view learning as a conscious acquisition of knowledge, while March and Olsen (1975) view learning as a response to a stimulus. Garvin (1993) incorporates both cognitive and behavioural elements believing that the individual brings cognitive differences to the learning process and that learning is only complete when it is applied.

The construct (diagram 2.4) is presented to describe the learning process that takes place in organisations. Organisational learning is multilevel, taking place at the individual, group and organisational level (Argyris & Schon, 1974; Crossan, et al., 2000; Popper & Lipshitz, 2000). Knowledge is held at all of these levels, in different places and with different people. Knowledge flows when a new idea occurs to an individual and is passed on to others to become combined with the organisations knowledge to produce new knowledge stocks (Garvin, 1993; Nonaka & Takeuchi, 1995). During this process social interaction combines various knowledge sources and allows the knowledge to be internalised by the individual and the organisation (Argyris & Schon, 1974; Birkinshaw, 2001; Crossan, et al., 1999; Kim, 1993; March & Olsen, 1975).

**Diagram 2.4: Relationship between Individual Knowledge and Organisational Knowledge**



Source: Authors own Interpretation

Diagram 2.4 shows the knowledge transfer process between individuals (who do the learning) and the organisation. It identifies the process as dependent on the organisations behavioural system with their established values, ideas, processes, systems and experiences that affect the learning process. An organisation's behavioural system is the product of history, culture and the business environment and it is within this system that ideas are formed articulated and shared (Argyris & Schon, 1974;

Crossan, et al., 1999; Kim, 1993; March & Olsen, 1975). However, individuals in the organisation develop different interpretations of this behavioural system, which usually means they have some difference of opinion. It follows that in the initial stages of knowledge creation the individuals involved in the social interaction may either deny or confirm that the knowledge presented is worthy of further inquiry. Before any new ideas are accepted, discussion is needed to seek alignment of opinion and allow ideas to be shared and integrated into the systems, culture, values and processes of the organisation (Nonaka & Takeuchi, 1995). This process is affected by what knowledge is made available from others, its usefulness and the participants' ability to recognise its value so that information can become integrated into experience (Cohen & Levinthal, 1990; Lenox & King, 2004). Nelson and Winter (1982) define knowledge at this stage as becoming part of the organisation's 'routines'.

It can be concluded that within an organisation there is a common understanding of learning routines that allows individuals to not only regulate their own behaviour but also the behaviour of the organisation. Learning is dynamic, involving the tension between knowledge exploitation, from knowledge held by the organisation and knowledge exploration creating new knowledge. This confines the notion that to manage knowledge effectively and efficiently one needs to recognise learning routines and the constraints that are placed on these routines by the individual and the organisation. These learning routines are discussed in the subsequent section.

## **2.6 LEARNING ROUTINES**

It is clear from the preceding discussion that knowledge resides in organisational and individual forms and the process of knowledge creation is the result of learning routines dependent on interaction between the individual and the firm. Expanding this view, the assumption can be made that the process of knowledge creation is very dependent on the management of these learning routines (Argyris & Schon, 1978; Nevis, Di Bella & Gould, 1995; Schein, 1993; Senge & Kofman, 1993).

The subject of learning routines is found in both the organisational learning and knowledge management literature. Comparisons of these literatures show contrast, consistency and overlap. It becomes clear that organisational learning involves routines

to facilitate the learning process and that knowledge management is about the management of these routines.

To explore the contrast, the overlap and the consistency in the organisational learning and knowledge management literature three tables are presented. Each presents a summary against the author under the headings of 'Basic Principles' and 'Routines or Actions'. The heading of 'Basic Principles' used for the concepts that these authors present that are behind organisational learning or knowledge management and the heading of 'Routines or Actions' to show the activities they believe bring these principles alive.

- **Contrast.** Table 2.2 shows the difference in approach between the two literatures. The knowledge management literature shows a strong practical focus. This literature is dominated by authors such as Demarest (1997), and Quintas, et al. (1997) giving practical advice on how to optimise knowledge acquisition, transfer and institutionalisation within organisations. The literature suggests systematic knowledge management routines. In contrast the organisational learning literature does not provide as much practical knowledge, focusing more on how learning occurs through linking cognition and action. For example, Garvin (1993) sees learning as evolving during problem solving and Argyris and Schon (1978) reflect on the dynamic nature of personal thought patterns that alter as one learns from their actions and the effects of these actions on the environment around them.

**Table 2.2: Contrasts - Knowledge Management and Organisational Learning**

<b>CONTRASTS</b>		
<b>Knowledge Management</b>		
Author	Basic Principles	Routines or Actions
Demarest (1997)	Learning routines - culture, human resources, and technical infrastructure.	Systematic –management and that focuses on optimisation of a firm knowledge.
Quintas, et al. (1997)	Learning routines - culture, people, and process.	Acquiring, developing and applying knowledge.
<b>Organisational Learning</b>		
Author	Basic Principles	Routines or Actions
Argyris & Schon (1978)	Theories of action as a learning process. Process of inquiry and deliberate learning.	Improved actions through learning. Systematic management to get results.
Garvin (1993)	Knowledge creation through learning experience.	Detecting and correcting errors.

- **Overlap.** The authors presented in the tables 2.3 reveal both a normative and descriptive perspective, producing an overlap in their approach. For example Argyris

and Schon's (1978) 'theories of action' includes a descriptive element of recognising the effects of experience and social interaction while the process of 'systematic learning' takes a normative approach by looking for best practices. Similarly, Levitt and March (1988) seeing learning by doing as producing best practice. Likewise Demarest (1997) and Gupta and Govindarajan (2000) acknowledge the need to work with culture, a descriptive element, but suggest it is managed with systematic routines that focus on best practice.

**Table 2.3: Overlap – Knowledge Management and Organisational Learning**

<b>OVERLAP</b>		
<b>Knowledge Management</b>		
Author	Basic Principles	Routines or Actions
Demarest (1997)	Learning routines - culture, human resources, and technical infrastructure.	Systematic –management and that focuses on optimisation of a firm knowledge.
Gupta & Govindarajan (2000a, 2000b)	Knowledge based view. Strategic renewal through knowledge creation routines.	Focus on the social ecology – creating and mobilising knowledge fast and effectively to create a competitive advantage.
<b>Organisational Learning</b>		
Author	Basic Principles	Routines or Actions
Argyris & Schon (1978)	Theories of action as a learning process.	Systematic management to get improve actions.
Levitt & March (1988)	Learning routines that focus on conditioning behaviours to improve learning.	Learning direct experience 'learning by doing'.

- Consistency.** The overlap is strengthened by consistencies in the knowledge management and organisational learning literature that support the belief that knowledge management and organisational learning go hand in hand. From both literatures the 'Basic Principles' columns in table 2.4 mentions either knowledge creation or learning routines. From the organisational learning literature, table 2.4 presents this evidence from Huber (1991) and Garvin (1993). From the knowledge management literature, table 2.4 presents this evidence from Quintas, et al. (1997) and Demarest (1997). This would indicate that both literatures recognise learning as embedded in organisational routines. In addition, both literatures describe various activities that create routines designed to encourage knowledge creation. For example, Levitt & March (1988) learning by doing, Garvin (1993) detecting and correcting errors, Gupta and Govindarajan (2000) by creating and mobilising knowledge, Quintas, et al. (1997) by developing, acquiring and applying knowledge and Malthotra (1998) by combining data and information with human capacity. Finally, Crossan, et al. (1999), Gupta and Govindarajan (2000) and Beijerise (1999) recognise knowledge as a strategic

resource, both literatures agree that learning is responsible for a process of renewal that develops the knowledge to give a strategic advantage.

**Table 2.4: Consistency – Knowledge Management and Organisational Learning**

<b>CONSISTENCY</b>		
<b>Knowledge Management</b>		
Author	Basic Principles	Routines or Actions
Demarest (1997)	Learning routines - culture, human resources, and technical infrastructure.	Systematic –management and that focuses on optimisation of a firm knowledge.
Gupta & Govindarajan (2000a, 2000b)	Knowledge based view. Strategic renewal through knowledge creation routines.	Focus on the social ecology – creating and mobilising knowledge fast and effectively to create a competitive advantage.
Beijerise (1999)	Knowledge Management as a strategic need.	Part of an organisation’s goals and objective – a process of giving meaning to data and information.
Malhotra (1998)	Organisational adaptation, survival and competence in the face of continuing change.	Synergistic combination of data Information processing capacity Creative capacity of human beings.
Quintas, et al. (1997)	Learning routines - culture, people, and process.	Developing, acquiring and applying knowledge.
<b>Organisational Learning</b>		
Author	Basic Principles	Routines or Actions
Argyris & Schon (1978)	Theories of action as a learning process.	Systematic management to get improve actions.
Levitt & March (1988)	Learning routines that focus on conditioning behaviours to improve learning.	Learning direct experience ‘learning by doing’.
Huber (1991)	Knowledge Creation Routines.	Focus on acquisition, distribution, and interpretation of knowledge.
Garvin (1993)	Knowledge creation through learning experience.	Detecting and correcting errors.
Crossan, et al. (1999)	Strategic renewal through learning.	Intuiting, interpreting, integrating and institutionalising across the entire enterprise.

A comparison of these literatures reveals that in both disciplines learning routines are not constrained to one particular type of organisation. This indicates these activities could take part in organisations with a variety of cultures. Both reveal in the process of learning and knowledge creation that learning routines need to align with that organisation’s requirement. This supports von Krogh, et al.’s (2000) comment that knowledge itself cannot be managed but learning routines can. Knowledge strategists should therefore look at enabling learning routines that are based around an understanding of how knowledge is created, what facilitates this knowledge creation and the strategic direction of the organisation.

The focus of this research is knowledge transfer and the routines that enable knowledge transfer. It is essential therefore to have an understanding of knowledge transfer. Therefore the next section turns the focus to knowledge transfer.

## **2.7 KNOWLEDGE TRANSFER**

Nonaka and Takeuchi (1995) describe knowledge creation as a spiralling process that starts with the individual and then moves across the organisation in a never-ending process of knowledge transfer (Nonaka & Takeuchi, 1995). This highlights the importance that needs to be placed on understanding knowledge transfer.

### **2.7.1 Understanding Knowledge Transfer**

The terms, knowledge transfer (Garvin, 1993; Gupta & Govindarajan, 2000a, 2000b), knowledge dissemination (Demarest, 1997; McAdams & McCreedy, 1999), knowledge flows (Gupta & Govindarajan, 2000b), and knowledge distribution (Huber, 1991) appear to be used interchangeably in the literature to describe the process of knowledge transfer. The literature identifies that knowledge transfer is a dynamic process between the individual or group and the organisation's knowledge stocks. Knowledge moves simultaneously forwards and backwards between individuals, groups and the organisation to become embedded in the organisation's routines, behaviours and strategic orientations (Argyris & Schon, 1974; Argyris & Schon, 1978; Grant, 1996; Levitt & March 1988; March & Olsen 1975).

It is important to distinguish between knowledge transfer at individual and organisational level. Knowledge transfer between individuals may not always be easily seen as some knowledge transfer can alter a person's awareness but not their behaviour (Huber, 1991). Knowledge transfer at organisational level occurs when knowledge becomes part of the organisation's process, systems and activities. Structural capital is embedded into the organisation's practices while individual knowledge remains in the heads of the individual. Knowledge that is part of the organisation's structural capital is therefore more visible than individual knowledge. However, it is important to remember that while knowledge can often be codified and become embedded in a firm's practice, some knowledge cannot be truly represented outside the heads of individuals (Fahey & Prusak, 1998).

Therefore, a firm needs the skills and capabilities to not only acquire this knowledge but to understand the potential in the knowledge and be able to integrate this knowledge into their organisation's structure in a space where it is easy to access. It is this integration that completes the knowledge transfer, as it is this integration that indicates knowledge transfer. At this point knowledge becomes part of the organisation's knowledge stocks and renews a firm's skills and capabilities (Tsai, 2001; Garvin, 1993).

Therefore, while knowledge transfer between firms includes the flow of knowledge between organisations and the ability to understand and to utilise this knowledge, it also includes the reality that the evidence of knowledge transfer may not always be easy to see. As previously discussed, tacit knowledge is not as tangible; therefore when considering knowledge transfer we need to consider the nature of knowledge.

### **2.7.2 The Nature of Knowledge**

As discussed in section 2.3.2 explicit knowledge is more tangible than tacit knowledge, the intangible nature of tacit knowledge making it more difficult to transfer. Tacit knowledge is socially constructed and requires social interaction for transfer. McGrath and Hillingshead (1993) demonstrate that virtual teams communicate tacit knowledge less effectively than face-to-face teams they found that the absence of social contact could create a semblance of anonymity and lack of awareness of intent. Conversely, explicit knowledge requires less social interaction and is often best transferred using formal and electronic means (Nonaka & Takeuchi, 1995). Explicit knowledge is easier to document because of its tangible nature (Polanyi, 1967).

However, Maula (2000) cautions that explicit knowledge often contains tacit elements and criticises the inference that explicit knowledge is largely objective, claiming that objectivity is a very personal notion. Offering more practical advice, Lundvall (1996) and Simonin (1999) warn that when selecting communication channels you need to consider the amount of tacit content attached to the explicit knowledge and to ensure sufficient social interaction to transfer this element.

All of these issues highlight the need to understand the diverse nature of knowledge caused by the variations in its tacit and explicit content. These issues also highlight the

need to consider the diverse nature of knowledge when selecting communication channels so that the communication channel is rich enough to transfer the knowledge effectively.

### **2.7.3 Richness of Communication Channels**

The MNO knowledge transfer literature identifies richness of communication channels (Dyer & Nobeoka, 2000; Gupta & Govindarajan, 2000a; Zander & Kogut, 1995) as important to knowledge transfer. For a communication channel to be considered rich, it needs to allow the firm to analyse, process, interpret and understand the information received. Further, as well as being effective, consideration needs to be given to efficiency and knowledge transfer comes at a financial cost (Lahit & Beyerlein, 2000; Nonaka & Konno 1998; Nonaka, 1994).

The first requirement when selecting a communication channel is to match the nature of knowledge for transfer with the most effective communication channel for the situation presented (Lahit & Beyerlein, 2000; Nonaka & Konno 1998). When selecting the mode of transfer it is important that it is able to overcome different frames of reference or clarify ambiguous issues (Daft & Lengel, 1984). For example, empirical studies show concerns are addressed more openly with face-to-face communication, as people are more likely to trust when they can interpret facial expressions (Kakabadse, Kouzmin &, Kakabadse, 2001). However, if the transfer involves information that is easily codified, information technology enables a variety of modes that are both effective and efficient (Teece, 2000).

The second consideration is the availability of an effective communication channel (Dyer & Nobeoka, 2000; Gupta & Govindarajan, 2000a; Zander & Kogut, 1995). For example, Davenport and Prusak (1998) and von Krogh, et al. (2000) see informal events as encouraging open dialogue and believe that firms should establish places and events where people have the opportunity to make connections and exchange knowledge. They believe this informal interaction builds trust and develops understanding that intensifies people's motivation to transfer knowledge with each other. However, this often comes with a financial cost that needs to be considered against the strategic objectives and the expected outcomes (Teece, 2000). Similarly, several authors mention the need to provide communication channels that allow sufficient dialogue between the

parties involved (Kakabadse et al., 2001; von Krogh, et al., 2000; Schein, 1993). Dialogue is conversation that involves sharing of experiences and provides the dynamics for the transfer of tacit knowledge enabling a shared understanding. Dialogue has the capacity for rapid feedback and coordinated action, which allows for the mutual exchange of ideas and the exploration of the different points of view (Kakabadse et al., 2001). Both von Krogh, et al. (2000) and Schein (1993) suggest that people should understand that the knowledge creation process requires rituals and rules that support good dialogue and guide the knowledge creation process. For example, in the knowledge combination phase in the SECI Process Model (see diagram 2.2 earlier) dialogue should be orderly and designed to package the knowledge as agreement is reached. While in the knowledge externalisation phase of this model, the conversation should avoid pushing for closure and consider all the concepts in an orderly way.

Importantly, the context in which the dialogue takes place should emphasise the natural flow of conversation providing a context where people feel equal and supported (Fahey & Prusak, 1998; Schein, 1993). The organisations context should be designed to motivate a free exchange of ideas so that true understanding is reached. The MNO knowledge transfer literature identifies the motivation to transfer knowledge (Dyer & Nobeoka, 2000; Gupta & Govindarajan, 2000a) as important to knowledge transfer. For that reason, the need to develop the motivation to transfer knowledge is paramount and therefore, is discussed next.

#### **2.7.4 Motivation to Transfer Knowledge**

The motivation to transfer knowledge plays an important role in the knowledge transfer process. To be motivated people need to understand the reasons and objectives for knowledge transfer (Bukh, Larson & Mouritsen, 1999; von Krogh, et al., 2000). The topic of motivation is broad, covering amongst others issues of vision, trust, incentives, organisational structure, rules, and employee influence. For the purpose of this thesis, and as these are issues frequently found in the knowledge transfer literature (Dyer and Nobeoka, 2000; Garvin, 1993; Quintas, et al., 1997; von Krogh, et al., 2000 Adler & Kwon, 2002; Bartlett & Ghoshal 1991) the focus will remain around the provision of a clear direction, social networks, group identity purpose and encouragement.

- **Clear Direction.** Firms that have knowledge-based visions see themselves as being responsible for mobilising and energising knowledge (Dyer & Nobeoka, 2000; von Krogh, 2000; Quintas, et al., 1997). For example, in the early stages of a relationship with a supplier, Toyota will lead the knowledge sharing, developing a trust that provides a catalyst for the supplier to share knowledge freely (Dyer & Nobeoka, 2000).

The responsibility for the knowledge management process begins with a commitment from top management to create a knowledge vision as the corner stone for an organisation wide strategic policy (von Krogh, et al., 2000). Bukh, et al., (1999) examines the motivation behind the development of intellectual capital statements in twenty-three Danish firms. His study shows intellectual capital statements are seen as knowledge management tools because they communicate values, strategic intent, give structure, are motivational and encourage the sharing of knowledge across organisational boundaries.

An organisation with a knowledge-based vision aims to create knowledge assets that help the organisation to keep a competitive edge and set the tone for the organisation's beliefs and values. Their challenges are to take this vision, establish a knowledge creation strategy and plan active goals that focus on this vision (von Krogh, et al., 2000; Quintas, et al., 1997). For example, a survival strategy may focus on knowledge transfer and continuous improvement while and an advancement strategy may focus on knowledge transfer, creation and radical innovation.

- **Encourage Social Networks.** The literature highlights the need to provide the right context to build the trust and shared understanding that motivates knowledge transfer (Adler & Kwon, 2002; Dyer & Nobeoka, 2000; Nonaka, 1994; von Krogh, et al., 2000). As discussed in section 2.2.3, social networks provide the links necessary for the relationships that support knowledge transfer. Many authors point out the need to provide opportunities for both formal and informal network ties (Adler & Kwon, 2002; Coleman, 1988; Davenport & Prusak 1998; von Krogh, et al, 2000). In addition to the number of network ties, the denseness of relationships (the extent to which they rely on each other) and the positioning in relationships are discussed in the literature (Adler & Kwon, 2002; Burt, 1992; Coleman, 1988; Dyer and Nobeoka, 2000). However, this discussion presents some confusion about what is the most beneficial network context.

Coleman (1998) and Dyer & Nobeoka, (2000) argue that firmly established network connections facilitate the emergence of shared values that strengthen the flows of knowledge, while Burt (1992) argue for a network with fewer closed ties as this provides greater opportunity for knowledge to flow through knowledge brokers who facilitate the transfer of knowledge without strong social ties. However, both parties agree that a coordinated approach is needed between the firms in the network.

Whatever the network structure, there is a need to recognise that there is a natural tendency to want to protect knowledge that is viewed as proprietary. This is often coupled with the fear that an organisation's knowledge value is diluted when it is shared and a view that knowledge is a currency matched to power (Dyer & Nobeoka, 2000; Gupta & Govindarajan, 2000a). For example, what Gupta and Govindarajan (2000a) call the 'not-invented here' syndrome that causes managers to block out information that suggests they are not competent.

- **Group Identity.** The literature review identifies the need for a MNO to establish group identity. This group identity is based on a sense of belonging and understanding of the value that is created for the MNO when the firms in the group work together (Dyer & Nobeoka, 2000; Gupta & Govindarajan, 2000a). To transfer knowledge freely within a MNO, group identity must take precedence over individual need (Argyris & Schon, 1978; Nahapiet & Ghoshal, 1998). Dyer and Nobeoka (2000) and Gupta and Govindarajan (2000a) identified group identity as the main driver to develop motivation to transfer knowledge within MNOs. Authors that focus on social capital and network linkages such as Nahapiet and Ghoshal (1998) and Tsai (2001) see group identity being fuelled by strategic relatedness and common interests. Fahey and Prusak (1998) warn the practitioner to first develop this shared understanding at firm level and then to move this understanding out to the wider group of the MNO.

Senge and Kofman (1993) believe that building an organisation that facilitates collaboration between firms requires a cultural shift. This cultural shift based on the realisation that the purpose of knowledge creation is not survival, but the need to leverage maximum value from the knowledge available. They caution that this involves individual commitment beyond commitment to their own firm to commitment across organisational boundaries to wherever it is needed. Kogut and Zander (1992) see this

level of commitment as essential for the multinational to perform knowledge combinations that the market cannot.

- **Encouragement.** While the literature reviewed offered no empirical research on the effects of encouragement on knowledge transfer, several authors mentioned the need to encourage knowledge transfer through rewarding the appropriate behaviours that facilitate knowledge creation (Davidson & Voss 2002; Quintas, et al., 1997; von Krogh, et al., 2000). This means encouraging firms to be open to new experiences, to get knowledge to those who need it and to focus on benefits for the group. Furthermore, the literature offers scant information about the application of encouragement but mentions that incentives increase the motivation to transfer knowledge across a group (Gupta & Govindarajan, 2000a; Teece, 2000). However, Gupta and Govindarajan (2000a) failed to show that financial incentives were very effective. Bartlett and Ghoshal (1991) mention that managing across borders should be backed by performance evaluations, which focus on rewarding knowledge transfer between firms. While Dyer and Nobeoka (2000) preferred to use money for facilitating meetings and ensuring people had the necessary expertise available rather than performance rewards.

The critical items discussed above motivate a firm to share knowledge, but whether they make full use of any knowledge they acquire relies heavily on their absorptive capacity, which can be defined as their ability to recognise the value in knowledge and to make use of the knowledge acquired or their absorptive capacity (Cohen & Levinthal, 1990).

### 2.7.5 Absorptive Capacity

The importance of absorptive capacity is recognised in the strategic management (Lane & Lubatkin, 1998; Nahapiet & Ghoshal, 1998) and knowledge transfer literature (Gupta & Govindarajan, 2000a; Simonin, 1999; Tsai, 2000). Cohen and Levinthal (1990) offer a definition of absorptive capacity as a firm's ability to value, assimilate and apply new knowledge. They see absorptive capacity as related to the level of prior related knowledge, because for them absorptive capacity is the ability to recognise links with previous knowledge. Kim (1997), on the other hand offers a definition of absorptive capacity as the capacity to learn and solve problems. Zahra and George (2002) see absorptive capacity as a combination of effort and knowledge base, a multi dimensional

construct involving the ability to value, assimilate, and apply knowledge. This research bases the research of absorptive capacity on the levels of prior knowledge, related knowledge and the individual firm's and the MNOs effort to gather knowledge and used this knowledge. This acknowledgement of the effort required to gather knowledge identifies the close relationship between absorptive capacity and the motivation to transfer knowledge in a MNO.

Supporting this link with motivation, Cohen and Levinthal (1990) emphasise the effect of accumulating absorptive capacity and the value in the inertia it creates. Lenox and King (2004) research showed that an organisations absorptive capacity is positively affected by the provision of knowledge stocks and the level at which the managers proactively make the necessary knowledge available. The stronger an organisation's absorptive capacity, the greater the ability to exploit any critical knowledge and the greater the tendency to be proactive and exploit new opportunities. Cohen and Levinthal (1990) suggest that in today's quick moving environment, when a firm ceases to invest in absorptive capacity, new knowledge becomes too far from its existing knowledge base to be appreciated and accepted.

The literature reviewed suggests that memory development is self-reinforcing, that learning is cumulative and that we can over time learn how to learn. Cohen and Levinthal (1990) comment that to develop effective absorptive capacity takes time and is not just a matter of exposing individuals briefly to related knowledge but considerable time needs to be spent to build the diversity of knowledge needed as it is this diversity that facilitates associations and linkages. Bartlett and Ghoshal, (1991) support this approach their focus, on the individual and the context that supports the individual and organisation to allow the basic attitudes, system and processes to be put into place before you move on to more complex solutions. Argyris and Schon, (1978); Garvin, (1993), Quintas, et al., (1997); and Levitt and March, (1988) stress the importance of providing an organisational context that facilitates knowledge transfer.

### 2.7.6 Organisational Context

Previously, in section 2.4 of this chapter, the literature identified the need to provide a context that supports the social interaction needed to support knowledge transfer. In section 2.7.4 it is clear that the context should be one that encourages knowledge transfer based on trust and the desire to reach a shared understanding. What has not been discussed is the need to create a context that facilitates the ability of an organisation to unlearn behaviour that inhibits knowledge transfer flows. The literature identifies several areas where unlearning would be of benefit, such as:

1. The tendency to analyse events and screen off issues to avoid the personal, political and organisational risks (Argyris & Schon, 1978; Senge & Kofman (1993);
2. The tendency to compete with those around us as a result of our need to be the best (Senge & Kofman 1993); and
3. The tendency to espouse a belief that is not supported by behaviour (Argyris & Schon, 1978; Garvin, 1993; Quintas, et al., 1997; Levitt & March, 1988).

Several authors suggest that a context that supports experimentation, risk taking and learning from failure supports unlearning (Garvin, 1993; McGill & Slocum, 1993; Senge, 1990; Quintas, et al., 1997). There should be a collective responsibility that pervades the whole organisation a responsibility focused on sharing knowledge at all levels of the organisation (Dyer & Nobeoka, 2000). This means that firms in the MNO need to take a proactively approach to ensure the boundaries between firms are permeable to knowledge transfer (Gupta & Govindarajan, 2000a). Also, the organisation needs to provide a variety of information technologies that are readily available to support the urgency to maximize knowledge resources (Roberts, 2000). Knowledge needs to be codified into the organisations systems and processes and made accessible for reevaluation (Huber, 1991; McGill & Slocum, 1993). All of this done taking into account that knowledge transfer is not just about managing information and information technology but also about the management of people (Davenport & Prusak, 1998; Roberts, 2000).

Knowledge management focuses on knowledge relevant to the business so that time is not wasted. It is critical to match the knowledge requirement to business objectives that

are understood by the individuals in the firm (Bukh, et al., 1999). The MNO needs to develop specific objective that support its strategic goal to encourage knowledge transfer (Gupta & Govindarajan, 2000a; Teece 2000). It requires effective leaders who understand how people learn and maintain the maximum knowledge transfer momentum (Bartlett & Ghoshal, 1991). The leader needs to drive the knowledge creation project by setting an example which means sharing knowledge and making themselves accessible and approachable (Argyris & Schon, 1978).

Finally to complete the picture, Bartlett and Ghoshal (1991) recognised the need for the MNO to have an organisational structure and a network structure that supports knowledge transfer. MNO's organisational and network structures are topics outside the scope of this review. However, it is important to mention that hierarchical structures with gatekeepers at certain levels have a greater tendency to inhibit knowledge transfer but in a flat structure knowledge flows more freely as it is usually not restricted by gatekeepers (Bartlett & Ghoshal, 1991). In addition, MNOs have the option of either centralised or decentralised control of knowledge transfer. Which approach they take often dependent on their need for control or their requirement for autonomy (Bartlett & Ghoshal, 1991).

The fact that knowledge is context bound demonstrates the complexity of issues that need to be addressed to maximize knowledge transfer. The complexity of the knowledge transfer process presents the realisation that knowledge transfer comes with many variations. These variations the results of the nature of the knowledge, the richness of communication channels used, the motivation to transfer knowledge the absorptive capacity and the organisational context. Therefore, it is not unreasonable to expect the results of this complex knowledge transfer process to be an alteration or asymmetry whenever knowledge is transferred (Simonin, 1999).

The literature reviews confirms the need to better understand inter-firm knowledge within MNOs.

## **2.8 SUMMARY**

This chapter established an understanding of the strategic importance of knowledge. It illustrated that there is no one framework accepted in the literature for implementing the management of knowledge in MNOs. The focus of this literature review was to understand the process of knowledge creation and organisational learning so that this understanding could then be applied to the transfer of knowledge between firms within a MNO.

The significance of knowledge to an organisation is highlighted in the literature that explains the nature of knowledge. This explanation expresses the potential and power of knowledge and explains its connection to the individual and social interaction between individuals. The knowledge creation process is considered dynamic in that the process is demonstrated as driven by interaction between the individual, the group and the organisation. Importantly, the literature then reveals the influence of the context on the knowledge creation process.

Knowledge transfer is arguably the key component in knowledge creation the movement of knowledge fuelling the creation process. The unique knowledge that a MNO creates can be responsible for this organisations sustainable competitive advantage. Through the course of this literature review several dominant themes emerge:

- The motivation to transfer knowledge across boundaries is fuelled by the understanding of the strategic benefits;
- The need to provide rich communication channels;
- The need to foster absorptive capacity as a prerequisite of knowledge transfer; and
- The need to understand how to create a knowledge transfer context that facilitates knowledge transfer of a proactive nature.

In conclusion, further study of knowledge transfer in MNOs would be valuable. The following chapter outlines the methodology used in this research to further the study of knowledge transfer in MNOs.

## **Chapter 3.0 RESEARCH DESIGN**

### **3.1 INTRODUCTION**

The intention of this chapter is to present the research focus and objectives, then to introduce the research framework used for the quantitative and qualitative research. A more detailed explanation of the latter is provided in chapter four and six. Finally, the chapter explains the research paradigm, the ethical issues and the management of the research limitations.

### **3.2 RESEARCH FOCUS**

In the preceding chapter Davenport & Prusak (1997); Grant (1996); and von Krogh, et al. (2000) highlight the knowledge-based view that knowledge is the pre-eminent resource of an organisation's capability to create sustainable competitive advantage. Further to this, the knowledge management and organisational learning literature reveal a converging theme, expressly that the most important aspect of knowledge creation is the management of learning routines. This thesis focuses on the transfer of knowledge as part of these learning routines to explore how MNOs transfer knowledge and some of the organisational issues that determine the effectiveness of the process.

Also, in the preceding chapter the literature on knowledge transfer establishes the importance of four constructs that are key elements in MNO learning routines and have a positive relationship with respect to knowledge transfer. These are as follows: the motivation to transfer knowledge, richness of communication channels, absorptive capacity and an organisational context that facilitates knowledge transfer (organisational context). In addition the literature recognises the relationships between these constructs and their relationship with knowledge transfer. This thesis focuses on these main constructs and asks the following research question:

**How does motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context influence inter-firm knowledge transfer in MNOs?**

In attempting to answer this question the main research objectives were set:

1. *To explore knowledge transfer in MNOs by researching the motivation to transfer knowledge for inter-firm knowledge transfer;*
2. *To explore knowledge transfer in MNOs by researching the richness of communication channels used for inter-firm knowledge transfer;*
3. *To explore knowledge transfer in MNOs by researching the absorptive capacity in inter-firm knowledge transfer;*
4. *To explore knowledge transfer in MNOs by researching the organisational context for inter-firm knowledge transfer; and*
5. *To explore knowledge transfer in MNOs by researching the interrelationships between, motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context, for inter-firm knowledge transfer.*

All of the main research objectives were then operationalised, to form a basis on which to collect data. The process used to operationalise these objectives is discussed next.

### **3.3 RESEARCH OBJECTIVES**

This section takes the objectives set above, and provides a brief background from the literature to explain the issues that accompany each objective and how these objectives could be operationalised.

#### **3.3.1 Motivation to Transfer Knowledge**

*To explore knowledge transfer MNOs by researching the motivation to transfer knowledge for inter-firm knowledge transfer.*

Gupta and Govindarajan, (2000a) describe motivation to transfer knowledge as the motivation that drives behaviour to reduce a natural tendency to hold onto knowledge. A MNO's shared identity reduces the competitive nature of knowledge transfer when people recognise that knowledge stocks are powerful but can become even more powerful when shared across organisational boundaries (Dyer & Nobeoka, 2000; Simonin, 1999). Shared identity comes as the result of an understanding of the benefits that the organisation gains through knowledge sharing. Those involved anticipate a worthwhile experience and consequently, actively facilitate the knowledge transfer process (Nahapiet & Ghoshal, 1998).

The objective regarding motivation to transfer knowledge was operationalised as follows:

- *To find the level of shared purpose between the firms in the MNO;*
- *To assess how positive the firms within the MNO view knowledge transfer;*
- *To find the level at which the firms within the MNO actively facilitate the knowledge transfer process; and*
- *To assess the level of proactive and reactive activity.*

### **3.3.2 Richness of Communication Channels**

*To explore knowledge transfer in MNOs by researching the richness of communication channels used for inter-firm knowledge transfer.*

The richness of a communication channel is judged by its ability to successfully transfer knowledge (Gupta & Govindarajan, 2000a; Lahit & Beyerlein, 2000; Zander & Kogut, 1995). This construct was operationalised by exploring the frequency and types of communication used and its perceived efficacy (Gupta & Govindarajan, 2000a; Dyer & Nobeoka, 2000; Zander & Kogut, 1995).

The objective regarding the richness of communication channels was operationalised as follows:

- *To determine what communication channels are used;*
- *To determine what communication channels are considered best;*

- *To determine the frequency of communications; and*
- *To determine the accessibility of 'know how' and 'know who' knowledge.*

### **3.3.3 Absorptive Capacity**

*To explore knowledge transfer in MNOs by researching the absorptive capacity in inter-firm knowledge transfer.*

An organisation's absorptive capacity is its ability to understand knowledge and to recognise its potential (Cohen & Levinthal, 1990; Gupta & Govindajarn, 2000a). The research looks for evidence of past experience that could supply the knowledge base that allows the recipient to see the value in the knowledge presented. This past experience relates to skill levels that increase with repeated experiences of a particular situation (Cohen & Levinthal, 1990; Barney, 1991). Hence, absorptive capacity is related to the extent that the organisation engages in knowledge transfer.

The objective regarding absorptive capacity was operationalised as follows:

- *To determine the level of similarity in business practice used across the organisation;*
- *To determine the level of resource applied;*
- *To determine the level of commitment to continuous improvement;*
- *To determine the level of experience; and*
- *To determine the level of expert knowledge.*

### **3.3.4 Organisational Context**

*To explore knowledge transfer in MNOs by researching the organisational context for inter-firm knowledge transfer.*

Demarest (1997) and Garvin (1993) highlight the importance that needs to be placed on an organisations context when exploring knowledge transfer. Authors such as Argyris and Schon (1974) and Schein (1993; 1996) identify behavioural aspects closely associated with knowledge transfer that can be related to the organisational context.

Whilst organisational context is a complex topic, themes that appear repeatedly in the knowledge management and organisational learning literature were used to operationalise the research objective. Dyer and Nobeoka (2000) and Senge and Kofman (1993) highlight the need for a culture with collective responsibility that pervades the whole organisation, a culture that supports experimentation and idea sharing. Bartlett and Ghoshal (1991) and Senge and Kofman (1993) acknowledge the need for effective leaders who understand how people learn and maintain the maximum knowledge transfer momentum. Taking a more practical approach, knowledge needs to be codified into the organisation's systems and processes, and made accessible for re-evaluation (Huber, 1991; McGill & Slocum, 1993). Finally, several authors mention social context, amongst them Nahapiet and Ghoshal (1998); Mc Adams and Mc Greedy (1999); and Nonaka and Takeuchi (1995). They recognise the importance of relationships developed on trust and shared meanings. Similarly, there are warnings that knowledge management is about people not just about the management of information systems (Davenport & Prusak, 1998; Roberts, 2000).

The objective regarding the organisation's context operationalised as follows:

- *To determine the level at which firms actively facilitates the knowledge transfer process;*
- *To identify where improvements could be made that would increase the knowledge transfer activity; and*
- *To explore the relationship context in which knowledge transfer takes place.*

### **3.3.5 Knowledge Transfer**

Knowledge transfer is completed when knowledge becomes part of the organisation's knowledge stocks and renews an organisation's skills and capabilities (Tsai, 2001; Garvin, 1993). At this point it is embedded in the organisation's routines, behaviours and strategic orientations (Argyris & Schon, 1974; Argyris & Schon, 1978; Grant, 1996; Levitt & March 1988; March & Olsen 1975). However, Fahey and Prusak, (1998) warn that within the organisation some knowledge will still remain in the

heads of the individuals. Consequently, the operationalised objectives were designed to look for evidence of knowledge transfer based on perception and tangible evidence.

The objective regarding knowledge transfer operationalised as follows:

- *To seek evidence that transfer knowledge transfer has taken place; and*
- *To discover if any knowledge transfer patterns based preference have develop.*

A framework is now presented with consideration given to the four constructs (main constructs), the operationalised objective, the knowledge measured and the inclusion of both quantitative and qualitative methods.

### **3.3 RESEARCH FRAMEWORK**

The diagram 3.1 presents the research framework. The research uses the main constructs, motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context against the variable knowledge transfer in the form of 'know-how' knowledge. As explained in section 2.3.2 of this thesis 'know how' knowledge involves the knowledge of skills and competencies and organisational routines and creates sustainable competitive advantage for an organisation because of its unique nature (Kogut & Zander 1992).

As mentioned in section 3.3 above, research objectives were developed for each of the main constructs. All of the research objectives were then operationalised as the basis on which to develop questions to collect data to address the research objectives. The development of these questions is explained further in the chapter four of this thesis.

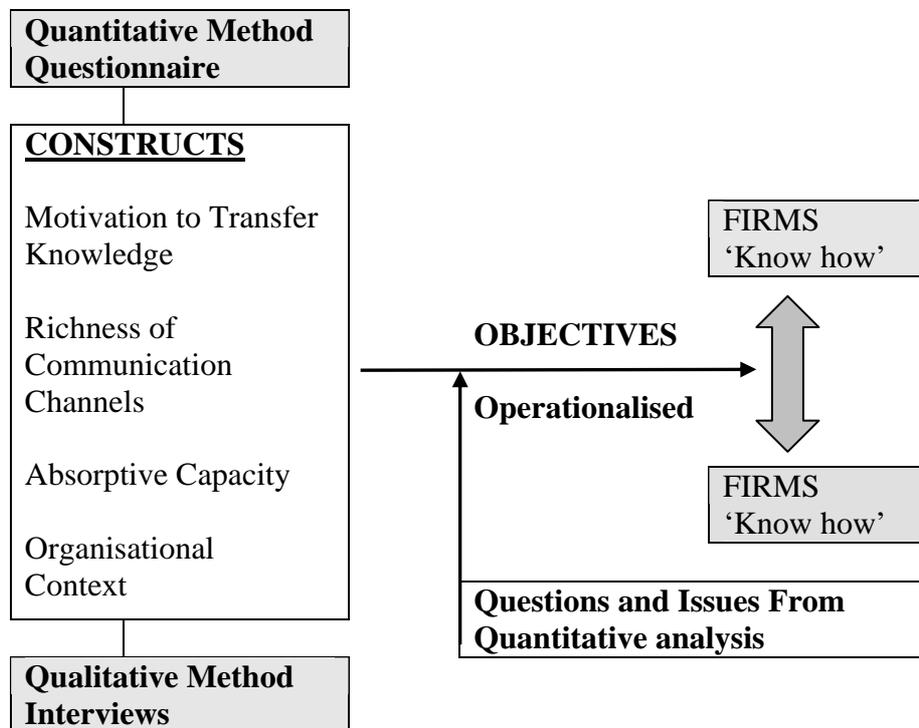
**Diagram 3.1: Research Framework - Quantitative and Qualitative Methods**

Diagram 3.1 shows that the research has a multi-method approach. First, a questionnaire was used to collect data for quantitative analysis. Second, semi-structured interviews were used to collect data for qualitative analysis. Data were collected from two MNOs in the same industry to increase the reliability of the findings. Also, in both organisations only a limited number of people had the necessary knowledge to participate. If one organisation had been used for the quantitative and qualitative research it would have meant using the same people. This preconditioning could have resulted in more contrived answers or caused action or behavioural changes within the MNO that would affect the results of the qualitative research. Therefore, by using another MNO, the qualitative research did not use subjects that were preconditioned by previous research.

This multi-method approach provided both a broader and complimentary approach. The research intended, to develop an understanding of knowledge transfer in a MNO

and then to explore this understanding in a different MNO. Taking a positivist approach a questionnaire was used to collect data for quantitative analysis. The questionnaire focused on exploring the relationship between the constructs, motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context against the variable knowledge transfer. This approach was taken with the belief that previous research presents objective statistical evidence that could be generalised to similar situations, in this case MNOs.

The research then sought further explanation of existing information moving into a phenomenological paradigm. The investigation of the research context took on greater detail, data collected for qualitative analysis through semi-structured interviews. The interview was designed to gather information that built on the results from the analysis of the quantitative data. First, it sought to confirm the quantitative findings and increase the reliability of the results. Second, it investigated any issues of interest that emerged from the quantitative analysis. This approach was designed to improve the validity of the analysis and investigate knowledge transfer in greater depth. One methodology designed to compliment the other.

### **3.5 ETHICAL ISSUES**

With any research methodology particularly when primary data is collected, there is a need to consider ethical issues. The researcher has a responsibility to ensure that the participant is well informed, has the right to privacy and understands the purpose of the research (Zikmund, 1994). This research has the approval of the Auckland University of Technology Ethics Committee (AUTEK) for the memorandum that grants this approval see appendix one.

Ethical considerations prescribed that before opening the questionnaire or being interviewed the participant was presented with details about the purpose of the research, how their confidentially would be kept, contact details so they could seek clarification on any issues relating to the research, their right to withdraw information before information was written into the research, and a statement that their identity would remain anonymous. The information given to participants (for the questionnaire and the interview) can be found in appendix two.

Researcher credibility was established by making both the subject organisations and the participant aware that the research was being carried out within university guidelines and with supervision. Both MNOs, indicated they required some control over what could be asked to ensure that the interview was focused on business management benefits. This research required a mutually acceptable structure, the researcher and university focused on the research objective and the subject organisations expected to identify business benefits from the research. This was done without compromising the researcher's academic aim of adding to the existing pool of knowledge. A mutual understanding was reached through constant involvement and communication about what was required and what could be expected between the two parties. Both organisations wished to remain anonymous in the thesis. The results of the research will be presented in report format to each of the organisation on completion of the research.

The purpose of the research for academic reasons was highlighted as the thrust behind the research. The research to be objective and the researcher to remain independent at all times to eliminate any bias. The fact that useful information found could help senior executives in the organisations identify areas for improvement was seen as a benefit that would emerge through the investigative nature of the research.

### **3.6 MANAGEMENT OF LIMITATIONS**

The limitations of this research are largely due to a framework that was created to bring a complex topic down into a manageable structure and to accomplish the research objectives within the time and with the resources available. However, this limitation is strengthened by the multi- method research approach.

The research does not encompass the issues based around the organisational and network structure. While the research is designed to identify the firms in the MNO who dominate others and find out where relationships have developed, the complexity of the issues relating to the structure within these firms and the MNO's network are beyond the scope of the research. However, where information is presented that relates to a firm or the MNO's network structure and its impact on knowledge

transfer, this information is included in the analysis and discussion chapters of this document.

In addition, in this research the term knowledge transfer is used to denote both the sending and receiving of knowledge. The difference between these two processes is recognised by Gupta and Govindarajan (2000a), notably that absorptive capacity is more closely associated with receiving knowledge. Also Szulanski (1996) considered motivation of the sender and the receiver as often different. This research recognises that by not researching sending and receiving knowledge separately, some information may be lost. However, this research takes the view that knowledge transfer is about the collective dynamic of knowledge flowing both backwards and forwards and about the organisational routines that support both the sending and receiving of knowledge.

In both MNOs the participants were a purpose-selected group, namely all the people in the organisation involved in inter-firm knowledge transfer. This technique was the most appropriate for the current research, but it is noted that it may limit the scope of this research. The purpose-selected technique used follows a strategic logic rather than a statistical logic, based on selecting people relevant to the research questions (Silverman, 2000) and resulted in a horizontal focus across the MNOs. It could be argued that by not selecting a random sample that covered both vertical and horizontal levels, the research made a presumption that there is very limited knowledge transfer between other people in the MNOs. However, confirmation that knowledge transfer occurred only at senior management level and within a select group was made by asking a contact person in each firm to identify who was involved in inter-firm knowledge transfer.

The selection process for participants may have put those selected under some pressure to participate. Nevertheless, the participants knew their identity would remain anonymous. Senior managers made the selection of people for both the questionnaire and the interview in the respective MNOs. On the positive side, this selection process signalled the research importance.

The research design considers the context in which the knowledge transfer takes place but recognises that any generalisation to other MNOs needs to be approached with caution. Knowledge transfer is a dynamic process affected by many things not addressed by this research, such as, the time lapse since the firm has been part of the MNO or the economic situation at the time (Tsai, 2001).

A final limitation concerns the potential bias created by the researcher working in the industry. Susman and Evered (1978) comment that when researching practical management issues the research cannot be value free and a phenomenon such as knowledge transfer must be considered as related to the actual issues that the members of an organisation face. However, the researcher is placed in a good position to understand the participants' frame of reference because they often know the reality (Jean Lee, 1992). The researcher was very aware of the need to remain as objective as possible.

### **3.8 SUMMARY**

This chapter developed the research structure from the main constructs identified in the literature review, motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context, to answer the following question.

**How does motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context influence inter-firm knowledge transfer in MNOs?**

From this question the main research objectives were developed. The chapter then explains how these objectives were operationalised to support the data collection. The data collection based on a multi-method approach that includes the quantitative analysis of questionnaire data and qualitative analysis of data from semi-structured interviews. The research paradigm that supports this approach was explained. Finally, the ethical issues and the consideration made to address these issues are explained and the limitations acknowledged.

**PART 2**

**QUANTITATIVE RESEARCH**

## **Chapter 4.0            QUANTITATIVE METHOD AND PREPARATION FOR DATA ANALYSIS**

### **4.1     INTRODUCTION**

The majority of research detailed in this chapter is conducted within the positivist paradigm, employing a questionnaire for data collection and quantitative analysis. This chapter covers the selection of participants and the data collection. Then, the chapter focuses on preparation of data for analysis, which involves the data conversion, the development of measures, and the testing for reliability and validity of these measures. Finally, the chapter outlines the data analysis method.

### **4.2     SELECTION OF PARTICIPANTS**

Participants were selected on the basis of being known to be involved in initiatives that focus on knowledge transfer across the MNO. These people were targeted because they were identified as the people in the MNO with the knowledge to give accurate and reliable answers based on experience (Zikmund, 1994). This selection approach is considered a census, as all the people identified by the organisation as involved in inter-firm knowledge transfer were asked to participate. This census targeted 40 people and could be considered small. However, the size is considered adequate for quantitative analysis (Hair, Anderson, Tatham & Black, 1998) and therefore it serves the purpose of initial exploration of knowledge transfer activity within a MNO. The questionnaire (see appendix three) collected data on the constructs: motivation to transfer knowledge; richness of communication; absorptive capacity and; organisational context. The questions were designed to answer the research objectives set out in section 3.2 of this thesis. The second stage of this research, the qualitative phase, will seek confirmation and further explore these answers.

The questionnaire was distributed electronically to the people involved in knowledge transfer initiatives in the MNO with a message from the Chief Executive Officer (CEO) to inform them that the research could be of benefit to the organisation. This message from the CEO is not included in the appendix as the organisation asked to remain anonymous. The CEO also distributed some of these questionnaires personally. This

approach was taken to signal the importance placed on knowledge transfer initiatives in the organisation in the hope it would encourage compliance.

Eighteen of the participants received and answered the questionnaire electronically while thirteen answered on a hard copy. Of the total of 40, 31 replies were received back with a response rate of 77.5%.

### 4.3 DATA COLLECTION

So that the data collected answered the main research objectives, these objectives were operationalised. The objectives were operationalised to target the issues and actions to be measured. This process was shown in section 3.3. The process followed to use these operationalised objectives for questionnaire development is presented next.

#### 4.3.1 Questionnaire Development

The questionnaire can be found in appendix three of this thesis. Two examples of how the questions were developed are shown in table 4.1.

**Table 4.1: Example of Question Development**

<b>Research Objective</b>	
<i>To explore knowledge transfer in a MNO by researching the absorptive capacity in inter-firm knowledge transfer.</i>	
<b>Operationalised Objective</b>	<b>Question</b>
<i>1. To determine the level of similarity in business practice used across the organisation.</i>	I find there are many similarities between the firms across the group.
<i>2. To determine the level of commitment to continuous improvement.</i>	We actively look for ways to improve the systems and processes in my firm.

The example in table 4.1 is for one of the main research objectives '*To explore knowledge transfer in a MNO by researching the absorptive capacity in inter-firm knowledge transfer.*' Two of the operationalised objectives developed from this

objective are presented. Next to each of the operationalised objective is an example of a question asked to collect the data for that operationalised objective.

The questionnaire asked for two types of responses namely, multiple choice and open-ended free text. The response selection in the multiple choice was provided by using a six-point Likert scale with three degrees of positive answers and three degrees of negative answers. This type of scale forces a positive or negative answer eliminating any tendency to take a neutral stance (Zikmund, 1994). A six-point scale was used to allow for sufficient range of response to provide the richness of the data. The six-point scale allowed for weak, medium and strong opinions to be expressed. Assumptions were made about the homogeneity of the responses (Zikmund, 1994). Open-ended questions were used to allow for accurate information about the participants position in their firm and their organisations context. The use of free text provided a way to collect an unstructured response in a non-threatening way (Hussey & Hussey, 1997).

### **4.3.2 Pre-Testing**

The questionnaire was pre-tested during the question development phase and before an electronic version was sent out. Pre-testing involved the testing of the questionnaire on a small sample to identify and eliminate potential problems (Zikmund, 1994). A selection of eight employees from middle to senior managers answered the questionnaire. They were asked to comment on the content for sensitivity and appropriateness for their firm and the time it took to answer all the questions. As well as, whether they found the Likert scale provided sufficient scope and if the choices were distinct enough to avoid confusion. The validity of each question to collect data that focused on the research objective was discussed with each participant. The feedback led to minor modifications aimed at increasing the questionnaires validity and clarity. These participants were not selected again, for the reasons explained previously in section 4.2. In addition, two people from outside the MNO answered the electronic version to check that the set up was working and the instructions were clear.

### 4.3.3 Electronic Questionnaire

The questionnaire was set up as a website and sent to possible participants in an e-mail containing the link to the website. In the MNO selected, all of the possible participants had access to a computer with e-mail and Internet facilities and the required level of computer literacy to complete the questionnaire. Respondents were assured of their confidentiality and that their responses would go directly into an electronic database that had no record of where the response came from. This meant that this data did not need to be checked for transcription errors. Participants were required to answer all the questions before they were able to submit their questionnaire. Most importantly, it let the participant know which questions had not been answered to reduce errors caused by missed questions. These responses were protected by a user name and password. Any hardcopies received were entered into the electronic database and checked for accuracy. These hardcopies were then stored in locked facilities.

## 4.4 DATA CONVERSION

The three open-ended questions that related to the organisational context were designed to be answered with free text. A software package, QSR NUD\*IST (Non numerical Unstructured Data Indexing Searching and Theorising) N6, was used to assist in the analysis of text. This software was used to sort and label the text, so that the context and the emerging themes could be coded for analysis. This process is described in greater detail in section 5.9 of this thesis.

The data collected by the questionnaire was mainly non-numerical. Some of the data was categorical and could not be converted into numerical form. For example, respondents were asked to select the most frequently used communication channel from a list of communication channel options. The rest of the data were converted into numerical form by providing a choice of answers. Each choice was given a numerical value based on an ordinal scale from 1 to 6 and from a negative to positive response. The scale was as follows: strongly disagree = 1; disagree = 2; somewhat disagree = 3; somewhat agree = 4; agree = 5 and; strongly agree = 6. The ordinal data collected were scored and categorised against the objective it was designed to address.

All of this data then analysed using frequency tables in SPSS Student Version 10.00 for Windows (SPSS). The frequency table gave a percentage value to the frequency of the answers, which gave an indication of the strength of the answer. For example, 77.4% said that e-mail was the most frequently used form of inter-firm communication; the next most frequent the phone at 22.6%. Clearly, e-mail is the most frequently used communication channel.

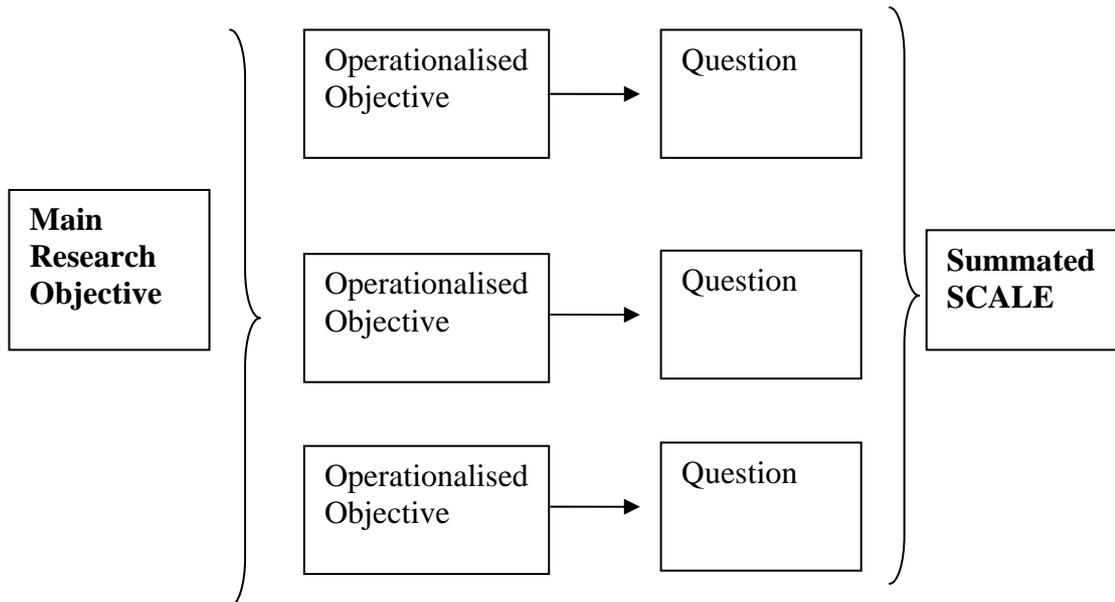
For quantitative analysis the constructs are termed either dependent or independent variables. Motivation to transfer knowledge (MTK), richness of communication channels (RC), absorptive capacity (AC) and organisational context (OC) became the independent variables and knowledge transfer (KT) the dependent variable. The questions in the questionnaire were grouped against these variables. The questions were grouped to increase the reliability of the measurement of the construct. Reliability was increased because the multiple questions represented the multiple aspects of the construct and when several questions are grouped and averaged you reduce the potential error that might occur in a single question (Hair et al., 1998). The questions that collected categorical data were not used in these scales; only the ordinal measures were grouped to form a summated scale. Ordinal data is considered the minimum requirement for bivariate and multivariate analysis (Bryman & Cramer, 1997; Hair et al., 1998). The use of ordinal data is discussed further in section 4.7 of this chapter.

## **4.5 RELIABILITY AND VALIDITY**

The preparation of summated scales to measure the above variables, the preliminary analysis involved in their preparation and the assessment for reliability and validity is discussed next.

### **4.5.1 Reliability**

Each question in the questionnaire determined a measure of a variable. Each of the four quantitative research variables, namely MTK, RC, AC and KT were measured with several questions that were grouped together to form a measurement scale. Diagram 4.1 gives an outline of how these summated scales were formed

**Diagram 4.1: Summated Scale**

For example, the main research objective for the variable MTK, namely *‘To explore knowledge transfer in a MNO by researching the motivation to transfer knowledge for inter-firm knowledge’* was translated into several operationalised objectives. This translation was designed to target what facts should be measured to address the main research objective, for example the operationalised objective, *‘To determine the level of shared purpose between the firms in the MNO.’* Then, to measure this operationalised objective a question was developed to asked the participant to score the level at which they felt *‘I never feel I should not share.’* Each question was then grouped to form the summated scale for the variable that it was designed to measure, such as MTK.

The reliability of each scale to measure the operationalised objective was assessed using the internal consistency method of Cronbach’s coefficient alpha. Cronbach coefficient alpha is a measurement scale of 0 to 1; the reliability of the measures indicated when the measure for the scale is above 0.60 to 0.70 (Hair et al., 1998). To improve the reliability, measures were removed to maintain the Cronbach coefficient alpha scale above 0.60.

Table 4.2 gives the Cronbach coefficient alpha values of the modified scales. This table shows the scale for MTK was reduced to three measures to collect data on: *‘feeling of belonging’*; *‘never feel I should not share’*; and *‘proactive’*. The table shows the measures for the frequency of both formal and informal communication remained for

RC. Other questions were used to identify the richness of communication channels, these questions collecting categorical and qualitative data. The assumption was made that the richness of the communication channels measured by the scale for RC would be assessed by these additional questions. Table 4.2 shows the measures for AC reduced to ‘experience’ and ‘expert knowledge’, the measures ‘resource’, ‘continuous improvement’ and ‘similarities’ removed. From the KT group the item measuring ‘influence on technology and processes’ and ‘inquires from others’ were removed. Table 4.2 gives the final measures which all show sound reliability that exceeds 0.60, the level of acceptance (Hair et. al., 1998).

**Table 4.2: Cronbach Coefficient Alpha Values.**

<b>Knowledge Construct</b>	<b>Alpha</b>
Motivation to Transfer Knowledge (MTK): Feeling of belonging; Never feel I should not share; and Proactive.	.7135
Richness of Communication channels (RC): Formal meetings, and Informal meetings (frequency)	.6975
Absorptive Capacity (AC): Experience and Expert knowledge	.9025
Knowledge Transfer (KT): Knowledge shared and Knowledge received	.6792

During the development of these scales the Cronbach alpha values for MTK showed that the measures ‘encouragement’ (E) and ‘group identity’ (Grp. ID) reduced the reliability of this scale, the Cronbach alpha value at .4205. On the other hand, the literature review in section 2.2.4 of this thesis identifies the importance of ‘encouragement’ and group identity’. It sees both these items as key elements in the motivation of knowledge transfer in a MNO. Also, ‘encouragement’ and the development of ‘group identity’ are part of the day-to-day operation of any organisation. Taking all of these items into account it was decided to include the measures for ‘encouragement and ‘group identity’ in the bivariate and multivariate analysis of the research. Both of these measures were considered to be sub-variables of MTK and to address the main MTK research objective.

### 4.5.2 Validity

Validity is concerned with the extent that a scale accurately represents the construct of interest (Hair et al., 1998). Where possible this should be supported by past research and consideration given to the practical things that affect the research (Hair et al., 1998). For example, the measurement of ‘encouragement’ can be affected when financial restrictions are placed on the type of ‘encouragement’ available. This research is based on past empirical research that showed MTK, RC, AC, Grp. ID and E have a relationship with KT. Table 4.3 shows the Spearman’s Rank Order (rho) correlations used to describe the relationship between these variables. The entire set of variables show a statistically significant relationship with KT.

**Table 4.3: Spearman’s Rank Order Correlations for Validity**

	Knowledge Transfer (KT)
Knowledge Transfer (KT)	1.000
Absorptive Capacity (AC)	.358*
Encouragement (E)	.423*
Richness Communication (RC)	.430*
Group Identity (Grp ID)	.559**
Motivation to transfer knowledge (MTK)	.819**

\*\* Correlation is significant at the  $p < 0.010$  levels

\* Correlation is significant at the  $p < 0.050$  levels

To explain this further, Spearman’s Rank Order correlations (rho) explore whether a relationship between two variables exist and calculate its strength and direction, they cannot be used to infer causation (Hair et al, 1998). A probability (p value) at  $p = < 0.050$  indicates that the strength of relationship given to be statistically correct in 95% of the cases (5% error rate), with the samples size (N) tested. Correlations with  $p = < 0.05$  are considered significant enough to confirm past empirical research (Hair et al., 1998). A probability value at  $p = < 0.01$  indicates the strength of relationship to be statistically correct in 99% of the cases, with the sample size tested.

Further, Green and Salkind (2000, p 736) suggest that in the behavioural sciences correlations are interpreted as follows. A weak correlation, is indicated when  $\rho = .300$  with  $p = <0.050$ , while correlations from  $\rho = .300$  to  $\rho = .500$  with  $p = <0.050$  can be considered moderate and correlation above  $\rho = .500$  with  $p = <0.050$  considered as strong. Using these parameters KT presents: moderate correlations with AC ( $\rho = .358$ ,  $N = 31$ ,  $p <0.050$ ), E ( $\rho = .423$ ,  $N = 31$ ,  $p = 0.010$ ), RC ( $\rho = .430$ ,  $N = 31$ ,  $p = <0.010$ ); and shows a strong correlation with Grp. ID ( $\rho = .559$ ,  $N = 31$ ,  $p = <0.010$ ) and MTK ( $\rho = .819$ ,  $N = 31$ ,  $p = <0.010$ ).

To summarise, Spearman's Rank Order correlations confirms the positive relationship between MTK, RC, AC, Grp. ID, E and KT.

- **Construct Validity**

The overarching validity is construct validity, which is concerned that the operationalised objective developed from information on the construct in past empirical research accurately reflects that construct (Zikmund, 1994). To demonstrate construct validity you need to demonstrate both discriminant and convergent validity (Hair et al., 1998).

- **Discriminant Validity**

It is important that the scale has discriminant validity. To establish discriminant validity you show that the measure discriminate between each other, that is that measures that should not be related are not related (Hair et al., 1998). Within the parameters explained above, the correlations for the variables MTK with E ( $\rho = .506$ ,  $N = 31$ ,  $p = <0.010$ ) and Grp ID ( $\rho = .650$ ,  $N = 31$ ,  $p = < 0.010$ ) should not be ignored. However, Francis (2001) advises that only correlations with  $\rho > 0.700$  are strong enough to have significant effect on each other. This suggests that the variables exhibit discriminant validity, although the variable MTK, E and Grp ID may show weak discriminant validity.

- **Convergent Validity**

For the measurement scale to exhibit convergent validity there should be a high degree of correlation between different groups responding to the same question (Hair et al., 1998). Kruskal-Wallis tests were run to test for convergent validity by splitting the participant response into three groups based on job function to allow for comparisons (Sheskin, 2000). The differences in the responses between job functions groups were not statistically significant, none of  $p = <0.05$ . This supports the convergent validity of the measure as it shows a high degree of correlation between the groups when responding to the same question. The results of these tests are shown in table 4.4 below.

**Table 4.4: Statistical significance level of difference between job function.**

<b>Measurement</b>	<b>Significance Level Correlation (p value)</b>
Motivation to Transfer Knowledge	0.076
Richness of Communication	0.516
Absorptive Capacity	0.273
Knowledge Transfer	0.287
Encouragement	0.105
Group Identity	0.447

To summarise, the measures showed a positive relationship with the dependent variable, KT and the scales all reflected discriminant validity. Finally, the scales show convergent validity or converging meanings to different groups. Therefore, it is concluded that the scales reflect the operationalised objectives.

#### **4.6 OUTLINE OF THE DATA ANALYSIS**

The data analysis is outlined in table 4.5 and table 4.6. Table 4.5 shows that the data collected were analysed using frequency tables, bivariate analysis and multivariate analysis. Table 4.6 shows data collected as free text analysed using qualitative techniques. Both tables shows the research objectives addressed, the type of analysis and the research variables involved and the purpose of the analysis. In table 4.5 the

research objectives are investigated with frequency tables, bivariate analysis and multivariate analysis were as follows:

**Table 4.5: Outline of Data Analysis - MTK, RC, AC, Grp ID and E.**

<b>Research Objectives:</b>		
<ol style="list-style-type: none"> <li>1. To explore knowledge transfer in a MNO by researching the motivation to transfer knowledge for inter-firm knowledge transfer;</li> <li>2. To explore knowledge transfer in a MNO by researching the richness of communication channels used for inter-firm knowledge transfer;</li> <li>3. To explore knowledge transfer in a MNO by researching the absorptive capacity in inter-firm knowledge transfer; and</li> <li>4. To explore knowledge transfer in a MNO by researching the interrelationships between, the motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context, for inter-firm knowledge transfer.</li> </ol>		
	<b>Analysis and Variables</b>	<b>The Purpose</b>
1.	<b>Frequency Tables</b> <b>The variables</b> All variables	Explore the data: <ul style="list-style-type: none"> <li>• To understand the relationship of the measures within the scales; and</li> <li>• To detect any issues relating to the individual measures.</li> </ul>
2.	<b>Bivariate Analysis</b> <b>The variables</b> All variables	To understand the relationships and the strength of relationships between the measures and the scales.
3.	<b>Multivariate Analysis</b> <b>The dependent variable</b> Knowledge Transfer <b>The independent variables</b> Motivation to Transfer Knowledge Richness of Communication Channel Absorptive Capacity Encouragement Group Identity	To understand how these variables predict the level of knowledge transfer.

Firstly, all the measures were analysed using SPSS frequency tables. Each response to a variable was then represented as a percentage of the total number of responses for that variable. Then comparisons were made between each response to detect any issues that related to that particular variable. Secondly, the same data were explored with bivariate analysis to find the relationships and strength of relationships between the variables, using Spearman's Rank Order correlations. Thirdly, with an understanding of these

correlations, the relationships between the variables were analysed using a stepwise multivariate regression technique. The purpose of using multivariate regression was to analyse if the independent variables, namely, MTK, RC, AC, Grp ID and E, can be used to predict the activity of KT as the dependent variable.

Finally, table 4.6 addresses the data collected as free text. The free text questions were designed to answer the research objectives (1 & 2) presented in this table. The purpose of this analysis was to understand the organisational context and how this influences knowledge transfer.

**Table 4.6: Outline of Data Analysis - Organisational Context**

<i>Research Objectives:</i>	
<ol style="list-style-type: none"> <li>1. <i>To explore knowledge transfer in a MNO by researching the organisational context for inter-firm knowledge transfer.</i></li> <li>2. <i>To explore knowledge transfer in a MNO by researching the interrelationships between, motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context, for inter-firm knowledge transfer.</i></li> </ol>	
<i>Analysis and Variables</i>	<i>The Purpose</i>
<b>4.</b> <i>Qualitative Analysis</i> To establish the meaning in the text.	To understand how the organisational context influences knowledge transfer.

#### 4.7 PARAMETRIC AND NON-PARAMETRIC TESTS

The data collected in this research was either categorical or ordinal. In this research non-parametric tests were used for bivariate analysis and correlations, as non-parametric tests are ideal for use with ordinal data (Pallant, 2001). However, parametric tests were used in the form of a multiple regression analysis. Parametric tests use the sample statistics to make estimates of the population. It can be argued that parametric tests should only be used when the level of measurement is more than ordinal, the population's distribution is normal and the variance between both the variables is homogeneous (Hair et al., 1998). Therefore, it could be claimed that because the data collected from the questionnaire was categorical data, measured with ordinal scales, it should only be analysed with non-parametric tests. However, some authors believe that

parametric tests can be used for ordinal data as tests apply to numbers and not what these numbers signify (Bryman & Cramer, 1997). For example, in this research, regression analysis is applied as a descriptive tool to find the size of portions that affect the relationships. The researcher can understand these portions, but the test does not know what these proportions means. Hair et al. (1998) also believe that the debate concerning the value of parametric and non-parametric tests can be of little consequence since when this data is used with either test they produce identical or similar conclusions. In addition, it has been shown that when normal distribution is violated this often has little effect on parametric tests (Bryman & Cramer, 1997). In this research the assumptions about linear relationship and data distribution were tested to reinforce the reliability of the test, (section 5.4).

#### **4.8 SUMMARY**

A questionnaire was developed to measure the operationalised objectives and it was distributed both manually and electronically. The participants were selected to target all the people in the MNO with known involvement in knowledge transfer between the firms. There were 31 participants, which were considered adequate for this investigation. Both the quantitative and qualitative measures were presented. The measures and measurement scale development were discussed and the levels of reliability and validity established between MTK, RC, AC, Grp. ID, E and KT. The measure E and Grp ID (while excluded from the scale measure for MTK) showed a strong relationship with KT, highlighting the need to include these sub-variables of MTK in the quantitative analysis. The process used for analysis of the data included the determination of data frequencies, bivariate analysis using non-parametric analysis, multivariate analysis using parametric analysis and qualitative analysis of the free text.

## **Chapter 5.0 QUANTITATIVE ANALYSIS AND RESULTS**

### **5.1 INTRODUCTION**

The quantitative analysis was conducted with SPSS (Student Version 10.00 for Windows). SPSS was first used to analyse the categorical and ordinal data to determine data frequencies. Thereafter it was used for bivariate analysis to find the strength of relationships between the variables. It was also used for multivariate analysis to find if the levels of the independent variable activity could be used to predict the level of knowledge transfer. This chapter presents this analysis as well as the qualitative analysis of the free text from the open-ended questions found in the questionnaire and ends by summarising the findings.

### **5.2 DATA FREQUENCIES**

SPSS data frequency tables were used to explore the data by identifying the level of positive and negative answers so that comparisons could be made and patterns identified. The data was expressed as a percentage and tabulated against the measure it addressed. Under each table the results were analysed and any questions or areas of interest identified.

#### **5.2.1 Motivation to Transfer Knowledge (MTK)**

Table 5.1, presented below, shows the data from the SPSS frequency tables that measure the motivation to transfer knowledge (MTK) using the measures from the operationalised objective. At the top of this table is the operationalised objective and down and on the left, the measures. Then directly to right of these measures the data condensed (from the SPSS frequency table) into the two major categories namely agree or disagree are presented.

**Table 5.1: Frequency Data for Motivation to Transfer Knowledge**

<i>Operationalise Objective</i>			
<i>To find the level of shared purpose between the firms in the MNO.</i>			
<i>Measure</i>	Strongly agree to somewhat agree	Strongly disagree to somewhat disagree	Total
<i>Belonging to the group</i>	83.9%	16.1%	100%
<i>Knowledge is free to all</i>	100.0%	0%	100%
<i>Never feel I should not share</i>	90.3%	9.7%	100%
<ul style="list-style-type: none"> <li><i>To find how positive the firms in the MNO view knowledge transfer.</i></li> </ul>			
<i>A lot to offer each other</i>	74.2%	25.8%	100%
<i>Belief in the benefits</i>	93.5%	6.5%	100%
<i>Group identity</i>	100.0%	0%	100%
<ul style="list-style-type: none"> <li><i>To assess the level at which the firms within the MNO actively facilitate the knowledge transfer process.</i></li> </ul>			
<i>Encouragement</i>	87.1%	12.9%	100%
<i>Power struggle play no part</i>	80.7%	19.3%	100%
<i>Understanding of business philosophy</i>	93.5%	6.5%	100%
<ul style="list-style-type: none"> <li><i>To assess the level of proactive and reactive activity.</i></li> </ul>			
<i>Measure</i>	Proactive	Reactive	
<i>Others activity given as</i>	38.7%	61.3%	100%
<i>Own activity given as</i>	54.9%	45.1%	100%

Table 5.1 shows the operationalised objectives that measured:

- *To find the level of shared purpose between the firms in the MNO;*
- *To find how positive the firms in the MNO view knowledge transfer;*
- *To assess the level at which the firms within the MNO actively facilitate the knowledge transfer process; and*
- *To assess the level of proactive and reactive activity.*

Over 74% of the responses were positive for all of these measures. In particular, the measure ‘group identity’ was 100%, ‘belief in benefits’ 93.5%, ‘understanding of business philosophy’ 93.5% and ‘encouragement’ was 81.1%. However, 19.3% responded negatively to the statement ‘that power struggles play no part’. This negative attitude was supported by 16.1% of responses who did not believe that their firm’s

knowledge belonged to the group and by another 25.8% who thought that the firms' did not have 'a lot to offer each other'. Also, 45.1% said that their firm's approach to knowledge transfer with other firms was reactive and 61.3% said that the firms they dealt with were even more reactive.

In summary, while there was evidence that the attitude to inter-firm knowledge transfer was positive, equally there was evidence of some negative attitudes and behaviours. This dynamic is explored in the next stage of the research, the qualitative research.

### 5.2.2 Richness of Communication Channels (RC)

Table 5.2, below shows the data from the SPSS frequency tables that measure the richness of communication channels (RC) using the measures from the operationalised objectives. At the top of this table is the operationalised objective, down and on the left, the measures and directly to right of these measures the data presented from the frequency table.

**Table 5.2: Frequency Data for Richness of Communication Channels**

<i>Operationalised Objective</i>					
<ul style="list-style-type: none"> <li><i>To discover the communication channels used, the frequency, considered the best and the accessibility.</i></li> </ul>					
<i>Measure</i>	Face to face		e- mail	Phone	Total
<i>Used the most</i>	0%		77.4%	22.6%	100%
<i>Considered best</i>	58%		32.3%	9.7%	100%
<i>Frequency</i>	Weekly	Fortnightly	Monthly	Six times year	
<i>Formal</i>	38.7%	35.5%	16.1%	9.7%	100%
<i>Informal</i>	22.6%	6.5%	41.9%	29.0%	100%
<i>Measures Accessibility</i>	Strongly agree to somewhat agree		Strongly disagree to somewhat disagree		
<i>'Know who'</i>	81.8%		12.2%		100%
<i>'Know how'</i>	71.0%		29.0%		100%
<i>Value of informal communication</i>	87.7%		6.5%		100%

The data presented in table 5.2 show the form of communication the participants used most and the form of communication they considered the best. The measure, e-mail, at

77.4% was the most used form of communication followed by phone contact at 22.6%. The form of communication considered best was face-to-face, with a score of 58%. The table shows 38.7% of the formal meetings were weekly and 35.5% said that these meeting were fortnightly. Informal meetings occurred weekly for 22.6% of the participants and 41.9% monthly. Also, 87.7% of the participants shared a positive opinion about informal meetings. The table shows a good variety of both formal and informal communication channels being used.

Positive comment about access to ‘know who’ knowledge was high at 81.8% and positive comment about access to ‘know how’ slightly lower at 71.1%. ‘Know how’ knowledge requires more human interaction than ‘know who’ knowledge to be transferred as ‘know how’ has a higher tacit content (Lundvall, 1996). The qualitative research will consider the effects of, the nature of knowledge and RC on KT.

### 5.2.3 Absorptive Capacity (AC)

Table 5.3 presents the data from the SPSS frequency tables that measure absorptive capacity (AC) using the measures from the operationalised objectives. At the top of this table is the operationalised objective and down and on the left, the measures. Then directly to right of these measures the data condensed (from the SPSS frequency table) into the two major categories namely agree or disagree are presented.

**Table 5.3: Frequency Data for Absorptive Capacity**

<i>Operationalised Objective</i>			
<ul style="list-style-type: none"> <li><i>To determine the level of similarities, continuous improvement, expert knowledge, experience and resource applied.</i></li> </ul>			
<i>Measure</i>	Strongly agree to somewhat agree	Strongly disagree to somewhat disagree	Total
<i>Similarities</i>	96.8%	3.2%	100%
<i>Continuous improvement.</i>	96.8%	3.2%	100%
<i>Expert knowledge</i>	96.8%	3.2%	100%
<i>Experience</i>	100%	0%	100%
<i>Resource</i>	51.6%	48.4%	100%

Table 5.3 presents evidence that similarities between the firms exist as 96.8% of the participants agreed there were similarities between the firms and that they focused on continuous improvement. As one would expect from a sample that is made up of managers involved in regular MNO knowledge transfer, 100% agreed, that there was a high level of experience. Further, 96.8% said there was a high level of expertise. The level of resource applied was split between a positive at 51.6% and negative answer at 48.4%.

In summary, the MNO had high levels of expert knowledge, experience and continuous improvement and the levels of resource applied to inter-firm knowledge transfer was considered high in only 51.6% of the cases. The measurement of resource will be further explored in the qualitative stage of this research.

#### 5.2.4 Knowledge Transfer (KT)

Table 5.4 presents the data from the SPSS frequency tables that measure knowledge transfer (KT) using the measures from the operationalised objectives.

**Table 5.4: Frequency Data for Knowledge Transfer**

<i>Operationalised Objective</i>			
• <i>To seek evidence that knowledge transfer has taken place.</i>			
<i>Measure</i>	Strongly agree to somewhat agree	Strongly disagree to somewhat disagree	Total
<i>Share information</i>	54.8%	45.2%	100%
<i>Receive information</i>	63.4%	36.6%	100%
<i>Inquires from others</i>	54.6%	45.4%	100%
<i>Influence technology/processes</i>	83.9%	16.1%	100%
• <i>To discover knowledge transfer patterns based on preference.</i>			
<i>Prefer large firms</i>	74.2%	25.8%	100%
<i>Prefer national contacts</i>	71%	29%	100%
<i>Relate to size</i>	67.8%	32.2%	100%
<i>Large firm offer more</i>	74.2%	25.8%	100%
<i>Relate to large firms</i>	69.0%	31.0%	100%
<i>Relate to national contacts</i>	64.5%	35.5%	100%

Table 5.4 shows evidence that knowledge transfer has taken place with 83.9% acknowledging tangible evidence of knowledge transfer in the form of technology/processes. However, more knowledge is received than shared, 54.8% agreed they shared while 63.4% agreed they received. Table 5.4 also shows that knowledge transfer patterns have become established based on various preferences that relate to the size or nationality of the firm. There was definite preference to transfer knowledge with large firms, 74.1% 'prefer large firms' and 74.1% felt 'large firms offer more'. Similarly there was preference to transfer knowledge with national contacts, 71% answering positively. Also, when asked if they felt that firms 'of a similar size are more likely to understand' their issues, 67.8% answered in the positive.

In summary, the result supports the measures for MTK that show the behaviour to knowledge transfer was often reactive. The results show more knowledge is received than shared, suggesting an uneven flow of knowledge between these firms and a tendency, to base knowledge transfer on established preferences. Dyer and Noebeoka (2000) caution that these behaviours may not always have a positive association with knowledge transfer. The reasons behind these behaviours and the tendency to base knowledge transfer on established preferences will be explored further in the qualitative stage of this research.

### **5.3 EXPLORING RELATIONSHIPS BETWEEN VARIABLES**

All of the ordinal variables were analysed using Spearman's Rank Order correlations ( $\rho$ ) to determine whether a relationship exists between two variables. Table 5.5 shows the correlations for the main research variables: MTK, RC, AC and the two introduced sub-variables identified in chapter four. The analysis of this table considered Green and Salkind (2000) suggestion that in the behavioural sciences, correlations where  $\rho = .300$   $p = <0.050$  should be considered weak, correlations from  $\rho = .300$  to  $\rho = .500$  with  $p = <0.050$  can be considered moderate and correlation above  $\rho = .500$  with  $p = <0.050$  should be considered as strong.

**Table 5.5: Spearman's Rank Order Correlations, Explore Relationships**

	KT	AC	RC	MTK	E	Grp. ID
Knowledge Transfer (KT)	1.000					
Absorptive Capacity (AC)	.358*	1.000				
Richness Communication (RC)	.430*	.247	1.000			
Motivation to transfer knowledge (MTK)	.819**	.336	.292	1.000		
Encouragement (E)	.423*	.164	.711**	.506**	1.000	
Group Identity (Grp ID)	.559**	.267	.205	.650**	.345	1.000

\*\* Correlation is significant at the  $p < 0.010$  levels

\* Correlation is significant at the  $p < 0.050$  levels

The statistically significant correlations with the variable KT are discussed first. This variable is moderately correlated with AC ( $\rho = .358$ ,  $N = 31$ ,  $p = < 0.050$ ), E ( $\rho = .423$ ,  $N = 31$ ,  $p = < 0.050$ ) and RC ( $\rho = .430$ ,  $N = 31$ ,  $p = < 0.050$ ) and shows a strong correlation with MTK ( $\rho = .819$ ,  $N = 31$ ,  $p = < 0.01$ ) and Grp. ID ( $\rho = .559$ ,  $N = 31$ ,  $p = 0.01$ ). In addition to the correlations with KT some of the variables show statistically significant correlations with the other variables. E shows a strong correlation with RC ( $\rho = .711$ ,  $N = 31$ ,  $p = < 0.010$ ) and MTK ( $\rho = .506$ ,  $N = 31$ ,  $p = < 0.010$ ). Finally, Grp ID has a strong correlation with MTK ( $\rho = .650$ ,  $N = 31$ ,  $p = < 0.010$ ).

Correlations with KT were also done with the variables that tested for established patterns of knowledge transfer. These variables tested for knowledge transfer based on a preference for size and nationality. None of these variables showed a positive correlation with KT.

In summary, table 5.5 shows that KT has significant correlations with all the variables, the strongest correlation with MTK. Also, it was noted that MTK and E were the most interactive variables. These relationships are explored further in the regression analysis in this chapter and the qualitative research that follows in chapter six and seven. Finally, none of the variables that tested for established patterns of knowledge transfer based on size and nationality preferences showed significant correlations with KT.

## 5.4 MULTIPLE REGRESSION

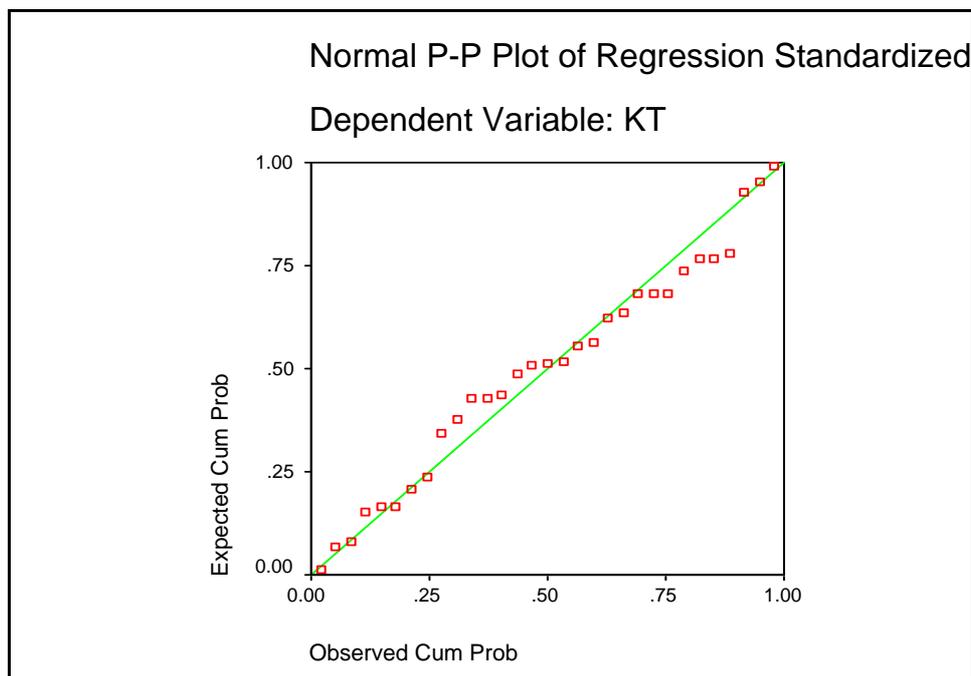
Multiple regression is used to explore the relationship between the dependent and independent variables, and is suited to the multivariate context of knowledge transfer. Multiple regression is also used to find the overall predictive power of the independent variables MTK, RC, AC, E, and Group ID against the dependent variable KT (Pallant, 2001). The multiple regression explores the following independent variables: MTK, AC, RC, E and Grp ID, as an unordered set of predictors with KT. With an unordered set of predictors, the regression analysis is used to evaluate the contribution of each independent variable by themselves and over and above the others in the set (Green & Salkind, 2000). A stepwise regression was used. At each step a variable was added that resulted in the highest  $R^2$ . Next the variables that reduce the reliability of the model based on their significance in the model at  $p = <0.050$  were removed (Norusis, 1999).

Multiple regression makes the assumption that all observations are independent of each other, the dependent variable is normally distributed at each value of the independent variable and has the same variability at each value of the independent variable and the relationship is linear (Pallant, 2001; Green & Salkind, 2000). These assumptions are investigated in the next section.

### 5.4.1 Data Assumptions

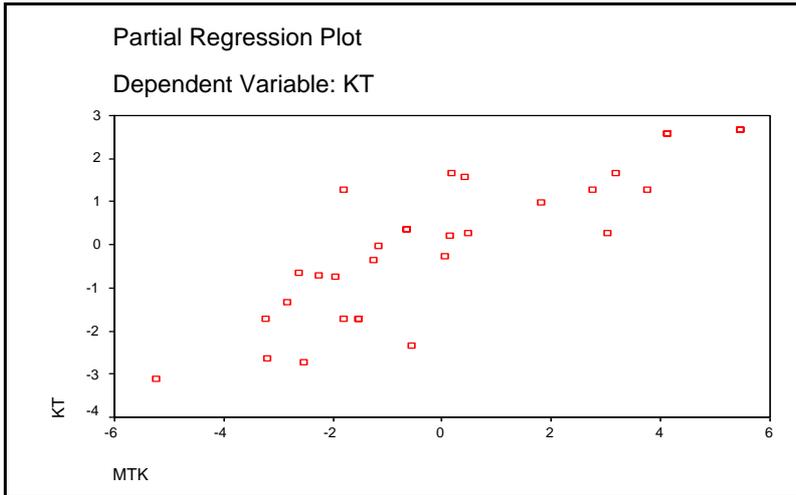
- Normality Plot.** A normality plot of the dependent variable and the independent variables is presented. Graph 5.1 shows the normality plots of the residuals values are along the diagonal with little violation of the linear relationship between the dependent and independent variables to weaken the analysis (Coakes & Steed, 1997).

**Graph 5.1: Normality Plot of Variables against KT**

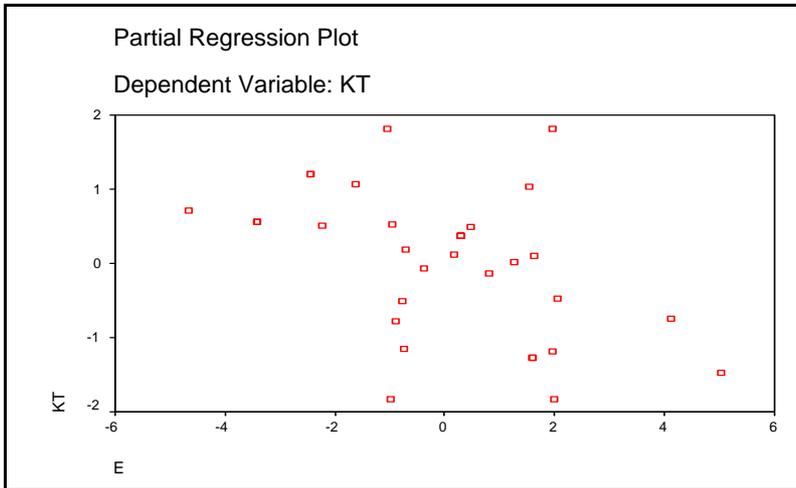


- Partial Regression Plots.** Next, partial regression plots for each independent variable against the dependent variable KT are presented. The first plot, graph 5.2, with KT against MTK shows the relationship between the variables is strong and linear explaining MTK significant effect in the regression equation. The second plot, graph 5.3, with KT against E, is not as strong and less defined with E showing a negative relationship with KT. The third plot, graph 5.4, with KT and RC shows the relationship as moderate and linear.

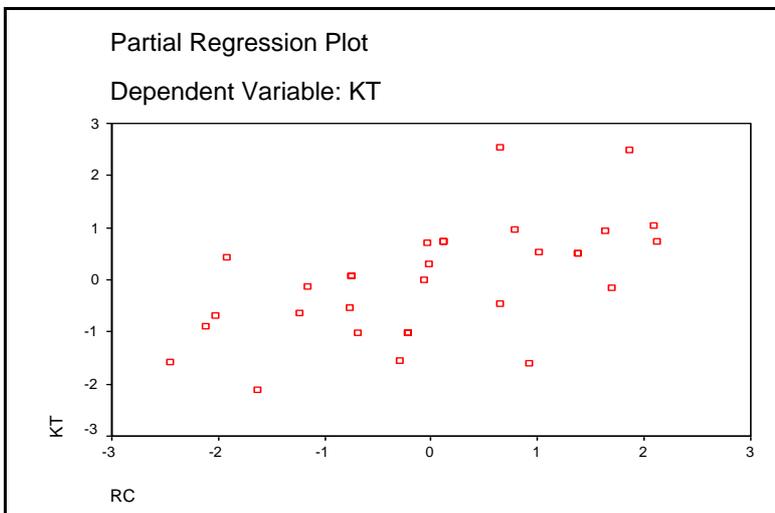
**Graph 5.2: Partial Regression Plot for KT and MTK**



**Graph 5.3: Partial Regression Plot for KT and E**

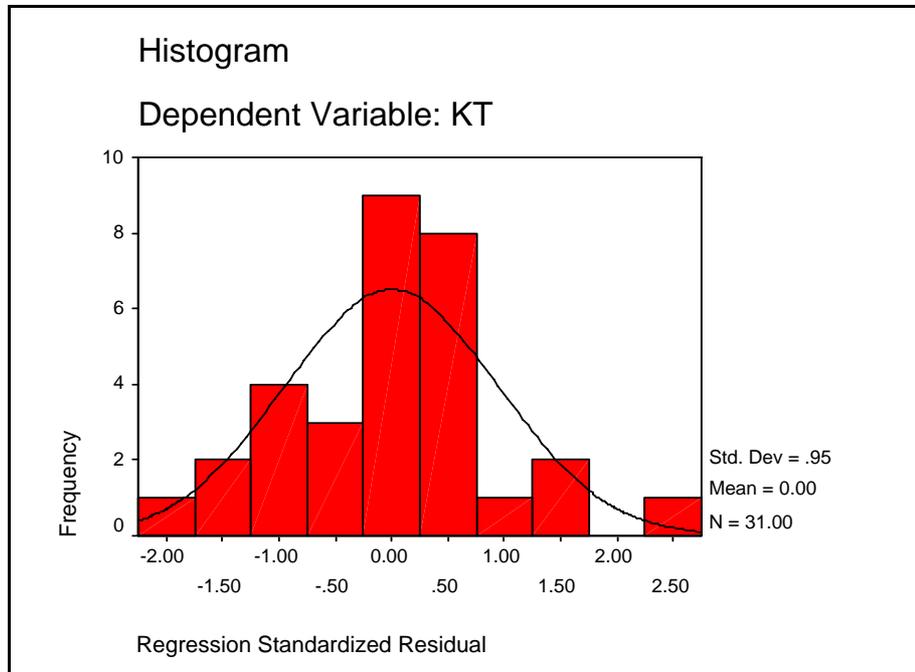


**Graph 5.4: Partial Regression Plot for KT and RC**



- **Data Distribution.** To examine the data distribution graph 5.5 presents a histogram.

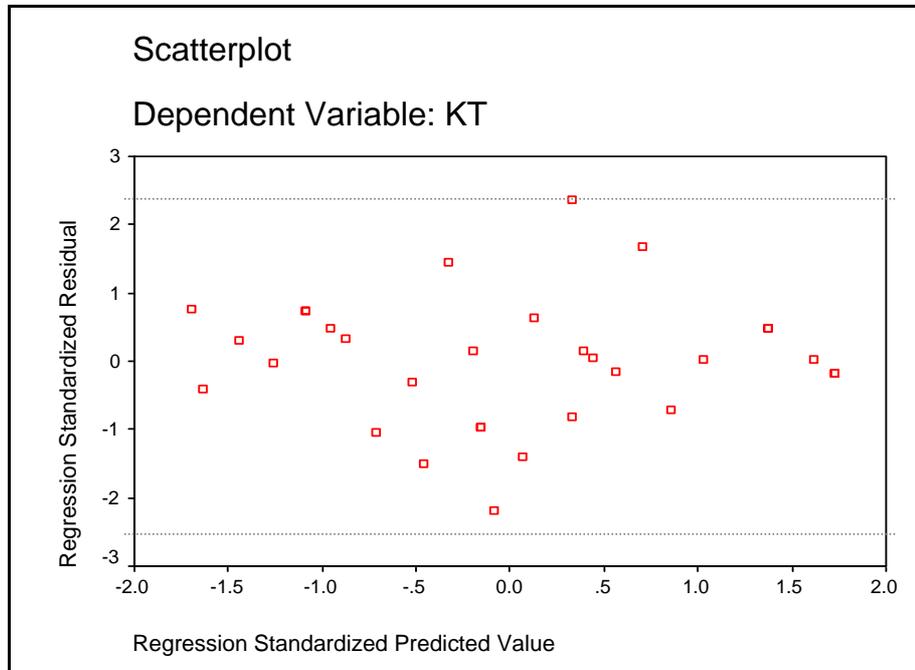
**Graph 5.5: Histogram - Frequency and Standardised Residual**



Graph 5.5 shows a small violation in the normal distribution with a very slight positive distribution. However, violations of linearity and equal variance are small and small variation only weakens the analysis and does not invalidate it. Regressions are considered to be robust up to moderate violations (Francis, 2001).

- Outliers. Finally, a scatter plot was prepared to check for extreme outliers as they can impact the regression analysis (Norusis, 1999). The scatter plot shows no extreme outliers, none of the values exceeding + or – 2.5 of the standardised variable value (Pallant, 2001; Hair et. al., 1998).

**Graph 5.6: Scatter Plot for Outliers**



In summary, the distribution of data was considered robust enough for regression analysis.

### 5.4.2 Stepwise Regression

The stepwise regression of MTK, AC, RC, E and Grp ID against KT removed the variables AC and Grp ID. These were removed because the t-value indicated that the variance caused by AC and Grp ID gave a greater than 5% error rate. Hence, a regression model that included MTK, RC and E with the dependent variable KT is presented next.

The multiple correlation coefficient (R) that indicates the strength of association between knowledge transfer and these variables is 0.888. The coefficient of determination ( $R^2$ ) for the sample indicates the percentage variance of KT that can be

explained by the linear relationship with the independent variables is 78.8 % (Green & Salkind, 2000).

The small sample size increased the propensity for type two errors (Green & Salkind, 2000). Therefore it would seem prudent to take the results from the multiple regression as less reliable than what the p value indicates. With this in mind it is important to report the estimated coefficient of determination (adjusted  $R^2$ ) to allow for the sample size (Green & Salkind, 2000). The adjusted  $R^2$  for the sample size is 76.5%. There was no evidence of multicollinearity that could reduce the accuracy of the model; the variance inflation factor (VIF) for all the variables was less than 3. The highest VIF was for E at 2.636 followed by RC at 1.990 (Hair et al., 1998). The regression equation with all three predictors is therefore a statistically robust model for predicting KT.

$$KT = -1.660 + 0.521MTK + 0.487RC + -0.216E$$

This equation shows that from the data collected, 76.5% of the variance in KT is explained by MTK, RC and E. This model measures KT in a multinational setting against the measures used to collect the level of feeling of belonging, never feel I should not share, the amount of proactive behaviour, the amount of both formal and informal knowledge transfer and the encouragement given to the staff to be involved in knowledge transfer between the firms in the group. It is also important to note while the model excluded AC and GR ID, the Spearman's correlations of these variables with KT are still considered significant.

The standardised Beta coefficients were used in the equation to examine the regression further. Standardisation makes the weights more interpretable, in the context of the other variables in the equation (Green & Salkind, 2000). The Beta coefficients have been standardised to have a mean of 0 and a standard deviation score of 1 (Green & Salkind, 2000). The prediction equation for the standardised variable is as follows:

$$KT = -0.392E + 0.909MTK + 0.463RC$$

This standardised model shows that E is weakened further; MTK is strengthened and RC remains close to the non-standardised value. This model confirms the dominant strength of MTK and moderate strength RC; and that as these values strengthen E

weakens. This highlights the complexity of the model and the need to consider the organisational context alongside the variables analysed in the multiple regression

## **5.5 ORGANISATIONAL CONTEXT (OC)**

Three open-ended questions answered by free text were used to collect information about the organisational context (OC) that could affect knowledge transfer (KT). The first question collected information about the level at which the firm actively facilitated the knowledge transfer process by asking about the firms culture, the second looked for gaps in the facilitation process by asking about areas for improvement and the third, asked about the type of relationships that had been established, to better understand the relationships that support or inhibit KT. The analysis of the free text from these three questions is discussed next.

The free text was analysed using QSR NUD\*IST (Non numerical Unstructured Data Indexing Searching and Theorising) N6, a software package designed to assist in the analysis of text. This software provided data labelling, sorting, searching and report formats that were use to organise, manage and retrieve pieces of test or data. The data were coded into themes that captured the overarching concept in the text. Each answer was explored sentence-by-sentence to identify the themes each theme was given a code. The themes that were identified are presented in table 5.6, table 5.7 and table 5.8. These tables show the themes under a heading for each of the questions mentioned above, namely 'culture,' 'improvements' and 'relationships'. Each of the themes was then catergorised into logical groups based upon what affect they could have on the knowledge transfer routines in the MNO. Table 5.6 shows the themes on 'culture' placed in either a positive or negative category based on evidence in the literature about the type of culture that facilitates or inhibits KT. Table 5.7 shows the themes on 'improvement', which were grouped under the need for more structure, improved access, to establish relationships, more communication and no change. Table 5.8 presents the themes for 'relationship'. The themes were categorised as either positive or negative comments. An analysis of these themes and categories is presented next.

### 5.5.1 Culture

The information collected was designed to address the following operationalised research objective:

*To determine the level at which the firm within the MNO actively facilitate the knowledge transfer process.*

**Table 5.6: Culture – Theme and Category**

<b>CULTURE</b>	
<b>THEME</b>	<b>CATEGORY</b>
Team focus	<b>plus</b>
Good employee support, democratic	<b>plus</b>
Hierarchical structure	<b>negative</b>
Family or friendly focus, staff valued	<b>plus</b>
Quality or excellence focus	<b>plus</b>
Customer focused	<b>plus</b>
Empowerment (Trust, open, responsive, people valued, flat structure)	<b>plus</b>
Innovation	<b>plus</b>
Financial focus	<b>plus/negative</b>
Relationship based	<b>plus</b>

In general, the comments gave an overall impression that the culture of the firms worked to facilitate knowledge transfer. There were 48.5% of the firms that described their culture in positive terms, such as; as democratic, customer focused, employee supportive and quality focused. While, 39.4% indicated high levels of trust between employer and employee, open communication, responsiveness to employees, seeing themselves as leaders in the group, and innovators. Of the 18.1% who made some negative comments, all of them countered this with positive comments suggesting, that in general, they believed that their firm worked to facilitate knowledge transfer. For example, those who described the culture as hierarchical indicated there were high levels of trust and team work in their firm.

### 5.5.2 Improvements

The information collected was designed to address the following operationalised research objective:

*To identify where improvements could be made that would increase knowledge transfer activity.*

**Table 5.7: Improvements – Theme and Category**

<b>IMPROVEMENTS</b>	
<b>THEME</b>	<b>CATEGORY</b>
Focus on review of communication strategy, effective and efficient knowledge transfer	<b>Structure and Standardisation</b>
To contact information. - central file, news letter, email groups	<b>Improved Access</b>
Raise the profile of inter-firm knowledge transfer	<b>Motivate by Example</b>
Doing well, no change identified	<b>No Change</b>

These were coded into groups based on the main focus of the answer (as shown in table 5.7). More structure and standardisation across the group was suggested by 45.5% of the participants. They asked for more timely and structured communication between the firms. Better access to information and people was suggested by 21.2% through better use of the e-mail system and people movement. The need to motivate by example and by making success more public was suggested by 18.2%. There was a small group of 6% who felt no changes were needed.

### 5.5.3 Relationship between Firms

The information collected was designed to address the following operationalised research objective:

*To explore the relationship context in which knowledge transfer takes place.*

**Table 5.8: Relationships – Theme and Category**

<b>RELATIONSHIP</b>	
<b>THEME</b>	<b>CATEGORY</b>
Good or valuable	<b>Positive</b>
Fairly strong, very good	<b>Positive</b>
Improves with time	<b>Positive</b>
Reactive	<b>Negative</b>
They seem receptive	<b>Positive</b>
We are leaders, reference for good practice	<b>Positive</b>
Not good	<b>Negative</b>
Operational and little else	<b>Negative</b>
Needs to be improved	<b>Negative</b>
Suggests mutual respect	<b>Positive</b>
Often viewed as too small to contribute	<b>Negative</b>

The data were placed under the theme based on the main idea as shown in table 5.8 and categorised as either positive or negative. Of the participants comments 42.4% of suggested a negative element and 45.5% gave positive comments describing their relationships ranging from good to excellent. The rest of the comments were mixed but in general they gave the impression that they felt positive about the relationships. The most common negative comment was delays in communication and the tendency to only participate in knowledge transfer activities on a reactive basis.

In summary, the information presented suggests that organisational context facilitates knowledge transfer but there appears to be a need for greater structure to better manage the knowledge transfer process within the MNO network.

## 5.6 SUMMARY

The quantitative analysis presents information on which to base the next phase of this study. It confirms the positive relationship between MTK, RC, AC within an organisational context that facilitates KT. It highlights that the measures for E and Grp ID have a positive relationship with KT and are worthy of further investigation. It also presents information that raises questions such as:

- Why did the evidence present the presences of a strong Group ID but a lack of proactive knowledge transfer behaviour?
- Why was there evidence of power play?
- Why was there a belief that others in the group have little to offer?
- Was there any value in the relationships based on size and nationality?
- What are the effects of the nature of knowledge on knowledge transfer?
- What additional value would be found by creating more structured routines?
- What was the strength of the relationship between the amount of resource applied and knowledge transfer?

The qualitative research suggested that the organisation had a culture and many of the systems and processes in place to facilitated knowledge transfer. However, there were still some areas where improvements could be made, such as, establishing knowledge management that was more structured.

**PART 3**

**QUALITATIVE RESEARCH**

## **Chapter 6.0            QUALITATIVE METHOD**

### **6.1     INTRODUCTION**

The qualitative research method is designed to build on the quantitative research. The chapter begins with an explanation of the selection of participants followed by the development of a framework designed to address the research objectives. The chapter then presents the research objectives and the questions used in the semi-structured interviews. An explanation of how the interview transcripts are analysed using QSR NUD\*IST N6 is presented. Finally the consideration given to the research reliability and validity is discussed.

### **6.2     SELECTION OF PARTICIPANTS**

From the fourteen firms in the second MNO the Managing Director selected six firms that were most involved in knowledge transfer projects. The Managing Director introduced the researcher in a letter to the Chief Executive Officer for each of the selected firms. In this letter they were asked to select two people in their firm to be telephone interviewed. There were four Chief Executive Officers and eight senior managers selected for interviews, all of them agreed to participate. They were all given information about the research (see appendix two) and asked to sign a consent form (see appendix four). The letter from the Managing Director is not included in the appendices as the MNO asked to remain anonymous.

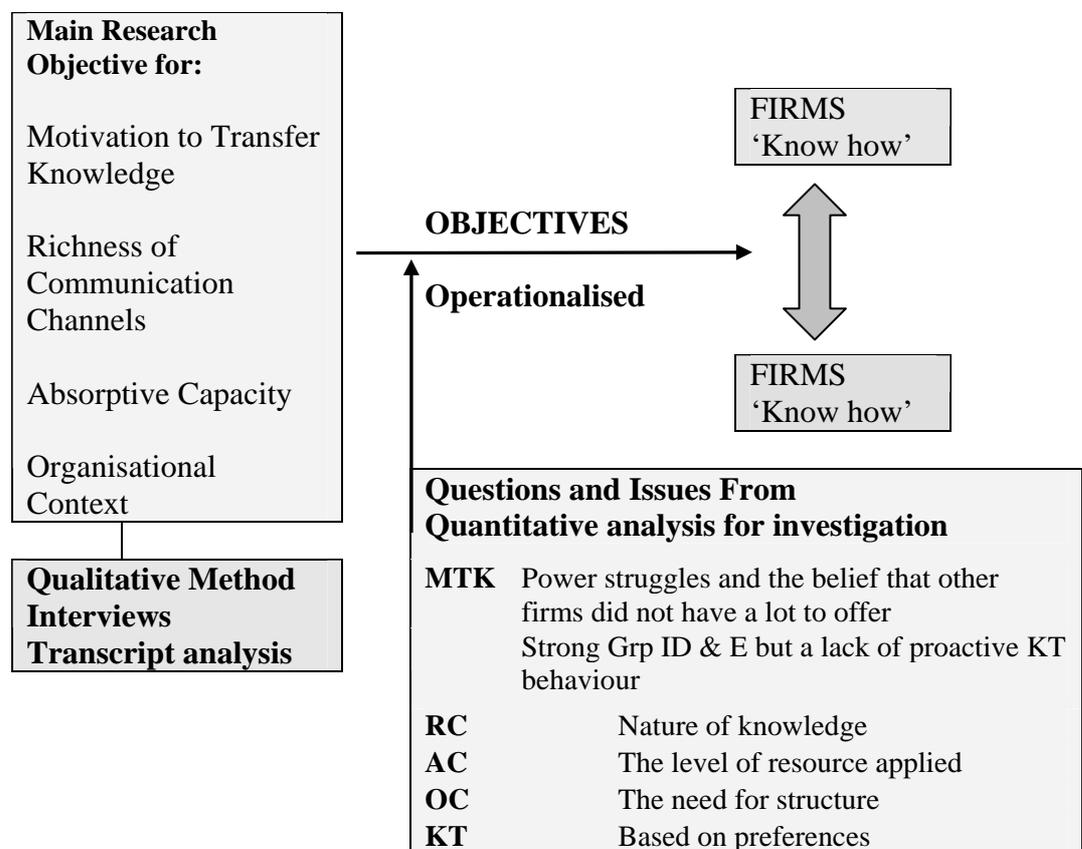
### **6.3     RESEARCH FRAMEWORK**

The framework used for the qualitative research is an extension of the framework presented in chapter three (diagram 3.1). Similarly, the diagram for the qualitative research, diagram 6.1, shows that to address the ‘main research objectives’, this research investigates the relationship of MTK, RC, AC and OC on the KT of ‘know how’ knowledge between firms in a MNO. In addition, the issues identified in the quantitative research were added to the framework. All of these issues are related to the main research objectives and the same operationalised objectives used in the quantitative research. These include a further investigation of the issues known to reduce the motivations to transfer knowledge. Also the research attempts to better

understand why a high level of Grp ID and E was identified in the quantitative analysis but the knowledge transfer behaviour was often reactive. It further strives to explore the effects of the nature of knowledge (the level of tacit content) on KT and if the level of resource applied affects AC. Diagram 6.1 shows that the data were collected using interviews, these interviews were semi-structured and tape-recorded. The transcripts from the interview tapes were analysed using QSR NUD\*IST N6 a software package designed to assist in the analysis of text.

The research was designed to complement and further develop the previous findings. This research was not entered into with a list of preconceived concepts. Rather it attempts to explore a guiding theoretical framework, making allowances for the emergence of other new issues that enhance the framework. The application of these issues to the operationalised objective used in the quantitative research is now discussed.

**Diagram 6.1: Research Framework - Qualitative Method**



### 6.3.1 Motivation To Transfer Knowledge

The data presented in the quantitative research for MTK shows the positive answers for Grp ID at 100%, 'belief in benefits' at 93.5%, and E at 81.1%. The data also identified some level of power play. The negative responses at 19.3% and 25.8% believed that other firms did not have a lot to offer each other. In addition only 54.9% said they took a proactive approach to knowledge transfer in the MNO context. To follow are the operationalised objectives used to research these issues, namely:

- *To find the level of shared purpose between the firms in the MNO;*
- *To find how positive the firms within the MNO view knowledge transfer;*
- *To assess the level at which the firms within the MNO actively facilitate the knowledge transfer process; and*
- *To assess the level of proactive or reactive activity.*

### 6.3.2 Richness of Communication Channels

The results in the quantitative research showed that the communication channels were available for knowledge to be shared across the organisation. However, there were no questions asked about the MNOs experience with various types of 'know how' knowledge or any attempt made to see how this affected the communication channels used. Technical process changes and equipment changes appeared to be recognised but other forms of 'know how' might not have been as easily recognised or as easy to action. It was decided to consider the nature of knowledge and the effect of established knowledge transfer patterns when addressing the operationalised objectives that follow:

- *To determine what communication channels are used;*
- *To determine what communication channels are considered the best;*
- *To determine the frequency of communications; and*
- *To determine the accessibility of 'know how' and 'know who' knowledge.*

### 6.3.3 Absorptive Capacity

It was evident from the data analysed in stage one that the firms researched had high experience levels and expert knowledge, but the data showed that the level of resource applied was not considered to be high; 48.4% suggesting that they did not apply a lot of resources to inter-firm knowledge transfer activities. Whilst the literature reviewed in

chapter two of this thesis (section 2.7.5) suggests that a firms AC is related to the energy and extent that they apply themselves to the knowledge transfer activity (Cohen & Levintahl, 1990). Absorptive capacity is researched further against the following operationalised objectives:

- *To determine the level of similarity in business practice used across the organisation;*
- *To determine the level of resource applied;*
- *To determine the level of commitment to continuous improvement;*
- *To determine the level of experience; and*
- *To determine the level of expert knowledge.*

#### **6.3.4 Knowledge Transfer**

The quantitative research showed that there were tendencies for some firms to rely on past relationships and/or preferences based on size and/or nationality. Dyer and Nobeoka (2000) caution that this behaviour may not always have a positive association with knowledge transfer and the results from the quantitative research confirmed this. However, the suggestion that knowledge transfer patterns were established warranted further investigation about their possible effect on the MNO ability to transfer knowledge effectively and efficiently. The operationalised objectives used to focus the research question are as follows:

- *To seek evidence that the transfer knowledge transfer has taken place; and*
- *To discover if any knowledge transfer patterns based preference have develop.*

#### **6.3.5 Organisational Context**

The information from the free text context questions was informative but lacked depth. The firms appeared to support knowledge transfer at two levels. The first level described their culture in positive terms, democratic, customer focused, employee supportive and quality focused, but with behaviour to knowledge transfer described as reactive. The second level described similar attributes as well as high levels of trust between employer and employee, open communication, responsive to employees, seeing themselves as leaders in the group, focused on relationship building and innovators. In conflict with this were calls for greater standardisation and structure across the group to improve knowledge transfer. It was decided to further investigate

the need for structure, the operationalised objectives used to focus the research questions follow:

- *To determine the level at which the firms actively facilitates the knowledge transfer process;*
- *To identify where improvements could be made that would increase the knowledge transfer activity; and*
- *To explore the relationship context in which knowledge transfer takes place.*

#### **6.4 DATA COLLECTION**

As mention previously data were collected using twelve semi-structured telephone interviews. Telephone interviews were used because of the distance between each firm. A semi-structured approach was used to allow the participant to focus retrospectively, recalling situations that could improve both the reliability and the validity of the answers. To ensure accurate data recording these interviews were tape-recorded. Each of the recordings were transcribed, this transcription then checked against the recording for accuracy. The interview questions were sent to the participant. This was done to give them time to think about the questions to help them give more comprehensive answers. The questions were aimed at being specific enough to relate the response to the operationalised objectives and yet general enough to allow the participant to include all the details they considered relevant. This approach was used to fit with the exploratory nature of the research.

The interview focused on collecting information about two different types of ‘know how,’ one of these more tacit and less contentious than the other. It did this by asking the same set of questions for two different projects. The organisation’s ‘core value’ project and the ‘other project’ were used for this purpose. The ‘other project’ included information about projects such as purchasing, information technology, quality assurance and marketing projects. The ‘core value’ project was selected because this knowledge has a high tacit content. The project involved the development and dissemination of the organisations core values across the MNO. The category ‘other project’ was selected because on the whole in these projects the knowledge is less tacit but it can be far more contentious than the knowledge in the ‘core value’ project. The knowledge from these ‘other projects’ usually requires knowledge to be added, or to be

replaced, while with a project like the ‘core value’ project knowledge is usually complementary to existing knowledge.

The interview questions were designed to allow the participant to talk freely about the knowledge transfer process. The same set of questions was used for both projects these questions are presented in table 6.1.

**Tables 6.1: Interview Questions**

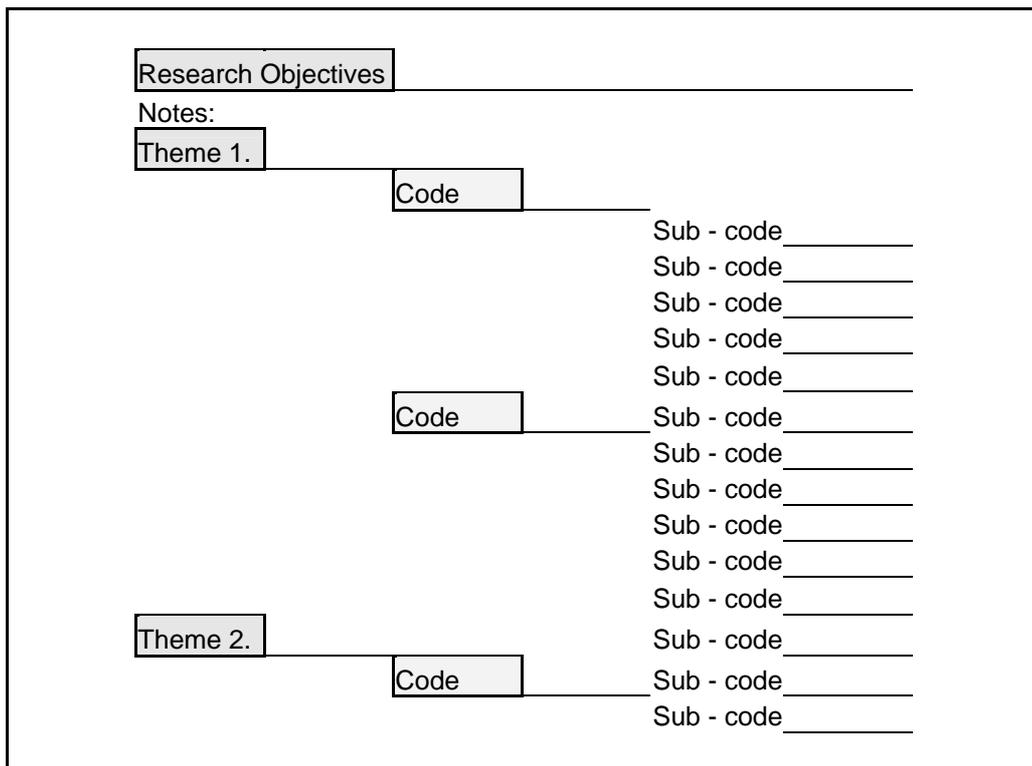
1.	To indicate the level of experience your firm had with this type of project before they were asked to participate in the projects. On a scale of 1 to 5 score this level of experience. - Please explain why you have suggested this score? - What effect did your firm’s level of experience have on this project?
2.	In your firm what people were involved in this project? - Describe how were they involved?
3.	Did those driving the project offer any form of encouragement to others involved? - How was this done?
4.	Did you or did anyone in your organisation contact other firms in the MNO about anything to with this project? - Explain how you went about this? - What was discussed?
5.	Were you or anyone else that you are aware of contacted by other firms to discuss this project? - How often did this happen? - What was discussed?
6.	On a scale of 1 to 5 where would you score the amount of resource your firm gave to this project? - Discuss why you suggest this score
7.	What do you feel were the main factors that had a positive effect on this project? - Why did they have a positive effect?
8.	In you firm have you monitored this project’s outcomes? - If so discuss how?
9.	What do you feel could have been done differently?
10.	Is there any thing else you would like to add?

To set the scene, get the participant focused and collect information about past experience the first question asked the participant about their firms experience with knowledge transfer projects and how this experience related to the project. The next questions were designed to find out how, what and why they did things the way they

did. These questions focused their replies by asking them to discuss their systems and processes, their contact with others in the group, how they encouraged knowledge transfer, the level of resources applied, the main factors that had a positive effect on knowledge transfer projects and things that they felt could have been done differently. To make sure that the participant answered the, how, what and why on the issues that the interview was designed to target, the interviewer used a checklist (appendix five).

## **6.5 DATA ANALYSIS**

The interview transcripts were analysed using QSR NUD\*IST N6. This software provides data labelling, sorting, searching and report formats that are used to organise, manage and retrieve pieces of text or data. Each participant was given a fictitious name in the transcripts to ensure that they remained anonymous. QSR NUD\*IST N6 was used first to condense the bulk of the data into sets or analysable units. This process is commonly called coding. For the 'core value' project and the 'other project', each transcript was read several times to ensure an understanding of the information and to identify the major themes. Each paragraph was then explored sentence-by-sentence to identify information for coding and where necessary each code given a description of what it covered and any emerging ideas recorded. Diagram 6.1 shows the hierarchical coding scheme that was developed, the research objective at the top, the themes that developed under the objective and the codes and sub-codes attached. In addition links were created between themes where the coded information related to more than one theme.

**Diagram 6.2: Coding System**

To check the accuracy of the coding, reports in QSR NUD\*IST N6 were used for each code, to check that they related to the themes that they had been collected under. The document and coding was reviewed and if necessary recoded, descriptions improved and any additional ideas recorded. The important analytical work was recognised as identifying the relevant concepts, the links between these concepts, collecting relevant examples and looking for patterns within each firm and across the MNO. From these patterns questions were presented that led to further searches through the data and the linking of codes.

In addition to the above technique, the data were collated from each of the firm into a table. A brief description of the data from each firm was collated against the questions asked (appendix six – Qualitative Analysis by Firm). This gave another view of the data for analysis and presented a summary with which to explore the data composition. Any new themes were then checked against the data in QSR NUD\*IST N6. Finally, a draft of the results was written. This initial writing allowed further thought about what the data was saying and there were times that the transcripts were revisited to explore a new idea or look for further examples to confirm a new idea.

## **6.6 RELIABILITY AND VALIDITY**

Consideration was given to the interview questions validity and reliability or how well and how consistently the questions measure the operationalised objectives.

### **6.6.1 Reliability**

To strengthen the reliability of the data the questions were presented at each interview in exactly the same manner (Silverman 1993). Also, three practice interviews were carried out to check that the questions were clear and the answers consistent or focused on the issues they targeted. In addition, all of the interviews were completed within six working days to eliminate the possibility that something could happen in the firm to alter the situation sufficiently enough to reduce the reliability of the answers. Getting the transcript typed by one person and checked for accuracy by another person strengthened data analysis reliability. Also, the data coding was checked and recoded where necessary. Finally the coding was crosschecked against the table mentioned in section 6.5 'Qualitative Analysis by Firm' (appendix six).

### **6.6.2 Validity**

As previously mentioned in section 4.4.2 of this thesis validity is about measuring what is intended. Each question was focused on collecting data to address the operationalised objectives. To improve the strength of the validity of the research questions, each question was discussed with the Managing Director and one other senior manager to establish as closely as possible the information that could be collected. Questions were adjusted if it was felt they could mislead the participant. In addition it was agreed that if the participant appeared to be way off track the researcher would clarify the question or prompt for additional information. Also the interview questions were pre-tested with two interviews carried out to assess the strength of the questions to produce valid answers.

Finally, interviewing two participants from each firm strengthened both the reliability and validity of the answers. The table 'Qualitative Analysis by Firm' (appendix six) used to identify similarities and differences in the data collected between the interviews in the same firm. Once identified these were checked for accuracy.

## **6.7 SUMMARY**

The twelve participants were selected on the basis that they would have the necessary knowledge to answer the interview questions. The six firms selected were the firms most involved in inter-firm knowledge transfer in the MNO. The questions were developed based on the main research objectives with the addition of the issues that emerged from the quantitative research. The validity of these questions improved through, consultation with the MNO about how these questions could be interpreted and pre-testing the questions with two test interviews. The interviews were conducted over the phone and followed a semi-structured format. The data analysed with the assistance of QSR NUD\*IST N6. This was used to group the data and identify themes for analysis, the reliability of these results improved by checking and crosschecking.

## Chapter 7.0 QUALITATIVE RESULTS

### 7.1 INTRODUCTION

The previous chapter outlined how the data collected from the interviews were coded and sorted for analysis. This chapter presents the analysis of this qualitative data. The data was analysed under the headings of: motivation to transfer knowledge, richness of communication channels, absorptive capacity, knowledge transfer and organisational context.

### 7.2 BACKGROUND INFORMATION

This research investigates two projects to provide information about the transfer of 'know how'. The first, the 'core value project', involves the transfer of knowledge with a high tacit content. The second project, or what is called the 'other project', involves the transfer of 'know how' knowledge of a less tacit nature. The firms that participated in the research were labelled firm A to firm F and the information was sorted by project, namely the 'core value project' or the 'other project'. The individual participants are not identified.

Within the firms researched, knowledge flows from head office directly to established top-level contacts such as project teams and Chief Executive Officers (CEOs). The project teams are made up of senior management and specialists, and formed for either functional or cross-functional activities. Regular inter-firm knowledge transfer occurs both within the project team and CEO group. From here the information is disseminated to other managers in the firms. These managers may have some contact with other firms but usually on an *ad hoc* basis. These managers are responsible for disseminating this knowledge down to the staff within their firm.

The results are presented against the headings of: motivation to transfer knowledge, richness of communication channels, absorptive capacity, knowledge transfer and organisational context. Where the evidence presented from both projects is consistent it is presented together. Conversely, where the evidence presented is different, the project is identified.

### 7.3 MOTIVATION TO TRANSFER KNOWLEDGE

The operationalised objectives for motivation to transfer knowledge were the focus of this analysis. These objectives identify the level of ‘shared purpose’, ‘how positive the firms view knowledge transfer’ and the level at which the firms ‘actively facilitate the knowledge transfer process.’ These are addressed under the headings of group identity and encouragement.

#### 7.3.1 Group Identity

The firms researched all stated that the project teams consisted of senior managers with the right skills and authority for the project. One participant summed it up, *‘I’d have to say that it is the senior staff that drives the project but we do foster involvement from other people.’* The evidence suggests that the people selected were enthusiastic about MNO projects. For example, from the ‘core value project’ a participant said, *‘People were happy to be part of the group, doing group activity.’* Another said, *‘I think it touched a nerve with a lot of people that really wanted to be involved in the development of the group’s values.’* Then when speaking about the ‘other project’, a participant said, *‘People are energised by the projects.’*

However, while they claimed group identity they also recognised the dilemma faced by those who were concerned that their firm reaped maximum benefits. A participant from firm D mentioned that she was often *‘trying to get them to understand that there are benefits in being with a company that is involved with a larger entity as well.’* Another from firm F said, *‘It is hard for people to put aside personal preferences and feelings.’* Some of the firms understood that establishing group identity would take time and involve sharing information. For example the comments *‘We identify with the group but it has taken time’* and *‘we need to take time to understand the problem together and to share information to do this.’* There was some frustration expressed by one participant that she sees a strong sense of belonging to the group but that this can run a little cold if the project is not going smoothly. The participants also acknowledged that there were times when they were reluctant to transfer knowledge with others in the MNO. Firm A commented, *‘People don’t put their energy into it unless they see where there is going to be benefit.’* Firm F made the strong comment, *‘they feel threatened...when things come together there is a loss of power...you’ll find a manager with their own little*

*empire, it's threatening.*' These comments further supported by another participant, *'Some people seem to be a little smug about their own backyard and this can lead to a little bit of conflict.'* This information suggested that the firms identified with the group but that commitment to the group could take time to become established. Commitment was not given automatically but required an understanding about the benefits of sharing knowledge and a lack of fear that sharing knowledge will result in a loss of power.

When asked about the frequency of knowledge transfer that related to the 'core value project'. One participant said, that *'When the project teams were set up there was some activity.* However, in relation to the implementation of these values and the movement of knowledge between the firms, this type of comment was typical from all of the firms *'I'm not aware that we have had many people asking for advice on how to implement the values.'* Firm A, when asked had they worked with other firms to implement the values said, *'No, I don't believe we do.'* Firm C commented, *'Maybe our CEO when she was involved in the project in the initial stages, but not the managers.'* This suggests the transfer of knowledge during the implementation stage of the 'core values project' was constrained.

There was some indication of dissatisfaction with the decision making process between firms in the group. For example *' I think once decisions are made there seems very limited ability to change things, the evidence that backs up things could be better, we should reconsider'* then adding, *'for the ones that go well, I believe we got better feedback'*. Another participant talked about a project that in their opinion failed because the consultation process failed to make sure everyone's issues were discussed sufficiently to allow a joint understanding to be reached. There was a comment about the need for improvement to prevent projects *'starting with a bang and then tapering out'* and a call for improved communication *'I think that we could improve the communication between the subsidiaries.'* These comments indicate the importance placed on making decisions based on joint understanding, that there is an awareness but lack of understanding why some projects falter and a belief that inter-firm knowledge transfer needs to improve.

### 7.3.2 Encouragement

When questioned about how they encouraged their staff to be enthusiastic about MNO projects the most common reply was through involvement. For example, *'It is important that where it is going to have implications for people in their working day that they are involved'* and *'It was decided that we would make a very consultative effort.'* Firm B said, *'We encouraged our staff by making the things personal, each job description and how they related to core values has been worked on with each individual.'* This firm focused at the individual level on personal reward and mentioned that once on board, the individual would *'start talking to other people about what they got out of it.'* Likewise, firm A said, they focused on *'winning the heart and minds of key opinion makers.'*

Firm C reinforced the core values importance by setting up teams and individual challenges designed to encourage the desired behaviours. For example, *'This year we are concentrating on the value, commit to service excellence and we have a morning tea once every couple of months and give them prizes.'* Then adds, *'At the end of the year we have a presentation and prize for the team that does the best.'* Also they focused at the individual level so they understood what was in it for them and said, *'Talk to them individually and get them to see how being part of a group is going to benefit them in the long run.'*

The firms also recognised the need for leadership and believed that these projects should be lead from the front. For example, when asked what had the most positive effect on the 'core value project' a participant said, *'Point one is CEO commitment and it wouldn't work without the CEO passionately committed.'* Another supported this and said, *'Our CEO is very involved and passionate about the core value project.'* On the other hand there was one participant that said, *'This sort of thing needs to be lead from the top and it wasn't in our organisation.'* Another called for *'better direction.'* In contrast in the 'other project' it appeared that all of the participants with one exception felt direction and leadership was adequate. This participant stating that they would like to see, *'More direction and not as much mucking around.'*

Evidence from the transcripts suggests that the firms approached all of the projects by focusing on reducing resistance to change, establishing buy in, and reinforced project benefits through encouragement. Firm F made the comment, *'I think communication and getting the buy in of people is really important. It has to be seen as non-threatening. It has to be seen as being of a benefit. It has to be seen say with benchmarking as an opportunity for improvement rather than a judgemental thing. I think there has got to be encouragement to change.'*

In all of the projects the encouragement given was intrinsic and focused on involvement and understanding the benefits and reaching a shared understanding.

#### **7.4 RICHNESS OF COMMUNICATION CHANNELS**

The operationalised objectives for richness of communication were the focus of this analysis. These objectives 'determine what communication channels are used', the frequency of communications', and the communication channels considered 'the best'.

The transcripts suggested that the participants were aware that knowledge transfer links could be either enhanced or hindered by the various communication channels used. The participants confirmed some reliance on electronic media but they recognised its limitations and the need for communication channels that involved closer personal contact. The CEOs made very positive comments about the value that they got from their quarterly meetings with other CEOs. For example, *'these are very valuable forums where we hammer out all sorts of things.'* Telephone conferences were also mentioned as another opportunity to seek or exchange information. For example *'We have good interaction at the informal teleconferences, where we just share it around.'* Two participants from different firms made found informal communication was a good forum to seek others opinion or just to clarify something. They also mentioned how they found email good, but face-to-face meetings were best. For example *'the idea of getting groups of people together from various operations and discussing common threads, is very, very good.'* Both of these participants mentioned the need to manage the cost but felt there were cases when face-to-face meetings were necessary and if carefully planned they were worth the expense.

While the transcripts revealed that there was regular communication between CEOs, there was no mention of the regularity of project team meetings. There was some evidence that the quality and frequency of communication between people in project teams varied. One team's communication described as, *'having died a natural death'* and another as, *'having lost momentum.'* Counter to this one participant described the meetings that they attended as having, *'an incredible amount of energy and we've actually had many meetings'*. A high value was placed on communication by the Managing Director and comment was made that some of the enthusiasm for the 'core value project' was weakened when the Managing Director was unable to visit.

There were some comments about the flow of information for head office. For example the comment, *'I think there is a reasonable flow from the entities to head office. I think that the information is there. But, there is a poor flow of information from head office regarding project information down to the entities'*. Also the comment *'it gets frustrating; when you ask head office and they never get back to you.'* One participant made the following suggestion, *'we definitely need better communication and I think we need to have someone try and work out a better way to do things.'* Two of the participants suggested that maybe more structure should be put into the way information is collected. One of the participants expressed concern that the group was not using its resources to pull together some of the common aspects in areas such as Human Resources and Occupational Health and Safety. There was evidence that showed they recognised the contentious nature of many issues often made knowledge transfer difficult. For example the comment that the 'core value project' gathered enthusiasm because the knowledge was *'less contentious than some of the other knowledge they had to deal with.'*

Finally, one participant commented on the difference that the nature of knowledge can make to a project, saying that the 'core value project' gathered enthusiasm because the knowledge was less contentious than some of the other knowledge they had to deal with. The effect of the nature of knowledge that needs to be transferred is further examined in 7.6 of this chapter.

## 7.5 ABSORPTIVE CAPACITY

The analysis focuses on the operationalised objective for absorptive capacity, focusing on the levels of ‘experience’, ‘expert knowledge’, ‘similarities between the firms’ and the ‘resource applied’.

### 7.5.1 Experience and Expert Knowledge

The participants were asked to score their level of experience with both the ‘core value project’ and the ‘other project’ on a scale of 1-5. With reference to the ‘core value project’, the range of scores given for level of experience across the firms was 2-5. The higher range of scores was from 3-5, from firms B, C and D. The lower range of scores was from firms A, E and F with scores of 2-3. It is interesting to note that the firms that gave the highest scores (firms B, C and D) are the same firms that presented evidence of a proactive approach to the core value project.

For the ‘other project’, firms D, E and F felt that their involvement in past alliances and mergers gave them considerable project experience, with these firms estimating their experience level on a scale of 1-5 as 3 –5. When asked to score the level of experience, firm B was the only firm that differentiated the different level of experience with internal and MNO projects, *‘I mean we have a very high level of experience internally but not across so I would probably put 2.’* There was a conflict of opinion between the two participants from firm A. One felt that their experience level was only a 2 as they had only been part of the group for just over two years and been involved in three projects, while the other said involvement in past alliances gave them considerable experience and scored experience at 5. This suggests that one felt that the expectation, as part of a MNO, was very different from the expectation placed on knowledge transfer in an alliance.

Importantly, none of the firms said that lack of experience had a negative effect on their ability to handle these projects. There was a general indication that they were familiar with these types of projects, refer Qualitative Data Analysis by Firm (appendix six). Many of the systems and processes already in place in their firms could be used to facilitate the collection of data, the decision making process and the implementation of

the knowledge. For example one firm said, *'we can use systems and ideas that we have used before with any project and 'We know what works and what may not.'*

### 7.5.2 Similarities

The nature of the knowledge in the core values project appeared to be congruent with the values of all the firm's interviewed. Not one of the participants expressed doubts about the values fitting their firm and ten of the participants mention how close they were to their own firm's values. For example, *'I think the values are so simple and powerful and sit so well with the ethos of the group'* and *'we were only new and it was nice to see that the others in the group had similar values.'* However, while all of the firms relate to the values only three focused on utilising these values and measuring the effect this utilisation had on their firm's performance. This supports the suggestion that the project was largely a learning experience and some firms may be better at learning than others.

There was indication that the participants acknowledged there were differences between the small and larger firms and that these differences could make the projects more complicated. One firm said they recognised the group as, *'A fairly heterogeneous group of firms of all different sizes and requirements and I think that we don't understand that heterogeneous nature that we have in the organisation as well as we should.'* One of the participants felt there was the perception that small firms had less to offer. A participant from a larger firm said that their pool of knowledge was such that they didn't need to seek advice very often.

Nine out of the twelve participants mentioned that they recognised a large part of project management was about managing change, indicating that these firms would take a similar approach. For example, the need to embrace change was mentioned and the commented that they were well equipped to tackle projects because their firm was used to change. Another participant talked about the importance of reducing resistance to change.

The research did not specifically asked for the level of continuous improvement but there was mention of benchmarking, information technology projects, marketing projects, purchasing projects, quality assurance projects, image project and the core

value project. In addition, one participant mentioned the emphasis that is placed on total quality assurance management. Further to this, another commented that they have a lot of people involved in projects in what was called '*an active environment*' where the focus was on improvement.

### **7.5.3 Resource**

The participants were asked to score their firms level of resource applied on a scale of 1–5. The level of resource applied across the firm was lower for the 'core value project' than the 'other project'. For example, for the 'core value project' the average score given was 2-3 while for the 'other project' the average is 4-5. One participant felt that the project teams for the 'core value project' should have been better planned and given more resources. For the 'other project' here was evidence that most of these were goal focused. For example, the comment, '*There are clear guidelines about the project, what it is, what is the desired outcome, why are we doing it, what we are hoping to achieve and when we are hoping to achieve it by.*' In addition the evidence presented suggested that most of the 'other projects' were monitored, comments like the following given, '*yes they did monitor all the projects that she had been involved in*'.

## **7.6 KNOWLEDGE TRANSFER**

This analysis focuses on the operationalised objectives for knowledge transfer, which looks for 'evidence that the knowledge transfer has taken place' and to discover any 'knowledge transfer patterns based on preference'.

### **7.6.1 Evidence of Knowledge Transfer**

In the firms that formed part of this research, knowledge transfer could be described as taking place at three separate levels. First, there was the need to accept the knowledge or recognise its value. Second, there was the need to take action with the knowledge and integrate it into the firm's processes and systems. Third, there was the need to transfer the firm's knowledge and learning experience to the MNO.

For the 'core value project' the transcripts revealed that each firm accepted the values as their own, presented them to their staff and displayed them in prominent places for staff

and customers to read. Three of the firms B, C and D stood out as moving beyond this level of knowledge transfer by integrating the knowledge into their firm and measuring its outcomes. These firms actively incorporated the values in company activities and took every opportunity to incorporate them into daily activities. They worked at the individual level with as many staff as possible to help them relate these values to their everyday behaviour. They also used the values as the basis for recruitment, selection, orientation and performance reviews, and the appropriate behaviours were praised. They understood that for their staff to truly understand these values they would need to experience them in action. For example firm C said, they *'do 360 degree reviews asking for feedback from all the people who report or interact with them. The values are part of the feedback and senior staff is expected to be exemplary role models of the values.'* All of these firms measured staff and customer satisfaction and related these measurements back to behaviour that supported the core values.

The other firms, A, E and F accepted the core values but the only action taken was to document and display these values and some used them when disciplining staff. When asked how they brought the values to life they felt the values were in fact a natural extension of their everyday behaviours so it meant no real managed change was necessary. For example *'we feel that we tend to live them.'* Also one of these firms said *'We are waiting for the core values to be officially implemented with guidance from head office.'* This approach suggests these firms took a reactive stance, while firms B, C and D were proactive and implemented the values into their daily activity.

This evidence indicates that firms B, C and D recognised the tacit nature of the knowledge and understood it was of little value in the explicit form. The knowledge was transferred into their firm activities and given value by measuring its success. These firms measured the 'core value project's' performance using indirect measures such as customer satisfaction and staff satisfaction surveys. While firms A, E and F struggled with the idea of measurement because of the intangible nature of the knowledge involved. One participant from firm F expressed confusion, *'Measuring is really an area where we are really, we need to do more but we haven't decided how.'* Another participant from firm E said, *'I don't suppose we really monitor it but we use it in everything so I suppose if we stopped we'd notice.'*

Probably the most important level of knowledge transfer in a MNO is when the collective knowledge of the group becomes integrated into the organisation (Bartlett & Ghoshal, 1991). However, with the ‘core value project’ none of the firms gave evidence that suggested they consciously focus on knowledge transfer at a MNO level. Firm A mentioned that they would discuss their experience and ideas at CEO level but not in a structured way ‘*informally we talk to each other*’ indicating there was some knowledge transfer into the MNO at CEO level. For the ‘core value project’ a participant firm B mentioned they did not usually seek knowledge from other firms in the group but, ‘*A few people had asked and taken a bit of what we’ve done but not much.*’ Firm C, E and F only spoke of knowledge sharing within the project team in the development phase. One participant from firm C said, ‘*I’m not aware that we’ve had many people asking for advice on how to implement the values.*’ There was no mention of any firm proactively seeking knowledge from other firms.

In contrast, the ‘other project’ produced indications of frequent inter-firm knowledge transfer. For example, ‘*I think in these sorts of things we are always getting ideas from other people.*’ Firm A claimed communication was frequent and, ‘*...usually people seeking others opinion or just clarifying something.*’ The success of ‘other projects’ mentioned by firm D ‘*we have had success with the several projects and out of these has come some positive changes.*’ This shows that the outcome for the ‘core value project’ with the higher tacit knowledge content is different from the outcome of the ‘other project’.

### **7.6.2 Knowledge Transfer Patterns Based on Preferences**

There was evidence of knowledge transfer patterns based on a preference for size or nationality. For example, one participant said, ‘*I would normally go to someone of similar or larger size, so yes, I do have people I prefer to ask*’. Also there was evidence that some of the larger firms felt there were some firms with little to offer. One of the participant from a larger firms said, ‘*At the end of the day, our firm is the biggest in the area and maybe in our arrogance we decided that we know more and are better than others*’. Another participant said, ‘*We should probably look at passing some of the projects to other people so that they get involved. The problem is that many of the smaller firms do not have the knowledge or resources to do these projects*’.

All of this evidence indicates that there were established patterns of knowledge transfer behaviour based on perceptions and experience and there appeared to be no analysis of the effects of these behaviours on the group as a whole.

## **7.7 ORGANISATIONAL CONTEXT**

This analysis focuses on the operationalised objective for organisational context that concentrates on the level at which firms ‘facilitate the knowledge transfers process’, ‘where improvements could be made’ and ‘relationships’.

### **7.7.1 Facilitation of Knowledge Transfer**

One of the participants describes the organisation structure as a 'federation model' which allowed each firm to maintain its own identity and sense of ownership with a strong influence on what should or should not happen within their own firm. However, there was potential for conflict, one participant said, *‘It means when you do get to a stage where you want to encourage some commonality it's really up to the individual practice whether they adopt it or not’*. Another commented, *‘When things come together there is a loss of power and people have their own little empires to protect, something they need to weigh up against group benefit’*.

There was agreement that the utilisation of project teams and CEOs’ to direct the exchange of knowledge worked well. However, some participants expressed concern about how people were selected for project teams. For example, one participant felt the MNO failed to tap into a very valuable source of knowledge by not including the Human Resources Manager on the core values team. Others reinforced the need to include the right people. They identified the need to include *‘opinion makers’* realising these people could be found anywhere in a firm and were often not selected. Also one of the participants said *‘We have a network but it could be broadened because it doesn't seem to be as responsive from everyone in the groups’*.

### 7.7.2 Improvements

Several of the participants recognised that there was a large pool of knowledge and that this could be put to better use. One participant said, *'when I reflect we had a wealth to share'* going on to comment that *'we could use it better.'* Another recognised the need to continually work on improving knowledge transfer *'We need better communication and I think we need to have someone try and work it out'*. Another participant felt that a more structured approach would be an improvement and stated *'there hasn't been any effort to try to establish or standardise policies for improvement of the whole group'*. In addition, there was a comment that knowledge was not always shared freely, they commented *'we need time to understand the problems so we can address them'* and to do this *'we need to share information'*. One participant admitted that the firm was in the habit of being reactive because it had been part of so many rapid changes. Another firm made comment that they had not taken the time to speak to other firms and they realised this can be counter productive for the group.

### 7.7.3 Relationships

The composition of the teams for all of the projects was based upon selecting a senior staff member with the appropriate skills and experience, and then involving other staff where and when needed. For example a participant said, *'For the larger projects I would have to say that it is the senior staff members with the appropriate knowledge to drive them, but we do foster involvement from other people within the appropriate work groups and also cross functional groups.'*

There was evidence that the majority of the projects in the MNO were functional projects, such as marketing, purchasing, information technology. The evidence from the transcripts suggests the relationships established for these projects were successful. For example one participant said *'we have a very good relationship and are able to use and share information.'* Another commented *'I know in my firm some who have formed professional relationships with people in other firms that are very successful.'* Then added *'Our Operations Manager is on a team, he would say that gives him a network of people to talk to whenever issues come up.'* Another said that she found her CEO *'a good contact point for information on people within the group.'*

## 7.8 SUMMARISED QUALITATIVE RESULTS

The results from the preceding discussion are summarised against the operationalised objectives.

### 7.8.1 Motivation to Transfer Knowledge

First, the operationalised objectives and results for motivation to transfer knowledge are presented as follows:

- *To find the level of shared purpose between the firms in the MNO.*
- *To assess the level of proactive and reactive activity.*

Just as the analysis of the quantitative data in stage one revealed strong group identity this qualitative data revealed the same. Further, the lack of proactive behaviour found in the quantitative stage of this research is reflected in some of the firms that participated in the qualitative research. This reactive behaviour was found in the ‘core value project’ where the knowledge was of a more intangible nature than the knowledge in the ‘other project’.

- *To find how positive the firms within the MNO view knowledge transfer.*

There was evidence that the firms recognised the need for MNO knowledge transfer and that the outcome could be positive. However, this was tempered by the need for an outcome that was best for their firm being placed before the needs of the MNO and a perception that knowledge transfer is associated with a loss of power.

- *To assess the level at which the firms within the MNO actively facilitate the knowledge transfer process.*

All of the firms mentioned that they motivated their staff through involvement; some recognised the value of focusing on the individual and the use of public rewards to both raise the profile of the project and encourage staff. Emphasis was also placed on the need to give clear direction supported by strong leadership.

### 7.8.2 Richness of Communication Channels

Second, the operationalised objective and results for richness of communication channels are presented as follows:

- *To determine what communication channels are used; and*
- *To determine the frequency of communications.*

The transcripts produced evidence that both projects appeared to be supported by rich communication channels at CEO and project team level. These include e-mail, phone, face-to-face meetings and formal and informal contact. While the transcripts revealed that there was regular communication between CEOs, there was no mention of the regularity of project team meetings. It appeared that in some cases the frequency of communication decreased to the detriment of the project.

- *To determine what communication channels are considered the best.*

There was evidence that the CEOs used informal contact and found this had distinct value. Others felt there could be more face-to-face contact but recognised this came at a cost that needed to be carefully managed.

- *To determine the accessibility of 'know how' and 'know who' knowledge.*

The analysis suggests that head office did not always provide the firms with the information they expected neither did they respond to requests for knowledge quickly. Also, some concern was expressed that the group was not using its resources to pull together some of the common aspects in the operations area such as Human Resources and Occupational Health and Safety. One of the participants commented that communication was made more difficult if the knowledge you were dealing with was divisive by nature.

### 7.8.3 Absorptive Capacity

Third, the operationalised objective and the results for absorptive capacity are presented as follows:

- *To determine the level of similarity in business practice used across the organisation.*

The 'core value project' presented evidence that suggests the proactive firms took a similar approach that would suggest there are similarities in their practices and philosophies. Also, most of the firms treated projects as change projects and approached them in a similar way, reducing resistance, employing collaborative decision making, bringing in the changes and cementing these changes.

- *To determine the level of commitment to continuous improvement.*

There appeared to be a high level of continuous improvement with each firm supporting benchmarking, information technology projects, marketing projects, purchasing projects, the image project, quality assurance projects, accreditation standards and the 'core value project'.

- *To determine the level of resource applied.*

The amount of resource indicated was reflected in the level of activity for the other projects but not in the 'core value project'.

- *To determine the level of experience; and*
- *To determine the level of expert knowledge.*

Experience levels were considered moderate to high for all the projects. With the 'other project' the evidence suggested that the firms had the systems and processes in place to support these projects. However, it appeared that the systems and processes needed to support the 'core value project' were lacking in some firms, for example, practical daily activities that encouraged people to share ideas.

#### 7.8.4 Knowledge Transfer

Fourth, the operationalised objective and the results for knowledge transfer are presented as follows:

- *To seek evidence that knowledge transfer has taken place.*

There was evidence that all of the firms had accepted and publicised the core values within their firm. Three of the firms B, C and D actively incorporated the values into company activities and worked at the individual level with as many staff as possible to help them relate these values to their everyday behaviour. They also monitored the project by measuring staff and customer satisfaction. The other firms were not as proactive. Some of these firms were waiting for further direction from head office whilst others were not taking action in the belief they were already living these values. For the 'other project' there was evidence that changes had been made as a result of MNO knowledge transfer, which indicates that the knowledge was accepted and put into action.

- *To discover if any knowledge transfer patterns based on preference have developed.*

Some of the participants mentioned knowledge transfer patterns based on preference of size or nationality. Similarly, there was evidence that many of the firms looked to the larger organisation for knowledge because they assume they have larger knowledge stocks. Furthermore, one of the smaller firms complained that they were often excluded because others presumed that they have little to offer.

#### 7.8.5 Organisational Context

Finally, the operationalised objective and the results for knowledge transfer are presented as follows:

- *To determine the level at which the firms actively facilitate the knowledge transfer process.*

Some participants questioned the value of the ‘federation model’ as a structure that facilitates MNO knowledge transfer. While they understood the logic that the individual firms maintain a strong influence on what should or should not happen within their own firm, they felt it inhibited the need to create group identity. Others felt that the network was not well developed and were concerned that the right people were not always identified to be part of project activity. In Mary’s words, *‘We have a network but it could be broadened because it doesn't seem to be as responsive from everyone in the groups.’*

- *To identify where improvements could be made that would increase the knowledge transfer activity.*

Several of the participants recognised the need to improve inter-firm communication. Other areas identified for improvement included better decision-making, less reactive behaviour and sharing knowledge freely.

- *To explore the relationship context in which knowledge transfer takes place.*

There was evidence that the majority of the projects were based on good relationships and that some of these had developed over time becoming valuable to the flow of knowledge in the MNO. It was also recognised in this research that this network should not remain static, it took time to establish and there were several areas that could be improved.

For both the quantitative and qualitative research there are a number of major findings that will be presented for discussion in the next chapter.

## **PART 4**

# **DISCUSSION, BUSINESS IMPLICATIONS AND CONCLUSION**

## **Chapter 8.0 DISCUSSION AND BUSINESS IMPLICATIONS**

### **8.1 INTRODUCTION**

This chapter presents the discussion under the construct headings of: motivation to transfer knowledge; richness of communication channels; absorptive capacity; and organisational context. The ensuing discussion highlights Pfeffer & Sutton (1999) comment that often you know what to do when you receive knowledge but fail to put this into action. Following this discussion, the business implications that facilitate knowledge transfer through to action are presented. Then, to conclude this chapter suggestions for further research are offered.

### **8.2 MOTIVATION TO TRANSFER KNOWLEDGE**

Motivation to transfer knowledge is one of the most important constructs in knowledge transfer. The findings of this research confirm the positive relationship between the motivation to transfer knowledge and knowledge transfer.

There were, however, some issues. In the questionnaire 45.1% of the participants said their knowledge transfer behaviour was reactive and they felt there was a lack of direction that a more structured knowledge transfer routines could correct. From the strategic renewal perspective, knowledge transfer aims to institutionalise knowledge, which involves moving knowledge across the organisation (Tsai, 2001; Seufert et al., 2000). Both of the MNO said that they identified with their organisation, the measure for group identity from the questionnaire at 100%. Nevertheless, there appeared to be tension between exploring new knowledge for their firm and exploring new knowledge for the MNO.

The interviews in this research presented evidence that suggested when the firms received knowledge they usually applied this knowledge in their firm without further exchange of ideas with other firms in the MNO. The majority of the firms in the MNO suggested routines for inter-firm interaction were not well developed during project implementation. Speculation about this situation raises several issues. It is Bartlett and Ghoshal's (1991 p 207) experience that before any changes are made to the structure and responsibilities in a MNO, you need to address the necessary change in 'individual

attitudes and mentalities' so that they are motivated to be part of the MNOs knowledge transfer activities.

The research supported the literature that argues knowledge transfer is strongly dependent not just on willingness to act but also on the individual's ability to act (Argyris & Schon, 1974; Argyris & Schon, 1978; Grant, 1996; Levitt & March 1988; March & Olsen 1975; Gupta & Govindarajan, 2000a). The ability to act appeared to be inhibited from both lack of skills and organisational barriers. While all the firms presented themselves as motivated to be part of MNO knowledge transfer none of the firms presented themselves as fully skilled at moving knowledge across organisational boundaries to create MNO knowledge. Some of the firms with better established knowledge transfer routines seemed to find any emerging change process from inter-firm knowledge transfer less harrowing. The evidence suggested that these firms were more skilled at putting the necessary processes in place. Their actions supported by a culture that based problem solving on involving the people affected by the change. The evidence suggests this resulted in more comprehensive problem solving.

The research also indicated that knowledge transfer was inhibited at times by unspoken rules. For example, there was evidence that the firms were expected to understand that knowledge did not flow freely from head office, because head office had the power to withhold knowledge at their discretion. Some of the participants in the research indicated that they felt other firms had little to offer. No doubt this feeling would influence others actions and could inhibit knowledge transfer. These types of unspoken rules are not always easy to change, it was Argyris and Schon (1978) experience that the most difficult thing was making these rule available for public scrutiny.

Bartlett and Ghoshal (1991) found the most successful MNOs motivate their staff to transfer knowledge by developing a management team committed to a corporate strategy where any issues are open for discussion. This approach they believed generated good decision making. Further that this management team recognises the need to find and foster the required skill set to ensure successful knowledge transfer activity. This strategy supported as part of the development of a shared purpose across the MNO (Gupta & Govindarajan, 2000a; Teece, 2000).

### **8.2.1 Power Play**

While evidence presented from both the quantitative and qualitative research showed an understanding of the benefits of sharing knowledge freely there were indications of power play and personal ownership of knowledge. The participating firms recognised the power of knowledge and this appeared to create tension between sharing power across the group and the loss of an individual firm's power to the group.

The research presented evidence of a knowledge transfer hierarchy based on size. The research revealed a preference to seek knowledge from larger firms and a belief that larger firms have more to offer. One of the firms felt that because they were large, their knowledge resource was sufficient and didn't need to consult with anyone else. While the research produced complaints from smaller firms about the perception that they have little to offer. To reduce these differences, Dyer and Nobeoka (2000) suggest that the organisation focuses on building a MNO that identifies and creates the belief that power is found in a common goal. For example, a set of rules for the MNO attached to the decision making process that facilitates joint decisions based on MNO identity. They also showed that larger firms often do have more to offer and this should be seen as a positive, these firms expected to lead by example, sharing their knowledge freely.

### **8.2.2 Encouragement**

Several authors mentioned the need to encourage knowledge transfer through rewarding the appropriate behaviours that facilitate knowledge creation (Davidson & Voss 2002; Quintas et al., 1997; von Krogh et al., 2000). Gupta and Govindarajan (2000a) viewed financial rewards as motivational but their study failed to support this view. They made comment that their finding may have been affected by other factors that were not explored. This indicates the complexities in rewarding certain behaviours and the need to consider organisational context before applying one rule to all. Not one of the participants in the research presented in this thesis mentioned a need for financial reward indicating that there were factors in the MNOs that may have prevented financial reward being effective. Involving staff in project activity was the dominant source of encouragement cited in the research and the interview participants felt this worked well. Dyer and Nobeoka (2000) found that Toyota would rather finance

meetings and training to support inter-firm knowledge transfer than use financial reward. These intrinsic rewards bring about rewarding consequences that are independent of any form of financial or material remuneration or extrinsic rewards (Deci, 1975). The motivation literature supports this behaviour with the belief that employees are able to reach higher levels of motivation with intrinsic rewards (Hackman & Oldham, 1975; Steers & Porter, 1991). This literature also claims that these intrinsic rewards are far superior to extrinsic rewards. The research in this thesis suggests that this type of encouragement was a successful motivator but at some point it began to lose its effectiveness. The research did not answer the question what would have happened if they had been offered financial reward.

This research highlighted the importance that should be place on motivation. These results confirmed Kogut and Zander's (1996) argument that a feeling of belonging facilitates inter-firm knowledge transfer, which supports the findings of Dyer and Nobeoka (2000) that focusing on enforcing proactive behaviours has a positive association with knowledge transfer.

### **8.3 RICHNESS OF COMMUNICATION CHANNELS**

The quantitative research (section 5.2.2) showed that the participants used a variety of communication channels. The use of electronic communication was measured at 77.4%, with the telephone at 22.6% and they indicated that this was the most practical and popular form of inter-firm knowledge transfer. In both of the MNOs researched frequency of both formal and informal meetings appeared to be well organised, although comments were made that there was room for improvement. Also while face-to-face meetings were considered the most effective they were aware that at times they were not practical and often costly.

The research presented evidence that valuable relationships developed as a result of their formal communication. It also showed that out of this formal communication valuable informal communication channels had developed. The literature reiterates that socialisation and relationship building is very much part of the knowledge transfer process (Senge, 1990; Argyris & Schon, 1978; Schein, 1993; 1996). While weak relationships between firms facilitate the transfer of new information, strong

relationships between firms facilitate the transfer of tacit knowledge such as 'know how' knowledge (Tsai, 2001).

At the CEO and project team level the evidence suggests that informal communication occurred on an *ad hoc* basis with no mention of any informal knowledge transfer being actively managed. Central to the promotion of knowledge transfer is the management of both formal and informal knowledge transfer (Gupta & Govindarajan, 1999; Dyer & Nobeoka, 2000 & Kogut & Zander 1996). The literature comments that 'know how' knowledge contains tacit knowledge that requires social interaction to be transferred. Therefore, formal systems that focus on 'know how' transfer can be doomed if those involved do not allow enough social interaction to occur for the knowledge to be successfully transferred (Adler & Kwon, 2000; Nonaka & Takeuchi, 1995). The 'core value project' may have benefited from more informal communication. Informal discussion by its very nature provides the format to discuss issues as soon as possible, increasing the momentum of knowledge transfer and exposing items that can be downgraded in a person's mind as being less important in a more formal setting. In addition, there are times when informal communication should be planned to assist relationship development. Therefore, to facilitate the cost-effective transfer of knowledge, both formal and informal communication needs to be managed to match the nature of the knowledge, the organisational context and the ability and willingness of people to transfer knowledge.

The research showed that 81.8% of participants in the questionnaire answered positively that they had little difficulty finding out 'who' to contact about a specific issue within the organisation. However, the accessibility of 'know how' knowledge was considered less at 71.0% (section 5.2.2). This indicates that while people are easy to find, there is sometimes a reluctance to respond, reinforcing the need to establish the MNOs norms and expectations that support the MNOs knowledge transfer. The expectations that the person responds without any hesitation with an understanding that valuable knowledge can be lost if responses are not timely.

It follows that the organisational norms that persuade open communication lead to a greater amount of knowledge transfer (Dyer & Nobeoka, 2000). However, the research presented evidence that while knowledge flowed from the firms to head office but it did not flow as well from head office down to the firms. This lack of action from head

office could signal that knowledge going to head office can become inaccessible or that the knowledge contributed was of little value. Equally, it can also signal that it is acceptable to hoard knowledge and to fail to reciprocate. Bartlett and Ghoshal (1991) warn that knowledge transfer comes with management accountability. The understanding that there is a responsibility to participate in communication seriously to ensure quality communication takes place. In addition, that any outcome from this communication is transferred to others who need this information.

#### **8.4 ABSORPTIVE CAPACITY**

The research confirmed the relationship between absorptive capacity and knowledge transfer. Also it demonstrated that firms in the same industry do not always have the same absorptive capacity. The relationship between high levels of experience, similarities in business practices, expert knowledge and resources applied with inter-firm knowledge transfer were not strong. Bartlett and Ghoshal (1991) and De Long and Fahey (2000) highlight the need to note that the firms within MNOs will each have their own culture reflected in the varying capabilities between the transferring and recipient firms. The firms studied had similar business philosophies and professional values but different aspects to their knowledge transfer behaviours. Three of the firms were more creative and more proactive about knowledge transfer, exhibiting greater absorptive capacity and knowledge transfer. With the largely tacit nature of the knowledge in the 'core value project' they immediately accepted the need to set up knowledge transfer activities that give people the space to share knowledge and to facilitate putting this knowledge into action. All of the other firms in the MNO had the absorptive capacity to transfer and receive the less tacit nature of the knowledge in the other projects. This supports Simonin's (1999), Zander and Kogut's (1995) and Szulanski's (1996) findings that knowledge transfer is more difficult when knowledge has a higher the tacit content.

The research highlighted the need to consider the difference in cultures between the firms in the MNO. It showed that some of the firms preferred knowledge to be less dependent on the context. While other firms looked for the contextual elements to help them understand the knowledge and the research suggests they had better absorptive capacity and knowledge transfer was more effective in these firms. These cultural differences probably had some moderating effect on inter-firm knowledge transfer (Bartlett & Ghoshal, 1991). Removing these differences could help to create a

knowledge base that overlap and improve the MNO's absorptive capacity, create a shared understanding and improve their motivation to share knowledge with each other (Cohen & Levinthal, 1990; Gupta & Govindarajan, 2000a).

In the quantitative research a relationship between the motivation to transfer knowledge and absorptive capacity was not demonstrated. However, the qualitative research indicated that a relationship between absorptive capacity and the motivation to share exists. To explain this further Cohen and Levinthal (1990) offer a definition of absorptive capacity as a firm's ability to value, assimilate and apply new knowledge. While motivating factors can be considered separate they could also be considered as part of a firm's ability to value, assimilate and apply new knowledge. The research showed that a firm's absorptive capacity was very much dependent on their motivation to apply themselves to the task at hand. In the firms that were more driven to action knowledge was more effectively acquired and synthesised. This suggests that these firms recognised the need for action to make this knowledge their own.

## **8.5 KNOWLEDGE TRANSFER**

Tensions were created by the uneven flow of knowledge from small and large firms. The research uncovered some expressions of anger about the perception that small firms had small knowledge stocks and that large firms were more attractive because of their large knowledge stocks. It is important to place uneven flows of knowledge into the right context, larger firms usually do have larger knowledge stocks and this brings with it the responsibility to distribute this knowledge across the MNO. Also, small firms often have valuable knowledge to offer and the flow of knowledge from and into these smaller firms should not be restricted (Dyer & Nobeoka, 2000).

The research showed relationships had become established for various reasons between some firms and these firms turned to each other for knowledge. These relationship links provided a degree of safety that appeared to promote learning; however, they also appeared to block other firms from making these knowledge transfer connections. Kenis and Knoke (2002) explain how these links can become a form of tension as others in the MNO notice a disproportionate distribution of knowledge across the group. It appeared that each firm did not have an equal opportunity to participate in the knowledge transfer activity of the group and those left out of the communication loop

felt under-utilised and undervalued. Dyer and Nobeoka (2000) warn knowledge managers that these patterns of behaviour can be a trap because they often result in tunnel vision and lost opportunity to tap the best knowledge source.

It is worth noting that as MNOs grow the relationships between the firms become more complex to handle (Kenis & Kone, 2002) as the relationships they build become valuable and the relationships they inhibit suffer. Kenis and Kone (2002) suggest these connections should be analysed regularly to check if the relationship structure is distributing the knowledge to where it is needed. They suggest the need to look into the number and density of connections and the patterns of both present and absent links (Kenis & Kone, 2002).

The research showed that each firm played an active role in knowledge transfer and that each firm had a different level of knowledge transfer activity. The literature suggests that knowledge transfer must be facilitated by organisational routine that create new knowledge and that these routines must be actively managed (Kenis & Kone, 2002; Dyer & Nobeoka, 2000; Pfeffer & Sutton, 2000; Bonitis, 1999; Bartlett & Ghoshal, 1991).

## **8.6 ORGANISATIONAL CONTEXT**

Planning, implementing and coping with change were mentioned as an integrated part of the participating firm's culture. The firms were aware of the need to involve people at the practical level and the culture was collectively concerned with knowledge transfer. However, when the focus turned to inter-firm connections and understanding the need to seek out collective experiences full of new issues, ideas and differences of opinion, various tensions were exposed.

The research suggested a lack of alignment between the MNO's strategic vision and the routines in place to support this vision. The evidence showed that each firm believed in the benefits of belonging to a MNO. However, the qualitative research suggested that there might not have been enough emphasis on institutionalising knowledge into the MNO. In the 'core value project', individual firms said they related to these values but there was no mention of the need to relate these values in the context of the MNO. The organisational learning literature warns that the sum of individual knowledge does not

make organisational knowledge (Kim, 1993; March & Olsen, 1975). This knowledge needs to be combined and assimilated in the MNO context to become MNO knowledge. From a strategic perspective the strategies and actions of each firm must align with those of the MNO (Dyer & Nobeoka, 2000; Bartlett & Ghoshal, 1991).

It follows that, in a MNO the ideal relationship between firms is one of interdependence (Bartlett & Ghoshal, 1991; Dyer & Nobeoka, 2000). In the qualitative research the MNO involved functioned under a decentralised 'federation model'. The participants said that this model was designed to allow individual firms to maintain their identity. The model appeared to create conflict, and it was suggested that this was because it suggests a democratic process and a superior-subsidary relationship as firms were expected to take directives from head office. Consequently (as the literature suggests with this model) the firms' tendency to look to head office to protect their individuality can displace the opportunity to develop knowledge transfer routines based on interdependence (Bartlett and Ghoshal, 1991). Perhaps project momentum would be better maintained if these firms had turned to each other and the positive result from this interaction would reinforce the principal that collaboration between firms solves problems.

In the qualitative research the participating firms commented about their failure to partake as often as they should in inter-firm knowledge transfer. Suggestions were made that head office didn't set a good example because they failed to share knowledge in a timely way and did not always allow knowledge to be shared freely. This gives some indication that the restriction on inter-firm knowledge transfer started at the top. Maybe, this was a reflection of the type of leadership and the organisational (hierarchical) structure. Unfortunately, hierarchies give the people at the top the power to hold things over others (Pfeffer & Sutton, 2000).

The literature stresses the need for managers to understand the need to foster a culture of collaboration and the destructive effect on the MNO caused by power struggles (Pfeffer & Sutton, 2000). The research presented evidence that while the organisational context supported knowledge transfer with project teams, involvement and the use of rich communication channels, there were areas where improvements could be made. The most prominent request was the need for more structured routines to guide the knowledge transfer process.

## **8.7 BUSINESS IMPLICATIONS**

This research highlights the need to move espoused theories into action. It appears the participating firms knew what to do but did not always implement what was known. Further, knowledge transfer is not about information technology (which may enable knowledge transfer, but is only a tool). The success of knowledge transfer is dependent on the individual choice and a facilitating context. The business implications for this research are based on providing direction with strategic focus, leadership, process, focusing on people and measurement.

### **8.7.1 Strategic Focus**

The knowledge-based view holds that by sharing knowledge a firm gains competitive advantage. The development of a strategic focus for the MNO is essential to guide the exploitation of knowledge (Davenport & Prusak, 1997; Grant, 1996a; von Krogh et al., 2000). This strategic focus is on new knowledge creation found by moving knowledge across MNO boundaries. Business goals, competencies, measured outcomes and leaders that carry the agenda forward provide this strategic focus (von Krogh et al., 2000; Quintas et al., 1997). All of the systems, networks and project teams focus on knowledge creation for the MNO rather than on knowledge management. This means first capturing the hearts and minds of each firm and supporting their vision of group strength.

### **8.7.2 Leadership**

The responsibility for the knowledge management process begins with top management being committed to leading and able to supply the resources to make things work (von Krogh et al., 2000). Top management has the responsibility to provide the strategic intent, establish a knowledge transfer structure and encourage the sharing of knowledge across organisational boundaries. The research showed the firms that were led from the top were more involved in inter-firm knowledge transfer. These leaders reinforce the norms that supported inter-firm knowledge transfer. Importantly, if a firm wishes to turn knowledge into action the leaders must drive out fear and support experimentation without the fear of failure (Pfeffer & Sutton, 2000). Action should be encouraged so

that experimentation can trigger even better ways of doing things; a fear of failure tends to promote mediocrity (Pfeffer & Sutton, 2000). Finally, there is the need to create awareness amongst staff of the benefits, the knowledge management routines available, to lead by example and to ensure that knowledge is made available where it is most critical (Quintas et al., 1997).

### **8.7.3 Process**

As previously mention in section 2.7.1, knowledge transfer involves the application of knowledge, as it is through action that the true understanding of the knowledge is found. This focus on action is driven by the strategic focus and strategic outcomes that encourage knowledge transfer and cooperation. One system of knowledge transfer will not accommodate all types of 'know how' knowledge. Therefore, there is the need to design communication systems that fit the nature of the knowledge to be transferred. Importantly the knowledge management process must allow for sufficient social interaction for the 'know how' knowledge to be transferred. The research showed that the less tangible the knowledge more the experimental the processes may need to be. This means that there is more to learn and a greater requirement to share knowledge during the learning process. Also, the use of key individuals to encouraged collective contributions from the staff and put the knowledge transfer routines in place to effectively transfer knowledge. Consideration given to the skills needed, matched against those available with a realisation there may come a point where the firm does not have the expertise and will need to source these from outside the organisation.

Equally important is the need to establish rules so that time is not wasted but is sufficient to allow for affirmation and negotiation during the knowledge transfer process. The organisation should examine their problem solving and decision-making processes (Garvin, 1993). As suggested by Nonaka and Takeuchi (1995) as new information is mixed with the old, new ideas must be allowed to emerge and the time taken for reflection.

### **8.7.4 Focus on People**

Information becomes knowledge through interaction with people (Davenport & Prusak, 1998). Therefore a MNO must realise the importance of the individual and the variety

of individual experience. This research takes the social perspective that social interaction is an integral part of knowledge transfer (Nahapiet & Ghoshal, 1998; McAdams & McCreedy, 1999). Therefore, a MNO needs to concentrate on the formation of links between individuals to assist the development of a relationship structure that allows active learning links based on mutual trust. The research also identified the need for encouragement, particularly in the early stage of inter-firm knowledge transfer, supporting Bartlett and Ghoshal's (1991) practice of placing the initial focus of MNO knowledge transfer on the individual.

### **8.7.5 Measurement**

Finally, time must be allowed for reflection on action to weigh up against experience and rationality. Projects should be evaluated before (understand the benefits), during and after to capture ideas, outcomes (analysis of success and failure) and shared lessons should be learnt. The organisation should look at both the process and the outcomes. For example, with the 'core value project' an examination of the implementation phase across the organisation could ask questions about how effectively they transferred and captured the tacit elements of this knowledge (Pfeffer & Sutton, 2000).

## **8.8 SUGGESTIONS FOR FUTURE RESEARCH**

One of the limitations of this research is the complexity of the topic and the need to narrow it down for the purpose of this research. The ideas for future research presented here arise from areas of interest that were not addressed in this research and involve exploring the topic's complexities.

First, as things change overtime, research has shown that knowledge transfer is facilitated by time lapse (Bresman, Birkenshaw & Nobel, 1999). Therefore, it would be of interest to research the differences in the project team members' as their ideas are altered through constant interaction with others across the MNO. Counter to this the recipients of the knowledge from the project teams could have a narrower focus because of their requirement to be more critical, analytical or defending their current practices. Hence it would be valuable to explore the relationship between the team's broad focus and the recipient's narrow focus on knowledge transfer across the MNO and how this develops overtime.

Second, the effect of the nature of knowledge is of primary importance to the knowledge transfer process and it appeared that the knowledge that can be transferred with visible outcomes had a greater impact on the development of the knowledge transfer process across the MNO. It would be valuable to investigate if 'know how' knowledge that can be transferred with explicit examples has greater impact than knowledge that is difficult to demonstrate. The research suggests that while you can identify the tangible elements of visible outcomes you still need to find ways to relate to the intangible elements. For example, in this research the three firms that appeared to transfer the core value knowledge successfully used measures that were indirectly related to this knowledge to monitor the project's success. It would be of interest to understand the impact the monitoring had on this knowledge transfer process.

Third, this research showed that as you increase the motivation to transfer knowledge and/or the richness of communication channels the amount of encouragement needed can be reduced. This relationship requires further investigation. In the participating MNO it was evident that knowledge transfer within the individual firms and at the project team level was encouraged, not through financial rewards but through the value placed on involvement. It would be of interest to investigate the relationship between the various types of encouragement and inter-firm knowledge transfer.

Finally, it would be valuable to conduct future research in other MNOs to observe any differences compared with the results of this research. Analysis of data from another context would provide information on the generalisability of the findings from this research. Also such investigations would allow further evaluation of the measures and may identify areas for improvement.

## Chapter 9.0 CONCLUSION

Overall, the findings of this research answer the question:

**How does motivation to transfer knowledge, richness of communication channels, absorptive capacity and organisational context influence inter-firm knowledge transfer in MNOs?**

The quantitative research confirms past empirical research that found a positive relationship between knowledge transfer and the following: motivations to transfer knowledge, richness of communication channels, absorptive capacity and organisation context. In particular, it highlights the strength of the relationship between knowledge transfer and the motivation to transfer knowledge. The research shows that a shared purpose and a positive view to knowledge transfer is needed, however, this may not always be supported by the proactive behaviours needed to transfer knowledge across organisational boundaries. There was evidence of power play, knowledge hoarding and feelings that often other firms had little to offer. Further, the research presented evidence that over time knowledge transfer activity develops from relationships that may not always have a positive effect on knowledge transfer across the MNO. Finally, while the organisational context was seen as facilitating knowledge transfer it was also seen to require greater structure and improvement in knowledge transfer routines.

The qualitative research confirms the above findings. The evidence highlights that some firms had a greater ability to transfer knowledge across their MNO. These firms understood the need to move knowledge across the group and to lead from the top. They also focused on ensuring individuals understood what was required and had more structure to their knowledge transfer routines. However, the research showed in some firm's the espoused theory of enthusiasm for MNO knowledge transfer was not always perpetuated by congruent behaviour.

The research also demonstrated that the interrelationships between the main constructs meant they couldn't be treated in isolation. The multivariate analysis showed that the level of motivation to transfer knowledge, richness of communication channels and the level of encouragement could predict knowledge transfer activity. Importantly it

highlighted the importance that needs to be placed on fostering the motivation to transfer knowledge. Also, while the quantitative research showed no relationship between motivation to share and absorptive capacity the qualitative research demonstrated that these two constructs do not work in isolation. This research demonstrated that the firms that were more motivated and proactive in their approach produced evidence of increased absorptive capacity and knowledge transfer.

The research confirmed the need to place greater attention on establishing knowledge transfer routines that support the concept of creating multinational organisational knowledge. The research supported Pfeffer and Sutton (2000) who found, often managers fail to turn knowledge into action, even when they know what should be done. The research suggested some difficulties with decision-making. Garvin (1993) recommended the key to knowledge integration is found is good decision making processes. It appeared that the firms were not focused enough on the goal of creating MNO knowledge. They were focused on achieving a known objective but failed to look beyond this to re-evaluating objectives and reflecting on learning experiences. Learning and reflection may have helped them to identify the benefits from knowledge sharing not just for their firm but also for the MNO (Argyris & Schon, 1978).

The research supports Bartlett and Ghoshal's (1991) suggestion that the first step in inter-firm knowledge transfer is to establish the mental attitude and behaviours that support knowledge transfer. The next step is to establish the structures and systems to manage the movement of knowledge so that this movement gathers the momentum necessary for the knowledge transfer activity to be maintained. The research showed that for knowledge transfer to be effective there is a need for alignment between strategic intent (espoused theories), the organisational context, decision-making processes and action. This indicates that while the constructs motivation to transfer knowledge, richness of communication channels absorptive capacity and organisational context have positive relationships with knowledge transfer, for knowledge transfer to move beyond knowledge acquisition these constructs must be supported by organisational routines that insight action. It is through action that the benefit of knowledge is truly understood and can then be integrated into the MNO's routines.

## REFERENCES

Adler P.S. & S-W. Kwon (2000). Social Capital: The Good, the Bad, and the Ugly, Knowledge and Social Capital, Lesser Eric L.(ed.), Butterworth Heinemann, Boston.

Argyris C. & D.A. Schon (1974). Theories of Action in Practice – Increasing Professional Effectiveness, Jossey – Bass, San Francisco.

Argyris C. & D.A. Schon (1978). Organisational Learning: A Theory Action Perspective, Addison-Wesley, Reading MA.

Almeida P., Song J., & R. Grant (2002). Are Firms Superior to Alliances and Markets? An Empirical Test of Cross-border Knowledge Building, Organisational Science, 13 (2): 147-161.

Barney J. (1986). Organisational Culture: Can It Be The Source Of Sustained Competitive Advantage? Academy of Management Review, 11(3): 656-665.

Barney J. (1991). Firms Resources And Sustained Competitive Advantage, Journal of Management, 17: 99-120.

Bartlett C. & S. Ghoshal (1991) Managing Across Borders, The Transnational Solution, Harvard Business School Press, Boston.Massachusetts.

Beckham T. (1997) Knowledge Management: A Technical Review. GWU Working Paper, Washington.

Beijerse R.P. (1999) Questions In Knowledge Management. The Knowledge Management Handbook, Liebowitz J. (ed.), CRC Press, New York.

Bhagat R.S., Kedia B.L., Harveston P.D. & H.C Triandis (2002). Cultural Variations in the Cross-Border Transfer of Organisational Knowledge: An Integrated Framework, Academy of Management Review, 27 (2): 204 –221.

Birkinshaw J. (2001). Making Sense Of Knowledge Management, Ivey Business Journal, London, 65 (4): 32-36.

Blumentritt R. & R. Johnston (1999) Towards a strategy for knowledge management, Technology Analysis and Strategic Management, Abington, September.11 (3): 287-300.

Boisot M. (1998). Knowledge Assets: Securing competitive advantage in the information economy, Oxford University Press, New York.

Bontis N. (1999). Managing an Organisational Learning System by Aligning Stocks and Flows of Knowledge: An Empirical Examination of Intellectual capital, Knowledge Management, and Business Performance, Faculty of Graduate Studies, The University of Western Ontario: March.

Bontis N., Chua Chong Keow W. & S. Richardson (2000). Intellectual Capital And Business Performance In Malaysian Industries, Journal of Intellectual Capital, 1 (1): 1496-1930.

Bresman H., Birkinshaw J. & R. Noble (1999) Knowledge Transfer In International Acquisitions, Journal of International Business Studies, London.30 (3): 439-462.

Bryman A & D Cramer (1997) Qualitative Data Analysis with SPSS, Routledge, London.

Bryman A. (2000). Research Methods and Organisation Studies, Routledge. London.

Bukh P.N., Larson H. & J. Mouritsen (1999). OECD – Workshop on Intellectual Capital, International Symposium, Measuring and Reporting Intellectual Capital: Experience, Issues and Prospects. Amsterdam, Technical Meeting 9-10 June (1999). Developing intellectual capital statements: Lessons from 23 Danish firms.

Burt R. (1992). A Structural Theory of Interlocking Corporate Directorates, Social Networks, 2: 415-35.

Carlisle Y. (2002). Strategic Thinking and Knowledge Management. In: Chapter 6, Stephen Little, Paul Quintas, Time Ray (eds). Managing Knowledge An Essential Reader, Sage, London.

Cohen W. & D. Levinthal (1990). Absorptive Capacity: A New Perspective On Learning And Innovation. Administrative Science Quarterly, 35: 128-152.

Coleman J.S (1998). Social Capital in the Creation of Human Capital, American Journal of Sociology, 94: 95-120.

Crossan M., Lane H.W. & R.E. White (1999). An Organisational Learning Framework: From Intuition To Institution, Academy of Management Review, 24, (3): 522-537.

Daft R.L. & R.H. Lengel (1984). Information Richness: A New Approach to Managerial Behavior and Organizational Design. In B. Staw and L.L. Cummings (eds.), Research in Organizational Behavior, 6, Greenwich: CT.JAI.

Davenport T.H. & L. Prusak (1998). Working Knowledge: How Organisations Manage What They Know. Harvard Business Press, Boston, Mass.

Davidson C. & P. Voss (2002). Knowledge Management, An Introduction To Creating Competitive Advantage From Intellectual Capital, Auckland, New Zealand: Tandem Press.

Deci E. L. (1975). Intrinsic Motivation. New York: Plenum Press

De Long D. & L. Fahey (2000). Diagnosing Cultural Barriers to Knowledge Management, Academy of Management Executive, 14 (4): 113-127.

Demarest M. (1997). Understanding Knowledge Management, Long Range Planning, 30 (3): 374-384.

Dyer J. H. & K. Nobeoka (2000). Creating and Managing Performance Knowledge Sharing: The Toyota Case, Strategic Management Journal, 21: 346-366

Dyer J. H. & H. Singh (1998). The Relational View: Cooperative Strategy and Sources of Inter-organizational Competitive Advantage, Academy of Management Review, 23: 660-679.

Edvinsson L. (1997). Developing Intellectual Capital at Skandia, Long Range Planning, 30 (3): 366 - 373.

Emig J. (1983). The Web of Meaning, Upper Montclair, NJ: Boynton/Cook.

Fahey L. & L. Prusak (1998). The Eleven Deadliest Sins of Knowledge Management, California Management Review, Spring. 40 (3): 265-275

Francis G. (2001). Introduction to SPSS for Windows, Versions 9.0 and 10.0, Prentice Hall, Australia.

Garvin D.A. (1993). Building a Learning Organisation, Harvard Business Review, July/August: 78-91

Ghoshal S. & C. Bartlett (1990). The Multinational Corporation as an Inter-Organisational Network, Academy of Management Review: 15: 603-625.

Grant R.M. (1991). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation, California Management Review, and 33(3): 114-135.

Grant R. M. (1996). Prospering in Dynamically Competitive Environments: Organisational capability as knowledge integration, Organisation Science, 7 (4): 175-387.

Graumann C. (1990). Perspectives Structure And Dynamics In Dialogues, In I. Markova and K. Foppa (eds.), The Dynamics of Dialogues, Harvester Wheat Sheaf. New York.

Green S.B., Salkind N.J & T.M Akey (2000) Using SPSS for Windows Analysing and Understanding Data. 2<sup>nd</sup> ed, Prentice Hall, New Jersey.

Griffith D. A., Zeybek A.Y. & M. O'Brien (2000). Knowledge Transfer as a Means for Relationship Development: A Kazakhstan – Foreign International Joint Venture Illustration, Journal of International Marketing, 9 (2): 1-18.

Grotenhuis F.D.J. & M.P. Weggeman (2002). Knowledge Management in International Mergers, Knowledge and Process Management, 9(2): 83-89.

Gutpa A.K. & V. Govindarajan (2000a). Knowledge Flows Within Multinational Corporations, Strategic Management Journal, 21: 473-496.

Gutpa A.K. & V. Govindarajan (2000b). Knowledge Management's Social Dimensions: Lessons from Nucor Steel, Sloan Management Review, Fall: 71-80.

Hackman J. R. & G. R. Oldman (1975). Development Of The Job Diagnostic Survey. Journal of Applied Psychology, 60 (2): 157 –170.

Hair J., Anderson R., Tatham R. & W. Black (1998) Multivariate Data Analysis, 5<sup>th</sup> (ed), Prentice Hall.

Huber G. (1991). Organisational Learning: The contributing processes and the literatures'. Organisation Science, 2 (1): 88-115.

Hussey J. & R. Hussey (1997). Business Research, A practical guide for undergraduates and postgraduate students, London: Mc Millian Press.

Jean Lee S. K. (1992). Quantitative Versus Qualitative Research Methods – Two Approaches to Organisation Studies, Asia Pacific Journal of Management, April: 88-94.

Jarvis P. (1999). The Practitioner – Research Development Theory from Practice. Jossey-Bass. San Francisco.

Kakabadse N.K., Kouzmin A. & A. Kakabadse (2001). From Tacit Knowledge-to-Knowledge Management: Leveraging Invisible Assets. Knowledge and Process Management, 8 (3): 137-154.

Kim D. (1993). The Link between Individual and Organisational Learning, Sloan Management Review, Fall: 35(1): 37-50.

Kim D. (1997). From Imitation To Innovation The Dynamics Of Korean Technological Learning. Cambridge, MA Harvard Business Press.

Kenis P. & D. Knoke (2002). How Organisations Field Networks Shape Interorganisational Tie-Information Rates, Academy of Management Review, 27(2): 275-293

Kogut B. & U. Zander (1992). Knowledge Of The Firm, Combination, Capabilities And The Replication Of Technology, Organisational Science, 3(3): 383-397.

Kogut B. & U. Zander (1993). 'Knowledge Of The Firm And The Evolutionary Theory Of The Multinational Corporation', Journal of International Business Studies, 24 (4): 625 – 646.

Kogut B. & U. Zander (1996). What Firms Do? Coordination, Identity, And Learning, 'Organisational Science, 7 (5): 502-518.

Lahit R.K. & M.M. Beyerlein (2000). Knowledge Transfer and Management Consulting: a Look at The Firm, Business Horizons, Jan/Feb: 65-73.

Lam A. (1997). Embedded Firms Embedded Knowledge: Problems of Collaboration and Knowledge Transfer in Global Cooperative Ventures, Organisational Studies, 18 (6): 973-996

Lane P.J & M. Lubatkin(1998). Relative Absorptive Capacity and Inter-organisational Learning. Strategic Management Journal, 19: 461 – 477.

Lenox M & A King (2004) Prospects for Developing Absorptive Capacity Through Internal Information Provision, Strategic Management Journal, 25: 331-345.

Levitt B. & J.G. March (1988). Organisational learning, Annual Review of Sociology, 14: 319-340.

Lundvall B.A. (1996). The Social Dimensions of the Learning Economy', Department of Business Studies, Aalborg University, Denmark.

March J.G. & J. P. Olsen (1975). The Uncertainty of the Past: Organisational Learning under Ambiguity, European Journal of Political Research, 3: 147-171

Maula M. (2000). Three Parallel Knowledge Processes, Knowledge and Process Management, 7 (1): 55-59.

Mc Adam R. & S. Mc Creedy (1999). The Process of Knowledge Management within Organisations: a Critical Assessment of Theory and Practice, Knowledge and Process Management, 6 (2): 101-113.

McGarth J.E. & A.B. Hollingshead (1993). Putting the 'Group' back in Group Support Systems: Some Theoretical Issues about Dynamic Processes in Groups with

Technological Enhancements, In L.M. Jessup and J.S. Valacich (eds.), Group Support Systems: New Perspectives, MacMillan, New York.

McGaughey S.L (2002). Strategic Interventions in Intellectual Asset Flows, Academy of Management Review, 27 (2): 258-274.

McGill M. & J. Slocum (1993). Unlearning the Organisation, Organisational Dynamics, New York, 22 (2): 67-79.

Malhorta Y. (1998).Deciphering The Knowledge Management Hype. Journal of Quality and Participation. 21(4): 58 – 60.

Nahapiet J. & S. Ghoshal (1998). Social Capital, Intellectual Capital, And The Organizational Advantage, The Academy of Management Review; Mississippi State.23 (2): 242-266.

Nelson R.R. & S.G. Winter (1982). An Evolutionary Theory of Economic Change, Belknap Press, Cambridge.

Nevis E., Di Bella A. & J. Gould (1995). Understanding Organisations as Learning Systems, Sloan Management Review, Winter.36 (2): 73-85.

Nohria N. & S. Ghoshal (1997) The Differentiated Network. Jossey-Bass, San Francisco, CA.

Nonaka, I. (1994). A Dynamic Theory Of Organisational Knowledge, Organisation Science, 5: 14-37.

Nonaka I. & N. Konno (1998). The concept of “ba”: building a foundation for knowledge creation, California Management Review; Berkley.40 (3): 40-54.

Nonaka I. & H. Takeuchi (1995). The Knowledge Creating Company, Oxford Press, Oxford.

Nonaka I., Toyama R. & N. Konno (2000). SECI, Ba and Leadership: A unified Model of Dynamic Knowledge Creation, Long Range Planning, 33(1) 5-34.

Norusis M.J. (1999). SPSS 9.0 Guide to Data Analysis. Prentice Hall.

Pallant, J. (2001). SPSS Survival Manual, Canberra: Allen and Unwin.

Pfeffer J. & R. Sutton (1999). Knowing 'What' to Do is Not Enough: Turning Knowledge Into Action, Reprinted by permission of Harvard Business School. The Knowing-Doing Gap: How Smart Companies Turn Knowledge into Action. 1-29.

Polanyi M. (1967). The Tacit Dimension. Anchor, Garden City, NY.

Popper M. & R. Lipshitz (2000). Organisational learning: Mechanisms, culture, and feasibility, Management Learning, Thousand Oaks; June 31 (2): 181-196.

Porter M.E. (1980). Competitive Strategy, Free Press, New York

Prahalad C.K. & G. Hamel (1990). The Core Competence of the Corporation, Harvard Business Review, May-June: 79-91.

Quintas P., P. Lefrere & G. Jones (1997). Knowledge Management: a Strategic Agenda, Long Range Planning, 30 (3): 385 – 391.

Quintas P. (2002). Managing Knowledge in the New Century, The Open University Business School, Managing Knowledge (ed), Little S., Quintas P., and T. Ray, Sage Publications.

Ray T. (2002). Managing the Japanese Organisational Knowledge Creation: the Difference. In Little S, Quintas P and T Ray (ed) Managing Knowledge. London: The Open University, London: Sage.

Roberts J. (2000). From Know-how to Show-how? Questioning the Role of Information and Communication Technologies in Knowledge Transfer, Technology Analysis & Strategic Management, and 12(4): 429-443.

Romer P. (1995) Beyond The Knowledge Worker, World Link. In Zack M.H. (1999) (ed.) Knowledge and Strategy Dynamics Capabilities and Strategic Management, Butterworth – Heinemann, USA.

Rumelt R.P. (1984). Towards A Strategic Theory Of The Firm, R.B. Lamb (ed.), Competitive Strategic Management, Prentice-Hall, Englewood Cliffs:556-570.

Schein E. (1993). On Dialogue, Culture And Organisational Learning, Organisational Dynamics, New York, Autumn. 22(2): 40-51.

Schein E. (1996). Three Culture of Management: The Key to Organisational Learning, Sloan Management Review, Fall: 38(1): 9 –20.

Senge P. & F. Kofman (1993). Communities Of Commitment: The Heart Of Learning Organisations, Organisational Dynamics, Autumn, New York. 22(2): 5- 26.

Senge P. (1990). The Fifth Discipline: The Art and Practice of the Learning Organisation. New York: Doubleday Currency.

Seufert A., von Krogh G. & A. Bach (1999). Towards Knowledge Networking, Journal of Knowledge Management, 3 (3):180-190.

Shapiro C. (1989). The Theory Of Business Strategy, RAND Journal of Economics, 20 (1): 125-137.

Sheskin D.J. (2000). Handbook Of Parametric And Nonparametric Statistical Procedures, 2<sup>nd</sup> ed, CRC Press, New York.

Silverman D. (2000) Doing Qualitative Research: A Practical Handbook. Sage Publications, London.

Simonin B. (1999). Ambiguity and the Process of Knowledge Transfer in Strategic Alliances, Strategic Management Journal, 20: 595-623.

Steers R. M. & L. W Porter (1991) Motivation and work behaviour (5<sup>th</sup> ed.). McGraw-Hill, New York.

Stewart T. (1997). Intellectual Capital, Doubleday, New York, NY.

Susman G.I. & R.D. Evered (1978). An Assessment of the Scientific Merits of Action Research, Administrative Science Quarterly, 23. Dec: 124-156

Sveiby K.E. (1994). Towards a Knowledge Perspective on Organisations, Unpublished PhD Dissertation. University of Stockholm.

Sveiby K.E. (1997). The New Organisation Wealth, London: McGraw Hill.

Szulanski G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm, Strategic Management Journal, Winter Special Issue, 17: 27-43.

Teece D.J. (2000). Managing Intellectual Capital, Organisational, Strategic and Policy Dimensions, Oxford: University Press.

Teece D.J., Pisano G & A. Shuen (1994). Dynamic Capabilities and Strategic Management, Working Paper, Center for Research in Management, University of California at Berkeley.

Tsai, W. (2001). Knowledge Transfer in Intra-organisational Networks: Effects of Network Position and Absorptive Capacity on Business Unit Innovation and Performance, Academy of Management Journal, 44 (5): 996-1004.

Van der Spek R. & A Spijkervert (1997). *Knowledge Management: Dealing Intelligently With Knowledge*. In Knowledge Management and Its Integrative Elements, Liebowitz J, & Wilcox L (eds), CRC Press, London.

von Krogh G., Ichijo K. & I. Nonaka (2000). Enabling Knowledge Management, Oxford University Press.

Wernerfelt B. (1984). A Resource-Based View Of The Firm, Strategic Management Journal, 5 (2): 171 –180.

Zack M.H. (1999). Knowledge and Strategy, Dynamics Capabilities and Strategic Management Butterworth –Heinemann, USA.

Zahra S. A. & G. George (2002). Absorptive Capacity: A Review Reconceptualization, and Extension. Academy of Management Review, 27 (2): 185-302.

Zander U. & B. Kogut (1995). Knowledge And The Speed Of Transfer And The Limitations Of Organisational Capabilities. Organization Science, 6. (1): 76-92.

Zikmund, W.G. (1994). Business Research Methods, 4th edition, Orlando: The Dryden Press.

Appendix 1  
Memorandum  
Auckland University of Technology Ethics Approval

## MEMORANDUM



### Student Services Group – Academic Services

---

To: Martie-Louise Verreyne  
From: **Madeline Banda**  
Date: 30 June 2003  
Subject: 03/56 Exploratory research of knowledge transfer in a multinational organisation

Dear Martie-Louise

Thank you for providing amendment and clarification of your ethics application as requested by AUTEK.

Your application is approved for a period of two years until 30 June 2005.

You are required to submit the following to AUTEK:

- A brief annual progress report indicating compliance with the ethical approval given.
- A brief statement on the status of the project at the end of the period of approval or on completion of the project, whichever comes sooner.
- A request for renewal of approval if the project has not been completed by the end of the period of approval.

Please note that the Committee grants ethical approval only. If management approval from an institution/organisation is required, it is your responsibility to obtain this.

The Committee wishes you well with your research.

Please include the application number and study title in all correspondence and telephone queries.

Yours sincerely

Madeline Banda  
**Executive Secretary**  
**AUTEK**  
CC:  
9400284 Christine Durrant

---

From the desk of ...  
**Madeline Banda**  
Academic Services  
Student Services Group

Private Bag 92006, Auckland 1020  
New Zealand  
E-mail: madeline.banda@aut.ac.nz

Tel: 64 9 917 9999  
ext 8044  
Fax: 64 9 917 9812

## Appendix 2

1. Participant Information for Questionnaire
2. Participant Information for Interview



## **PARTICIPANT INFORMATION FOR QUESTIONNAIRE**

The purpose of this questionnaire is to collect information on the transfer of knowledge within XXXX for a Master of Business Thesis. This Thesis aims to improve the understanding of the transfer of knowledge and focuses on the transfer of organisational ‘best practice’ across XXXX.

You have been invited to answer a questionnaire that will take approximately 20mins to complete. The questionnaire seeks information on the knowledge routines used by your organisation. The questionnaire is confidential and the identity of the participant and company will remain anonymous. A summary of the results of this analysis that is not identified against you or your company will be made available to you. In addition you can withdraw, without reason, from the research at anytime prior to the analysis of the data.

Should you have any questions about the study please do not hesitate to contact me [REDACTED]. Should you have any concerns regarding the nature of this project the Project Supervisor at the Auckland University of Technology, Martie-Louise Verreynne, [martie-louise.verreynne@aut.ac.nz](mailto:martie-louise.verreynne@aut.ac.nz) , 09 917 9999 ext 5026 is available for you to discuss these concerns. Any concerns regarding the conduct of the research should be notified to the Executive Secretary, Auckland University of Technology Ethics Committee, Madeline Banda, [madeline.banda@aut.ac.nz](mailto:madeline.banda@aut.ac.nz) , 09 917 9999 ext 8044.

I thank you ahead of time for participating.

Kind Regards

Christine Durrant

## **PARTICIPANT INFORMATION FOR INTERVIEW**

The purpose of this interview is to collect information on the transfer of knowledge within XXXX for a Master of Business Thesis. This Thesis aims to improve the understanding of the transfer of knowledge and focuses on the transfer of organisational ‘best practice’ across XXXX. The interview is designed to explore the knowledge routines used by your organisation.

You have been invited to participate in a 15 – 25min telephone interview. Your organisation was selected as one of six organisations as being actively involved in knowledge transfer initiatives. The Chief Executive in each of these six organisations has selected two people from their organisation who have regular contact with other employees from other organisations in XXXX.

The interview is confidential and the identity of the participant and company will remain anonymous. The interview will be audio taped and transcribed so that data can be analysed for themes, patterns and relationships. A summary of the results of this analysis that is not identified against you or your company will be made available to XXXX. In addition you can withdraw, without reason, from the research at anytime prior to the analysis of the data.

Should you have any questions about the study please do not hesitate to contact me [REDACTED]. Should you have any concerns regarding the nature of this project the Project Supervisor at the Auckland University of Technology, Martie-Louise Verreynne, [martie-louise.verreynne@aut.ac.nz](mailto:martie-louise.verreynne@aut.ac.nz) , 09 917 9999 ext 5026 is available for you to discuss these concerns. Any concerns regarding the conduct of the research should be notified to the Executive Secretary, Auckland University of Technology Ethics Committee, Madeline Banda, [madeline.banda@aut.ac.nz](mailto:madeline.banda@aut.ac.nz) ,09 917 9999 ext 8044.

I thank you ahead of time for participating.

Kind Regards

Christine Durrant

Appendix 3  
Questionnaire



## AUT Research Project

### Instructions

All the questions must be answered. There are two types of responses:

1. *Free text* which is entered in the box below the question
2. *Selected* which is answered by selecting the response that most closely represents your answer.

1. What position do you currently hold in your organisation?

2. Who do you report to?

3. Within the company group, what is your organisation's size?

Small

Medium

Large

4. I find the communication channel that is the most *productive* for communicating in the group is.....

Face to face

e-mail

Phone

Phone Conferences

5. The communication channel that I use the most *frequently* is;

Face to face

e-mail

Phone

Phone Conferences

6. I communicate in some *formal* way with people from other organisations in the group

At least once a week

At least twice a month

At least once a month

At least six times a year

Hardly ever

7. I communicate *informally* with people from other organisations in the group.

At least once a week

At least twice a month

At least once a month

At least six times a year

Hardly ever

**8. The informal communication I have with people from other organisations is as valuable as our formal communication from other organisations in the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**9. Information about *who* is the best person to contact, on a particular issue in the group, is readily available.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**10. Information about *how things are done* at other organisations in the group is readily available.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**11. What would you suggest could be done to improve communication between organisations in the group ?**

**12. I share a large amount of information about how things are done in my organisation with other organisations in the group .**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**13. I have received a large amount of knowledge about how things are done from other organisations in the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**14. I believe knowledge from other organisations in the group has greatly influenced technology/process changes made in my organisation.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**15. When seeking information from other members of the group I always start by asking those who work in the larger organisations.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**16. I get frequent enquires from others in the group about how we do things in my organisation.**

Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
<input type="radio"/>					

**17. When seeking information from others in the group I would always call my national contacts first.**

Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
<input type="radio"/>					

**18. I find that the larger organisations in the group have more knowledge to offer than most of the smaller organisations**

Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
<input type="radio"/>					

**19. I quickly inform other organisations in the group of any new or improved process or system being developed in my organisation.**

During the development	As soon as they are developed	Not long after they are developed	Sometime after development	When asked	Never
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**20. Other organisations in the group quickly inform me of any new or improved processes and systems being developed in their organisation.**

During the development	As soon as they are developed	Not long after they are developed	Sometime after development	When they are asked	Never
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**21. How do you see the relationship your organisation has with other organisations in the group?**



**22. I find there are many similarities between organisations across the group**

Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
<input type="radio"/>					

**23. I have committed a lot of time to activities that involve other organisations in the group.**

Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
<input type="radio"/>					

**24. We actively look for ways to improve the systems and processes in my organisation.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**25. I have many years' experience in the industry/profession that I work in.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**26. I have expert knowledge about the industry/profession that I work in.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**27. I find I relate better to employees' from other organisations in the group who are stationed in the same country as my organisation.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**28. I find organisations within the group of a similar size are more likely to understand my issues.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**29. Briefly describe your organisations culture**

**30. I have a strong feeling of belonging to the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**31. I believe other organisations in the group have a lot to offer my organisation.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**32. I view my organisations knowledge as a powerful currency.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**33. I believe that power struggles do not inhibit the exchange of knowledge between organisations in the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**34. I never feel I shouldn't share my organisation's knowledge with others in the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**35. I believe once I offer knowledge to another group in the organisation, they are free to offer this knowledge to another organisation in the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**36. I believe my organisation gains benefit from sharing knowledge with other organisations in the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**37. I believe that as we share knowledge the group gains identity/business knowledge that will give the group a competitive advantage.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**38. My organisation actively encourages knowledge sharing with other organisations in the group.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

**39. I believe people in my organisation have an understanding of the group's business philosophy.**

Strongly Disagree   Disagree   Somewhat Disagree   Somewhat Agree   Agree   Strongly Agree

*Thank you, for taking the time to answer this questionnaire*

[Send answers](#)

[Clear Form](#)

Appendix 4  
Interview Consent Form



## Consent to Participation in Research

This form is to be completed in conjunction with, and after reference to, the AUTEK Guidelines Version 3 (Revised September 2000).

ONLY type where indicated by instructions eg <Click here and type>

Title of Project: Exploratory research of knowledge transfer in a network of companies within one organisation

Project Supervisor: Martie-Louise Verreyne

Researcher: Christine Durrant

- 
- I have read and understood the information provided about this research project.
  - I have had an opportunity to ask questions and to have them answered.
  - I understand that the interview will be audio-taped and transcribed.
  - I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way. If I withdraw, I understand that all relevant tapes and transcripts, or parts thereof, will be destroyed
  - I agree to take part in this research.

Participant signature: .....

Participant name: <click here and type the subject's full name>

Date: <Click here and enter date>

AUT Project Supervisor: Martie-Louise Verreyne 09 917 9999 ext 5026  
AUT Ethics Committee Executive Secretary: Madeline Banda 09 917 9999 ext 8044.  
**Approved by the Auckland University of Technology Ethics Committee**

Appendix 5  
Interview Checklist

## INTERVIEW CHECKLIST

	QUESTION	Check
1.	To indicate the level of experience your firm had with this type of project <u>before</u> they were asked to participate in the projects.  On a scale of 1 to 5 score this level of experience. - Please explain why you have suggested this score? -What effect did your firm's level of experience have on this project?	Score How What this meant
2.	In your firm what people were involved in this projects? - Describe how were they involved?	Who How Level of Commitment
3.	Did those driving the project offer any form of encouragement to others involved? - How was this done?	Yes/no How Why
4.	Did you or did anyone in your organisation contact other firms in the MNO about anything to with this project - Explain how you went about this? - What was discussed?	Yes/no How Why About what
5.	Were you or anyone else that you are aware of contacted by other firms to discuss this project. - How often did this happen? - What was discussed?	Yes/no How Why About what
6.	On a scale of 1 to 5 where would you score the amount of resource your firm gave to this project? - Discuss why you suggest this score	How Why What
7.	What do you feel were the main factors that had a positive effect on this project? - Why did they have a positive effect?	What factors How
8.	In you firm have you monitored this project's outcomes? If so discuss how?	Yes/no Why How
9.	What do you feel could have been done differently?	
10.	Is there any thing else you would like to add?	

## Appendix 6

Table: Qualitative Analysis by Firm

## Qualitative Analysis by Firm – A, Core Values – B, Other Projects

A. CORE VALUES	Firm A	Firm B	Firm C	Firm D	Firm E	Firm F
Experience	2,4 Not done before	3,4 Done before	3,5 Done before	4,5 Done before	2,2 Not done before	2,3 Not done before
Action	Std	Std Action	Std Action	Std Action	Std	Std
Resource	3,3	4,5	2,5	2,4	3,4	3,3
Congruence	High	High	High	High	High	High
Encouraged	Involved	Involved	Reward	Involved	Involved	Involved
Measured	No	Customer Survey	Staff and Customer survey	Customer Survey	No	No
Group ID	Yes	Yes	Yes	Yes	Yes	Yes
Structure	Team Senior	Team Broad	Team Broad Inform	Team Broad	Team Senior	Team
Culture	Accept As directed	Accept CEO lead	Accept CEO lead	Accept CEO lead	Accept As directed	Accept As directed
B OTHER PROJECT	Firm A	Firm B	Firm C	Firm D	Firm E	Firm F
Experience	5,2	3,2	2,3	5,3	5,3	3,3
Action	Action	Action	Action	Action	Action	Action
Resource	5,5	4,3	5,4	5,5	4,5	4,3
Congruence	Need input	Needs work	Need input	Needs work	Needs work	Needs work
Encouraged	Involve	Involved	Listen	Listen	Listen	Listen
Measured	Yes	Yes	Yes	Yes	Yes	Yes
Group ID	Yes	Yes	Yes	Yes	Yes	Yes
Structure	Team Senior	Team Broad	Team Broad Inform	Team Broad	Team Senior	Team Senior
Culture	Positive	Positive	Positive	Positive Evidence of fear of change	Positive Evidence of fear of change	Positive Evidence of fear of change