# Social Relations, Human Resource Management, and Knowledge Transfer in Work Organisations: Toward an Integrated Approach

Angelos Alexopoulos

BA, MSc.

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Dublin City University, Business School

Supervisor: Professor Kathy Monks

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*To my parents,*
*Nicólas and Mariánthi*

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## ABSTRACT

Hailed as the basis for competitive advantage of contemporary firms, knowledge transfer has recently emerged as a key research topic in the organisation and management field. Despite wide recognition of the importance of social relations for effective knowledge transfer, there is little understanding of the micro-sociological foundations of this process, and even less understanding of the ways in which human resource management practices can support social relations conducive to knowledge transfer and sharing. The present study developed an integrated conceptual model with the aim to improve understanding of the mechanisms for and the conditions under which social relations can be transformed into useful, actionable knowledge. To test this model, quantitative data were gathered through a questionnaire survey of 135 knowledge workers from three Irish-based organisations. Qualitative data were also collected through semi-structured interviews with the human resource managers and knowledge managers of these organisations. The findings demonstrated that, at the interpersonal level of analysis, the effective transfer of knowledge hinges upon the extent to which individuals share a common lexicon for communication and trust each other, both professionally and personally. In particular, personal trust was found to be key to the transfer of tacit knowledge, thereby underlining the importance of positive affect as a criterion for the formation of productive knowledge exchange relations. In regard to the role of human resource management, it was found that employees' perceptions of reciprocal task interdependence, job feedback, selective staffing, intensive socialisation, and relational-oriented training and development are related strongly to their perceptions of a social climate of teamwork and cooperation and, consequently, of knowledge sharing attitudes. Importantly, the effect of these practices was found to be mediated by employees' perceptions of line managers' support for knowledge sharing. The study concluded by suggesting the need for further integration of social relations into research on the role of human resource management practices in knowledge transfer and organisational learning.

# INTRODUCTION

An increasing number of developed countries have experienced in the past few decades a transformation in which knowledge has become a core element for the organisation and development of economic and social activities (OECD, 2001). The Irish economy has experienced the highest growth in the OECD over the 1990s and the first half of the 2000s (OECD, 2006). According to the Industrial Development Authority (IDA) of Ireland, much of this growth has been the result of positioning the country as a favourite destination for knowledge-driven activities and sectors (IDA, 2007). The IDA (2007: 12) asserts that Ireland's expanding knowledge-driven economy 'thrives on the importance of human connections...to help create new knowledge'. The country's transformation into an advanced knowledge-driven economy is now being conveyed to the international marketplace by the IDA through the marketing motto: 'Ireland, knowledge is in our nature'.

As knowledge begins to supplant land, labour and physical assets as the primary source of value creation in the marketplace, the ability to create new knowledge, transfer existing knowledge, and apply knowledge to new situations becomes the basis for sustained competitive advantage in contemporary firms (Kogut & Zander, 1992; Nonaka & Takeuchi, 1995; Grant, 1996; Argote & Ingram, 2000). The importance of knowledge as 'the most distinctive and inimitable resource available to firms' (Kang, Morris, & Snell, 2007: 236) has been reflected in the emergence of knowledge management (KM) as one of the most significant recent developments in organisation and management theory and business practice (Storey & Quintas, 2001; Easterby-Smith & Lyles, 2003a).

Much of the earlier KM research effort has fallen, though, into a so-called 'ICT [information and communication technologies] trap' (Huysman & de Wit, 2004): 'this technology-driven bias [that] leads to the conviction that the introduction of technological facilities will improve knowledge sharing amongst people' (ibid: 86). KM theorists and practitioners have gradually come to the realisation that ICT can only support KM, not replace it. The current mantra in KM research is that knowledge creation and transfer are 'fundamentally human and above all *social* processes' (Borgatti & Foster, 2003: 997, italics added). Pioneering research conducted by Thomas Allen and his colleagues on technology flows in R&D laboratories and engineering organisations in the US has long shown that scientists and engineers were less likely to seek information and advice from a database of file cabinet than their

collegial and wider social networks (Allen & Cohen, 1969; Allen, 1977). More recent research by Rob Cross and his colleagues drawing upon a diverse sample of Fortune 500 companies and government organisations in the US suggests that, even in today's ICT-driven work environment, 'the extent to which information that affects what we do largely comes from other people' (Cross, Parker, Prusak & Borgatti, 2004: 81). In this regard, several KM scholars have given a name – social capital – to the value of social relations at the knowledge-intensive workplace (Prusak & Cohen, 2004).

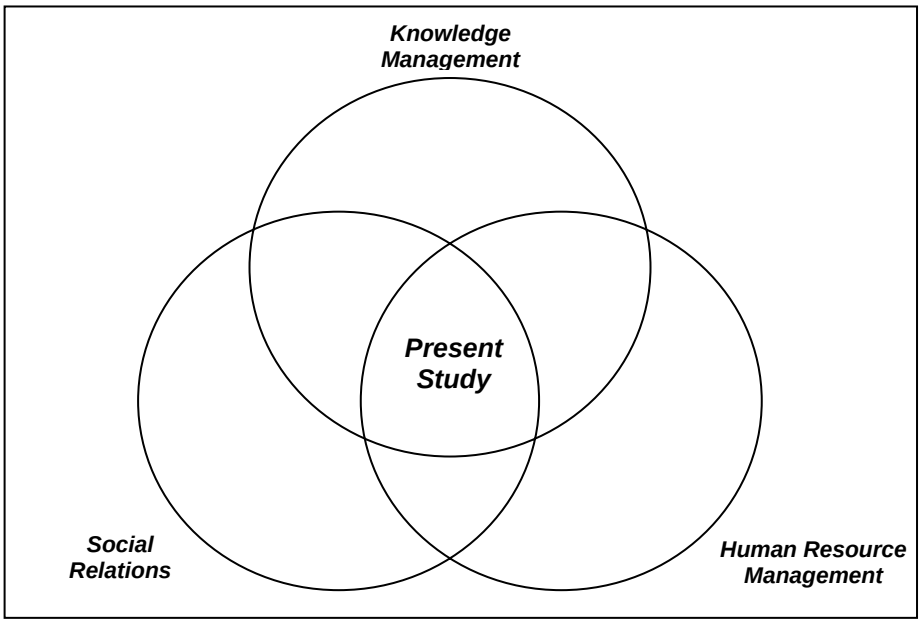
However, although it has long been suggested that 'an important form of social capital is the potential for information that inheres in social relations' (Coleman, 1990: 310), there remains little systematic evidence about key features of social relations within which knowledge transfer occurs (e.g., Cross & Sproull, 2004). In particular, there is a considerable gap in understanding the 'micro-sociological foundations' of the knowledge transfer process (Moran, 2005: 1148). This is because, to the extent there has been progress in studying knowledge and its transfer in organisations, this has been 'almost never at the level of human interactions that are the primary source of knowledge and knowledge transfer' (Argote & Ingram, 2000: 156).

A socio-relational approach to knowledge transfer brings to the forefront new challenges for the human resource management (HRM) field as well. This is not only because people-embodied knowledge is considered the foundation of a firm's knowledge transfer capability (Argote & Ingram. 2000), but more importantly because the knowledge of the firm is embedded in the social relations of its members and, therefore, it is dependent upon the organising of its human resources (Kogut & Zander, 1992). This suggests that HRM practices can be a fundamental tool for influencing a firm's social architecture and, subsequently, its knowledge transfer capability. A focus on the relationship between HRM, social relations and knowledge transfer 'opens a new field of study that has rarely been dealt with' (Jerez-Gómez, Cespedes-Lorente, & Valle-Cabrera, 2005: 724). Indeed, to date, very little research has examined theoretically and/or empirically whether and how HRM practices support social relations conducive to knowledge transfer and sharing (Kang *et al.*, 2007).

The overall contribution of this thesis, therefore, is twofold. First, it casts new light on key aspects of social relations pertinent to effective knowledge transfer within knowledge-driven units of Irish-based work organisations. Second, it advances understanding of the mechanisms by which HRM practices influence social relations that, in turn, impact on the effectiveness of intraorganisational knowledge transfer and

sharing. By so doing, it integrates three theoretical fields – KM, social relations and HRM – that have hitherto remained largely fragmented in the emerging knowledge literature on work organisations (Figure I.I). The remainder of this introductory chapter provides an overview of the research agenda. It then highlights the contributions of the study and concludes with outlining the structure of the thesis.

Figure I.I **Theoretical Positioning of the Present Study**

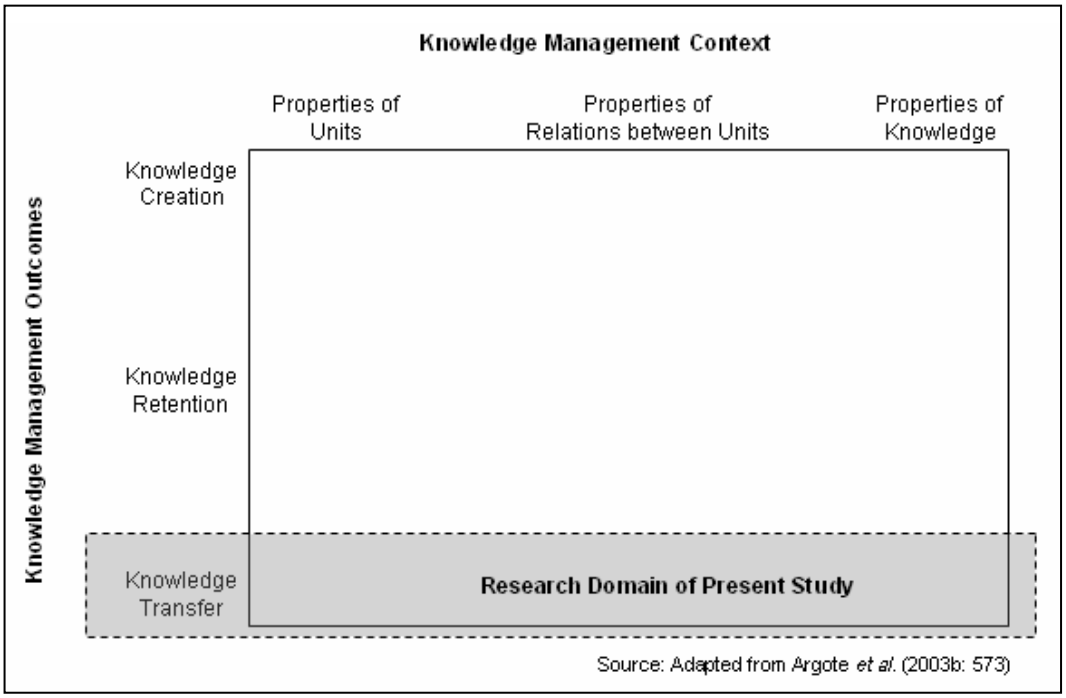



## I. THE RESEARCH AGENDA

During the last decade there has been a broad interest in the management of knowledge that has characterised many subfields in business administration including information management, strategic management, organisational behaviour and theory, and HRM, to name a few. This interest has recently been termed as a 'knowledge movement' (Foss, 2007). Each of the subfields of the knowledge movement addresses different aspects of KM grounded mainly in the traditionally separate social sciences disciplines of economics, sociology and psychology. For example, theoretical foundations of KM range from the psychological emphasis on individual cognition to the focus of economics on market exchange to the sociological interest in social structure (Argote, McEvily, & Reagans, 2003a). The increasing heterogeneity of the knowledge movement raises two important issues. The first concerns the extent to which dialogue and cross-fertilisation actually occur across these diverse discipline-based subfields of the knowledge movement. Related, the second issue points to the risk of ending up with a highly segregated knowledge movement where 'researchers fail to take advantage of ideas produced in other areas and simply "rediscover" what is known already' (Argote *et al.,* 2003b: 572). In other words, the KM field runs the risk of

fragmented learning due to lack of knowledge transfer across its subfields. In response to this, Argote *et al.* (2003b) integrate the various strands of KM research into a useful theoretical framework within which this thesis is located (see figure I.II).

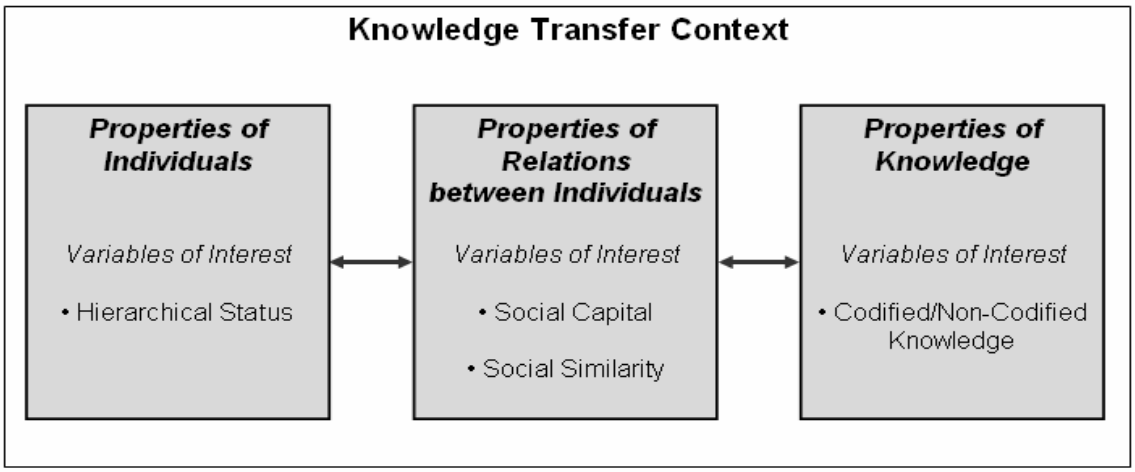
Figure I.II **Theoretical Framework for Organising Research on Knowledge Management**




The vertical axis of Figure I.II shows the three interrelated KM outcomes, while the three properties of the KM context by which these outcomes are influenced are shown in the horizontal axis. Knowledge creation refers to new knowledge that is generated in work organisations. Knowledge retention concerns the extent to which knowledge that is embedded in 'knowledge reservoirs' (e.g., people, tasks, tools) exhibits some persistence over time (Argote *et al.,* 2003b). Knowledge transfer is the process through which one unit is affected by the experience of another unit (Argote & Ingram, 2000: 151). The unit can be an individual or group within the organisation, a department or division of the organisation, an organisation itself, or a group of organisations. Explanations of effective KM outcomes focus on the properties of units, properties of the relations between units, and properties of knowledge itself. For example, properties of units can range from individual characteristics, such as demographics, to collective characteristics, such as intellectual property. There are also other characteristics, such as status or expertise that can be a property of an individual as well as of a group or organisation. Research on properties of the relations between units examines, through the theoretical lens of a social network paradigm, how units are connected to each other (Borgatti & Foster, 2003). Finally, KM research places emphasis on the impact of knowledge characteristics (e.g., codified/non-codified, private/public, internal/external)

on the extent to which knowledge is accumulated, where and how much of it is retained, and how easily it is transferred across the organisation. The shaded rectangular shown in Figure I.II indicates the knowledge transfer research domain within the wider KM theoretical framework. Figure I.III zooms in on this domain to specify the properties of the knowledge transfer context. Prior to outlining the properties of the knowledge transfer context, it is important to clarify the level of analysis at which knowledge transfer is examined in this thesis.

Figure I.III **Knowledge Transfer Context**




Knowledge transfer is examined at the interpersonal or dyadic level of analysis (Wasserman & Faust, 1994) as this has been identified in the knowledge literature as a key building block of organisational learning (Argote, 1999). Interpersonal knowledge transfer is thus understood as the process through which an individual, namely the knowledge receiver, is affected by the experience of another individual, namely the knowledge transmitter. Consistent with the behavioural tradition of organisational learning theory (Levitt & March, 1988), the focus in this study lies on purposeful or outcome-orientated knowledge. This is knowledge that has a positive impact on a knowledge receiver's work outcomes. Given that knowledge transfer is often asymmetric, emphasis is placed on its receiving end. Therefore, at the interpersonal level of analysis a knowledge receiver 'is the best, perhaps the only, judge of the usefulness of knowledge received from a particular source' (Levin & Cross, 2004: 1482).

### An Integrated Approach to Knowledge Transfer

As shown in Figure I.III, the thesis takes an integrative approach to the study of interpersonal knowledge transfer by focusing on key variables of all three properties of the KM context that have received limited attention in the literature. It thus responds

constructively to the call for more research on the fit between the three pillars of the context within which knowledge transfer occurs (Argote *et al.,* 2003b).

**Properties of Relations between Individuals**

In relation to the properties of relations between individuals, particular emphasis is placed on the role of social capital. Despite theoretical advancements made in this area (e.g., Nahapiet & Ghoshal, 1998; Adler & Kwon, 2002), paradoxically very little empirical research has so far examined the combined effect of distinct facets of social capital on knowledge transfer (Levin & Cross, 2004). A central aim of this study is to fill this research gap by examining the combined impact of the structural, relational, and cognitive dimensions of individual social capital on interpersonal knowledge transfer.

Social similarity or homophily is also a key research theme. While recent organisational research on social similarity has focused on its effects on individual and group performance (e.g., Ibarra, 1993; Reagans & Zuckerman, 2001), little is known about how it actually impacts on knowledge transfer outcomes (Argote *et al.,* 2003b). In particular, while research has shown that interacting with similar others facilitates the transmission of knowledge (e.g., Cross, Borgatti & Parker, 2001), the issue of how social similarity is actually combined with social capital towards affecting knowledge transfer has remained understudied.

**Properties of Individuals**

In relation to the properties of individuals, focus is placed on individuals' positioning in the formal organisational structure since hierarchies remain prominent forms of organising in contemporary work organisations (Kramer & Cook, 2004). Hierarchy also features as a prominent factor of social capital, for it influences the structure and content of social relations (Adler & Kwon, 2002). However, 'research on how formal organisation hierarchy shapes informal social relations…has largely gone unanswered' (ibid: 27). The thesis explores this issue in the context of interpersonal knowledge transfer. In particular, drawing upon research on social networks and group processes (e.g., Mintzberg, 1976; Moore, 1990; Ibarra & Andrews, 1993), it considers individuals' hierarchical status to moderate the type of social capital pertinent to interpersonal knowledge transfer.

**Properties of Knowledge**

A recurrent theme in the knowledge literature concerns the type of knowledge transferred (e.g., Nelson & Winter, 1982; Zander & Kogut, 1995; Szulanski, 1996).

Various typologies of knowledge have been proposed in the literature (e.g., Blackler, 1995; Spender, 1996), with most notable being the one that distinguishes between explicit and tacit knowledge (Winter, 1987; Nonaka, 1994; Nonaka & Takeuchi, 1995). This is due both to the challenges and strategic value associated with facilitating the effective transfer and sharing of the latter type within and across organisational borders (e.g., Zander & Kogut, 1995; Szulanski, 1996). Research has shown that the transfer of tacit knowledge is far from frictionless within work organisations (e.g., Szulanski, 1996). More recent developments in the area suggest that the extent to which tacit or non-codified knowledge is transferred within the organisation is dependent upon the structure of social capital (e.g., Hansen, 1999). However, given the multidimensional character of social capital, very little research has examined how the relational and cognitive dimensions of social capital influence the transfer of codified and non-codified knowledge at the dyadic level (Levin & Cross, 2004; Holste & Fields, 2005). In this regard, the thesis contributes to a more holistic understanding of the role of individual social capital in the transfer of knowledge along its explicit-tacit continuum.

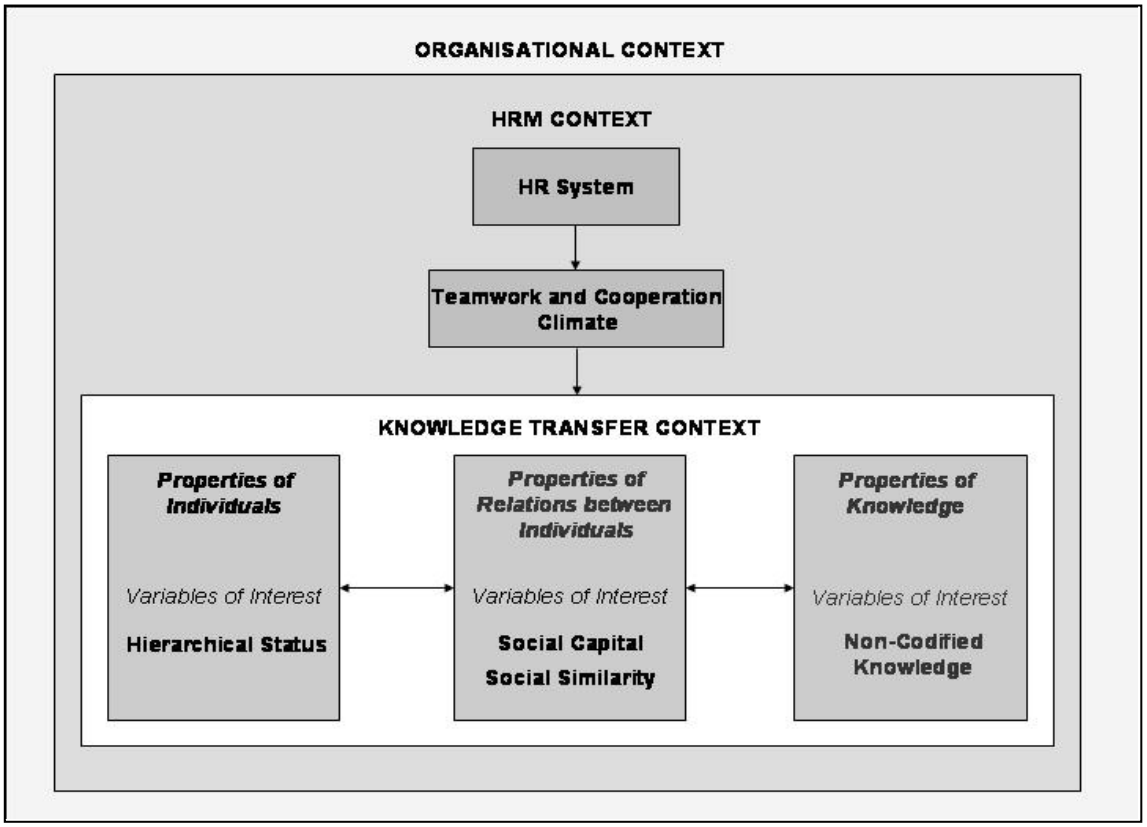
### Implications for Human Resource Management

In 2000, KMPG conducted a survey in 423 organisations in the UK, mainland Europe and the US in order to investigate organisational issues related to managing knowledge. The results of this survey indicate that, while KM is an accepted part of the business agenda, organisations are faced with more people- rather than technology-related issues in their efforts to realise benefits from the implementation of KM initiatives. When managers were asked to specify those issues, half of them complained about “reinventing the wheel” due to inadequate knowledge sharing among employees as well as to difficulties in capturing non-codified knowledge. The results of the KPMG (2000) KM survey point to a question addressed by managers and scholars alike: how can employees be encouraged to share what they know? This question reflects a key challenge with which the HRM function is faced in knowledge-intensive organisations.

Although it is more than a decade since HRM researchers called for the strategic transformation of the HRM system to better support KM processes and outcomes (e.g., Pucik, 1988; Lado & Wilson, 1994) only little theoretical progress has been made since ‘HR practitioners and HR analysts have been slow in making their mark in this emerging domain’ (Storey & Quintas, 2001: 344). Indeed, only few studies in the HRM field have recognised that it is unclear whether traditional approaches to HR practices actually fit the requirements of encouraging intraorganisational knowledge transfer and

sharing (Illegems & Verbeke, 2004; Kang *et al.,* 2007). A possible reason why research on HRM 'has missed much of the organisational view of knowledge' (Wright, Dunford & Snell, 2001: 715) is that HRM, as the name implies, has focused exclusively on methods of developing human capital rather than social capital (Brass & Labianca, 1999; Leana & Van Buren, 1999). Under an individualist HRM perspective, the social climate of the firm is considered little more than a context for individual needs, interests, values, motivation, and behaviour (Brass, 1995). However, given that a firm's knowledge and knowing capability depends both on human and social capital advantage, 'to focus on the individual in isolation is, at best, failing to see the entire picture' (Brass & Labianca, 1999: 323). A socio-relational approach to knowledge transfer offers an alternative theorising of the role of HRM in supporting KM outcomes. Notably, little theoretical discussion and even less empirical research has hitherto attempted to shed light on the mechanisms by which HR practices, social relations and knowledge processes, particularly knowledge transfer and sharing, are interlinked towards advancing a firm's learning potential and, ultimately, its value proposition (e.g., Currie & Kerrin, 2003; Kang *et al.,* 2007). In response to this, the thesis examines whether and the extent to which relational-orientated HR practices promote a social climate of teamwork and cooperation as this is considered fundamental for shaping a social context conducive to knowledge transfer and sharing (Nahapiet, Gratton & Rocha, 2005). Figure I.IV illustrates the conceptual model of the thesis.

Figure I.IV **Conceptual Model of the Present Study**



## II. CONTRIBUTIONS

Despite being in its infancy only a decade ago, the development of the knowledge movement has been 'rapid and chaotic' (Easterby-Smith & Lyles, 2003b: 12). While the first wave of KM research focused almost exclusively on the role of ICTs, the second emerging wave has began to place more emphasis on the importance of the human and social parameters of KM. The thesis contributes to this emerging field in a number of important ways.

The first contribution lies in the domain of the relationship between social relations and knowledge transfer. While previous research has taken a macro perspective on the role of social capital (e.g., Tsai & Ghoshal, 1998), this study develops and tests a model that extends understanding of the micro-social foundations of knowledge transfer. A micro-level approach is advantageous for it disentangles the possible overlapping effects of the structural, relational and cognitive facets of social capital on knowledge transfer. In addition, it allows for testing how these facets interact with key properties of the individuals involved in knowledge transfer as well as with the complexity of knowledge transferred.

The thesis also develops and tests a model examining the role of HR practices in promoting a teamwork and cooperation climate within organisations. The contribution here lies first in the development of new measures of HR practices that nudge the study of HRM from human capital to social capital in a knowledge-intensive context. In addition, the proposed model differentiates from and, hence, complements existing research (e.g., Currie & Kerrin, 2003; Zárraga & Bonache, 2005; Collins & Smith, 2006) in the following ways. By focusing on employees' experience of HR practices, it seeks to bridge the gap between intended and perceived HRM, thereby enabling the more accurate assessment of the impact of HR practices on employee attitudes and behaviour (Purcell & Kinnie, 2006; Purcell & Hutchinson, 2007). Furthermore, the inclusion of work design features allows for testing the possibility that the way in which knowledge work is structured and organised may be instrumental in influencing employees' perception of the value of teamwork and cooperation and, subsequently, their knowledge sharing behaviour (Kang *et al.,* 2007). Moreover, by considering management's commitment to supporting knowledge sharing, it brings into the forefront the much neglected, yet crucial role that line managers can play as key mediators between formal, espoused HR policy and informal, enacted HR practice (Legge, 1995; Truss, 2001).

## III. THESIS STRUCTURE

The thesis contains eleven chapters organised into three parts. The first part includes four chapters that cover background literature, identify research gaps in this literature and formulate the research hypotheses for empirical testing. The second part includes three chapters that describe the research methodology, research process and the research context of this study. The third part, which includes four chapters, presents the empirical results, discusses those results in light of previous research, outlines the limitations of the study and identifies areas that future work might address.

The first part of the thesis (chapters one to four) reviews a wide range of literature in order to assess critically the research domain and to develop a clear direction for the empirical work. Chapter one provides an overview of the philosophical, psychological and sociological approaches to conceptualising knowledge. Chapter two shifts attention to the notion of knowledge and its management in work organisations. It provides a critical overview of various typologies of knowledge both at the individual and organisational level. It also discusses how knowledge is managed in work organisations by identifying emergent knowledge governance archetypes. This is followed by a discussion of the emergence of KM. Chapter three shifts attention to the properties of the knowledge transfer context. This chapter centres on previous theoretical and empirical work into properties of social relations, properties of individuals, and properties of knowledge. Based on this, the chapter identifies a number of research gaps which provide the basis for the development of an integrative theoretical framework for the transfer of knowledge at the dyadic level of analysis. Chapter four focuses on the HRM implications of knowledge transfer. Preceded by a critical overview of the HRM literature on managing knowledge, the chapter identifies the role that people management practices play in shaping employees' perceptions of a social climate of teamwork and cooperation that is conducive to knowledge transfer and sharing.

The second part of the thesis (chapters five to seven) describes the empirical work. In particular, chapter five provides an overview of the methodological strategy and design employed to investigate the research questions and associated hypotheses identified in the previous chapters. Chapter six details the research process followed in the study. It describes the design and development of the research instruments by which both quantitative and qualitative data were collected, prepared and analysed. Chapter seven offers an overview of the organisational context within which the study has been conducted. The profile of each participant organisation is outlined in terms of its

ownership, size, operations, structure, and workforce characteristics. This is followed by a brief overview of the HRM and KM policies of those organisations.

The third part of the thesis (chapters eight to eleven) presents and discusses the results of the empirical work. Specifically, chapters eight and nine present both the quantitative and qualitative findings in regard to the knowledge transfer and HRM context. In chapter ten, the findings are discussed in light of previous research. The eleventh and final chapter presents some conclusions to the research aims, identifies a number of theoretical and methodological limitations and addresses directions for future research.

# PART ONE
# Literature Review

## Overview

The first part of the thesis is divided into four chapters, each of each focuses on a particular aspect of knowledge transfer. Chapter one provides an overview of the philosophical underpinnings of knowledge, followed by an outline of psychological and sociological approaches to investigating knowledge. The second chapter provides an analysis of how knowledge is conceptualised in an organisational context. Emphasis here is placed on describing various views of the firm as a knowledge-based entity, followed by a critical analysis of how knowledge is managed. Chapter three sets out to examine the micro-foundations of knowledge transfer. Particular emphasis here is placed on the role of social capital in conjunction with the characteristics of knowledge transferred, the social similarity of individuals engaged in knowledge transfer, and the positioning of individuals in the formal organisational structure. The chapter concludes by proposing a micro-model for empirical testing. Chapter four sets out to provide a critical overview of the HR implications of managing knowledge flows. It provides a critical overview of theoretical approaches to the HRM-KM linkage, based on which it identifies the key role of social relations and social climate in that linkage.

# CHAPTER ONE

# Conceptualising Knowledge:

# Philosophical, Psychological & Sociological Approaches

## INTRODUCTION

The concept of knowledge can be interpreted in different ways depending on the underlying epistemology on which it is based (Venzin, von Krogh, & Roos, 1998). Theoretical approaches to knowledge originate in philosophical discourses that later acquire psychological and sociological descendants. The aim of this chapter is to outline these approaches, thereby providing a basis for appreciating the diverse epistemological traditions that have influenced various conceptualisations of knowledge that are found in the domain of organisation and management theory. The chapter is structured into five sections. The first section provides a basic taxonomy drawn from the information management and KM literature as a guide to distinguishing between data, information, and knowledge. The second section offers an overview of the philosophical approach to knowledge, and in the third and fourth sections psychological and sociological approaches to the concept are presented. The concluding section of the chapter places emphasis on a pragmatist approach to knowledge and highlights how such an approach can provide fruitful stimuli for re-considering the social character of the firm within a knowledge-based organisational mode.

## I. DATA, INFORMATION AND KNOWLEDGE

Data refers to discrete, objective non-contextual facts or observations, whereas information is the result of providing data with some meaningful, purposeful content, which usually takes the form of a message (Zack, 1999). Nonaka & Takeuchi (1995: 58) posit that, in contrast to data, information 'provides a new point of view for interpreting events or objects, which makes visible previously invisible meanings or sheds light on unexpected connections'. The nature of information changes the way the person who receives the message perceives something or, in other words, becomes informed about something. Davenport & Prusak (1998: 3) emphasise the important role of the receiver in the process of transforming data into information, since 'the receiver, not the sender, decides whether the message he gets is really information'. Drawing on rationalist, Platonian epistemology, Nonaka & Takeuchi (1995) define knowledge as 'justified true belief'. They further suggest that knowledge, unlike information, involves 'beliefs and commitment', and therefore it is a 'function of a particular stance,

perspective, or intention' (ibid: 58). This distinction underlines that knowledge is '*essentially related to human action'* (ibid: 58-59, italics in the original). Consistent with this, Boddy, Boonstra & Kennedy (2005: 9) suggest that 'knowledge builds on information that is extracted from data…While data is a property of things, knowledge is a property of people that predisposes them to act in a particular way'.

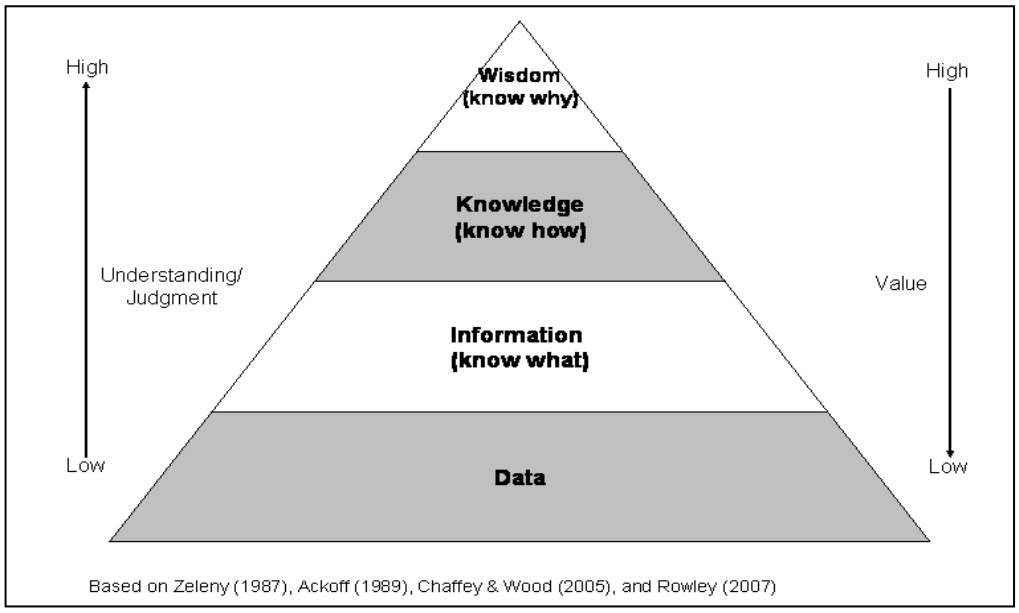
The processes by which data are transformed into information and, subsequently, how information becomes knowledge have been modelled around a widely recognised schema in the information management and the KM literature, which is commonly known as the data-information-knowledge-wisdom (DIKW) hierarchy (Cleveland, 1982; Zeleny, 1987; Ackoff, 1989; Bellinger *et al.,* 2004; Chaffey & Wood, 2005; Rowley, 2007). The DIKW hierarchy defines four elements (i.e., data, information, knowledge, wisdom) and describes their transformation process from a lower to a higher stage at the hierarchy. First, data result from observation and represent properties of objects, events, and their environment. However, data are of no use until they are in a relevant form. Accordingly, the difference between data and information is functional rather than structural (Rowley, 2007). At a higher level, information is processed data and, as such, it provides answers to 'what', 'when', and 'where' types of questions. In Zeleny's (1987) view, information equals to 'knowledge that', or to what Ryle (1949) has described as 'know what'. At an even higher level, knowledge parallels Ryle's (1949) notion of 'know how'. This is viewed more as a skill or competence. It refers to the application of data and information to answer 'how' questions. In this sense, knowledge is obtained either by transmission from another person through instruction or advice, or by experience (Kant, 1990). For Ryle (1949: 29, 32) 'knowing how' is distinctly different from 'knowing what', and therefore deserves the characterisation of 'intelligence':

> The well-regulated clock keeps good time and the well-drilled circus seal performs its tricks flawlessly, yet we do not call them 'intelligent'. We reserve this title for the persons responsible for their performances. To be intelligent is not merely to satisfy criteria, but to apply them … A person's performance is described as careful or skilful, if in his operations he is ready to detect and correct lapses, to repeat and improve upon successes, to profit from the examples of others and so forth.

Despite sitting at the top of the DIKW hierarchy, wisdom is a neglected concept in the KM and the wider management literature (Rowley, 2007). This is attributed to the possibility that wisdom is an elusive concept (Jashapara, 2005a). Zeleny (1987) views wisdom as 'knowing why', while Ackoff (1989) ascribes to it the title of evaluated understanding or judgement. Based on a synthesis of theoretical studies on information management and KM, Rowley (2007: 257) defines wisdom as 'the capacity to put into action the most appropriate behaviour, taking into account what is known (knowledge)

and what does the most good (ethical and social considerations)'. The ethical dimension of the concept of wisdom is also evident in Jashapara's (2005a: 17-18) definition: 'Wisdom is the ability to act critically or practically in any given situation. It is based on ethical judgement related to an individual's belief system'. For Kakabadse, Kakabadse & Kouzmin (2003: 77) wisdom requires action and reflection and, as such, it enables 'understanding pre-suppositions and meanings as well as limitations within context and time'. Understanding features prominently in Bellinger *et al's* (2004) knowledge hierarchy as the catalyst that enables the transition from each stage to the next. They suggest that moving from data to information involves 'understanding relations', moving from information to knowledge involves 'understanding patterns', and, finally, moving from knowledge to wisdom involves 'understanding principles'. Chaffey & Wood (2005) add two axes to the knowledge hierarchy, which indicate that the value of knowledge and the meaning that is ascribed to it by individuals increase when moving from lower to higher stages at the hierarchy. The DIKW hierarchy is illustrated in Figure 1.1.

Figure 1.1 **The DIKW Hierarchy**




The DIKW hierarchy represents a schema for classifying the four elements (i.e., data, information, knowledge, wisdom) based on their relative value and degree of human understanding and judgement (including ethical evaluations) that are involved in their formation and transformation along the so-called 'knowledge pyramid' (Rowley, 2007: 163). While being a recognised schema in mainstream information management and KM literature, the DIKW hierarchy has limitations. Watson (2003: 12-13) argues that considering 'information purely in terms of the degree to which it has been processed –

that is, the data, information, knowledge continuum – oversimplifies the complex relationship between the three intangibles'. For Watson (2003: 12) information and knowledge are viewed in terms of a more interactive and dynamic relationship in which 'information facilitates the development of knowledge, which creates more information that deepens knowledge, ad infinitum'. An additional critique of the knowledge pyramid is that it places little emphasis on the role of context in the stage where information transforms into knowledge. As mentioned above, knowledge involves the recognition or understanding of patterns. Bellinger *et al.* (2004) suggest that when a pattern exists amidst the information, then it has the potential to represent knowledge. However, as Watson (2003: 8) notes: 'the patterns representing knowledge must have a context. The context of the pattern provides a degree of predictability as to when the pattern is applicable'. Stewart (1997: 69) warns that 'the idea that knowledge can be slotted into a data-to-wisdom hierarchy is bogus, for the simple reason that one's man knowledge is another man's data'. As the following example illustrates, knowledge and data are heavily context dependent:

> Data is discrimination between states – for example, black, white, heavy, light, dark – that may or may not convey information to a person, depending on the person's prior stock of knowledge and the context. For example, the states of nature indicated by red, amber, and green traffic lights may not be seen as informative to Bushmen of the Kalahari. Yet they in turn may perceive certain patterns in the soil as indicative of the presence of lions nearby. These patterns would probably convey no knowledge to a New Yorker (Watson, 2003: 13)

Furthermore, the DIKW hierarchy could be characterised as relatively simplistic as it offers a rather rudimentary understanding of the complex interconnections between different elements of knowledge (i.e., know-what, know-how, know-why). This is because it, first, overlooks the philosophical roots of knowledge. Second, it does not take into account the psychological processes by which the different elements of knowledge are dynamically shaped. Finally, it ignores the social context within which knowledge is related to human action. The following three sections seek to provide a more integrated approach to conceptualising knowledge based on important research from the fields of philosophy of knowledge, cognitive psychology, and sociology of knowledge.

## II. A PHILOSOPHICAL APPROACH TO KNOWLEDGE

The question 'what is knowledge?' lies at the heart of philosophical inquiry since the inception of philosophy itself, and yet remains largely unanswered to date. Philosophical inquiry into knowledge is concerned with metaphysics, which combines the branches of ontology and epistemology. According to Guba & Lincoln (1994),

ontology and epistemology can be defined in terms of the questions they seek to answer. The former seeks to provide answers to the question about 'what is the form and nature of being and therefore, what is there that can be known?' (ibid: 108). The latter focuses on the sources, nature, criteria and limits of knowledge including the methodological instruments that are used to validate the acquisition of knowledge. It therefore seeks to answer the question 'what is the relationship between the knower and what can be known?' (ibid: 108). Ontological and epistemological questions are linked to each other, in that an answer to the epistemological question is constrained by the response given to the ontological question. For example, if one assumes an objective reality then the knower is assumed to be a detached observer of that reality.

The quest for a theory of knowledge entails a basic problem, which reflects the paradox as well as the beauty of humankind's journey to understanding itself and its surrounding world. Popper (2002 [1963]: 38) illustrates this problem by noting that:

> Every solution of a problem raises new unsolved problems; the more so the deeper the original problem and the bolder its solution. The more we learn about the world, and the deeper our learning, the more conscious, specific, and articulate will be our knowledge of what we do not know, our knowledge of our ignorance. For this, indeed, is the main source of our ignorance – the fact that our knowledge can be only be finite, while our ignorance must necessarily be infinite.

The evolution of Western philosophy has been characterised by two antithetical epistemological traditions, rationalism and empiricism, whose historical foundations are rooted in the classical Greek philosophical thought, and particularly in Plato's and Aristotle's epistemology respectively. In the fifth century BC, Parmenides argued that 'knowledge is to be achieved through reasoning rather through the senses' (Sharples, 1996: 11). Parmenides laid the groundwork for Plato's rationalist theory of knowledge. According to Plato, the physical world represents a mere reflection of the perfect world of 'ideas', which can only be known through pure reason rather than sensory perception. Undeniably, Plato (2004) established epistemology as a philosophical branch in its own right. This is meticulously discussed in *Theaetetus*, one of his later Socratic dialogues written in c. 360 BC, in which he described and challenged the notion of knowledge as justified true belief, a view which provided the basis for what today is known as Western rationalism. Aristotle refuted Plato's conceptualisation of knowledge by arguing for the inseparableness of ideas and senses. Aristotle suggested that knowledge of first principles – from which other truths can be demonstrated by argument – is based on repeated sense-experiences, a view that was also shared by both the Epicureans and the Stoics (Sharples, 1996).

In *Nicomachean Ethics*, Aristotle (1999) offers an elaborated account of knowledge by distinguishing between three types: epistèmè, technè, and phronesis. Briefly, epistèmè, which approximates the notion of scientific or theoretical knowledge, may be defined as a systematically organised, rationally justifiable body of doctrines. In this view, knowledge is the conclusion of deductive inferences that demonstrate understanding of invariable truths about invariant states of affairs. For Aristotle, what differentiates epistèmè from the other two types of knowledge is the exactness that is required for scientific knowledge in order to reach universal truths. Accordingly, epistèmè can be paralleled to 'know what' and 'know why' (Johnson, Lorenz, & Lundvall, 2002). On the other hand, technè, which can be translated into 'craft knowledge', refers to knowledge that is instrumental, context specific, and productive. This is not to say that technè does not involve reason. Aristotle (1999: 1140a, 10-11) emphasises that technè is a state involving 'true reason concerned with production'. The third type of phronesis, whose closest English word is that of prudence, refers to the ability to reach usual truths by applying good sense which, in turn, is fuelled by intelligent awareness, perception, and understanding. Prudence is distinct from scientific knowledge as it is mainly concerned with the particular, 'since this is what is achievable in action' (Aristotle, 1999: 1142a, 25-26). In addition, it is distinct from craft knowledge, since the latter is concerned with production but not with action. Prudence also entails an ethical dimension as it represents a necessary and sufficient condition for reaching virtue of character or human excellence. Based on the Aristotelian line of thinking, prudence can be seen as synonymous to practical wisdom. This can be described as the ability to apply successfully decisions to particular situations by exhibiting experience, and a correct sense of the usual (i.e., ethical) aspects inherent in those particular situations.

The Platonian and Aristotelian views re-appeared in the 17$^{th}$ century with the emergence of Continental rationalism and the British empiricism. Descartes, a French rationalist, argued that the ultimate truth can be deduced only from the real existence of a thinking self, which is independent of body or matter. This is because while a body or matter does have an extension in space but does not think, a mind has no extension but thinks, thus 'Cogito, ergo sum'. Descartes' dualism of mind/body, subject/object was criticised by Locke, the founder of British empiricism. According to Locke, the human mind is a 'tabula rasa' with no a priori idea. Locke further argued that only experience, in the form of sensation and reflection, can provide the mind with ideas. It is noteworthy that despite their differences, both rationalists and empiricists believe in metaphysical realism, which corresponds to the 'platonic doctrine that universal or abstract have being independently of the mind' (Gellner, 1980: 60). As Putnam (1981)

notes, it is impossible to find a philosopher after the pre-Socratics and before Kant who was not a metaphysical realist.

In the eighteenth century, rationalism and empiricism were brought together by the German philosopher Kant. In his *Critique of Pure Reason*, Kant (1990) posited that 'although all our knowledge begins with experience, it by no means follows that all arises out of experience' (ibid: 1). In his view, knowledge is the outcome of two sources, intuition and conception, which provide individuals with sensibility (i.e., 'the receptivity of the mind for impressions') and understanding (i.e., 'the faculty of thinking the object of sensuous intuition') respectively (ibid: 44). For Kant (1990: 44), neither of these sources is superior or substitutable to the other. Instead, they are complementary to each other. In his own words:

> Without the sensuous faculty no object would be given to us, and without the understanding no object would be thought. Thoughts without content are void; intuitions without conceptions, blind…Neither of these can exchange its proper function. Understanding cannot intuite, and the sensuous faculty cannot think. In no other way than from the united operation of both, can knowledge arise.

Kant also distinguished between general and particular logic. The former type contains the fundamental, universally applied principles of thought, and therefore, can be seen as close to Aristotle's notion of epistèmè. The latter refers to the logic of the employment of the understanding and contains rules of correct thinking about particular objects. Accordingly, it corresponds to the logic of a particular science. General logic is further divided into pure and applied logic. While pure logic 'has no empirical principles' and deals with abstractions or mere forms of thoughts, applied logic refers to understanding under subjective empirical conditions (ibid: 46). Kant's philosophy is particularly known for the notion of transcendental logic. This 'has not, like general logic, to do with the laws of understanding and reason in relation to empirical as well as pure rational cognitions without distinction, but concerns itself with these only in an *à priori* relation to objects' (ibid: 48, italics in the original). In this sense, it refers to all knowledge that deals not with objects but with the mode of knowledge of objects in so far as this mode is possible a priori, that is, independent of experiences and senses. For this reason, Kant's philosophical position is essentially dualist.

In the 19$^{th}$ century, Marx made a further attempt at synthesising rationalism and empiricism. Building critically on Hegel's dialectical idealism, he argued for an interactive relationship between the knower (i.e., subject) and the known (i.e., object) in an effort to explain the dynamism that characterised the relationship between

individuals and their socioeconomic environment following the profound changes caused by the two industrial revolutions of the mid-18th century and early 19th century (Passmore, 1968). Marx proposed that subject and object are in a continuous and dialectic process of mutual adaptation. In this sense, knowledge is inherent in action and demonstrated in practice. Marx's interest was not in providing a theory of knowledge per se. His task was not to interpret the world but to change it (Russell, 1961). Towards this end, as Rorty (1999: 30) critically notes, 'Marx had be taken in by the bad, Greek, side of Hegel – the side which insisted on necessary laws of history' that could explain scientifically capitalism as a transitional stage between feudalism and communism. In this sense, Marx's philosophy succumbed to a Kantian dualism between science, on the one hand, and ideology on the other.

Further attempts to overcome the dualism of the knower and the known are found in the contributions of more contemporary philosophers of the late nineteenth and early twentieth century. The German philosopher Husserl established the foundations of phenomenology as a philosophical approach focusing on the intuitive experience of phenomena as the starting point for understanding the relationship between human consciousness and the external world. Husserl posited that every mental phenomenon or psychological act is intentional, that is directed at objects (Guignon, 1992). In this sense, intentionality is the key concept by which phenomenological philosophy seeks to overcome the Cartesian dichotomy between subject and object in the pursuit of knowledge. Another philosophical movement of the twentieth century called analytical philosophy focused on the role that language plays in shaping perception of phenomena. Wittgenstein, a prominent figure within this movement, argued for the importance of language in enabling individuals to acquire knowledge that reflects reality. As quoted by Ayer (1984: 112), Wittgenstein rejected metaphysics as 'nonsensical': What we cannot speak about we must pass over in silence'. In his later works, Wittgenstein (1958: 150) viewed language and, by extension, knowledge as synonymous to human action aimed at altering the state of affairs rather than understanding the world from a detached stance:

> The grammar of the word "knows" is evidently clearly related to that of "can", "able to do". But also closely related to that of "understands". But there is also *this* use of the word "to know": we say "Now I know!" – similarly "Now I can do it!" and "Now I understand" (italics in the original).

The relationship between knowledge and human action is particularly prominent in pragmatism, the philosophical stream that originated in the United States during the last quarter of the nineteenth century, and developed further in the first half of the

twentieth century. Key figures within this philosophical stream include: Peirce (1997[1904]), who coined the term pragmatism; James (1997[1907]), who built upon Peirce's work to provide the first systematic account of pragmatism; and Dewey (1929) whose work contributed substantially to the current state of pragmatist thought. Wicks & Freeman (1998: 129) acknowledge the significant contribution particularly of James' and Dewey's works to a distinct approach to philosophy, since 'both men saw pragmatism as a way to move beyond the vexing and seemingly irresolvable philosophical questions of metaphysics and epistemology'. Rorty (1985: 5), a central figure of neo-pragmatism, notes that both men viewed philosophy as a 'forum in which people can talk about how to fulfil their needs, which beliefs work to get them what they want, without running into Platonic and Cartesian impasses'. James and Dewey, according to Rorty (1999: xiii), 'enabled us, if not exactly to throw away, at least understand in a radically un-Platonic way'.

According to pragmatism, philosophical inquiry into knowledge and its relation to truth takes a new meaning, that of 'replacing the task of justifying past custom and tradition by reference to unchanging structure with the task of replacing an unsatisfactory present with a more satisfactory future, thus replacing certainty with hope' (Rorty, 1999: 32). In contrast to the Platonian rationalist view of knowledge as context-free justification towards seeking the ultimate 'truth', pragmatism sees 'no connection between justification and truth', nor does it view truth as the overarching aim of philosophical inquiry (ibid: 37). As Rorty (1999: 38-39) argues,

> By contrast, pragmatists think that there are a lot of detailed things to be said about justification to any given audience, but nothing to be said about justification in general. That is why there is nothing general to be said about the nature or limits of human knowledge, nor anything to be said about a connection between justification and truth. There is nothing to be said on the latter subject not because truth is atemporal and justification temporal, but because *the only point in contrasting the true with the merely justified is to contrast a possible future with the actual present* (italics in the original).

Pragmatism suggests that 'ideas are worthless except as they pass into actions which rearrange and reconstruct in some way, be it little or large, the world in which we live' (Dewey, 1929: 138). This is why Dewey defines knowledge as successful practice enabling the reorganisation of the current situation by overcoming the difficulties it sets for people (Passmore, 1968). In this sense, pragmatism is concerned with the question of 'whether or not information (scientific data, a novel, a treatise in ethics) is useful – useful in the sense of helping people to better cope with the world or to create better organizations' (Wicks & Freeman, 1998: 129). It is noteworthy that, from the standpoint of pragmatism, usefulness is not synonymous to utilitarianism, but rather 'contains a

broad injuction that is adaptable to a wide range of value-systems that may differ substantially from utilitarianism' (ibid: 129). Thus, the pragmatist approach to knowledge places emphasis on the importance of values to the study of human action – or more precisely described as normative action – in its sociocultural context.

Knowledge has also been conceptualised from a postmodernist perspective. A number of scholars from this philosophical stream have undertaken a critique of positivist knowledge by underlining the connections between knowledge creation and issues of power and control. For example, Foucault (1980: 52) argues that 'the exercise of power perpetually creates knowledge, and, conversely, knowledge constantly induces effects of power'. Others, like Lyotard (1984), have expressed the view that scientific truth is merely a reconstruction of language in a localised context. Postmodernists view knowledge and reality as constantly changing entities, thereby rejecting positivist claims of a single, a priori system of thought that should govern belief and investigation into knowledge (Kakabadse *et al.*, 2003). Essentially, they acknowledge the role of the social context within which human knowledge is shaped.

## III. A PSYCHOLOGICAL APPROACH TO KNOWLEDGE

Cognitive psychology emerged in the late 1950s as a distinct discipline following the divide of psychological thought into behaviourism and cognitivism which, in turn, are philosophically rooted in empiricism and rationalism, respectively (Eyseck & Keane, 2000). In contrast to behaviourist psychology, which rejects the notion of internal mental states, cognitive psychology is broadly concerned with the study of the mental processes of perception (e.g., attention, pattern recognition), memory, thinking (e.g., choice, concept formation, decision making, problem solving), language and communication, learning, and emotion (ibid.). By employing strictly positivist methods, which are usually operationalised in the form of models of human-computer interaction, cognitive psychologists investigate the intervening variables between stimuli and response in order to understand the processes of the human mind. Those models help elucidate what happens in the human brain during problem solving, decision making, remembering, and other cognitive processes (ibid.). Theory development in cognitive psychology has benefited from computational modelling, and thereby been unified under the information processing model of human thinking that is commonly found in research on artificial intelligence (AI). This represents a dominant paradigm in cognitive science according to which the human mind is viewed as an information processor similar to that of a computer (Kuhn, 1962; Massaro & Cowan, 1993).

Cognition is defined as 'the activity of knowing: the acquisition, organization, and use of knowledge' (Neisser, 1976: 1). The ways through which knowledge is represented and organised in the mind or, in other words, the architecture of the human mind, is a fundamental question in cognitive psychology, and in the related discipline of cognitive science. According to Sternberg & Ben-Zeev (2001: 58), 'knowledge representations strip off peripheral details and preserve the essence of our experiences'. There are various terms employed by cognitive scientists to explain the processes by which individuals acquire and process knowledge. These terms include mental models (e.g., Rouse & Morris, 1986), scripts (e.g., Schank & Abelson, 1977), schemata (Bartlett, 1932), frames of reference (Minsky, 1975), and cognitive maps (Neisser, 1976). According to Rouse & Morris (1986), mental models are often used as synonymous with 'knowledge'. In this sense, mental models refer to a general class of cognitive constructs explaining how knowledge is represented in the human mind.

Cognitive scientists have developed cognitive architectures that aim at explaining how the various mental processes or parts of the human mind work together to produce coherent cognition (Anderson *et al.*, 2004). Newell (1990: 17-18) has called for a unified theory of cognitive architecture, pointing to its advantages as follows:

> A single system (mind) produces all aspects of behavior. It is one mind that minds them all …If a theory covers only one part, it flirts with trouble from the start. It goes without saying that there are dissociations, independencies, impenetrabilities, and modularities. These all help to break the web of each bit of behavior being shaped by an unlimited set of antecedents. So they are important to understand and help make that theory simple enough to use. But they don't remove the necessity of a theory that provides the total picture and explains the role of the parts and why they exist.

The above statement reflects the challenges as well as the need for a common paradigm shared among cognitive scientists (Newell, Shaw, & Simon, 1958). The review of the literature indicates that most cognitive scientists operate under the supposition that there are two types of knowledge, declarative (or propositional) and procedural knowledge (e.g., Anderson, 1983; Bransford *et al.*, 1990; Bruer, 1993). The distinction between the two types was introduced by artificial intelligence researchers (Winograd, 1975), and was then transferred to cognitive psychology through the early works of Anderson (e.g., Anderson, 1976, 1983).

Anderson's (1983) Adaptive Character of Thought (ACT*) theory of cognition specifies two memory systems: declarative and procedural. The former contains memories of facts and episodes, and places information in working memory for conscious thought and articulation. The latter contains procedural knowledge that directly guides the

performance of cognitive tasks, bypassing working memory. The distinction between declarative and procedural knowledge resembles that proposed by Ryle (1949) between 'know what' and 'know how' respectively. Procedural knowledge or 'know how' is typical of an expert who no longer needs articulated instruction. Declarative knowledge is represented explicitly and is therefore accessible, whereas procedural knowledge is represented implicitly and is therefore inaccessible (Anderson, 1983). ACT* theory predicts that the conversion of declarative knowledge to procedural knowledge results in eliminating the need for considering consciously the sequential steps of declarative knowledge when performing a task. Because conscious attention is not required when performing a task, access to declarative knowledge about a task often declines (Anderson, 1987). 'A basic characteristic of the declarative system is that it does not require one to know how the knowledge will be used in order to store it' (ibid: 206). In this sense, declarative knowledge or 'know what', while may be needed to acquire a skill, becomes redundant during the actual practice of the skill (i.e., know how).

Empirical evidence from cognitive research on accounting practice validates the predictions made by the ACT* theory. For example, Herz & Schulz's (1999) study indicates that the acquisition of knowledge that is required to perform a structured accounting task creates procedural knowledge that contributes to performance without enhancing declarative knowledge. The results of the same study show that, first, 'procedural knowledge develops separately from declarative knowledge', and second, 'increased procedural knowledge results in decreased time needed to solve structured tasks without increasing the accuracy of declarative knowledge' (Herz & Schulz, 1999: 22). Similar research on expertise, decision-making and problem-solving in accounting practice provides interesting insights into the difficulties of accessing declarative knowledge (Nisbett & Wilson, 1977; Bedard & Graham, 1994). This research shows that as expertise increases, access to declarative memory often decreases. This is reflected in Nisbett & Wilson's (1977) study in which the experts were faced with significant difficulties in explaining how they went about solving a problem. Similarly, Bedard & Graham's (1994) study indicates that expert auditors assisting the development of an expert system had considerable difficulties in generalising the decision making process.

Notwithstanding its contribution to a better understanding of the processes by which knowledge is represented and organised in the human mind (e.g., the distinction made between declarative and procedural knowledge), the information processing model of

human thinking has been challenged on various grounds. First, developments in AI and neuropsychology suggest that the physiology of the human brain does not support the metaphor of the mind-as-computer, since cognition occurs not as a series of processes but as patterns of activation (St. Julien, 1997). Based on the co-evolution of neurosciences and information processing psychology, the connectionist model of cognitive architecture suggests that the brain does not work as a central information processor but rather forms a neural network, which consists of simultaneously active units (McClelland & Rumelhart, 1986). In this model, connections, meaning and learning are intertwined concepts: 'When no meaning (no connections) can be created, nothing is learned' (Gagné, 1985: 79). Second, Anderson (1996: 364) states that 'complex human cognition is just a simple reflection, once removed, of its environment'. This statement is consonant with Simon's (1981: 64) 'metaphor of the ant': 'An ant, viewed as a behaving system, is quite simple. The apparent complexity of its behavior over time is a reflection of the environment in which it finds itself'. Third, Jerome Bruner, a prominent figure in the cognitive revolution of the 1950s, has expressed the view that the computer metaphor does have considerable limitations as it does not allow for the role of the cultural environment in shaping both the thoughts and the linguistic tools that humans choose to express their thoughts. For Bruner (1990: 8), understanding of the human mind must take into account the mental states of 'believing, intending, and grasping a meaning', and must also consider the mediating effects of culture and language. In other words, computation models examine human cognition in isolation from the wider social and moral aspects of behaviour (Eyseck & Keane, 2000). This has led psychologists and organisation theorists to consider the social aspects of knowledge.

## IV. A SOCIOLOGICAL APPROACH TO KNOWLEDGE

In a critique of the domination of psychology by cognitive psychology and, in turn, the domination of cognitive psychology by cognitivism, Still & Costall (1991) pose two questions: First, how can individuals reach beyond internal representations to the reality they are supposed to represent? Second, how can individuals' mutual interdependence with the environment be captured by a system of formal and informal rules? These two questions address the separation of knower from knowledge as problematic and, therefore, shift the attention to the social construction of knowledge.

The philosophical underpinnings of socially constructed knowledge can be found in constructivism. This reflects a phenomenological stance on the nature of experience and the foundations of knowledge, and is historically associated with the writings of

Husserl (Guignon, 1992). Arguing against the purely positivist orientation of science and philosophy, Husserl advocated that all forms of consciousness are characterised by intentionality in a sense that all our thinking, feeling, and acting are always about things in the Lebenswelt (i.e., lived experience) (ibid.). The core phenomenological argument is that all knowledge begins in consciousness and, therefore, comes from subjectivity. Similarly, constructivism posits that knowledge does not correspond solely to objective reality. Instead, it is the outcome of an agreed upon reality, which 'is made of the network of things and relationships that we rely on in our living, and on which, we believe, others rely on, too' (von Glasersfeld, 1995: 7). The main thesis made by radical constructivist von Glasersfeld concerns the relation of knowledge and reality. Whereas in the traditional epistemology as well as in cognitive psychology this relation is seen as an iconic correspondence, radical constructivism sees it as an adaptation in the functional sense (von Glasersfeld, 1995). According to von Glasersfeld's (1995: 1), radical constructivism is defined as:

> '[…] an unconventional approach to the problem of knowledge and knowing. It starts from the assumption that knowledge, no matter how it is defined, is in the heads of persons, and that the thinking subject has no alternative but to construct what he or she knows on the basis of his or her own experience. What we make of experience constitutes the only world we consciously live in. It can be sorted into many kinds, such as things, self, others, and so on. But all kinds of experience are essentially subjective, and though I may find reasons to believe that my experience may not be unlike yours, I have no way of knowing that it is the same. The experience and interpretation of language are no exception'.

In contrast to radical constructivism, social constructivism represents a more balanced stance on the nature and foundations of knowledge. In *The Social Construction of Reality,* Berger & Luckmann (1967: 29) put forward a 'systematic theoretical reasoning' of the role of knowledge in society with the aim to 'move the sociology of knowledge from the periphery to the very centre of sociological theory'. Berger & Luckmann (1967) argue that sociological interest in the philosophical questions of 'knowledge' and 'reality' is justified by their social relativity: 'What is "real" to Tibetan monk may not be "real" to an American businessman. The "knowledge" of the criminal differs from the "knowledge" of the criminologist" ' (ibid: 15). Burger & Luckmann (1967) agree with Husserl in that consciousness is always intentional. However, in contrast to radical constructivism, they argue that the reality of everyday life presents itself to individuals as an intersubjective world in which social interaction is fundamental to making sense of a shared reality:

> This intersubjectivity sharply differentiates everyday life from other realities of which I am conscious. I am alone in the world of my dreams, but I know that the world of everyday life is as real to others as it is to myself. Indeed, I cannot exist in everyday life without continually interacting and communicating with others…My 'here' is their 'there'. My 'now'

> does not fully overlap with theirs…All the same, I know that I live with them in a common world. Most importantly, I know that there is an ongoing correspondence between *my* meanings and *their* meanings in this world, that we share a common sense about its reality (ibid: 37, italics in the original).

The notion of intersubjectivity is inherent in the social constructionist view of knowledge. It derives from the phenomenology of Husserl (1965) and later appears in the 'I-Thou' formula of Buber (1974) and the existentialism of Sartre (1966). 'Intersubjectivity is the act of transcending the private and becoming one with the other' (Plaskoff, 2003: 165). It views the relationship between Ego and Alter 'as an irreducible dyad' (Markova, 2003: 250). In this sense, intersubjectivity builds on individuals' existing mutuality. Markova (2003: 253) notes that the idea of 'I-Other(s)' is reflected in Hegelian philosophy according to which 'self-consciousness achieves its satisfaction only in another self-consciousness'. It also accords with the philosophy of Feuerbach who argued that ideas emerge only through communication and conversation, and the community of one human with another is the first principle and criterion of truth (ibid: 254). Essentially, it reflects Heidegger's (1962) interpretation of the human self as being fundamentally constituted by a relationship to other human beings. Intersubjectivity is also central to Habermas' (2003) view of knowledge. Habermas (2003) suggests that knowledge is neither the representation of reality nor the outcome of applying ultimate rational criteria. Instead, it is a competence of engaging successfully in practice. Based on this, intersubjectivity is also governed by the 'dialogical principle' in terms of the 'I-Thou' formula (Buber, 1974). This is established through speech and communication which, in turn, express the Lebenswelt of people, their emotions, and their making of their social realities. Distinctly, the dialogical principle reflects not only mutuality between "I" and "Thou". It also embodies judgement, difference, tension, conflict, and negotiation (Rosenzweig, 1921, in Markova, 2003). In this view, the impossibility of a total consensus is the basis of dialogue. As Markova (2003: 257) puts it, 'all symbolic activity of humans is founded on dialogue between different minds expressing multitudes of multivoiced meanings'.

The notion of intersubjectivity has been of particular interest to organisational researchers. For example, Eden *et al's* (1981) early study of management teams in the USA has paid explicit attention to intersubjectivity in order to understand its role in effective problem-finding and problem-solving. For Eden *et al.* (1981: 39), intersubjectivity reflects a considerable cultural and social communality between organisational members which would enable them to communicate with much greater confidence than would, for example, 'an American airline pilot and a Papuan headhunter who had never met before'. At the same time, given the different

professional backgrounds, values, interests and situational judgements, individuals' understandings ought not to be viewed equivalent. Based on participatory research on management teams in several organisations in the USA, Eden *et al.* (1981) conclude that when team members are having a deeper awareness of others' intersubjective knowledge and concerns, the team will be benefited in the long term from the range of experience available within the team. Intersubjectivity has also noticeable implications for building communities of practice (CoPs). Plaskoff (2003) suggests that community-building occurs through four expanding circles of intersubjectivity: First, the community development team develops a shared understanding of what constitutes a community by defining its philosophical underpinnings and desired behaviours. Next, the community emerges by developing a sense of intersubjectivity concerning its specific practice. This core subset then expands the intersubjectivity circle to other potential members. Finally, community members develop intersubjectivity with non-members through their social interactions with them. Plaskoff (2003: 181) further argues that organisational learning is achievable through community building 'which catalyzes intersubjectivity, the development of social norms, and the determination of the identity of the practitioner group'.

In summary, social constructionism views knowledge as neither objective nor subjective, but rather as constructed through individuals' collaborative efforts with common objectives or by dialectically bridging their diverse perspectives. From this viewpoint, knowledge is theorised as being socially distributed (Tsoukas, 1996). This means that problem-solving and other cognitive processes are also based on distributed access to information and knowledge and a shared understanding among individuals (Plaskoff, 2003). Fundamentally, social constructivism views knowledge as intersubjective process rather than an object. In this regard, it shares common ground with pragmatism for they both suggest that knowledge and, more broadly, beliefs and ideas cannot be 'passed physically from one to another, like bricks; they cannot be shared as persons would share a pie by dividing it into physical pieces' (Dewey, 1916: 4).

## V. DISCUSSION AND CONCLUSION

The discourse on the concept of knowledge has not taken place in a vacuum. Instead, it has been shaped by a multitude of, mainly Western, philosophical, psychological and sociological perspectives, the most prominent of which have been outlined in this chapter. The conceptualisation of knowledge in terms of its distinction from data and information appears to be the dominant view in the information science and the KM

literature. The DIKW hierarchy is a widely accepted taxonomy of knowledge in both literatures. However, as Watson (2003: 12-13) argues, this distinction 'is not helpful and has led to the current confused preoccupation in the management literature with what is conceived of as a clear distinction between knowledge management and information management'. Thus, Kakabadse *et al.* (2003: 76) characterise KM as a 'nebulously defined field' for it lacks a pluralistic perspective on knowledge itself. In a similar vein, Jashapara (2005b: 144) points out that 'much greater philosophical introspection is required to understand the nature of knowledge before it can be effectively managed in organizations'.

From a philosophical standpoint, the most widespread definition of knowledge that is found in the KM literature is based on the Platonian conception of knowledge as justified true belief (Nonaka & Takeuchi, 1995). As was mentioned in this chapter, the traditional epistemological view of knowledge as justified true belief corresponds to a dualist view of the world, thereby separating the mind from the body, the knower from the known, the subject from the object, the theory from practice, the appearance from reality. In fact, 'these dualisms dominate the history of Western philosophy, and can be traced back to one or another passage in Plato's writings' (Rorty, 1999: xii). A number of philosophical schools have attempted to overcome the Platonian, Cartesian and Kantian dualisms. For example, phenomenological approaches posit that individuals act intentionally in the world to construct knowledge. In particular, analytical philosophy points to the importance of language for constructing meaning and, by extension, perceiving reality. Post-modernism takes critical departure from the search of universal truths and brings into the forefront the role of power and ideology in the social construction of knowledge.

### A Pragmatist Approach to Knowledge

The present study adopts a pragmatist approach to knowledge. Pragmatism is fundamentally an anti-dualist philosophy. As Dewey (1929: 17) argues, it rejects the notion 'that the office of knowledge is to uncover the antecedently real, rather than, as is the case with our practical judgements, to gain the kind of understanding which is necessary to deal with problems as they arise'. It is antithetical to the Platonian doctrine inherited by Descartes and Kant, which views humankind's most distinctive capacity to know things are they really are (Rorty, 1999). It replaces the 'quest for knowledge from the status of end-in-it-self to that of one more means towards greater human happiness' (ibid: xiii). Hence, pragmatism 'shifts the object of philosophy from the quest for foundational knowledge to the generation of hope…driven by the quest to

fulfil human aspirations and the desire to live better lives in community with others' (Wicks & Freeman, 1998: 130). In this regard, it concurs with Aristotle that human happiness cannot be reduced to utilitarianism as this is reflected in the accumulation of pleasures and the pursuit of self-interest.

Pragmatism does not distinguish, as Aristotle does though, between what is useful and what is right. As Dewey (1922[2002]: 326) points out, 'right is only an abstract name for the multitude of concrete demands in action which others impress on us, and of which we are obliged, if we would live, to take some account'. Dewey (1922[2002]) argues for an alternative view that distinguishes between prudence and morality in terms of the distinction between routine and non-routine social relationships. This distinction parallels the one that can be made between custom and law; that is 'a distinction of degree – the degree of need for conscious deliberation and explicit formulation of precepts – rather than a distinction of kind' (Rorty, 1999: 73). Pragmatism sees both intellectual and moral progress not in terms of 'getting closer to the True or the Good or the Right, but as an increase in imaginative power…the ability to redescribe the familiar in unfamiliar terms' (ibid: 87). Rorty (1999: 88) emphasises that the difference between the Platonian conception of human nature and the pragmatist, Deweyan conception is the difference between 'the security of the unchanging and the romance of unpredictable change…this willingness to substitute imagination for certainty, and curiosity for pride, breaks down the Greek distinction between contemplation and action'.

## Implications for Organisational Research

Pragmatism offers a new promising angle on thinking about work organisations. Wicks & Freeman (1998) posit that positivism and anti-positivism are the dominant intellectual anchors within organisation studies. However, they see pragmatism as a preferable epistemological framework. This is because pragmatism places emphasis on the importance of creativity and imagination as the primary means that enable individuals to realise their aspirations (Rorty, 1999). Wicks & Freeman (1998: 130) suggest that organisational researchers who adopt a pragmatist approach to their studies can combine fruitfully the 'insightfulness and skill of the intellectual with the needs and challenges of those engaged in the practice of business in a given socioeconomic context'.

Wicks & Freeman (1998) build on Weick's (1979) work to explore more specific implications of pragmatism for organisational research. In contrast to positivism,

pragmatism suggests that organisations are confronted with equivocality (Weick, 1979). Yet, contrary to anti-positivism, pragmatism is not interested in capturing the image of an 'environment that is disordered, indeterminate, and chaotic' (ibid: 174). Instead, it seeks to capture the image of an environment that is 'rich in the possible connections that could be imposed on an equally rich assortment of possible punctuated variables' (ibid.). The question that arises therefore is how individuals and organisations interpret equivocality. In line with Weick (1979), Wicks & Freeman (1998: 131) argue that 'this process is, and organisations in general are, fundamentally social'. Hence, the activity of organising takes a new meaning, that of a 'consensually validated grammar for reducing equivocality by means of sensible interlocked behavior (Weick, 1979: 3). This echoes Dewey's position that the individual is, 'before all else, a *social* animal' (Passmore, 1968: 115, italics in the original). In other words, pragmatism places particular emphasis on the 'social and contextual richness which shapes the activity of organizing' (Wicks & Freeman, 1998: 132). This brings into the forefront the notions of social character (Fromm, 1941) and social self (Meade, 1918) and their implications for an alternative theorising of the firm and the social relations therein within a knowledge economy.

Recent advancements in organisation theory suggest that a shift towards knowledge-based modes of economic production has been accompanied by the emergence of collaborative communities as a new principle of social organising alternative to markets and hierarchies (Heckscher & Adler, 2006). The collaborative community thesis points to the transformation of the social character of the firm. Social character, a term that was conceived by Fromm (1941), refers to 'the core aspects of character produced within social groups through common socialisation mechanisms that enable people to count on the fact that others will react predictably' (Adler & Heckscher, 2006: 54). The notion of social character echoes Meade's (1918) idea of the social self. The two concepts can be seen as two sides of the same coin: social character is more a micro-level concept focusing on psychological dynamics, while social self is more a macro-level concept focusing on the connections of psychological dynamics to social situations (Adler & Heckscher, 2006).

Meade (1918) describes three archetypes of social self (i.e., independent, dependent, interdependent) that correspond to three generic types of social organising (i.e., hierarchies, markets, communities). In traditional bureaucracies, the social self is created 'by subsuming individuals under preordained social statuses' (Adler & Heckscher, 2006: 56) whereas in markets it 'derives primarily from a competitive battle

with people within the social group' (ibid.). Meade (1918) foresaw the possibility of a third archetype of social self, which Adler & Heckscher (2006: 54) label 'interdependent social self' and distinguish it from Gemeinschaft and Gesellschaft types of community. This archetype is characterised by a distinct collaborative ethic fuelled by the constant social interaction among organisational members, a shared responsibility for the collective outcome, and the 'ability to grasp the distinctive contributions that different types can make to a shared project' (ibid: 58). In Meade's words (1918: 602):

> The test of success of this self lies in the change and construction of the social conditions which make the self possible, not in the conquest and elimination of other selves. His [sic] emotions are not those of mass consciousness dependent upon suppressed individualities, but arise out of the cumulative interests of varied undertakings converging upon a common problem of social reconstruction.

In this view, pride and self-valuation stem not from loyalist attachment to the organisation as such nor from accomplishment of individualised tasks but from a 'capacity to "see it from the other's point of view"' (Adler & Heckscher, 2006: 58). Therefore, individuals 'present themselves as interdependent with others, and are motivated to maintain and develop those relations' (ibid: 56). More broadly, from a pragmatist viewpoint, 'the most distinctive and praiseworthy human capacity is our ability to trust and cooperate with other people, and in particular to work together so as to improve the future' (Rorty, 1999: xiii). The notion of the collaborative community and its implications for reconsidering the role of individuals and their social relations within knowledge-intensive firms are explored in more detail in the following chapter.

## Conclusion

This chapter has highlighted that human knowledge is determined by a multitude of factors exemplified by diverse philosophical, sociological, and psychological issues. This diversity is reflected in the broad literature on knowledge and organisations which, in turn, is characterised by epistemological debates and controversies over what constitutes knowledge in work organisations. The influence of the philosophical, psychological and sociological perspectives on the topic of knowledge transfer will become clearer in the remaining chapters. It is important to note, as a prelude to the following discussion, that the diversity of the literature on knowledge in organisations is welcomed insofar as it provides 'the basis of a generative interaction or discourse between a plurality of heterogeneous elements rather than evidence of disabling fragmentation' (Spender & Scherer, 2007: 13).

# CHAPTER TWO
# Conceptualising Knowledge in Organisations

## INTRODUCTION

This chapter offers an analytical overview of knowledge as conceptualised in organisation and management theory. The aim is to provide an understanding of the complex relationship between knowledge and organisations, and to identify key aspects of that relationship that deserve further research attention. The chapter is structured into four sections. The epistemological and ontological properties of knowledge are examined in the first section. The second section presents theories of strategic management that are informed by a knowledge-based view of the firm. In the third section the emergence of the KM field is outlined, followed by an analysis of KM paradigms, strategies, and activities, with a particular emphasis placed on knowledge creation and transfer. The fourth section discusses the notion of knowledge transfer as a learning process, identifies the need for understanding its micro-mechanisms and, finally, considers its HRM implications. The chapter concludes by arguing that, given the 'inbuilt pluralism of the knowledge movement' (Foss, 2007: 31), a more comprehensive understanding of the role of knowledge in work organisations is possible only if it is based on approaches that incorporate insights from multiple theoretical perspectives.

## I. PROPERTIES OF KNOWLEDGE

Research dealing with the nature of knowledge in organisations has to date been predicated on a taxonomy of knowledge properties along two generic dimensions: the epistemological and the ontological (Tywoniak, 2007). The epistemological dimension distinguishes between two types of knowledge; that is explicit and tacit knowledge (e.g., Nonaka & Takeuchi, 1995; Cowan, David, & Foray, 2000). The ontological dimension places emphasis on the locus of knowledge; that is the analytical level – individual or collective – in which knowledge resides (e.g., Brown & Duguid, 1998; Felin & Hesterly, 2007).

### Explicit and Tacit Knowledge

KM's academic legitimacy and wider popularity in the business world has to a large extent been attributed to Ikuro Nonaka and colleagues' theory of organisational knowledge creation (Nonaka, 1991, 1994; Nonaka & Takeuchi, 1995; Nonaka & Konno, 1998; Nonaka, Toyama, & Nagata, 2000). At the heart of this theory lies the

idea that knowledge in organisations is created as a result of a dynamic interaction process, termed knowledge conversion, between explicit and tacit knowledge. The influence of the distinction between explicit and tacit knowledge on KM studies has been extensive. As Tsoukas (2003: 412) comments: 'it is nearly impossible to find a publication on organisational knowledge and knowledge management that does not make a reference to, or use the term "tacit knowledge"'.

**Philosophical Underpinnings of Tacit Knowledge**

The term 'tacit knowledge' was coined by Polanyi (1966) and refers to his frequently cited quotation 'we can know more than we can tell' (ibid: 6). The notion of tacitness takes centre stage in Polanyi's integrative philosophy of thought. This, in turn, is underpinned by two core assumptions, according to which reality is personal and knowledge is constructed through tacit integration. Polanyi's theory of knowledge is rooted in Gestalt psychology, a basic premise of which is that perception is determined in the way that is integrated into an overall pattern or Gestalt. As Polanyi (1966: 6) states:

> Gestalt psychology has demonstrated that we may know a physiognomy by integrating our awareness of its particulars without being able to identify these particulars, and my analysis of knowledge is closely linked to *this* discovery in Gestalt psychology (italics added).

The "this" refers, therefore, to the integration of parts into forming the "whole" without being aware of the actual parts. Gestalt psychology holds that this integrating process is innate, whereas for Polanyi (1966: 6) the "whole" is 'an outcome of an active shaping of experience performed in the pursuit of knowledge'.

In evaluating Polanyi's theory of knowledge it can be argued that it provides an alternative way of knowing. This stems from the actual practice of the pursuit of knowledge (Ruzits-Jha, 1995). Yet, in constructing a clear definition of tacit knowledge that can demonstrate causal connections to specific outcomes, Polanyi's definition does not meet this criterion. In his view, this is a criterion for a rule-following mechanistic conception of scientific investigation but not necessary for a philosophical inquiry (Ruzits-Jha, 1995). However, the term 'tacit knowledge' has been the biggest "export" from philosophy to the KM field. This is due to Nonaka & Takeuchi's (1995) landmark publication *The Knowledge Creating Company*, where Polanyi's idea of tacit knowledge is expanded 'in a more practical direction' (ibid: 60). The next sub-section explores further the nature of tacit knowledge in relation to explicit knowledge.

**Tacit Knowledge in Relation to Explicit Knowledge**

Drawing on Polanyi's (1966) philosophical account of knowledge, Nonaka & Takeuchi (1995: 59) distinguish between tacit and explicit knowledge as follows:

> Tacit knowledge is personal, context-specific, and therefore hard to formalize and communicate. Explicit knowledge or "codified" knowledge, on the other hand, refers to knowledge that is transmittable in formal, systematic language.

There have been various attempts to define and classify knowledge along the tacit-explicit typology. Nonaka & Takeuchi (1995) equate Polanyi's conception of tacit knowledge with subjective nature, and explicit knowledge with objective nature. They also draw an analogy between tacit knowledge and procedural knowledge, and explicit knowledge and declarative knowledge, based on Anderson's (1976, 1983) cognitive theory that was presented in the previous chapter. Similarly, Ryle's (1949) distinction between know-how and know-what is employed by Nonaka & Takeuchi (1995) to highlight the contrast between the two types of knowledge. On the one hand, tacit knowledge refers to the processual character of knowledge: 'as we are generating new knowledge in action, we are not necessarily attentive to the knowledge for we are attending to the action (Tywoniak, 2007: 61). On the other hand, explicit knowledge refers to the 'retrospective unfolding of the knowledge process: once skilful performance has been achieved, it is possible to reflect and theorize about it' (ibid: 62). Table 2.1 provides a summary of some of the labels given to the tacit/explicit knowledge distinction.

Table 2.1 **Labels for the Distinction between Tacit and Explicit Knowledge**

| **Tacit Knowledge** | | **Explicit Knowledge** |
|---|---|---|
| Subjective<br>Knowledge of experience (body)<br>Simultaneous knowledge (here and know)<br>Analog knowledge (practice) | | Objective<br>Knowledge of rationality (mind)<br>Sequential knowledge (there and then)<br>Digital knowledge (theory) |
| *Other Labels for the Tacit-Explicit Dichotomy* | | |
| Unconscious | James (1890) – Psychology | Conscious |
| Know-how | Ryle (1949) – Philosophy | Know-that |
| Procedural | Anderson (1983) – Cognitive Psychology/AI | Declarative |
| Intuitive | Dreyfus & Dreyfus (1986) – Philosophy/Computer Science | Analytical |
| Subconceptual (Inaccessible) | Smolensky (1988) – Cognitive Science | Conceptual (Publicly accessible) |

Source: Extended from Nonaka & Takeuchi (1995: 61)

A key characteristic of tacit knowledge that distinguishes it from explicit knowledge is argued to be its context-specificity. In this sense, it is 'knowledge typically acquired on the job or in the situation where it is used' (Sternberg, 1994: 28). For Nonaka (1991:

98), it is ‘deeply rooted in action and in an individual’s commitment to a specific context – a craft or a profession, a particular technology or product market, or the activities of a work group or team’. Tacit knowledge, therefore, consists partly of ‘technical skills – the kind of informal, hard-to-pin down skills captured in the term “know-how”’ (ibid.).

**A Critique of the Tacit/Explicit Dichotomy**

The notion of tacit knowledge and its relation to explicit knowledge, as conceptualised in Nonaka and colleagues’ theory of knowledge creation, has been subject to scrutiny and criticism (Tsoukas, 1996; Cook & Brown, 1999; Brown & Duguid, 2001; Tsoukas & Vladimirou. 2001; Castillo, 2002; Wilson, 2002; Tsoukas, 2003; Styhre, 2004; Gueldenberg & Helting, 2007). Much of this criticism focuses on the misinterpretation of Polanyi’s original notion of tacit knowledge. For example, Tsoukas (2003: 412) argues that ‘popular as the term “tacit knowledge” may have become in management studies, it has, on the whole, been misunderstood’. Indeed, In Polanyi’s (1969: 195) epistemological account of knowledge a clear-cut distinction between tacit and explicit knowledge is explicitly denied:

> The ideal of a strictly explicit knowledge is indeed self contradictory; deprived of tacit coefficients (personal to the individual), all spoken words, all formulae, all maps and graphs, are strictly meaningless.

Polanyi advocates the inextricability rather than the dichotomisation of explicit and tacit knowledge. This is a philosophical position which goes well beyond Platonian and Cartesian dualisms. The subject area of Polanyi’s philosophy is associated with the pursuit of knowledge in the context of scientific inquiry. In this context, problem identification and scientific discovery are viewed by Polanyi (1966: 20) to be embedded in tacit knowing; therefore, scientific knowledge cannot be objective:

> The declared aim of modern science is to establish a strictly detached, objective knowledge…[yet if] tacit thought forms an indispensable part of all that knowledge, then the idea of eliminating all personal elements of knowledge would, in effect, aim at the destruction of knowledge.

According to Tsoukas (2003), Nonaka’s theory reflects a dualist approach to knowledge since it suggests that explicit knowledge is objective and characteristic of a rational mind, whereas tacit knowledge is subjective and derived from experience. Tsoukas (2003: 425) argues that ‘tacit and explicit knowledge are not the two ends of a continuum but the two sides of the same coin: even the most explicit kind of knowledge is underlain by tacit knowledge’. Tsoukas (2003: 417) further argues that, according to Polanyi’s account of tacit knowing, both tangible things and intangible constructions are

'*tools* enabling a skilled user to get things done' (italics in the original). Tsoukas' critique, while acknowledging the duality of knowledge, rejects the dualism that is inherent in Nonaka's theoretical framework. The difference between dualism and duality is subtle but important for it underlines the inseparableness of knower and knowledge in that the person is an organic constituent of the knowing process[1]. As Polanyi & Prosch (1975: 44) assert, '*[a]ll* knowing is personal knowing – participation through indwelling' (italics in the original).

It can be argued that Polanyi's (1966: 4) heavily quoted line 'we can know more than we can tell' should not, therefore, be reduced to a simplistic divide between explicit and tacit knowledge as perfectly substitutable elements, nor should it be translated into the erroneous view of tacit knowledge as a tradable commodity that 'needs to be converted into explicit form to circulate' (Brown & Duguid, 2001: 204). For Tsoukas (2003), a richer account of knowledge requires a shift away from the mechanistic notion of knowledge conversion towards acknowledging the importance of action or praxis in which knowledge, as conceptualised by Polanyi, manifests itself (ibid: 426).

**Operationalising Tacit and Explicit Knowledge**

The philosophical basis for defining tacit knowledge that was posited by Polanyi is difficult to extend to a working definition and, as Ruzits-Jha (1995) argues, was never intended to be, since it is in the realms of philosophy. Tacit knowledge, in its pure Polanyian form, is pre-theoretical, inaccessible, inarticulable and, therefore, un-measurable. Attempts have, however, been made by researchers to define operationally and subsequently measure tacit knowledge (e.g., Zander & Kogut, 1995; Szulanski, 1996; Hansen, 1999, 2002).Yet, these attempts have led to the problem of overlap and confusion in terminology. Much of this confusion stems from using the term 'tacit' interchangeably with other terms, and particularly with the term 'implicit' (Cleeremans, 1997). It is, thus, important to be clear about what the terms tacitness and explicitness actually refer to in the context of the present study.

Some theorists suggest that there is a subset of tacit knowledge, called implicit knowledge, which can be articulated and, as a consequence, communicated and transformed into explicit knowledge (Sternberg *et al.*, 2000; Wilson, 2002; Arena,

[1] Möllering (2005: 205) explains the difference between dualism and duality in concrete terms as follows: 'Take the two sides of a coin. The *dualism* perspective notes that there are two sides to every coin and one of the sides ('head') is different from the other ('tail'); we can describe them separately. The *duality* perspective now stresses that coins need to have a head side in order to have tail side and vice versa; when referring to head we imply a matching tail (e.g. in diameter, material) and the coin as such gains its meaning and value from head and tail together'.

Lazaric, & Lorenz, 2006). According to Wilson (2002), while implicit knowledge refers to something that a person knows but does not want to express, tacit knowledge is something that a person knows but cannot express. Wilson (2002) further argues that implicit knowledge is that which is taken for granted in human action, and which may be shared through common experience or culture. Although such knowledge may be difficult to be written down or codified, it may be capable of being communicated by people living and interacting with each other in the social environment (ibid.).

Arena *et al.* (2006) distinguish between "tacit", "articulable", "articulated" and "codified" knowledge. According to this distinction, part of the (tacit) knowledge of a person is articulable when it can be made explicit by means of language. In the same vein, articulated knowledge is knowledge that has been rendered explicit through language. Articulated knowledge is, in turn, distinct from codified knowledge since only parts of the knowledge that have been articulated will be encoded on a particular "hard" medium (e.g., training manual, job description, software) (Zollo & Winter, 2002; Arena *et al.*, 2006).

In much of the empirical research on knowledge transfer and sharing in organisations, the distinction between explicit and tacit knowledge is made on the basis of the degree of knowledge codification (Zander & Kogut, 1995; Szulanski, 1996; Hansen, 1999, 2002; Haas & Hansen, 2005; Hansen, Mors & Løvås, 2005). Knowledge codification refers to the extent to which 'knowledge is fully documented or expressed in writing at the time of the transfer' (Hansen, 1999: 87). Accordingly, 'knowledge with a low level of codification corresponds closely to the concept of tacit knowledge' (ibid.). Non-codified knowledge – that is 'mainly personal practical know-how' (Hansen, 1999, 2002) – denotes a proxy for tacit knowledge. On the other hand, codified knowledge – that is knowledge contained in written (paper or electronic) format – approximates the notion of explicit knowledge (ibid.). The distinction of knowledge into codified and non-non-codified types is followed in the present study.

### Individual and Collective Knowledge

A key issue of the relationship between knowledge and organisation pertains to the analytical level at which knowledge is considered to be the primary source of value creation and sustained competitive advantage. The knowledge movement (Foss, 2007) is characterised by two research streams each of which is informed by a distinct theoretical perspective (i.e., individualist or collectivist) on the locus of knowledge in work organisations (e.g., De Graaf, 1957; Nelson & Winter, 1982; Simon, 1991). Table

2.2 offers representative quotes from prominent organisational scholars that illustrate the antithesis between the two perspectives on the locus of knowledge.

Table 2.2 **Individualist and Collectivist Perspectives on Knowledge in Organisations**

| **The Individual as the Locus of Knowledge** | | |
|---|---|---|
| 'The firm is in no sense a 'natural unit'. Only the individual members of the economy can lay claim to that distinction…The ultimate repositories of technological knowledge are the men comprising it…in itself the firm possesses no knowledge' (De Graaf, 1957: 16) | 'All organizational learning takes place inside human heads; an organization learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organization didn't previously have' (Simon, 1991: 125) | 'The emphasis upon the individual as the primary actor in knowledge creation and the principle repository of knowledge, I believe, is essential to piercing the veil of organizational knowledge and clarifying the role of organizations in the in the creation and application of knowledge' (Grant, 1996: 121) |
| **The Firm as the Locus of Knowledge** | | |
| 'The possession of technical knowledge is an attribute of the firm as a whole, as an organized entity, and is not reducible to what any single individual knows, or even to any simple aggregation of competencies and capabilities of all the various individuals, equipments and installations of the firm' (Nelson & Winter, 1982: 63) | 'Firms exist because they provide a social community of voluntaristic action structured by organizing principles that are not reducible to individuals' (Kogut & Zander, 1992: 384) | 'Collective knowledge is the most secure and strategically significant kind of organisational knowledge' (Spender, 1996: 52) |

### Philosophical Underpinnings of Individual and Collective Knowledge

Felin & Hesterly (2007) build on Kaplan's (1964) definition of the 'locus problem' in order to contrast the philosophical assumptions underlying the individualist and collectivist perspectives on knowledge in organisations:

> We roughly concur with Kaplan's [1964: 78] definition of the locus problem and apply this question to knowledge-based work: "The locus problem may be described as that of selecting the ultimate subject-matter for inquiry in behavioral science, the attribute space for its description, and the conceptual structure within which hypotheses about it are to be formulated" (Felin & Hesterly, 2007: 195).

The philosophical assumptions underlying individualist and collectivist perspectives on knowledge have received little attention in the organisation and management studies (ibid.). However, Rosenberg (1995: 4) asserts that 'being clear about a discipline's philosophy is essential because at the frontiers of disciplines, it is the philosophy of science that guides inquiry'. Felin & Hesterly (2007: 195) emphasise that the theoretical and practical implications of the debate between an individualist and collectivist locus of knowledge 'are far from pedantic' for enriching understanding of how knowledge

contributes to new value creation in organisations. The contrasts between the two perspectives are presented in Table 2.3.

Table 2.3 **Dimensions of Individualist and Collectivist Perspectives on Knowledge**

| Dimensions | Individual Ideal Type | Collective Ideal Type |
|---|---|---|
| *Locus of knowledge* | Individual | Collectives |
| *Epistemology* | Methodological Individualism | Methodological Collectivism |
| *Causal directionality* | Micro-micro, micro-macro; Upward-causation | Macro-macro, macro-micro; Downward-causation |
| *Explanans or independent variables* | Individuals | Social facts (e.g., community, collective, culture, environment, organising principles etc.) |
| *Collective ontology* | Reducible to individuals | Not reducible to individuals |
| *Mereology* | Resultant whole (supervenience) | Emergent whole (multiple realisability) |
| *Level of analysis assumption* | Individual heterogeneity, independence from higher-level interaction | Individual homogeneity, higher-level collective heterogeneity (e.g., firm, culture, environment) |
| *Theory of knowledge* | Internalist | Externalist |
| *Source of knowledge* | A priori or innate | Environmentally determined |
| *Human nature* | Nature | Nurture, blank state |

Source: Felin & Hesterly (2007: 198)

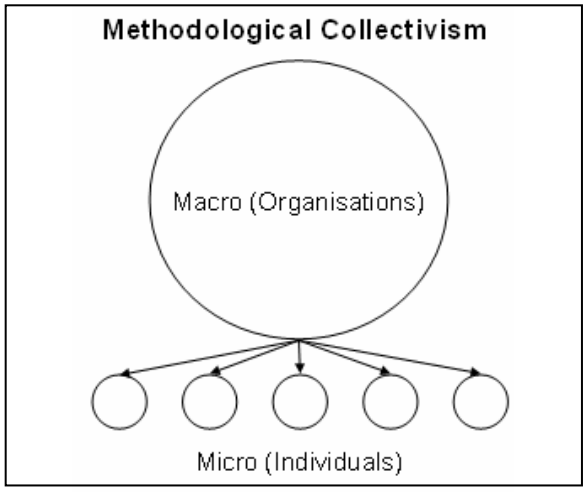
### Collective Knowledge Ideal Type

Building on the Durkheimian sociological tradition, a view of knowledge through the lens of the collective ideal type suggests that social phenomena should be treated as social facts extraneous to the individual. In Durkheim's (1952: 39) words:

> Sociological method as we practice it rests wholly on the basic principle that social facts must be studied as things, that is, as realities external to the individual. There is no principle for which we have received more criticism; but none is more fundamental.

Durkheim (1952) postulates that social facts determine not only collective phenomena (i.e., macro-macro causation) but also individual human behaviour and action (i.e., macro-micro causation). By placing emphasis on external social factors 'which act from "outside" the individual actor, regardless of his intentions', Durkheim concludes that an intentional act 'is the outcome of social causes, as these operate in particular individuals' (Giddens, 1986: 118). Under the methodological tradition of collectivism, causal explanations are, thus, made in a downward fashion since it is assumed that human behaviour and action are an a priori function of collective-level variables including routines, norms, structures, and organising principles. The explanatory rationale of methodological collectivism for linking micro and macro constituents of social systems in general and work organisations in particular is shown in Figure 2.1.

Figure 2.1 **Causal Directionality in Methodological Collectivism**




A number of organisational scholars have placed emphasis on the role of 'supraindividual structures' (Felin & Hesterly, 2007: 200) in which knowledge resides. For example, Levitt & March (1988: 320) claim that organisational routines are 'independent of the individual actors who execute them'. Similarly, Kogut & Zander (1992: 383) argue that the knowledge of the firm cannot be reduced to its members since 'then firms could change simply by employee turnover'. Instead, according to the authors, 'an analysis of what firms can do must understand knowledge as embedded in the organizing principles' (ibid.). Furthermore, research on communities of practice (CoPs) views the collective as the enabling structure for achieving knowledge outcomes (Brown & Duguid, 1991, 2001). For example, while Brown & Duguid's (2001: 210) social-practice perspective on knowledge 'is in no way a dismissal of the individual' (ibid: 210), it nevertheless suggests that CoP are 'ubiquitous sources of knowledge driving organizational change' (ibid: 208). Taken together, a shared assumption within the collectivistic stream of the knowledge movement is that of individual homogeneity. By specifying the collective (e.g., organisation, business unit, community of practice) as the level of analysis at which most knowledge heterogeneity is assumed to occur, collectivist scholars automatically attribute homogeneity to lower levels (Klein, Dansereau, & Hall, 1994). In this sense, they posit that firm-level attributes, such as routines and dynamic capabilities, rather than individual differences, account for performance heterogeneity (Felin & Hesterly, 2007).

When collectivists make assumptions about the level of analysis they also reveal, explicitly or implicitly, their views on human nature. In *The Rules of Sociological Method*, Durkheim (1962: 106) takes a clear stance on human nature by stating that 'individual natures are merely the indeterminate material that the social factor molds and transforms'. Durkheim's view is shared by collectivist organisation scholars who

place emphasis on 'heterogeneous collective process, social construction, situation and experience' (Felin & Hesterly, 2007: 202). For example, Spender (1996: 53) argues that 'organizations learn and have knowledge only to the extent that their members are malleable beings whose sense of self is influenced by the organization's evolving social identity'. Under the collective ideal type, human nature is conceived as a 'blank slate, which heterogeneous social facts (such as culture, social context, and environment) shape and determine' (Felin & Hesterly, 2007: 201-202).

**Individual Knowledge Ideal Type**

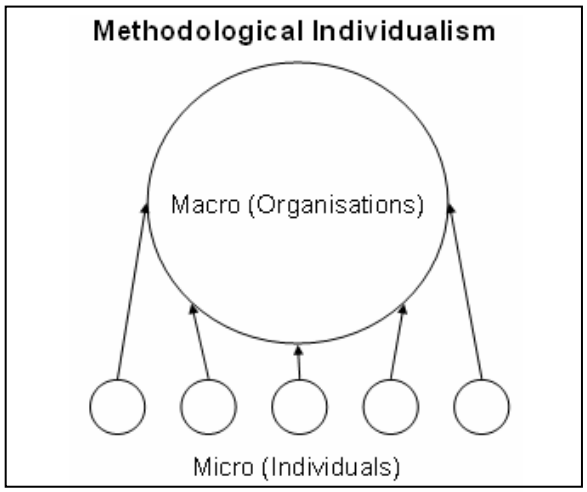
A view of knowledge through the lens of the individual ideal type suggests that social phenomena are inadequately explained when the focus of inquiry is placed on collectives rather than individuals as the basic unit of analysis. In *Conjectures and Refutations*, Popper (2002 [1968]: 459) argues:

> The belief in the empirical existence of social wholes or collectives, which may be described as *naïve collectivism*, has to be replaced by the demand that social phenomena, including collectives, should be analyzed in terms of individuals and their actions (italics in the original).

Methodological individualists object to the existence of the metaphysical and argue that only individuals exist in any real sense and, therefore, 'should provide the basis for all collective explanation' (Rosenberg, 1995: 159). In contrast to methodological collectivism, they assert that collectives are understood by the actions of their individual members. Explanations of social phenomena are, therefore, drawn from individual-level variables following a micro-macro or upward causation (Felin & Hesterly, 2007). The explanatory rationale of methodological individualism for linking micro and macro constituents of social systems in general and work organisations in particular is illustrated in Figure 2.2.

Methodological individualism is based on the notion of supervenience. This is defined as 'higher-level dependence or determination on lower-level properties or facts' (ibid: 200). The notion of supervenience is reflected in Simon's (1991: 125) view that the organisation learns 'by the learning of its members'. In a similar vein, Grant (1996) argues that the effectiveness of knowledge processes and outcomes in organisations depends primarily on the individual employee. He further posits that emphasis should be placed upon the 'role of the individual as the primary actor in knowledge creation and the principal repository of knowledge' (ibid: 121).

Figure 2.2 **Causal Directionality in Methodological Individualism**




The notion of supervenience challenges the underlying assumption of methodological collectivism regarding what Popper (1968[2002]: 60) calls 'initial conditions'. According to Popper (1968[2002]: 59), the causal explanation of an event 'means to deduce the statement which describes it, using as premises of the deduction one or more universal laws, together with certain singular statements, the initial conditions'. For organisational individualists, the initial conditions reflect and, hence, should focus on, a priori individual differences. In contrast, those differences are largely overlooked by collectivists who view organisational environments as 'strong situations' (Davis-Blake & Pfeffer, 1989) or emergent, collective environments (Nelson & Winter, 1982). However, Felin & Hesterly (2007: 204) argue emphatically that 'the initial conditions or a priori propensities of individuals within an organization of course have fundamental implications for performance heterogeneity and new value creation'.

Methodological individualism challenges the externalist and environmentally determined learning tradition which underpins collective-orientated approaches to the knowledge of the firm such as the notion of collective mind (Weick & Roberts, 1993), collective identity (Kogut & Zander, 1996), distributed knowledge system (Tsoukas, 1996), and CoP (Brown & Duguid, 2001). Felin & Hesterly (2007: 202) note that the above approaches have to a large extent been influenced by the work of externalist psychologists and philosophers, who argue 'that cognitive abilities and knowledge in general are context dependent and environmentally determined'. The collectivist learning tradition has been also criticised by the Chomskyan cognitive revolution in linguistics which shows empirically that 'external environmental input and socialisation play only a minimal triggering role in language acquisition' (ibid.). According to Chomsky's '"I"- language' concept, 'human beings have a genetically determined "initial state", competence, or endowment, which is individual, intentional and internal' (ibid.).

## Properties of Knowledge as Interrelated Dimensions

There are a number of frameworks which treat the epistemological and ontological properties of knowledge as interrelated dimensions with the aim of helping to understand the types of knowledge pertinent to processes of knowledge creation, transfer and utilisation in work organisations. Two salient frameworks are outlined below: Spender's (1996) fourfold framework and Blackler's (1995) fivefold framework.

In Spender's (1996) theoretical framework, the epistemological and ontological dimensions of knowledge give rise to four types of knowledge: conscious knowledge (individual-explicit), automatic knowledge (individual-implicit), objectified knowledge (social-explicit), and collective knowledge (social-implicit). The four types of knowledge are illustrated in Table 2.4.

Table 2.4 **Four Types of Knowledge in Organisations**

| | **Individual Knowledge** | **Social Knowledge** |
|---|---|---|
| **Explicit** | Conscious | Objectified |
| **Implicit** | Automatic | Collective |

Source: Spender (1996: 52)

According to Spender (1996: 51), the four different types of knowledge represent ideal types since 'every real firm will be a mixture of them all'. The distinction between individual and social knowledge reflects the distinction between the psychological, individual-focused type of knowledge proposed by Polanyi (1966), and the sociological, collective-oriented type of knowledge proposed by Durkheim (1962). In particular, individual knowledge comprises conscious and automatic knowledge. While the former type refers to knowledge that is available to the individual in the form of facts, concepts, and frameworks that can be stored in and retrieved from memory or personal records, the latter type concerns automatic knowledge, which can take the form of either theoretical or practical knowledge that enable the individual to perform a number of skilful activities. Both types of individual knowledge are considered particularly important 'in contexts where the performance of individual employees is crucial, as in specialist craft work' (Nahapiet & Ghoshal, 1998: 247).

Social knowledge comprises objectified and collective knowledge. The former type refers to 'the shared corpus of knowledge – epitomized, for example, by scientific communities, and often regarded as the most advanced form of knowledge' (ibid.). The

latter type refers to what Nelson & Winter (1982) name as routines. Empirical evidence on the role of collective knowledge in organisations is found in Weick & Roberts' (1993) study of members of flight operation teams of aircraft carriers in the USA. Spender (1996: 52) suggests that, from a strategic viewpoint, 'collective knowledge is the most secure and strategically significant kind of knowledge' in the sense that it is hard to be understood and imitated by competitors. Yet, one of the limitations of Spender's (1996) framework appears to be the lack of interaction between individual and social knowledge. The matrix tells little about 'how the firm becomes a context especially favourable to the interaction of knowledge creation and knowledge-application processes' (ibid: 51).

Blackler's (1995) framework identifies five types of knowledge in organisations: embrained, embodied, encoded, embedded, and encultured knowledge. A brief description of the five types of knowledge is provided in Table 2.5.

Table 2.5 **Five Types of Knowledge in Organisations**

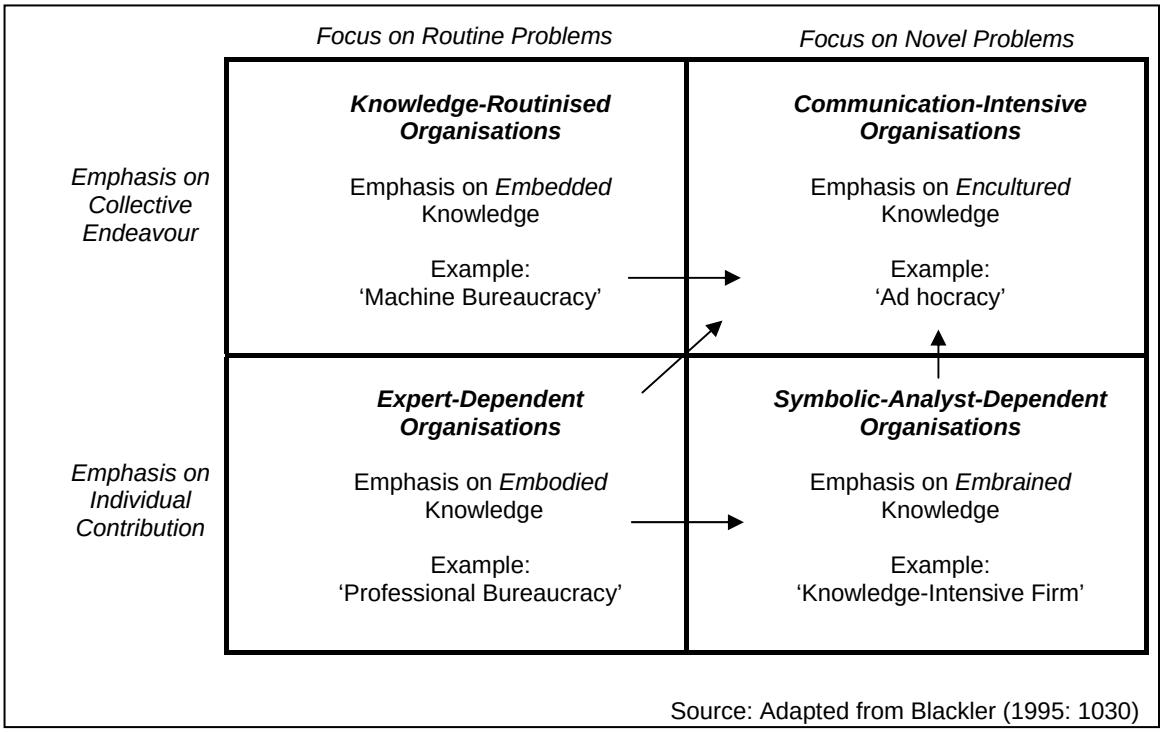
| **Types of knowledge** | **Description** |
|---|---|
| *Embrained* | …is knowledge that is dependent on conceptual skills and cognitive abilities (e.g., know-that). |
| *Embodied* | …is knowledge that is action oriented and is only partly explicit (e.g., know-how). |
| *Encoded* | …is information conveyed by signs and symbols such as books, codes of practice and electronic documents. |
| *Embedded* | …is knowledge which resides in systemic routines. It is analysable in the relationships between, for example, technologies, roles, formal procedures, and emergent routines. |
| *Encultured* | …refers to the process of achieving shared understandings. It is related to the processes of socialisation and acculturation. |

Source: Adapted from Blackler (1995: 1023-1025)

The types of knowledge identified in Blackler's (1995) framework share similarities with Spender's (1996) framework as well as Nonaka & Takeuchi's (1995) distinction between explicit and tacit knowledge. For example, embrained knowledge equates with the notion of tacit knowledge and encoded knowledge with explicit knowledge. Encultured knowledge is similar to Spender's collective (social/implicit) knowledge. On the other hand, embedded knowledge can be either tacit or explicit knowledge since 'routines may be formal articulated policy and procedures or informal routines that are tacitly known by everyone in the firm' (Newell *et al.*, 2002: 6). The distinguishable characteristic of Blackler's (1996) framework is, though, that it links different types of

knowledge with different types of organisations. In particular, Blackler (1995) develops a two-by-two matrix in which four types of organisations are identified according to their relative dependence on embodied, embedded, embrained, and encultured knowledge. The four types of organisations are further distinguished by (i) their emphasis on collective endeavour versus contribution of key individuals, and (ii) their focus on routine versus novel problems. The two-by-two matrix is illustrated in Figure 2.3.

Figure 2.3 **Organisations and Knowledge Types**




Source: Adapted from Blackler (1995: 1030)

The arrows in Figure 2.3 indicate 'that a shift is occurring away from dependence on the embodied and embedded knowledge towards embrained and encultured knowledge' (Blackler, 1995: 1029). In summary, Blackler's (1995) framework is useful for it highlights that 'the type of knowledge that dominates within the firm should to some extent influence the way in which knowledge is managed in the firm' (Newell *et al.*, 2002: 6-7).

## II. KNOWLEDGE AND THE THEORY OF THE FIRM

While a great deal of research on strategy and organisation is inductive and empirical, an alternative and complementary approach is deductive and starts with a theoretical inquiry into why firms exist and what they do that could not be done otherwise. Grant (1996: 110) notes that 'the foundation of any theory of the firm is a set of initial premises which form the basis for the logical development of propositions concerning the structure, behavior, performance and, indeed the very existence of firms'. Seth &

Thomas (1994) state that the theory of the firm provides a way of conceptualising the business organisation and helps address questions which are central to research in strategy and organisation design. Likewise, according to Tsoukas (1996: 11), there are two key questions scholars have traditionally addressed in their studies of organisations, each of which corresponds to strategy and organisation design respectively. The first question concerns the direction in which a firm should channel its activities, while the second question focuses on identifying the ways through which a firm be organised. It is generally expected that the answers to these questions will vary depending on the theoretical perspectives and epistemological assumptions on which those perspectives are informed.

This section provides an overview of knowledge approaches to organisation theory. The aim is to highlight how these approaches have changed understanding of the theory of the firm, and to identify their relative strengths and weaknesses. The first sub-section outlines how the firm is viewed from an economics perspective, and particularly from a transaction cost economics (TCE) view (e.g., Williamson, 1975), the influence of which has been pervasive in a wide range of the organisation and management theory. The second sub-section focuses on a key theoretical precursor of the knowledge-based view of the firm, namely the resource-based view. The third sub-section shifts attention to the notion of intellectual capital, while the fourth sub-section describes the firm as a knowledge-distributed system. The final two sub-sections are informed by a communitarian view of the firm. The notion of CoP is first outlined, followed by a more recent theoretical advancement in organisation design, in which the firm is construed as a collaborative community.

## Economics of Organisation

Economics has played a major role in shaping current thinking in the theory of the firm. The most influential theory of the firm in the tradition of Coase (1937) and Williamson (1975, 1985) identifies the business organisation with authority as an alternative to the free market exchange in carrying out economic transactions. Otherwise known as transaction cost economics (TCE), this theory explains the emergence of the firm based on the axiomatic assumption of human opportunism. According to Williamson (1975: 26), opportunistic behaviour is defined as ‘self-interest seeking with guile’. Accordingly, firms exist due to their ability to avert the opportunistic behaviour of their members by exercising hierarchical control not otherwise achievable in a free market situation. Another influential view in this tradition relies on a similar notion according to which individuals have a propensity to shrink when involved in team production (e.g.,

Alchian & Demsetz, 1972). The assumption of self-interest is also prevalent here, and therefore the firm emerges as a policing mechanism. In brief, according to TCE, the firm is viewed as a governance structure or nexus of contracts (Williamson, 1991). Hence, the core difference between a market and hierarchy lies in the employment of two distinct coordination mechanisms. While the marker relies on pricing mechanisms to coordinate competing economic actors, hierarchy exercises authority over its members through a detailed horizontal and vertical division of labour resembling therefore, in Weber's terms, an ideal bureaucracy (Adler, 2001).

Notwithstanding the contribution of TCE to advancing understanding of the economic behaviour of firms, a number of organisation and management scholars who are acutely aware of the complexity of motivational and social aspects of contemporary business organisations have found the opportunism (i.e., self-interest) assumption unsatisfactory at best (e.g., Granovetter, 1985; Simon, 1991; Kogut & Zander, 1992; Ghoshal & Moran, 1996; Adler, 2001). For example, Ghoshal & Moran (1996) argue that firms are not substitutes for structuring efficient transactions when markets fail. The advantage of organizations over markets lies not in overcoming opportunism through hierarchy, but in creating an organisational context conducive to team-spirit, cooperation and collective learning (ibid.). Thus, trust would take the place of hierarchical control. Relatedly, Adler (2001) suggests trust to emerge as a relatively more effective means of coordination than price and hierarchical control as organisations gradually move towards knowledge-based competition.

Another wave of criticism concentrates on what neoclassical economists view as fundamental for firms' existence: that is the efficient allocation of given resources. In this view, the economic problem for firms, as Tsoukas (1996: 11-12) critically notes, is 'a mere problem of logic, of economic calculation […] Firm behavior is identified with the pattern of detectable actions […] Issues related to *how* preferences are formed, plans are formulated, and decisions are made, are not normally explored' (italics in original). Tsoukas (1996: 12) makes an interesting connection between neoclassical economics and behaviourism to highlight that essentially each discipline treats either firms or human agents as 'black boxes':

> Neoclassical economics and behaviorism make a nice couple: firms as well as individuals are thought to be fixed, bounded, surveyable entities whose behavior is described by the systematic input-output an observer is able to ascertain.

In juxtaposition to the neoclassical economic logic, Hayek (1945) has long argued that the fundamental economic problem not only for firms but for societies in general is not

the mere allocation of given resources, but instead the dynamic, circumstantial, and dispersed character of knowledge. In this view, it is impossible for a single "mind", be it the individual or the firm, to obtain nothing more than fragmented knowledge. According to Hayek (1945: 519-520):

> The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and contradictory knowledge which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate "given" resources […] It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge not given to anyone in its totality.

Although one could argue that different organising principles are likely to apply to firms and societies (e.g., Vanberg, 1993; Bianchi, 1994; Spender & Scherer, 2007), it is still likely that, 'given the increasing importance of knowledge for the effective functioning of firms in conditions of globalized capitalism', firms and societies are faced with similar challenges with respect to how to utilise the knowledge of their members (Tsoukas, 1996: 13). Viewing the firm through the lens of society can also act fruitfully as a generative metaphor. This can help provide interesting insights into organising aspects of firms 'by virtue of not only revealing previously unseen associations but also creating new ones between target and source domains' (Heracleous, 2003: 190). Essentially, metaphors, as Aristotle (1991) originally suggested, should be drawn from things that are related but not necessarily in an obvious way.

### The Resource-based View of the Firm

The knowledge-based view of the firm can be seen as a natural evolution of the resource-based approach (e.g., Wernerfelt, 1984; Barney, 1991; Conner, 1991) which, in turn, is grounded in Penrose's (1959) theory of the growth of the firm. According to the resource-based approach, competitive advantage is contingent upon the extent to which the firm possesses bundles of valuable, rare, imperfectly imitable, and imperfectly substitutable resources including physical assets, human resources, and organisational processes (Barney, 1991).

While recognising the important role of knowledge and its transferability within the firm as a critical determinant of the firm's capacity to gain competitive advantage, the resource-based approach does not distinguish between types of knowledge, but instead it treats knowledge largely as a generic resource. The resource-based approach has also received criticism on other grounds. Accordingly, the resource

based approach seems to adopt an all-encompassing definition of resources without, however, examining how resources are obtained or interact with each other towards contributing to the firm's competitive advantage (Priem & Butler, 2001). Teece, Pisano, & Shuen (1997: 516) propose an alternative to the resource-based approach according to which the firm's competitive advantage is dependent upon its dynamic capabilities. These are defined as 'the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments'. Eisenhardt & Martin (2000: 1107) extend the concept of dynamic capabilities by considering 'the organizational and strategic routines by which firms achieve new resource configurations'. Spender (1994) has expressed the view that the resource-based approach may be too narrow in its scope by concentrating on the protection of key resources, and by overlooking though how those resources are coordinated, integrated, and applied. As Grant (2002) notes, coordination and integration become particularly salient when one considers knowledge as the most important asset that the firm possesses. Spender (1996: 59) further argues that 'a knowledge-based theory of the firm can yield insights beyond the production-function and resource-based theories of the firm'.

### Intellectual Capital

The knowledge-based view of the firm signals a clear departure from the transaction cost logic and its behavioural assumption of opportunism (Nickerson & Zenger, 2004). This echoes Spender's (1996: 46) view according to which the aim of the knowledge-based approach is to 'deconstruct the black box of the economist's productive function into some more elemental components and interactions'. Spender (1996) continues arguing that 'until we identify these we cannot be confident about what is useful to observe over time' (ibid: 46). Based on a review of the relevant literature, it is hard to suggest, though, the existence of a crystallised consensus on what constitutes a knowledge-based theory of the firm. However, as a starting point, it would be useful to define knowledge-based firms as those organisations that 'employ, transfer and diffuse knowledge as a substantial aspect of their operations […] to create the intellectual capital that underpins wealth creation (Staples, Greenaway, & McKeen, 2001: 4).

The keyword in the preceding definition is intellectual capital, a term which 'has been considered by many, defined by some, [and] understood by a select few (Bontis, 1998: 63). There have been various definitions of the concept of intellectual capital (e.g., Edvinsson & Malone, 1997; Bontis, 1999; Choo & Bontis, 2002; McElroy, 2002). For example, in Edvinsson & Malone's (1997) scheme, intellectual capital is composed of

human capital and structural capital. The latter refers to 'the embodiment, empowerment, and supportive infrastructure of human capital' (ibid: 35). As McElroy (2002: 31) critically comments, structural capital 'includes all the things that support human capital in a firm, but which are left behind when employees go home at the end of the day'.

Nahapiet & Ghoshal's (1998) view of intellectual capital represents a rich framework for theorising on knowledge and organisations. According to them, intellectual capital comprises 'the knowledge and knowing capability of a social collectivity, such as an organization, intellectual community, or professional practice' (ibid: 245). Building on Schumpeter's (1934[1962]) classic work on economic development, Nahapiet & Ghoshal (1998) argue that intellectual capital, like any other resource, is created as a result of two generic processes: namely knowledge exchange and combination. They further identify four conditions for knowledge exchange and combination to occur: opportunity to access knowledge; anticipation of the value that is created through exchange; motivation to engage in knowledge exchange and combination; and finally, capability to combine, assimilate and use knowledge. Significantly, Nahapiet & Ghoshal (1998) acknowledge the social embeddedness of intellectual capital and, as a result, suggest that a theory of intellectual capital 'is likely to be one that is primarily concerned with social relationships' (ibid: 250). Accordingly, as the authors point out, 'social capital theory offers a potentially valuable perspective for understanding and explaining the creation of intellectual capital' (ibid: 250-251).

## The Firm as a Distributed Knowledge System

Nahapiet & Ghoshal's (1998) theoretical model of intellectual capital builds upon Spender's (1996) four-fold classification of organisational knowledge. However, Spender (1996) acknowledges the limitations of his proposed matrix to be the lack of interaction between individual and social knowledge.

In relation to this, Tsoukas' (1996: 22-23) view of the firm as a distributed knowledge system provides some hints worth of further theoretical development and empirical investigation:

> Given the distributed character of organizational knowledge, the key to achieving coordinated action does not so much depend on those 'higher up' collecting more and more knowledge, as on those 'lower down' finding more and more ways of getting connected and interrelating the knowledge each one has. A necessary condition for this to happen is to appreciate the character of a firm as a discursive practice: a form of life, a community, in which individuals come to share an unarticulated background of common understandings.

Tsoukas' (1996) argument shifts attention to the important issue of organisation design or, in other words, to the question posed in the beginning of this section on how a firm should be organized (ibid: 11). Clearly, Tsoukas (1996) points to the inability of hierarchical structures to deal efficiently with the coordination of knowledge processes as the knowledge of the firm is asymmetrically dispersed across its members. Hierarchical structures cannot exercise control over individuals' predispositions 'within particular interactive situations, whose features cannot be fully known ex ante, but are actively shaped by practitioners as they confront local circumstances' (ibid: 22). Likewise, Grant (1996) argues that a view of the firm as a knowledge integrating institution is incompatible with organisational modes built on bureaucratic control. In brief, a view of the firm as a distributed knowledge system calls into question the effectiveness of hierarchical structures for integrating the knowledge of its members through rules and directives: 'When managers know only a fraction of what their subordinates know […] then coordination by hierarchy is inefficient' (ibid: 118). If markets and hierarchies appear to be inefficient modes of social organising within a knowledge-intensive context, what, if any, are the alternatives?

### Communities of Practice

The CoP approach shifts attention to the role of knowledge as social practice in an attempt to understand the intricacies of work and its role in engendering knowledge-related outcomes, and subsequently, the learning and innovative capability of the firm. Drawing on Orr's (1987, 1990) ethnographic studies of service technicians, Brown & Duguid (1991) distinguish between canonical (i.e., espoused) and non-canonical (i.e., actual) practice to highlight the respective gulf between 'if, then' rules and daily practice. They describe three central aspects of (non-canonical) practice, namely narration, collaboration, and social construction, which 'have no place in the organization's abstracted, canonical accounts of work' (Brown & Duguid, 1991: 44). These aspects, in turn, feature prominently in their conceptualisation of work organisations as 'communities-of-communities' of practice (ibid: 53). In a later work on the role of CoP in knowledge transfer and organisational learning, Brown & Duguid (2001: 203) define practice as 'undertaking or engaging *fully* in a task, job or profession' (italics added). The precepts-practice gulf re-appears here, but this time the parallel is drawn in relation to Ryle's (1949) distinction between know-what and know-how, and Polanyi's (1966) distinction between explicit and tacit knowledge respectively (ibid: 204). Essentially, for Brown & Duguid (2001: 204-205) CoP is the social catalyst for the transfer and sharing of both tacit and explicit knowledge:

> It seems reasonable to argue that if people share a practice, then they will share know *how*, or tacit knowledge. So, as communities of practice are defined by their communal practice, they are likely to have communal know *how* developed from that practice. If shared know *how* or tacit knowledge make it possible to share know *that* or explicit knowledge effectively, then such communities, sharing common embedded circumstances, will also be effective at circulating explicit knowledge (italics in the original).

Brown & Duguid (2001) base their argument on ethnographic studies of occupational communities, including technicians and service representatives (e.g., Barley, 1996; Orr, 1996) academic communities (e.g., Strauss, 1984) as well as scientific groups (e.g., Knorr Cetina, 1999). Cumulatively, these studies indicate that members of 'networks of practice' (Brown & Duguid, 2001: 205) can share knowledge, including know-that, 'because of their common base of tacit knowledge, or know how' (ibid.). This echoes Ryle's (1949) view of the 'retrospective unfolding of the knowledge process: once skilful performance has been achieved, it is possible to reflect and theorize about it' (Tywoniak, 2007: 62). While philosophically this reflection is possible and even necessary, empirical evidence drawn from cognitive psychology indicates the considerable difficulties involved in individuals' efforts to articulate clearly their know that (e.g., Bedard & Graham, 1994; Nisbett & Wilson, 1977).

Brown & Duguid's 'social-practice' perspective is rigorous and sophisticated. It sheds valuable light into the inextricable links between knowledge and practice by explicating the importance of intra- and inter-communal dynamics for explaining how coordination and collaboration may simultaneously be achieved in organisations. For Brown & Duguid (2001) the somewhat puzzled phrase 'sharing common embedded circumstances' takes meaning in the context of 'epistemic cultures' or 'social worlds' (ibid.). In this sense, it points to the salience of shared identities that lubricate the sharing of knowledge through the interpretation and re-interpretation of stories and narratives (Patriotta, 2003). This is essentially the basis on which they develop a 'sociocultural view of learning and knowledge…that challenges conventional views of the internal homogeneity of the firm' (Brown & Duguid, 2001: 209).

A notable limitation of the CoP perspective is that it overlooks how individual knowledge is intermingled with collective knowledge. Specifically, it pays little attention to explaining the mechanisms through which knowledge acquired on the basis of the experience of another member of the CoP is actually enacted in purposeful work tasks. This is not to deny the value of a CoP perspective on knowledge processes in organisations. Yet, as Tywoniak (2007: 66) comments:

> In this perspective, it is worth remembering that communities embody only one level of knowledge processes: the work of community needs to be coordinated with that of the other units within the firm. Communities are embedded in a wider context and their contributions cannot always be understood in isolation.

## The Firm as a Collaborative Community

A commonly held view among knowledge-based views of the firm is that organisations are better suited than markets for gathering and disseminating knowledge (Staples *et al.,* 2001) since they 'create and transfer knowledge efficiently within an organisational context' (Kogut & Zander, 1992: 384). The underlying argument is that, in a knowledge-based economy, the core advantage of corporate organisations over markets does not lie in their ability to reduce transaction costs through hierarchical coordination (e.g., Williamson, 1975, 1985). Instead, they rely on the possession of 'unique advantages for governing certain kinds of economic activities through a logic that is very different from that of a market' (Ghoshal & Moran, 1996: 13). This logic is reflected in an emerging theorising of the firm as a social, collaborative community (e.g., Kogut & Zander, 1992, 1996; Adler, 2001; Brown & Duguid, 2001; Inagami & Whittaker, 2005; Adler & Heckscher, 2006). The notion of collaborative community appears to appeal to contemporary firms. For example, the motto "Uniting Communities" has been the underlying philosophy of the recent merger between telecommunication giants Siemens and Nokia.

Collaborative community refers to a distinct principle of social organisation that contrasts radically with that of markets or hierarchies in regard to its fundamental coordination mechanism. In particular, markets rely on prices to coordinate competing economic actors, whereas hierarchies rely on authority and control to coordinate dependent activities among employees whose roles are prescribed based on a detailed division of labour. Distinctively, collaborative community relies on trust, and, more widely, on the quality of social relations among its members to create, transfer and utilise knowledge (Adler, 2001; Inagami & Whittaker, 2005; Adler & Heckscher, 2006). The contrasts between the three principles of social organisation are summarised in Table 2.6.

In reality, the three principles of social organisation are likely to be combined in a wide spectrum of hybrid institutional forms such as 'internal labour markets' (e.g., Benson, 1995; Jacoby, 2004), 'relational contracting' (e.g., Jeffries, 2000; Adler, 2001), 'keiretsu-type' configurations (e.g., Dyer, 1996), or 'soft bureaucracies' (e.g., Robertson & Swan, 2004). However, as knowledge generation and sharing become increasingly the main sources of value creation for the contemporary firm (e.g., Kang *et al.,* 2007),

and KM emerges as its key performance determinant, organising forms that rely primarily either on hierarchies (i.e., Gemeinschaft) or markets (i.e., Gesellschaft) 'are not the answer' for the effective coordination of complex, highly interdependent, and non-routine knowledge work (Adler & Heckscher, 2006: 30). Instead, collaborative corporate community represents an alternative organising template, which serves as an essential precondition for the effective management of knowledge (Adler, 2001), and consequently for organisational learning (March, 1991). This is due to the axiom that a collaborative corporate community is governed by an ethic of interdependent contribution to a shared purpose and the success of others; yet, it is driven by pragmatic business considerations which, in a knowledge-intensive context, focus on value creation through the generation, sharing and application of knowledge (Adler & Heckscher, 2006). In this sense, value creation is, to a large extent, contingent upon the extent to which employees 'believe that others have contributions to make towards this shared creation' (ibid: 21).

Table 2.6 **Three Principles of Social Organisation**

| Principles of Social Organisation | Hierarchy | Market | Collaborative Community |
|---|---|---|---|
| Coordination mechanism | Authority | Price | Trust |
| Primary benefits | Control | Flexibility | Generation and sharing of knowledge |
| Resources produced | Organisational capital | Economic capital | Social capital |
| Fits tasks that are | Dependent | Independent | Interdependent |

Source: Adler & Heckscher (2006: 16)

Essentially, a view of the firm as collaborative community acknowledges the social embeddedness of work organisations, and therefore, the role of social relations in shaping their exchange activities (Granovetter, 1985, 1992b). As such, collaborative corporate communities are 'constructed by individuals whose action is both facilitated and constrained by the structure and resources available in social networks in which they are embedded' (Granovetter, 1992b: 7). Thus, one of the key challenges for contemporary firms is argued to be their capability to develop and sustain ongoing, mutually beneficial relations among their members. That is, to develop and sustain their social capital which, subsequently, can facilitate the effective transfer of knowledge through the engagement of their members in purposeful and highly interdependent work tasks (Adler & Heckscher, 2006).

## III. KNOWLEDGE MANAGEMENT

There is wide recognition that knowledge is of central importance for the functioning and competitiveness of work organisations within a post-industrial society (e.g., Bell, 1973). Subsequently, KM has emerged over the last decade as one of the most significant developments in organisation theory and management practice (e.g., Storey & Quintas, 2001; Easterby-Smith & Lyles, 2003b).

### The Emergence of Knowledge Management

The term KM seems to have appeared first in a 1974 article by N. L. Henry with the title 'Knowledge Management: A New Concern for Public Administration' that was published in *Public Administration Review* (Vol. 34, No. 3). In this article Henry (1974: 189) defined KM as follows:

> By knowledge management, I mean *public policy for the production, dissemination, accessibility, and use of information as it applies to public policy formulation*. In this sense, knowledge management constitutes what Yehezkel Dror calls "metapolicy"; that is policy for policy-making procedures (italics in the original).

In the following year, the same journal hosted a symposium entitled 'Knowledge Management'. This included a collection of seven single-authored articles by US scholars addressing three broad themes: the relationships between knowledge, technology and the bureaucratic organisation; the implications of KM for theories of public administration; and the role of KM in relation to specific policy and administrative developments (Public Administration Review, 1975, Vol. 35, No. 6). As noted by the symposium editors in their introduction, all seven authors shared the idea that 'man's ability to manage knowledge is of central importance in contemporary public administration' (Carroll & Henry, 1975: 567).

It took approximately twenty years before KM began to attract the wider attention of organisation scholars and practitioners. The first conference specifically devoted to KM was held in Boston, USA in 1993 (Prusak, 2001), and two years later, the Knowledge Imperative Conference in Houston, USA 'was probably the first to raise general management awareness' (Gu, 2004: 172). In the same year, Nonaka & Takeuchi's (1995) book *The Knowledge Creating* Company was published, to which KM's popularity has to a large extent been attributed (Easterby-Smith & Lyles, 2003b).

From the mid-1990s, KM theory has been at the forefront of organisation and management theory, with a publication rate that is rising exponentially (Gu, 2004; Ryan & Hurley, 2004). Specialised journals such as the *Journal of Knowledge Management*,

*Knowledge and Process Management* and the *Journal of Intellectual* Capital were introduced in the second half of the 1990s. A bibliometric analysis of publications with KM as key word indicates that KM emerged from the literature on the Learning Organisation in around 1995-1996, suspending the literature on Total Quality Management and Business Process Reengineering (Ryan & Hurley, 2004). The practice of KM has also expanded over the last decade with many organisations having introduced initiatives to managing knowledge. A KPMG survey of 423 leading European and US companies found that more than two thirds of respondents were undertaking some kind of KM initiative (KPMG, 2000). A more recent UK survey found that 64 per cent of the responding firms had introduced KM and 24 per cent were at the roll-out stage (Moffett, McAdam, & Parkinson, 2003). Easterby-Smith & Lyles (2003b: 12) note that the driving force behind the development of KM in the corporate world has come from 'major consultancy companies seeking to capitalize on the enormous potential of information technology in a period following disenchantment with the methods and prescriptions of re-engineering'.

## Defining Knowledge Management

While there is no agreed upon definition of KM (Scarbrough & Swan, 2001; Schultze & Stabell, 2004), there seems to be a growing consensus in the literature that the overarching aim of KM is to improve organisational productivity and competitiveness (Kakabadse *et al.*, 2003). From a strategic viewpoint, KM has been defined as a 'conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance' (O'Dell & Jackson, 1998: 4). Some scholars equate KM with the organisational ability 'to manage, store, value, and distribute knowledge (Liebowitz & Wilcox, 1997: i). Similarly, others suggest that KM can be viewed as 'the process of creating, capturing, and using knowledge to enhance organizational performance' (Bassi, 1999: 424). Other definitions place emphasis on the "management" and "control" aspects of KM. Accordingly, KM is defined as 'the explicit control and management of knowledge within an organization aimed at achieving the company's objectives' (Van der Spek & Spijkervet, 1997: 43), or as the 'formalization of, and access to, experience, knowledge and expertise that create new capabilities, enable superior performance, encourage innovation and enhance customer value' (Beckman, 1997: 1-6). From a managerial perspective, around three quarters of 260 UK and European corporations agreed upon a definition of KM as the 'collection of processes that govern the creation, dissemination and utilization of knowledge to fulfil organizational capabilities' (Murray & Myers, 1997: 29).

## Knowledge Management Paradigms

The development of the KM field over the last decade has been characterised as 'rapid and chaotic' (Easterby-Smith & Lyles, 2003b: 12). Indeed, there are a large variety of themes in the KM literature including the nature of knowledge, information management, information technology, people management (knowledge roles, knowledge workers), knowledge creation, knowledge sharing, transfer of learning, intellectual capital, tacit knowledge and so on (Ryan & Hurley, 2004). Despite the diverse array of different interests and perspectives, it is possible to discern two distinct thrusts or paradigms within the KM field: the computational or technological paradigm, and the organic or sociorganisational paradigm (Hazlett, McAdam, & Gallagher, 2005). The main characteristics of the two paradigms are presented in Table 2.7.

Table 2.7 **Two Knowledge Management Paradigms**

| **Computational KM Paradigm** | **Organic KM Paradigm** |
|---|---|
| -Systems / Techno-centric | -Relations / People-centric |
| -Mechanistic | -Discontinuous |
| -Codified Knowledge | -Codified and non-codified knowledge |
| -Acontextual | -Contextual |
| -Static | -Dynamic |
| -Optimisation | -Adaptation |

Source: Adapted from Hazlett *et al.* (2005: 37)

The computational paradigm reflects a scientific view of knowledge, or a "knowledge-as-truth" view (Alvesson & Willmott, 1996). Under this view, KM is linked to the management of information technology 'based on predefined assumptions and models concentrating on software and hardware issues' (ibid.). Examples of KM tools and solutions include intranets, datawarehousing and electronic repositories, electronic document systems, Lotus notes, yellow pages catalogues, groupware, and decision support systems (e.g., Ruggles, 1998; Hansen, Nohria & Tierney, 1999). The computational paradigm takes a mechanistic approach to the management of knowledge by stressing the importance of IT tools for knowledge capture, codification, storage and retrieval (Swan & Scarbrough, 2001).

On the other hand, the organic paradigm, without rejecting the value of technology, places explicit emphasis on the importance of people and organisational issues of managing knowledge. The organic paradigm is based on a social view of knowledge. Under this view, knowledge is 'socially constructed rather than being seen as universal scientific truth' (Hazlett *et al.*, 2005: 36). In this sense, emphasis is placed on 'knowledge creation and sharing through essentially social means' (Swan &

Scarbrough, 2001: 914). The organic paradigm takes a dynamic and contextual approach to the management of knowledge by seeking to understand 'the people within organisations, their interactions, the work structures and processes, and the organisational culture' (Hazlett *et al.*, 2005: 36).

It is important to distinguish between the two KM paradigms because proponents of KM often do not make a distinction between information and knowledge, which can result 'in one or other of these terms standing as synonym for the other, thereby confusing anyone who wishes to understand what each term signifies' (Wilson, 2002: 2). Distinguishing between the two paradigms can also help clarify that it is not the knowledge that is in people's heads that is managed but the people themselves (Sveiby, 2001; Smoliar, 2003). In this regard, Smoliar (2003) argues that a more useful term for KM would be "interaction management".

### Knowledge Management Strategies

The computational and organic KM paradigms find their parallel in two distinct KM strategies, namely codification and personalisation respectively (Hansen *et al.*, 1999). Based on research on management consultancies, computer companies, and health care providers in the USA, Hansen *et al.* (1999) argue that organisations do not take a uniform approach to managing knowledge, but instead they either focus on the computer or on people. According to the codification strategy, '[k]nowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone in the company' (ibid: 107). In contrast, according to the personalisation strategy, 'knowledge is closely tied to the person who developed it and is shared mainly through direct person-to-person contacts. The chief purpose of computers is to help people communicate knowledge, not to store it' (ibid.).

As shown in Table 2.8, each of the two KM strategies places emphasis on the management of different types of knowledge. In particular, the codification strategy focuses on managing objectified knowledge (i.e., social/explicit), while the personalisation strategy focuses on managing individual knowledge, be that automatic or conscious (Spender, 1996). The management of different types of knowledge is seen as delivering different benefits. The leverage of objectified knowledge is seen as providing efficiency benefits, while the leverage of individual knowledge is seen as providing innovation benefits. Using an analogy drawn from organisational learning theory, codification strategy focuses on exploitative learning, while the personalisation strategy focuses on explorative learning (March, 1991). The results of a quantitative

study of 182 sales teams in a large management consulting firm in the USA provide empirical support to the claim that sharing different types of knowledge is not substitutable for each other, but instead they affect task-level performance differently (Haas & Hansen, 2007). In particular, the study indicates that sharing codified knowledge in the form of electronic documents resulted in substantial time savings for the sales teams (i.e., efficiency). On the other hand, sharing personal advice improved the quality of teams' work and increased their ability to signal competence to their clients.

Table 2.8 **Two Knowledge Management Strategies**

| **Codification** | ***Competitive Strategy*** | **Personalisation** |
|---|---|---|
| *Reuse Economics:*<br>- Invest once in a knowledge asset and reuse it many times<br>- Focus on generating large overall revenues | ***Economic Model*** | *Expert Economics:*<br>- Charge high fees for highly customised solutions to unique problems<br>- Focus on maintaining high profit margins |
| *People-to-Documents:*<br>- Develop an electronic document system that codifies, stores, disseminates, and allows reuse of knowledge | ***KM Strategy*** | *Person-to-Person:*<br>- Develop networks for linking people so that tacit knowledge can be shared |
| -Invest heavily in IT<br>-The goal is to connect people with reusable codified knowledge | ***Information Technology*** | - Invest moderately in IT<br>- The goal is to facilitate conversations and the exchange of tacit knowledge |

Source: Adapted from Hansen *et al.* (1999: 109)

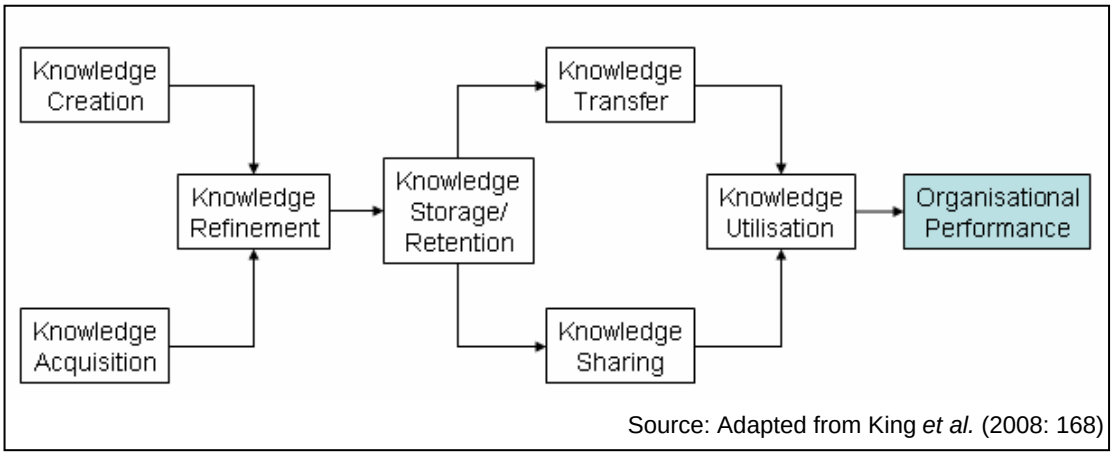
Hansen *et al.* (1999: 107) assert that the two KM strategies are 'relevant to any company that depends on smart people and the flow of ideas', and that the choice between the two strategies 'is the central one facing virtually all companies in the area of knowledge management' (ibid.). They also argue for an "either-or" approach to managing knowledge by noting that '[e]mphasizing the wrong strategy or trying to pursuit both at the same time can, as some consulting firms have found, quickly undermine a business' (ibid.). However, counter to Hansen *et al's* (1999) prescription, a recent study of 115 Korean firms examining the relationship of KM strategy type to organisational performance indicates that firms that follow a mix of codification and personalisation KM strategies achieve the best performance (Choi, Poon & Davis, 2008).

## Knowledge Management Activities

A useful way to understand how KM contributes to organisational performance is to think of KM through the lens of a life cycle model. There have been a number of life

cycle models that describe KM activities and their relationship to performance (Davenport & Prusak, 1998; McElroy, 2001; Nissen, 2002; Ward & Aurum, 2004; Chang Lee, Lee, & Won Kang, 2005). These models range from Davenport & Prusak's (1998) three-stage model (i.e., knowledge generation, codification/coordination, and transfer) to Ward & Aurum's (2004) seven-stage model (i.e., knowledge creation, acquisition, identification, adaptation, organisation, distribution, and application). Figure 2.4 illustrates a KM life cycle model proposed by King, Chung & Haney (2008). This model, by making use of parallel paths, helps clarify some subtle but important differences between KM activities that are often confounded in the literature.

Figure 2.4 **Knowledge Management Life Cycle Model**




Source: Adapted from King *et al.* (2008: 168)

King *et al's* (2008) model, as presented in Figure 2.3, shows that the initiation of the KM life cycle involves the creation and/or acquisition of knowledge. The former KM activity entails the development of new knowledge or the enhancement of existing knowledge with new content (Nonaka, 1991). Knowledge creation is normally expected to take place within the boundaries of the firm. In contrast, knowledge acquisition refers to 'search for, recognition of, and assimilation of potentially valuably knowledge, often from outside the firm' (King *et al.*, 2008: 167). Knowledge refinement involves a set of processes by which newly created knowledge is prepared to enter into the organisation's memory. These processes include the explication, evaluation, selection, and codification of knowledge. Knowledge storage describes the stage at which refined knowledge becomes part of the organisation's memory. Organisational memory comprises multiple knowledge repositories or knowledge reservoirs, namely members, tools, and tasks, as well as the subnetworks that are formed amongst them (Argote & Ingram, 2000; McGrath & Argote, 2000). Members reflect the people component of organisations. Tools, which include electronic repositories such as hardware and software, are the technological component. Tasks refer to the goals, intentions, and purposes of the organisations (Argote & Ingram, 2000.). There are also a number of

different subnetworks based on various combinations of knowledge reservoirs. The member-member network reflects the organisation's social network. The task-task network corresponds to the sequence of organisational routines. The tool-tool network represents the combination of ICTs used by the organisation. More broadly, organisational memory is also reflected in the organisation's business processes, products and services, as well as its relationships with internal and external stakeholders (King *et al.*, 2008).

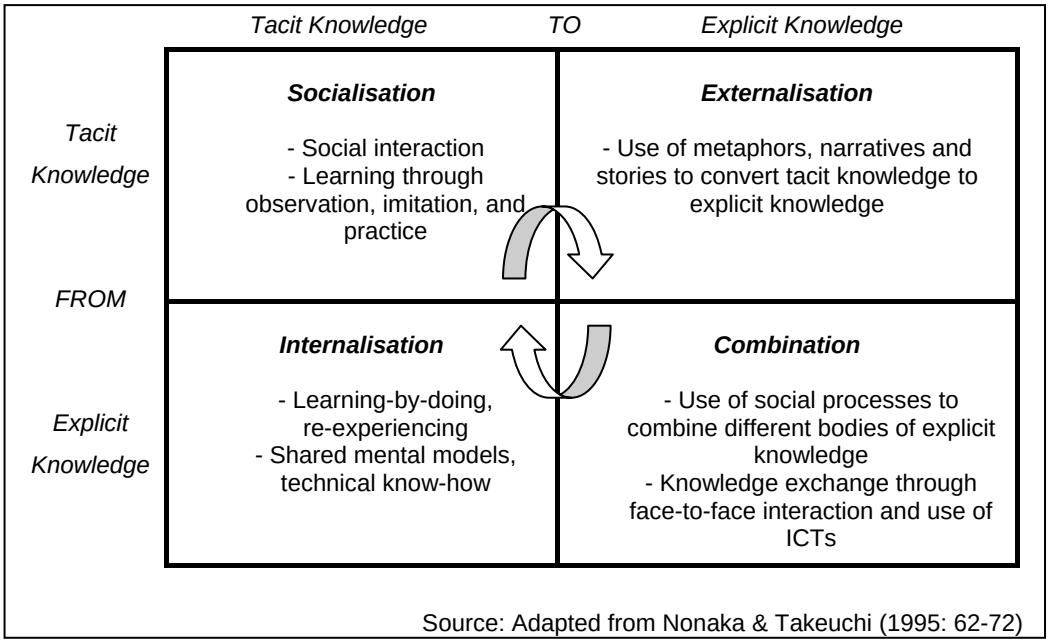
In order for knowledge to have an organisational impact, it is necessary for it to be transferred or shared. According to King *et al.* (2008), knowledge transfer and sharing can be viewed as two ends of a continuum. In particular, '[t]ransfer involves the focused and purposeful communication of knowledge from a sender to a known receiver' (ibid: 168). On the other hand, '[s]haring is less-focused dissemination, such as through a repository, to people who are usually unknown to the contributor' (ibid.). The final stage in the KM life cycle model involves the utilisation or application of knowledge. Knowledge utilisation is a multi-faceted and multi-level process. It involves a number of processes including 'elaboration (the development of different interpretations), infusion (the identification of underlying issues), and thoroughness (the development of multiple understandings by different individuals or groups)' (ibid.). It is also inextricably related to learning, be individual, group or organisational, as well as to collaborative problem solving (King, 2006). Finally, 'it may also be embedded in the practices, systems, products and relationships of the organization through the creation of knowledge-intensive organisational capabilities' (King *et al.*, 2008: 168). The following sub-sections offer an overview of two key KM activities, namely knowledge creation and knowledge transfer, which are viewed as 'the basis for competitive advantage in firms' (Argote & Ingram, 2000: 150).

**Knowledge Creation**

The underlying principle of Nonaka & Takeuchi's (1995) theory of knowledge creation is that of knowledge conversion. Based on this principle, 'human knowledge is created and expanded through social interaction between tacit and explicit knowledge' (ibid: 61). The knowledge conversion principle shares considerable similarities with Anderson's (1983) ACT* cognitive model of procedural and declarative knowledge, which has been discussed in Chapter One. Nonaka & Takeuchi (1995) argue that the process of conversion from explicit knowledge (which corresponds to declarative knowledge) into tacit knowledge (which corresponds to procedural knowledge) can be bidirectional and spiral. Accordingly, they posit that tacit knowledge can be expressed

and, therefore, transferred between individuals. Based on this assumption, they postulate four modes of knowledge conversion under the acronym SECI: socialisation (tacit → tacit), externalisation (tacit → explicit), combination (explicit → tacit), and internalisation (tacit → tacit). The four modes of knowledge conversion and their associated processes are presented in Figure 2.5.

Figure 2.5 **Four Modes of Knowledge Conversion: The SECI Framework**




Source: Adapted from Nonaka & Takeuchi (1995: 62-72)

Nonaka & Takeuchi's (1995) theory represents a 'powerful framework that serves well as a starting point for devising a comprehensive and profound knowledge management theory' (Gueldenberg & Helting, 2007: 102). It aims at providing an insightful view of the concept of knowledge in organisations by acknowledging the long and deep processes by which crystallized propositions (i.e., explicit knowledge) are originated in and influenced by pre-theoretical knowledge (i.e., tacit knowledge) or what Polanyi (1966: 16) referred to as 'indwelling', a notion that is rooted in Heidegger's (1962) phenomenological theory of knowledge. Significantly, the four processes that compose the SECI framework underline that knowledge creation is deeply rooted in, and influenced by the quality of social interaction among organisational members. As Nonaka & Takeuchi (1995: 61) suggest, knowledge conversion 'is a "social" process *between* individuals and not confined *within* the individual' (ibid: 61, italics in the original).

The knowledge conversion assumption has been a major theme in the KM literature. Particular emphasis has been placed on the tacit knowledge that employees possess. This is because tacit knowledge is difficult to be understood and subsequently imitated

by competitors (Nelson & Winter, 1982; Teece, 1987; Winter, 1987). Yet, the knowledge conversion assumption entails a paradox: if tacit knowledge constitutes a core competitive advantage, then its conversion into explicit knowledge, which can be imitated, leads inevitably to loss of competitive advantage (Schulze & Stabell, 2004). A number of KM scholars argue that organisations should not, therefore, concentrate on trying to 'extract knowledge from within the employees to create new explicit knowledge artefacts', but to promote a 'knowledge culture' that encourages learning through knowledge creation and sharing (McInerney, 2002: 1014). Wilson (2002) points to the weak epistemological basis of the knowledge conversion assumption which, in turn, has led to much confusion in KM theory and practice. He adds that this confusion, which has contributed to the fad-like qualities of the KM field, has resulted in many organisations equating the presence of an ICT system with a KM system. The focus placed on ICT systems that seek to capture tacit knowledge and convert it into explicit knowledge has been characterised as the 'IT trap' of KM (Scarbrough, Swan, & Preston, 1999; Huysman & de Wit, 2004).

**Knowledge Transfer**

Knowledge transfer in organisations can be defined at multiple analytical levels as 'the process through which one unit (e.g., group, department, or division) is affected by the experience of another' (Argote & Ingram 2000: 151). This definition concurs with definitions of knowledge transfer at the individual level of analysis that are found in the area of cognitive psychology. For example, according to Singley & Anderson (1989: 1), knowledge transfer is understood at the individual level as 'how knowledge acquired in one situation applies (or fails to apply) to another'.

From a strategic management perspective, a firm's ability to transfer knowledge is regarded as its raison d'être (Kogut & Zander, 1992; Zander & Kogut, 1995). Organisational knowledge resides in multiple repositories, such as tasks, tools and people. It is people-embodied knowledge that constitutes the foundation upon which rests the development of a firm's dynamic capabilities and subsequently its intellectual capital advantage (Argote & Ingram, 2000). Dierickx & Cool (1989) suggest that a firm's accumulated skills, expertise and talent can be viewed as knowledge stocks. In contrast, knowledge flows include the transfer of new knowledge across organisational boundaries as well as the transfer of underutilised knowledge within organisational boundaries. While knowledge stocks provide the basis for a firm's core competencies (e.g., Grant, 1996), knowledge flows are vital for the refinement, modification, renewal and expansion of knowledge stocks (Teece *et al.*, 1997). The distinction between

knowledge stocks and knowledge flows signifies that 'without continual knowledge flows to enhance and renew their strategic value, knowledge stocks can sometimes cause core rigidity' (Kang *et al.*, 2007: 236).

The performance benefits of knowledge transfer have been documented both in the manufacturing (e.g., Galbraith, 1990) and service sectors (e.g., Baum & Ingram, 1998), as well as both at intra-organisational (e.g., Epple, Argote & Murphy, 1996) and inter-organisational levels (e.g., Dyer & Nobeoka, 2000). While beneficial to the organisation, the transfer of knowledge is nevertheless found to be far from frictionless (e.g., Nonaka, 1991; Von Hippel, 1994; Zander & Kogut, 1995; Szulanski, 1996).

There is theoretical and empirical support to the claim that the extent to which knowledge diffuses within and across firm boundaries is contingent upon the type of knowledge transferred. For example, Nonaka (1991, 1994) argues that tacit knowledge is more difficult to transfer than explicit knowledge. Grant (1996: 111) highlights the transfer implications of explicit and tacit knowledge as follows:

> Explicit knowledge is revealed by its communication. The ease of communication is its fundamental property…Tacit knowledge is revealed through its application. If tacit knowledge cannot be codified and can only be observed through its application and acquired through practice, its transfer between people is slow, costly and uncertain.

Zander & Kogut's (1995) field research on the transfer of manufacturing capabilities in Swedish based firms indicates that transferring codified knowledge was significantly less difficult than transferring non-codified knowledge. Similarly, Hansen's (1999) study of a US multidivisional research-intensive firm found that the transfer of non-codified knowledge among R&D subunits was slower compared to codified knowledge. Szulanski's (1996) study of 122 best-practice transfers in eight US based corporations, including AT&T, Rank Xerox and Chevron, highlights three major barriers to internal knowledge transfer: first, a knowledge-related barrier, namely the 'causal ambiguity' of knowledge (i.e., knowledge that is not well understood); second, a cognitive-related barrier, namely the recipient unit's lack of 'absorptive capacity' (i.e., ability to recognise, assimilate and apply new knowledge to productive ends [Cohen & Levinthal, 1990: 128]); and third, a relation-related barrier, namely the 'arduous (i.e., laborious and distant) relationship' between the source and recipient of knowledge (Szulanski, 1996: 32). According to Szulanski (1996: 37), these three barriers frame the problem of the 'internal stickiness' of knowledge.

## IV. DISCUSSION AND CONCLUSION

Three distinct yet interrelated themes were addressed in the present chapter: first, the types of knowledge that are available in organisations; second, the importance of knowledge as a source of competitive advantage; and third, the management of knowledge for competitive advantage. These themes are discussed critically below.

### Knowledge, Knowing and Learning

The first theme revolves around the epistemological properties of knowledge. There has been a strong debate in the literature whether it is useful to distinguish between tacit (i.e., non-codified) and explicit (i.e., codified) knowledge. This distinction, as forwarded by Nonaka & Takeuchi (1995), suggests that knowledge is mainly cognitive, including the facts and skills individuals possess. This essentially positivist approach has been challenged and complemented by more constructivist approaches (e.g., Tsoukas, 1996), in which knowledge is seen as mainly behavioural, and therefore it is 'enacted – every day and over time – in people's practices' (Orlikowski, 2002: 250). The difference between the two approaches corresponds to a subtle yet important distinction between knowledge (i.e., something that people have) and knowing (i.e., something that people do) (e.g., McInerney, 2002). This difference, in turn, defines the boundary between the fields of organisational knowledge (OK) and organisational learning (OL) (Easterby-Smith & Lyles, 2003a). The fundamental difference between the two fields is that while OK treats knowledge mainly as a resource or stock, OL places emphasis on the processes by which knowledge changes or flows.

Consistent with integrative theoretical approaches (e.g., Argote, 1999; Vera & Crossan, 2003; King *et al.*, 2008), knowledge and learning, and by extension OK and OL, can also be viewed as complementary and mutually reinforcing: 'learning is the process through which knowledge is created and developed. Current knowledge impacts future learning' (Vera & Crossan, 2003: 132). Under this view, 'knowledge and knowing are the content of the learning process' (ibid: 126).

#### Knowledge Transfer as a Learning Process

An integrative approach to knowledge and learning points to the dynamic character of knowledge (i.e., knowing) without disregarding that knowledge does also incorporate facts (i.e., codified knowledge or know-what) and skills (i.e., non-codified knowledge or know-how). It suggests that learning involves the process of acquisition as well as of application of knowledge, be it codified or non-codified (Argote, 1999). In this sense, knowledge is a 'powerful source that can be used to overcome barriers, influence

decision-making, and generally “enable” and refresh individuals and organizations so that they can accomplish goals and complete work successfully’ (McInerney, 2002: 1010). The definition of knowledge transfer, as forwarded by Argote & Ingram (2000), incorporates the action-orientation and utilisation of knowledge acquired. For this reason, knowledge transfer denotes a process – including both cognitive and behavioural aspects – which results in learning. Furthermore, it also reflects a pragmatic view of knowledge application towards specific ends (Carlile, 2002). In this sense, it is similar to the concept of ‘actionable knowledge’ which, in turn, refers to ‘knowledge that leads to immediate progress on a current assignment or project’ (Cross & Sproull, 2004: 446).

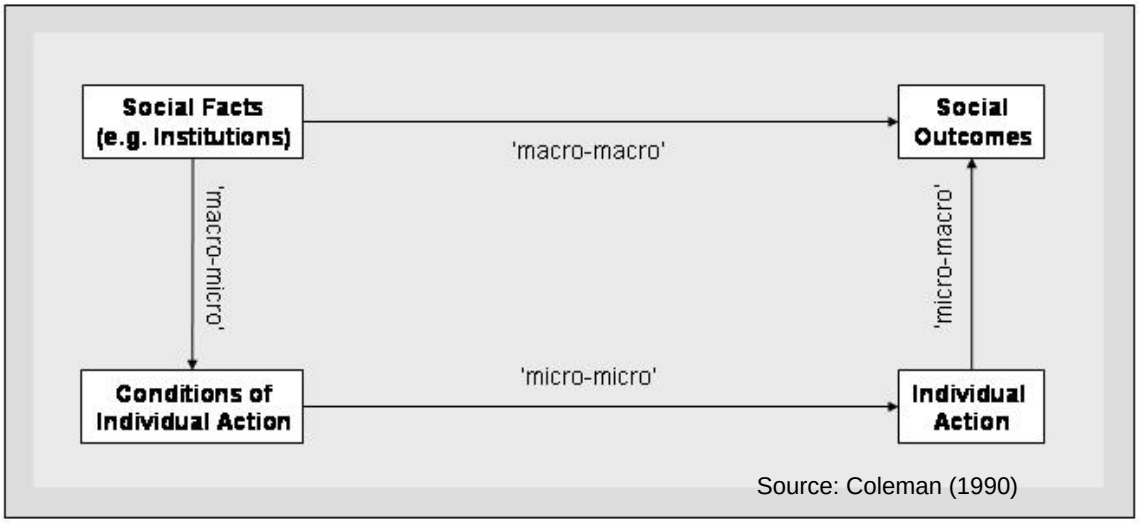
## Knowledge and Organisational Performance

The second theme concerns whether the individual or the collective is the ‘locus of knowledge’ in organisations (Felin & Hesterly, 2007). The dominant view among scholars in the OK and OL fields posits that competitive advantage resides in the knowledge and knowing capability of the firm. As explicated in the second section of the chapter, collective knowledge-based views of the firm have contributed significantly towards a better understanding of the firm by stressing the importance of social processes by which knowledge is created, transferred and integrated. In particular, a view of the firm as a social community specialising in the transfer of knowledge (Kogut & Zander, 1992; Zander & Kogut, 1995) brings to the fore the critical role that social relations play in enabling the exchange and combination of knowledge resources towards achieving intellectual capital advantage (Nahapiet & Ghoshal, 1998). In addition, the inclusion of trust as a fundamental mechanism for coordinating knowledge processes adds significantly to understanding the motivational assumptions underlying the effective transfer of knowledge (Adler, 2001; Adler & Heckscher, 2006). However, the overriding emphasis placed on ‘supraindividual structures’ (Felin & Hesterly, 2007) such as norms, routines, and regularities, leaves a lacuna in ‘individual action and interaction for organizational knowledge-based phenomena’ (Foss, 2007: 30).

### The Missing Micro-Foundations of Knowledge Transfer

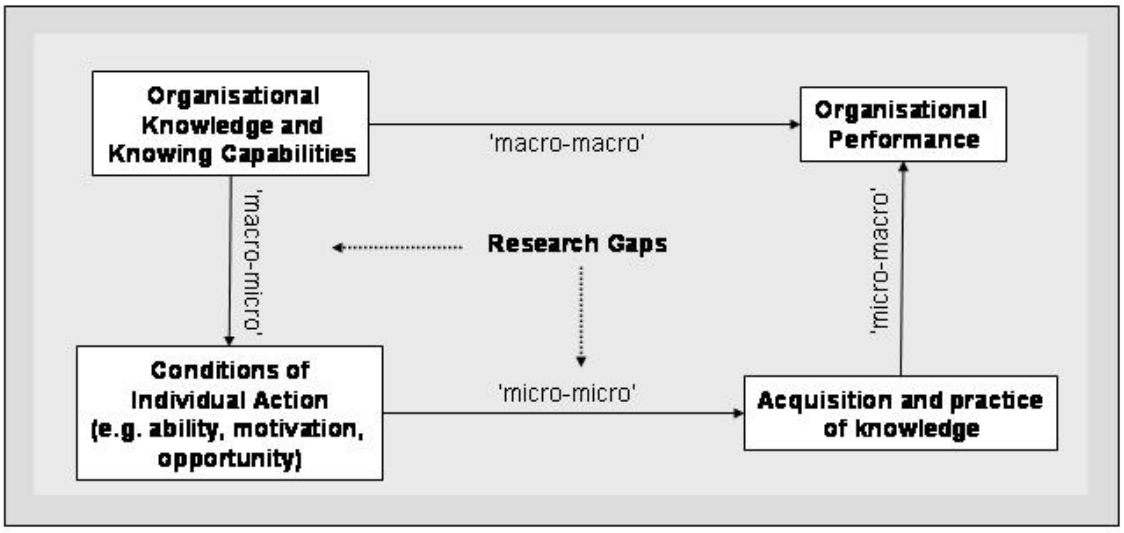
Coleman’s (1990) general model of social science explanation, as illustrated in figure 2.6, provides a useful way of understanding the combined role of macro (i.e., social) and micro (i.e., individual) constructs in explaining social outcomes.

Figure 2.6 **General Model of Social Science Explanation**




Coleman's (1990) diagram can be adapted to highlight the problematic nature of the relationship between a firm's dynamic capabilities (Teece *et al.*, 1997) and organisational performance. This is shown in figure 2.7.

Figure 2.7 **Missing Micro-Foundations of Knowledge-Performance Relationship**




Collective knowledge-based views of the firm examine macro-level antecedents (i.e., knowledge and knowing capabilities) to macro-level outcomes (i.e., organisational performance), thereby providing explanations of performance heterogeneity based on processes examined at the firm level, such as social practice (Brown & Duguid, 2001), socially distributed knowledge (Tsoukas, 1996), routines and norms (Nelson & Winter, 1982), social capital (Nahapiet & Ghoshal, 1998), organisational memory (Weick & Roberts, 1993) and so on. By doing so, they assume, explicitly or implicitly, homogeneity at lower levels of analysis, thereby obscuring understanding the role of important micro-mechanisms in the organisational knowledge and performance

relationship. In particular, as Foss (2007: 33) notes, 'this stance is problematic because it suppresses the level of individual action and interaction'. This is because, macro-macro explanations are essentially a 'shorthand way of representing more complex underlying behaviours' (ibid: 35). This echoes Spender & Grant's (1996: 6) observation 'that the surge of interest in organizational capabilities and competences has directed attention to organizationally embedded knowledge, but has made only limited progress in understanding its anatomy'.

In particular, as illustrated in figure 2.7, two research gaps exist in the literature on knowledge in organisations. First, there is little understanding of the micro-level manifestation of organisational social capital as an enabler of learning. In particular, there is little known about how exactly social capital affects the conditions of acquisition and practice of knowledge, such as the employee's opportunity ability, and motivation to access, internalise and decide to utilise knowledge received from her or his collegial network. As Argote & Ingram (2000: 156) note, to the extent there has been progress in studying knowledge transfer as the basis for competitive advantage:

> it has been at the level of identifying consistencies in organizations' knowledge development paths and almost never at the level of human interactions that are the primary source of knowledge and knowledge transfer.

For example, while trust features as a key coordination mechanism of employee work interactions, there is not much known about its multifaceted role in the process of knowledge transfer. Moreover, there is not much research on the micro-level manifestation of organisational structure, such as hierarchical status, and its effect on an individual's portfolio of knowledge resources inherent in her or his web of horizontal and vertical connections across the firm.

Second, there is not much known about how a firm's knowledge and knowing capabilities or 'knowledge governance mechanisms' (Foss, 2007) influence the conditions of employee knowledge-sharing behaviour and action. These mechanisms can range from the deployment of IT systems and allocation of decision rights to incentive systems and job design structures. This, in turn, points to the importance of a deeper understanding of the management of knowledge workers and particularly of the management of the social relations employees experience at work.

### Knowledge and Management

As discussed earlier in the chapter, there are two KM paradigms (i.e., computational and organic) identified in the literature which, in turn, correspond to two KM strategies

(i.e., codification and personalisation). In its early stages of development (mid-1990s to late 1990s), KM was closely linked to the management of information technology. However, despite the initial enthusiasm among managers, KM failed to live up to its expectations. A survey conducted by Bain & Company (1998) concluded that, of all management initiatives, KM demonstrated the biggest gap between promise and results. As a consequence, it has been claimed that the term KM 'may soon disappear as practitioners rush to disassociate themselves from the relatively unsuccessful effort to use technological solutions to help organizations store, share and create new knowledge' (Borgatti & Forester, 2003: 997).

**Managing Knowledge is Managing People**

The current trend in KM theory, termed by some as the 'second wave' of KM (Huysman & de Wit, 2004), places more emphasis on the human, social, and cultural parameters of knowledge processes. In particular, people and their management are increasingly seen as the key to the success of managing knowledge (Davenport & Völpel, 2001). Besides the somewhat commonsensical observation of a link between HRM and KM (e.g., 'if HRM is about managing people effectively and if people's most valuable resource is knowledge, then HRM and KM come closely interrelated' [Svetlik & Stavrou-Costea, 2007: 201]), it is important to acknowledge that the relationship between managing knowledge and managing people is not as straightforward as it may appear. One of the key issues, which is addressed in chapter four, is related to the tension between the role of HRM in eliciting individuals' skills, knowledge and abilities (i.e., human capital) and its role in organising social relations (i.e., social capital) conducive to the development of the knowledge and knowing capability of the firm.

## Conclusion

The present chapter set out to provide a comprehensive overview of conceptual paradigms and their philosophical underpinnings that have informed a number of different and often competing perspectives on how knowledge can be studied in an organisational context. The inherently interdisciplinary nature of the so-called 'knowledge movement' signifies that 'no single established business administrative field or social science perspective is likely to carry us all the way towards a comprehensive understanding of the management of knowledge' (Foss, 2007: 31). For this reason, it is not only impossible but also misguided to fit competing perspectives into a single, grand theory of knowledge (Rorty, 1987). However, as Gioia & Pitre (1990: 595) assert, it is important to avoid 'theoretical narrowness' by acknowledging that there is 'similarity despite disparity' across various theoretical angles. Consistent with this, the present

study adopts a multi-disciplinary approach to understanding the process, context and organising of knowledge transfer and sharing activities in work organisations.

# CHAPTER THREE

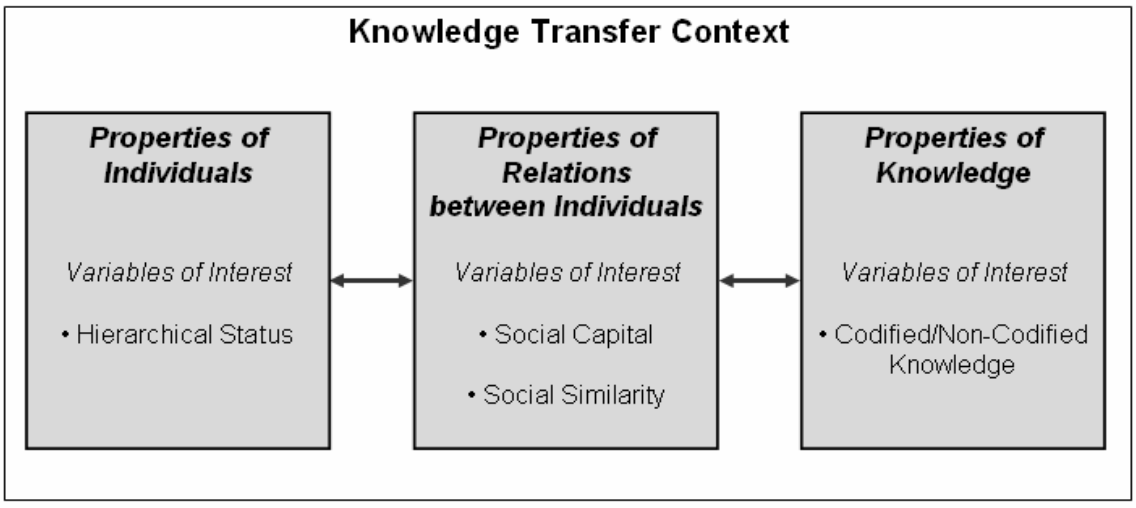
# Knowledge Transfer: Context and Processes

## INTRODUCTION

That knowledge transfer is the firm's raison d'être is a widely held view among organisation and management scholars (e.g., Kogut & Zander, 1992; Nonaka & Takeuchi, 1995; Grant, 1996; Spender, 1996). However, although the performance benefits of intraorganisational knowledge transfer are well documented in the literature (e.g., Argote, Beckman & Epple, 1990; Darr, Argote & Epple, 1995), successful knowledge transfer has proven difficult to achieve in practice (von Hippel, 1994; Szulanski, 1996; Argote, 1999). For example, a field study of 32 attempts to transfer technological knowledge within eight US-based high-tech firms provides quantitative evidence on the difficulties associated with knowledge transfer (Galbraith, 1990). In that study, almost three out of ten attempts failed and were terminated. Of the remaining attempts, the mean initial productivity loss for the recipient units was 34 per cent, and the time it took for those units to recover lost productivity ranged from one to 13 months. Given the direct performance implications of knowledge transfer, understanding the mechanisms that enable or impede effective knowledge transfer has, therefore, been of vital concern to organisational theorists and managers alike.

The chapter sets out to examine the micro-foundations of knowledge transfer. The analytical approach employed is based on Argote *et al's* (2003b) integrative framework for organising research on KM. Figure 3.1 highlights the variables of interest for the three properties of the context within which knowledge transfer occurs.

Figure 3.1 **Organising Framework for Examining Knowledge Transfer**



Knowledge transfer is examined in this chapter as an interpersonal process, which has been identified as a key building block of organisational learning (Argote, 1999). It is thus defined as the process through which an individual, namely the knowledge seeker, is affected by the experience of another individual, namely the knowledge provider (Argote & Ingram, 2000). The term 'receipt of useful knowledge' is employed to denote the 'perceived receipt of useful knowledge that has a positive impact on a knowledge seeker's work' (Levin & Cross, 2004: 1477). An outcome-based approach is consistent with the behavioural tradition of organisational learning theory (Levitt & March, 1988). It also reflects a pragmatic view of knowledge application toward specific ends (Carlile, 2002; Cross & Sproull, 2004).

Particular emphasis in the following analysis is placed on the properties of relations between individuals and, more specifically, on the role of social capital inherent in those relations. This is because research on social relations is a newer and relatively understudied area compared to research on properties of knowledge and individuals (Argote *et al.,* 2003b). Besides, as will be explicated below, social capital holds promise as a key enabling condition of effective knowledge transfer. The bidirectional arrows in Figure 3.1 indicate that the three properties are also examined for their congruence with each other, thereby responding to the call for more research on how fit between contextual properties affects KM and learning outcomes (ibid.).

The chapter is structured into four sections. The first section provides a general overview of the concept of social capital including its intellectual origins and theoretical foundations. Following this, a general definition of social capital is presented. The second section shifts attention to the concept of social capital in an organisational context. The discussion focuses on how social capital is associated with knowledge processes and outcomes. The section continues with the specification of an analytical framework that identifies three key enabling conditions of interpersonal transfer of knowledge that are attributed to individual social capital. This framework provides the basis for the generation of hypotheses with respect to the direct, mediating and moderating effects of distinct social capital dimensions on knowledge transfer. The third section explores aspects of fit between social capital and the tacit properties of knowledge. The knowledge transfer effect of social capital is also examined in relation to social similarity, and the positioning of the knowledge seeker in the formal organisational structure. In the final section, the relationships identified among the three contextual properties are integrated into a model for empirical testing. The chapter concludes by highlighting the contribution of the proposed model to providing

empirically-based understanding of the micro-foundations of knowledge transfer within work organisations.

## I. SOCIAL CAPITAL: AN OVERVIEW

Social capital is hailed as 'one of the most successful "exports" from sociology to other social sciences and to public discourse during the last two decades' (Portes, 2000: 1). However, despite its growing popularity in a wide array of academic disciplines including economics, political science, human geography, and business studies, it has been characterised as a 'wonderfully elastic term' (Lappe & Du Bois, 1997: 119), or as 'something of a cure-all of the maladies affecting society' (Portes, 1998: 2), encompassing a 'wide variety of meanings…[but] with limited critical attention being given to its intellectual history or its conceptual and ontological status' (Woolcock, 1998: 155). The focus of this section is therefore an analytical overview of the concept 'social capital' drawn from the insights in sociology, economic sociology, and social network theory, which have contributed significantly to the development of the concept. This overview provides the theoretical platform upon which social capital is explored in an organisational context.

### The Origins and Emergence of Social Capital

The first usage of the term 'social capital' is attributed to Lyda J. Hanifan, a state supervisor of rural instruction for the West Virginia education department of the USA. Hanifan was an enthusiastic proponent of the social centre movement that characterised the 'Progressive Era' of the early 20$^{th}$ century USA (Farr, 2004). His article, which appeared in the *Annals of the American Academy of Political and Social Science* in 1916, was a set of recommendations on the prominent role that the school could play as a social centre in facilitating not only its well-functioning but also the wellbeing of its surrounding community. Hanifan's (1916: 130) description of social capital goes as follows:

> In the use of the phrase social capital I make no reference to the usual acceptation of the term capital, except in a figurative sense. I do not refer to real estate, or to personal property or to cold cash, but rather to that in life that make these tangible substances count for most in the daily lives of people, namely, good will, fellowship, mutual sympathy, and social intercourse among a group of individuals and families that make up a social unit, whose logical center is the school. In community building as in business organization and expansion there must be an accumulation of capital before constructive work can be done…The community as a whole will benefit by the cooperation of all its parts, while the individual will find in his associations the advantages of the help, the sympathy, and the fellowship of his neighbors.

Hanifan's account of social capital vanished thereafter, until it was resurfaced independently forty years later in the work of Canadian sociologists Seeley, Sim, & Loosley (1956) who described the club memberships and other associations of suburban residents. In the 1960s it re-appeared briefly in Jacob's (1961) *The Death and Life of Great American Cities*, an influential book in urban planning and community studies. In her discussion of the uses of New York's districts and neighbourhoods, Jacobs (1961[1993]: 180) referred to social capital to highlight the importance of social relations inherent in 'forged neighbourhood networks' for the well-functioning of city life. In the 1970s, the term re-emerged in the writings of American economist Loury (1977) who considered the salient role of social relations in racial income inequality in the USA. Drawing upon social stratification theory, Loury (1977) employed the term to highlight the 'processes by which the social relationships that occur among persons promote or retard their acquisitions of traits valued in the market place' (ibid: 35). In the 1980s, the French sociologist Bourdieu (1983) offered the first systematic account of social capital in his discussion on the *Forms of Capital*. Bourdieu was interested in explaining how elites utilise their social networks to sustain, reinforce, and reproduce their social status. Accordingly, social capital was conceived by Bourdieu (1983: 248) as 'institutionalised relationships of mutual acquaintance and recognition'. A year later, the term was employed by Gernan economist Schlicht (1984) to underscore the economic resources embodied in social networks.

It was not until the late 1980s that the idea of social capital started to gain currency in the sociological and related social science disciplines. This is mainly due to the work of American sociologist Coleman (1988, 1990). Coleman (1988) introduced the concept of social capital in social theory in an attempt to reject the 'extreme individualistic premises' that underpin strictly economic explanations of rational action (ibid: S95). Coleman (1988: S98) uses an example of social capital that is very useful in understanding the concept:

> Wholesale diamond markets exhibit a property that to an outsider is remarkable. In the process of negotiating a sale, a merchant will hand over to another merchant a bag of stones for the latter to examine in private at his leisure, with no formal insurance that the latter will not substitute one or more inferior stones or a paste replica. The merchandise may be worth thousands, or hundreds of thousands, of dollars. Such free exchange of stones for inspection is important to the functioning of this market. In its absence, the market would operate in a much more cumbersome, much less efficient manner.

In the 1990s, the widespread popularity of social capital has been associated with a large-scale research programme conducted by American political scientist Putnam on civic participation and institutional performance in Italy and the USA (Putnam, 1993,

1995, 2000). For Putnam (2000: 21), social capital – similar to other forms of capital (e.g., physical, human capital) – 'aids future productivity of individuals and groups in civil society, though not mainly economically'. Social capital, according to Putnam (2000), is conceptualised as the network of associations, activities or relations that bind people together as a community via certain norms and psychological capabilities, notably trust, which are essential for civil society and productive of future collective action or goods.

## The Theoretical Foundations of Social Capital

The influential works of Coleman and Putnam have given rise to conceptions of social capital which incorporate both structural and cultural aspects including social networks, norms and values, and trust (van Deth, 2003; Farr, 2004). The distinction between structural and cultural aspects can be paralleled to Paxton's (1999: 93) distinction between 'objective associations between individuals' and 'a subjective type of tie'. This, in turn, reflects the traditional tension in social theory between structure and content (Simmel, 1950). It suggests that social capital entails both a quantitative (i.e., structural) and qualitative (i.e., cultural) dimension. It is important to note that structural and cultural aspects 'are not simply conceptualised as different features of social capital, but as highly (causally) interdependent characteristics' (van Deth, 2003: 82). Distinguishing between the two is also important for discerning two core theoretical pillars upon which the development of the concept of social capital has been based over the last two decades.

### Social Networks

The study of social structural determinants of human interaction has a long tradition in sociological thought, which can be traced back to the works of Durkheim (1952, 1962) and Simmel (1950). According to this line of thought, social structure is a social fact in the sense that it is given to individuals – human beings are embedded in and constrained by the social structure that connects them. For Durkheim (1952), even the most personal, intimate action a human being can perform – suicide – is determined by the level of interconnectedness within the social context. The formal and structural approaches in sociology form the theoretical platform upon which social network research is grounded. In general terms, the focus of social network research is on examining how social structures enable or prevent social actors (e.g., individuals, groups, organisations) to achieve their goals and interests. Social structure is seen as a network of actors who are in some way connected through a set of relationships (Gabbay & Leenders, 1999).

During the 1980s and early 1990s, social network studies made substantial progress in the development of innovative methodologies for the study of human interaction in its social environment. These included sophisticated mathematical models for mapping, tracking and deconstructing data on networks (e.g., Wasserman & Faust, 1994). However, during the same period, the analysis of social networks appeared to lack a 'good theory' in which empirical results could be placed (Salancik, 1995: 348). Shortly after the publication of seminal works by Coleman (1988, 1990), Burt (1992), and Putnam (1993), an increasing number of social network researchers saw in social capital a promising theory that could ground the discourse of social structures in a focus on the productive outcomes of social relations. This resulted in an explosion of social capital studies in a broad range of disciplines including sociology, economics, political science, and organisation and management studies (Woolcock, 1998; Adler & Kwon, 2002).

Partly as a consequence of its strong formalistic sociological tradition, and partly as a consequence of the need for establishing its academic legitimacy by showing that network variables cause important outcomes, the focus of network theoretic approaches to social capital has been on the structural features of social relations (Gabbay & Leenders, 1999; Adler & Kwon, 2002; Borgatti & Forest, 2003). When viewed in this perspective, social capital studies can be classified into two groups: the 'tie approach' and the 'structural form approach'. The former places emphasis on the dyadic relationships or ties between a specific ego and a specific alter; the latter places emphasis on structural characteristics of ego-networks. The tie approach distinguishes between a strong and weak tie (Granovetter, 1973), while the structural form approach distinguishes between ego-networks characterised by closure (Coleman, 1990) and structural holes (Burt, 1992). The difference between the two approaches is that the former focuses mainly on direct ties linking two actors, while the latter is more complex as it takes into account both direct and indirect ties (i.e., ego-alter, alter-alter).

Network theoretic approaches to social capital seek to explain variation is success (e.g., performance, rewards) as a function of an actor's social ties. In this regard, they differentiate from other network studies which seek to explain homogeneity in social actors' attitudes again as a function of their social ties (Borgatti & Foster, 2003). The difference between the two research streams boils down to the classic tension between agency and structure. 'This instrumental, individual-oriented aspect of social capital work contrasts with the environmental determinism that is found in much diffusion and social influence research' (ibid: 1002).

Despite their common explanatory goals, social capital studies differ in their explanatory mechanisms. On the one hand, there is a stream of social capital research that adopts a 'structuralist' or 'topological' approach by focusing on the patterns of interconnections between actors to explain performance variance. For example, Burt's (1992) study of managerial mobility in a high-tech firm showed that managers who were connected to disconnected others (i.e., structural holes) advanced faster in the corporate ladder. The core assumption in the 'topological' camp is that performance variation is attributable to structurally different positions actors occupy in a given network. On the other hand, the focus of the 'connectionist' or 'pipe' research stream is on the resources that flow through ties (Lin, 2001). In this view, successful actors are those who can mobilise material resources or symbolic resources (e.g., knowledge, emotional commitment) that are embedded in their social ties (Lin, 2001). The 'connectionist' approach suggests that 'different kinds of ties have different capacities for extracting resources' (Borgatti & Foster, 2003: 1004). For example, research on the information seeking behaviour of 72 scientists in two global pharmaceutical organisations in the US offers quantitative evidence that intentional search of information is informed by characteristics of the relation between the seeker and the provider including knowing and valuing what the provider knows, and being able to gain timely access to her thinking (Borgatti & Cross, 2003). In this regard, 'connectionist' approaches imply 'an interpersonal transmission process among those with pre-existing social ties' (Borgatti & Foster, 2003: 1003). The distinction between the 'structuralist' and 'connectionist' approaches is loosely connected to Granovetter's (1992a) distinction between 'structural' and 'relational' embeddedness, which will be outlined below.

**Social Embeddedness**

A fundamental premise on which social capital theory is based and distinguished from other neo-capital theories, such as human capital theory (Becker, 1964), is that resources of economic or symbolic interest are embedded in, and captured through social relations (e.g., Lin, 2001; Robison, Schmid, & Siles, 2002). The role of social relations in economic life lies at the heart of a classic discourse on the interaction between the economy and society, early evidence of which can be found in the works of Marx (1867[1971]) and Weber (1947), and more recently in Parsons' (1960) view of the economy and society as distinct sub-systems. As a response to under-socialised and over-socialised conceptions of economic behaviour found either in the neo-classical economic thought or in the Parsonian tradition of economic sociology, Granovetter (1985) introduced the notion of social embeddedness to modern economic

sociology as a middle ground approach to the study of human action. This called for the contextualisation of economic activity in on-going patterns of social relations (Dacin, Ventresca & Beal, 1999). According to Granovetter (1985: 487):

> A fruitful analysis of human action requires us to avoid the atomization implicit in the theoretical extremes of under- and oversocialized conceptions. Actors do not behave or decide as atoms outside a social context, nor do they adhere slavishly to a script written for them by the particular intersection of social categories that may happen to occupy. Their attempts at purposive action are instead embedded in concrete, ongoing systems of social relations.

Importantly, the term 'embeddedness', which was coined by Polanyi (1944) in opposition to the 'rationality' and 'self-interest' assumption that underpins mainstream economic theory, was employed by Granovetter (1985: 490) to highlight the unique roles that both 'concrete personal relations and structures (or "networks") of such relations in generating trust and discouraging malfeasance'. Granovetter (1985: 491) argues that, for example, in business relations individuals gain confidence in their transactions with each other as a result of 'the strength of personal relations, and this strength is a property not of the transactors but of their concrete relations':

> Standard economic analysis neglects the identity and past relations of individual transactors, but rational individuals know better, relying on their knowledge of these relations. They are less interested in *general* reputations than in whether a particular other may be expected to deal honestly with *them* (ibid., italics in the original).

It is important to note that the embeddedness argument acknowledges the negative consequences of overmuch trust that may follow from personal relations. There are many examples that illustrate the potentially detrimental consequences stemming from temptations to act with malfeasance as a result of enormous trust. Granovetter (1985) mentions the case of the notorious 'CBS murders'[1] in 1982. Breaches of trust, as the recent case of Société Générale illustrates, can also result in substantial financial loss[2] (Walsh & Gow, 2008). The embeddedness argument, therefore, 'makes no sweeping

[1] In this case, as Granovetter (1985: 492) describes it, 'the owner of a diamond company was defrauding a factoring concern by submitting invoices from fictitious sales. The scheme required cooperation from his accounting personnel, one of whom was approached by investigators and turned state's evidence. The owner then contracted for the murder of the disloyal employee and her assistant. Three CBS technicians who came to their aid were also gunned down.'

[2] This is how *The Guardian* (24 January 2008) covered the recent fraud at the second largest French bank: 'A rogue trader has cost French bank Société Générale €4.9bn (£3.7bn) in the biggest fraud in financial history… "Aided by his in-depth knowledge of the control procedures resulting from his former employment in the middle-office, he managed to conceal these positions through a scheme of elaborate fictitious transactions," the bank said […] Roger Steare, professor of organisational ethics at Cass Business School in London said: "The banking industry used to have a reputation for honesty, trust and prudence. This latest scandal, on top of the massive losses in credit markets, and the ongoing incidence of mis-selling to retail customers, indicates that there is a systemic deficit in ethical values within the banking industry" (Walsh & Gow, 2008).

predictions of universal order or disorder but rather assumes that the details of social structure will determine which is found' (ibid: 493).

In a later work, Granovetter (1992a) uses the terms 'relational' and 'structural' embeddedness to distinguish between the structure of one's network and the content or quality of those relations. In summary, the notion of social embeddedness as forwarded by Granovetter (1985, 1992a), is a fruitful critique of Williamson's (1975, 1981) thesis on 'market and hierarchies', thereby questioning the 'absolute assumption of rational decision making' (Granovetter, 1985: 505), and pointing to the fact that 'economic action and outcomes, like all social action and outcomes, are affected by actors' dyadic (pair wise) relations *and* by the structure of the overall network of relations' (Granovetter, 1992a: 33, italics in the original). As will be discussed in the second section, the notion of social embeddedness has provided the basis for the development of integrative and refined conceptual models of social capital which embrace the distinction between structure and content of social relations (e.g., Nahapiet & Ghoshal, 1998; Li, 2007).

## Defining Social Capital

Despite its growing popularity social capital 'suffers from conceptual confusion' (Li, 2007: 227) and some authors have suggested that it may be at the risk of being used as a metaphor per se (Burt, 2000). Given the lack of consensus on its underlying theoretical elements, social capital may be viewed as an 'umbrella construct' which, having passed the initial 'emerging excitement' phase of its life-cycle, is ready to enter the second and more challenging phase of validity assessment (Hirsch & Levin, 1999). There are two strategies for confronting this challenge (van Deth, 2003). The first is to search for and develop a priori definitions of the concept. However, this strategy 'is hardly fruitful in the field of social capital… [since] the lack of *a priori* definitions is part of the conceptualisation of social capital itself' (ibid: 81, italics in the original). Consider, for example, Coleman's (1988) notion of 'appropriability' of social structure which, as Adler & Kwon (2002: 17) note, 'reflects a primordial feature of social life':

> It is possible to gain insight into some of the ways in which closure and appropriable social organization provide social capital by use of a distinction made by Max Gluckman (1967) between simplex and multiplex relations. In the latter, persons are linked in more than one context, while in the former persons are linked through only one of these relations. The central property of a multiplex relation is that it allows the resources of one relationship to be appropriated for use in others' (Coleman, 1988: S109).

A priori definitions of social capital are restrictive since they fail to take into account that social capital 'is defined by its function' (Coleman, 1988: S98) and, therefore, 'can be

traced in very different ways in different situations' (van Deth, 2003: 81). Given the lack of consensus on its exact meaning, it is suggested that 'it is more appropriate to use a ground-up approach and to search for shared characteristics of available applications of the concept' (ibid: 81). The analysis of the theoretical foundations of the concept, as presented in this section, makes clear that social capital is a multidimensional concept that encompasses structural as well as relational facets of social connections (Granovetter, 1985; 1992a). The definition forwarded by Paxton (1999: 93) encapsulates the multi-faceted character of social capital:

> Social capital involves two components:
> 1. *Objective associations between individuals*. – There must be an objective network structure linking individuals. This component indicates that individuals are tied to each other in social space.
> 2. *A subjective type of tie*. – The ties between individuals must be of a particular type – reciprocal, trusting, and involving positive emotion.
> When social capital is present, it increases the capacity for action and facilitates the production of some good. When active, it facilitates various ends for the members of a group and for the group as a whole. Social capital could, however, remain latent within the group and be viewed as potential energy.

The above definition is advantageous for the following five reasons. First, it makes an explicit distinction between social structure per se and the content of social relations that are embedded in social structure. Second, it makes an explicit reference to the particular types of social relations (i.e., ties) that count for social capital (i.e., reciprocity, trust, and positive emotion). These types fit well with Adler & Kwon's (2002: 18) suggestion that the substance of social capital is found in the 'goodwill [i.e., sympathy, trust, forgiveness] offered us by friends and acquaintances'. Third, it makes explicit that social capital is goal-specific. In other words, it suggests that not all ties are translated into social capital but only those that 'assist the actor in the attainment of particular goals' (Gabbay & Leenders, 1999: 2). Fourth, while acknowledging the goal-specificity of social capital and its derived benefits for the individual, it also acknowledges that social capital can have positive externalities. It highlights that 'some forms of social capital are "collective goods" in that they are not the private property of those who benefit from them' (Adler & Kwon, 2002: 22). Finally, it suggests that social capital is intangible and, thus, susceptible to decline unless continuous investment efforts are made (Leana & Van Buren, 1999). In summary, Paxton's (1999) definition provides a coherent macro-theoretical grounding for exploring in more detail the micro-mechanisms by which social capital can enable the transfer of knowledge between individuals in an organisational context. This is examined in the section that follows.

## II. SOCIAL CAPITAL AND KNOWLEDGE TRANSFER IN ORGANISATIONS

Over the last decade, the concept of social capital has been attracting considerable interest from organisation and management scholars as well as business practitioners (e.g., Nahapiet & Ghoshal, 1998; Leenders & Gabbay, 1999; Baker, 2000; Cohen & Prusak, 2001; Adler & Kwon, 2002; McFayden & Cannella, 2004; Li, 2007). The increasing popularity of social capital can be seen in a wider context as being part of a recent transition towards intangible assets such as intellectual, structural, organisational, and innovation capital (e.g., Edvinsson & Malone, 1997; McElroy, 2002). These intangible assets are now perceived to be of greater importance than more traditional assets such as physical, human, and financial capital, since they are associated more closely with the dynamic capabilities of the firm (Teece *et al.*, 1997). The attractiveness of social capital may also stem from its labelling as 'capital', which has contributed to its wide appeal (Araujo & Easton, 1999).

Despite differences among scholars regarding what actually social capital comprises and whether it fits the notion of 'capital', a broad consensus is emerging that social capital is a valuable asset. Moran (2005: 1129) explains the features of social capital that make it promising for explaining organisational performance as follows:

> Particularly important for strategy are social capital's unique features compared to other forms of capital. Characterized as it is by durable, interconnected human relationships…, social capital is neither as easily alienable from the firm as physical or financial capital nor as mobile as human capital. Rather, it is tightly bound with the organization, development, and strategy of the firm…As such, to the extent the firm can influence its development and can appropriate its value, social capital may well prove to be the firm's most enduring source of advantage.

The impact of social capital on various aspects of performance has been examined at multiple levels and settings which range from access to employment opportunities (Granovetter 1973), and career advancement of individuals and small groups (Burt 1992) to job satisfaction (Requena 2003), employee commitment (Watson & Papamarcos, 2002), group effectiveness (Oh, Chang, & Labianca, 2004), and inter-unit resource exchange and product innovation (Tsai & Ghoshal 1998; Hansen, 1999). The above outcomes echo the three generic benefits of social capital that have been identified in the literature: (i) information channels providing access to timely, unique and diverse information and know-how (Coleman, 1988; Burt, 1992); (ii) influence and control including power and prestige (Lin, 2001); and (iii) solidarity, defined as the 'degree of mutual trust and commitment among [actors] that is independent of any specific transaction' (Sandefur & Laumann, 1998: 491).

## Social Capital and the Knowledge Capability of the Firm

Much of the interest in social capital is associated with the emergence of the knowledge-based organisation and, more broadly, with the rise of the networked economy and society (Lesser, 2000). As Cohen & Prusak (2001: 16) note, '[t]he size and intricacy of organizations, the proliferation of critical information, and the increasing complexity of [work] tasks make connection and cooperation – social capital – increasingly important'. As discussed in Chapter Two, since the early 1990s and onwards, theories of strategic management have been shifting toward knowledge-based views of the firm. What is common to these theories is the unequivocal importance they ascribe to the social context of organisational knowledge and learning. Scholars such as Kogut & Zander (1992, 1996) and Nonaka & Takeuchi (1995) have recast the theory of the firm by focusing on organisations as social communities specialising in the creation and transfer of knowledge. More specifically, researchers have positioned social capital as a core source of the knowledge and knowing capability of the firm which, in turn, constitutes its intellectual capital advantage (Nahapiet & Ghoshal, 1998) – in short,' "who you know" affects "what you know" '(ibid: 252).

### An Integrative Conceptual Model of Social Capital

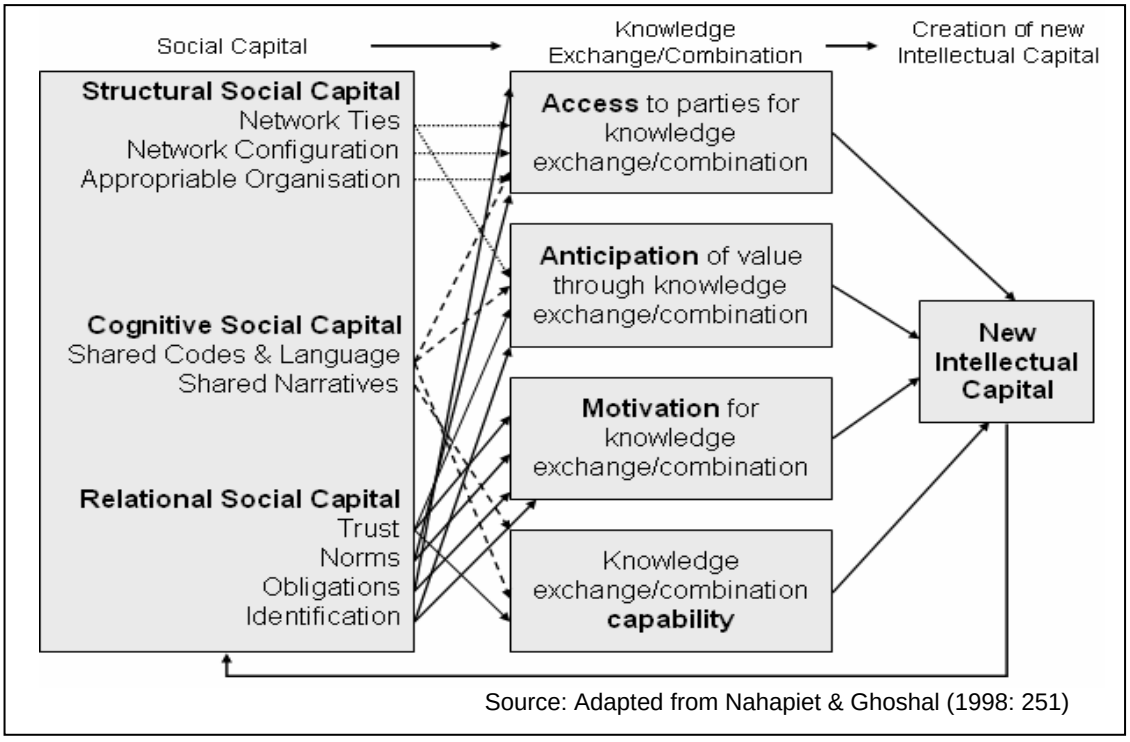
Arguably, one of the most influential discussions on the role of social capital in knowledge exchange and combination processes within work organisations is that by Nahapiet & Ghoshal (1998)[3]. Consistent with Paxton (1999), the definition of social capital forwarded by Nahapiet & Ghoshal (1998) extends beyond the structure of social networks by considering as well the actual or potential resources that can be accessed through such networks. Accordingly, social capital is defined as 'the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit' (ibid: 243). The main thesis made by Nahapiet & Ghoshal (1998) is that social capital comprises three dimensions, which contribute to the development of intellectual capital by their impact on four conditions for knowledge exchange and combination.

Elaborating upon the notion of social embeddedness (Granovetter, 1985, 1992a), Nahapiet & Ghoshal (1998: 244) distinguish between and provide substantive definitions for structural and relational social capital. The structural dimension of social capital, defined as the 'impersonal configuration of linkages between people and units',

[3] Nahapiet & Ghoshal's article, which appeared in *The Academy of Management Review in* April 1998, has been cited 528 times in the *ISI Web of Science* database [accessed 7th February 2008].

focuses on the 'pattern of connections between actors'. It thus involves a number of facets familiar to social network researchers including strong/weak ties at the dyadic level, closure/structural holes at the ego-network level, and the overall configuration of a social network (e.g., centralisation, range, cohesion etc.). It also involves Coleman's (1988) concept of appropriability, thereby highlighting the multipurpose character of social connections. The relational dimension of social capital places explicit focus on the content of social relations. In contrast to the impersonal, 'objective associations' among people (Paxton, 1999), it refers to the kinds of 'personal relationships people have developed with each other through a history of interactions' (Nahapiet & Ghoshal, 1998: 244). Among the key facets in this dimension are trust, norms and sanctions, obligations and expectations, and identification. According to Nahapiet & Ghoshal, these facets represent valuable assets that are inherent in, and available through 'ongoing personal relationships…and parallel to what Lindenberg (1996) describes as behavioral, as opposed to structural, embeddedness' (ibid: 244). Furthermore, drawing upon cognitive sociology and psychology (e.g., Cicourel, 1973), Nahapiet & Ghoshal (1998) introduce the cognitive dimension of social capital to highlight the importance of shared representation, understanding, and systems of meaning among parties. Shared language and narratives comprise the shared cognition of a social unit which, in turn, determines its absorptive capacity (Cohen & Levinthal, 1990). This, according to the authors, has not received special attention in the discourse on social capital. The full conceptual model proposed by Nahapiet & Ghoshal (1998) is presented in Figure 3.2.

Figure 3.2 **Social Capital, Knowledge Exchange/Combination and New Intellectual Capital**




Source: Adapted from Nahapiet & Ghoshal (1998: 251)

As shown in Figure 3.2, there are multiple paths through which the three dimensions of social capital might affect the four conditions for knowledge exchange and combination and, subsequently, contribute to the creation of new intellectual capital. While many facets of social capital appear to impact upon more than one exchange-and-combination mechanism, Nahapiet & Ghoshal (1998) suggest that: (i) structural social capital affects primarily actors' access to knowledge exchange-and-combination, (ii) cognitive social capital impacts primarily upon actors' combination capability and (iii) relational social capital can influence three mechanisms, namely accessibility, anticipation of the value of knowledge exchange, and motivation to engage in knowledge exchange. Nahapiet & Ghoshal (1998) stress that, while in their model the three dimensions of social capital act independently, it is likely that they may also have a configurational effect upon knowledge exchange and combination.

Nahapiet & Ghoshal's (1998) model, despite its theoretical prominence, has received limited empirical attention. The review of the literature identified only one study that has hitherto tested in an integrated fashion the combined effect of the three dimensions of social capital on knowledge exchange (Tsai & Ghoshal, 1998). Based on a sample of 15 business units of a US-based multinational firm in the electronics industry, Tsai & Ghoshal's (1998) study has provided support for the contribution of social capital to knowledge exchange and combination which, in turn, is positively associated with product innovation.

Nahapiet & Ghoshal's (1998) seminal discussion sparked considerable interest in exploring further the knowledge implications of social capital. Much research has since been focused on structural aspects of social relations including the overall pattern of a social network (e.g., Reagans & Zuckerman, 2001; Tsai, 2002; Reagans & McEvily, 2003) and how individuals fit into a network of ties (e.g., Hansen, 1999, 2002; Tsai, 2001; McFayden & Cannella, 2004). Less attention has, however, been paid to the actual relationship between two individuals (Rowley, Behrens, & Krackhardt, 2000). As Moran (2005: 1132) has pointed out, 'dyad-specific qualities of social capital [including interpersonal trust and feelings of closeness and solidarity] have been given much less empirical attention'.

### The Neglected Importance of Personal Relations

Beyond broad consensus that trust is a key attribute of work relations conducive to effective knowledge transfer (e.g., Zand, 1972; Penley & Hawkins, 1985; Mayer, Davis, & Schoorman, 1995; Nahapiet & Ghoshal, 1998; Adler, 2001), recent developments in

organisation theory highlight the emergence of trusting relations 'that are qualitatively different than those prescribed by formal and rigid bureaucratic systems' (Nugent & Abolafia, 2006: 629). Adler & Heckscher (2006) suggest that, as businesses have gradually been shifting away from Gemeinschaft and Gesellschaft towards more collaborative forms of social organising, the bases of trust have also been changing from loyalty, honour, duty, and status deference to interdependent contribution, mutual concern, honesty, openness, and collegiality. In trust terminology, a shift appears to take place from fragile to resilient trust (Ring, 1996), from calculus-based to relational-based trust (Rousseau *et al.*, 1998), or, using Dietz & Den Hartog's (2006) typology of trust intensity, from weaker to stronger degrees of trust. Relational trust 'directly acknowledges that the forms of trust most interesting to organizational studies are to be found in personal relationships' (Nugent & Abolafia, 2006: 631).

However, personal relationships at work have traditionally been considered in much of the organisational literature as 'a secondary adjustment, of sorts, to the coercive demands of organizational life. Organizations are conceptualised as barren soil for the cultivation of personal ties' (Nugent & Abolafia, 2006: 647). Yet, it is the personal ties that shape 'accessibility and motivation…to engage with each other in knowledge and learning' (Nahapiet, Gratton, & Rocha, 2005: 5). To date, most of social capital theory tends 'to treat the relationship building capacity of interaction or exchange as predictable and nonvarying – like a magic dust that reliably bonds people emotionally as they share social spaces' (Nugent & Abolafia, 2006: 647).

There is little doubt that what one knows is to a large extent a function of whom one knows (Nahapiet & Ghoshal, 1998). However, 'is it enough to focus exclusively on *whom one knows*, without taking into account *how well one knows them*?' (Moran, 2005: 1130, italics in the original). This question points to a major shortcoming in understanding what Moran (2005) identifies as the micro-foundations of the knowledge transfer process. Indeed, as most of the social capital research has been tied to a social network paradigm that places emphasis on the structure or form of interpersonal relations, little is known on whether and how the quality or content of those relations matter to productive knowledge exchange.

### Social Capital as Enabling Condition of Knowledge Transfer

Nahapiet & Ghoshal's (1998) three-dimensional modelling of social capital shares common ground with a subsequent framework forwarded by Adler & Kwon (2002). Based on the familiar tripartite schema of ability, motivation and opportunity (AMO),

Adler & Kwon (2002) identify three sources of social capital inherent in social relations: (i) structural properties of social relations that provide actors with opportunities to yield their contacts' resources (Granovetter, 1973; Burt, 1992); (ii) shared beliefs, common lexicons, and communication regimes that provide actors with the ability to connect with each other (Cicourel, 1973; Orlikowski & Yates, 1994; Clark, 1996); and (iii) trust that motivates actors to engage in social exchange by 'reducing the chances of opportunistic behaviour by one's partners' (Knoke, 1999: 24). Taken together, the two frameworks provide a good basis for examining the combined effect of social capital on knowledge transfer by distinguishing between the form and content of social relations (Friedland & Alford, 1991; Powell & Smith-Doerr, 1994; Podolny & Baron, 1997). As Friedland & Alford (1991: 252) argue:

> Social networks per se do not have content and as such do not entail interests, values, motives, beliefs…[and without content] it will be impossible to explain what kinds of social relations have what kind of effect on the behavior of organizations and individuals.

The distinction between form and content echoes distinctions made by other scholars such as 'weak' and 'strong' ties (Granovetter, 1973, 1983), 'structural' and 'relational' embeddedness (Granovetter, 1992a), 'objective associations' and 'subjective type of tie' (Paxton, 1999), 'impersonal' and 'personal' social ties (Nahapiet & Ghoshal, 1998). All the above distinctions can be seen through the duality lens of informal-formal exchange, which reflects the duality nature of social capital (Li, 2007). However, the existing models do not capture the nuances of the process by which a tie between two individuals is transformed into useful, actionable knowledge.

Based on a synthesis of Granovetter's (1992a) notion of structural and relational embeddedness, Paxton's (1999) general definition of social capital, Nahapiet & Ghoshal's (1998) three-dimensional conception of social capital, and Adler & Kwon's (2002) AMO model, table 3.1 presents an analytical framework which identifies three key conditions that enable individuals to mobilise their social capital for receiving useful knowledge: (i) structural opportunity to access knowledge; (ii) cognitive ability to understand and internalise knowledge; and (iii) relational motivation to decide to utilise knowledge.

Structural opportunity refers to the question of 'how' individuals access knowledge that is available in their collegial network. It thus concerns the existing or lacking opportunity of employees to connect with their co-workers. At the interpersonal level, structural opportunity focuses on the existence and strength of social interaction between a

knowledge seeker and knowledge provider. Cognitive ability corresponds to the question of 'whether' employees are able to connect cognitively with knowledge providers in order to understand what the latter are referring to when communicating. This ability depends on the extent to which knowledge seekers and providers share a common perspective, that is, that they share a common 'technical grammar' for communication (Argyres, 1999) and common concerns, values and purpose (Tsai & Ghoshal, 1998). Relational motivation refers to the question of 'why' employees decide to use information or advice received from knowledge providers. It, thus, concerns those socially attributed characteristics of the interpersonal relation between a knowledge seeker and provider, such as trust.

Table 3.1 **Social Capital as Enabling Condition of Knowledge Transfer**

| **Questions for a Knowledge Seeker** ⇨ | **Whether and how do I go for knowledge?** | **Am I able to understand and internalise this knowledge?** | **Why do I choose to utilise this knowledge?** |
|---|---|---|---|
| Social Capital *Components* (Granovetter, 1992a; Paxton, 1999) | Impersonal/Objective | Personal/Inter-subjective | Personal/Inter-subjective |
| Social Capital *Sources* (Adler & Kwon, 2002) | Opportunity | Ability | Motivation |
| Social Capital *Dimensions* (Nahapiet & Ghoshal, 1998) | Structural | Cognitive | Relational |
| Social Capital *Variables* (Research Gap) | Tie Strength | Shared Language<br>Shared Values and Goals | Reliance Trust<br>Disclosure Trust |
| ***Enabling Conditions of Knowledge Transfer*** | ***Structural Opportunity*** | ***Cognitive Ability*** | ***Relational Motivation*** |

Besides research that looks at the individual effect of each of the three conditions on knowledge exchange, there is little empirical evidence for how the interplay between structural opportunity, cognitive ability, and relational motivation influence the transfer of knowledge. As Levin, Walter, & Appleyard (2007: 1-2) have more recently noted:

> The powerful overall visual image conveyed by research on social capital and social networks is that of nodes representing actors connected in a network by lines, which represent the ties among those actors. Yet fundamental to this image—this metaphor of social structure—is the often overlooked issue of what it actually means to have a line connecting two nodes. That is, what does such a tie really signify?

The aim of this section is, therefore, to disentangle the relational and cognitive fabric of social relations from their structural characteristics, thereby contributing to a more nuanced understanding of social capital as enabling condition of interpersonal knowledge transfer.

**Structural Social Capital**

The core argument behind the knowledge transfer effect of tie strength is that frequent and close social interaction provides individuals with enhanced opportunities to acquire and exchange information and knowledge (Nahapiet & Ghoshal, 1998; Adler & Kwon, 2002). That is because ties embody information benefits in the form of access, timing, and referrals (Burt, 1992). Nahapiet & Ghoshal (1998) suggest that ties influence primarily actors' opportunities to combine and exchange knowledge but also their anticipation that 'interaction, exchange, and combination will prove worthwhile, even if they remain uncertain of what will be produced or how' (ibid: 249). In contrast to weak ties, strong ties are more accessible (Granovetter, 1983) and, therefore, provide additional opportunities for parties to exchange knowledge resources (Krackhardt, 1992). It is also likely that individuals can anticipate the value of knowledge resources held among network partners with strong ties (Burt, 2001). Moran (2005) suggests that strong ties can also reduce the uncertainty of an exchange and, as a result, enhance the likelihood of obtaining information from others.

The positive impact of strong ties on dyadic knowledge transfer has been verified at multiple levels of analysis and industry settings including: networks of large entrepreneurial manufacturing firms (Uzzi, 1997); inter-firm transfer of knowledge among bank officers and their corporate clients (Uzzi & Lancaster, 2003); inter-unit transfer of best practices within multinational corporations (Szulanski, 1996); inter-unit exchange of knowledge among a multi-unit multinational electronics company (Tsai & Ghoshal, 1998); inter-unit transfer of knowledge among R&D units of a multidivisional computers and electronics firm (Hansen, 1999); and interpersonal transfer of knowledge within divisions of a pharmaceutical, a bank and an oil and gas company respectively (Levin & Cross, 2004). Based on the above, it is proposed that:

Hypothesis 1 (H1): *Strong ties have a positive effect on the transfer of knowledge.*

It is equally likely, though, that the social capital dimensions may also impact on knowledge transfer in a more complex manner. For example, Nahapiet & Ghoshal (1998) have stressed that network ties, especially of a strong, symmetrical nature (Krackhardt, 1992), may go beyond providing individuals with the requisite opportunity to access knowledge and anticipate the value of its exchange. They may further, and even more importantly, influence actors' motivation to get involved in social interaction, thereby affecting their perceptions of trust in knowledge providers. Nahapiet & Ghoshal (1998: 252) also underline the possibility that strong ties 'are conducive to the

development of the different facets of the cognitive social capital'. Their full argument, as provided below, is indicative of the multifaceted role that social interaction may play over productive knowledge exchange.

> '[W]ithin the context of the framework of combination and exchange adopted by us in this article, the structural dimension of social capital influences the development of intellectual capital primarily (though not exclusively) through ways in which its various facets affect access to parties for exchanging knowledge and participating in knowing activities. While recognizing that the structural facets may also be systematically associated with other conditions for the exchange and combination of knowledge, we believe that these associations are primarily derived indirectly, through the ways in which structure influences the development of the relational and cognitive dimensions of social capital'.

However, little research to date has focused on the configurational effect of the social capital dimensions on knowledge transfer, especially by considering the relational and cognitive dimensions as multidimensional constructs. The following section focuses on the relational dimension of social capital (i.e., interpersonal trust) as the starting point for unravelling the theoretical rationale behind a configurational approach to the role of social capital in knowledge transfer.

**Structural and Relational Social Capital**

Why do strong ties lead to receipt of useful knowledge? In other words, what is in a strong tie that makes it conducive to transferring effectively information and/or knowledge between individuals? Research suggests that strong ties matter because they lead to higher levels of trust between parties which, in turn, can affect positively the transfer of knowledge (Tsai & Ghoshal, 1998; Levin & Cross, 2004). It is important to note for theoretical clarity that, although strong interaction ties and trust and/or trustworthiness may be correlated, they reflect distinct dimensions of social relations. Tsai & Ghoshal (1998: 265) state:

> '[T]he structural dimension of social capital includes social interaction…People can use their personal contacts to get jobs, to obtain information, or to access specific resources. The relational dimension of social capital, in contrast, refers to assets that are rooted in these relationships, such as trust and trustworthiness…The structural dimension of social capital, manifesting as social interaction ties, may stimulate trust and perceived trustworthiness, which represent the relational dimension of social capital'.

There is substantial theoretical and empirical support to the claim that relations rich in trust are also conducive to knowledge transfer and sharing (e.g., Zand, 1972; Gambetta, 1988; Ring & Van de Ven, 1994; Mayer *et al.,* 1995; Kramer & Tyler, 1996; Jones & George, 1998; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998; Mayer & Davis, 1999; Andrews & Delahaye 2000; Adler, 2001; Levin & Cross, 2004;

Chowdhurry, 2005; Holste & Fields, 2005; Moran, 2005; Nahapiet *et al.,* 2005). However, only a few studies have examined this relationship by either treating trust as a multidimensional construct (Chowdhurry, 2005; Holste & Fields, 2005), or by looking simultaneously at the structural and relational social capital (Tsai & Ghoshal, 1998), or more importantly, by doing both (Levin & Cross, 2004). Specifically, while acknowledging the multidimensional character of trust, Levin & Cross' (2004) study has found that knowledge seekers' perceptions of knowledge providers' benevolence- and competence-based trust not only led to the receipt of more knowledge, but also mediated fully the relationship between strong ties and knowledge transfer. This finding accords with other studies that point to the assertion that a structurally strong work relation will likely be characterised by high levels of trust (Currall & Judge, 1995; McAllister, 1995; Cherry, 2000; Gillespie, 2003). Similar to Levin & Cross (2004), the present study considers trust multidimensionally; that is, to consist of reliance and disclosure trust (Gillespie, 2003). The former type is defined as the willingness of 'relying on another's skills, knowledge, judgement or actions, including delegating and giving autonomy', and can be viewed as more 'professional' oriented. The latter type refers to the willingness of 'sharing work-related or personal information of a sensitive nature' (ibid: 10), and therefore reflects a more 'personal' character. Reliance and disclosure trust can be viewed as conceptually close to cognitive- and affect-based trust respectively (McAllister, 1995), which represent two well-established dimensions of trust in the literature (e.g., Morrow, Hansen, & Pearson, 2004), and by extension similar to competence-based and benevolence-based trustworthiness (Mayer *et al.,* 1995) Thus, based on the evidence provided above, it is plausible to expect both reliance and disclosure trust to mediate the effect of tie strength on knowledge transfer. Accordingly, it is stated that:

Hypothesis 2 (H2): *The positive effect of strong ties on the transfer of knowledge is mediated by reliance trust and disclosure trust.*

Despite substantive empirical evidence on the positive effect of trust on knowledge transfer and sharing, very few studies have examined this effect by exploring whether the influence of distinct trust dimensions may be dependent of each other or not (cf. Chowdhurry, 2005). Chowdhurry's (2005) study conducted in MBA student teams in the US found that cognition-based and affect-based trust had a distinct pattern of association to complex knowledge sharing. The results of that study suggest that knowledge sharing was possible 'without simultaneous presence of both forms of trust' (ibid: 321). The finding of Chowdhurry's (2005) study is based on McAllister's (1995: 51) assertion that each form of trust 'functions in a unique manner and has a distinct

pattern of association to antecedent and consequent variables'. Chowdhurry (2005) distinguishes between distinct antecedents of cognitive-based trust and affective-based trust. Specifically, the former type is thought to be based on shared professional experience, while the latter is viewed as a positive function of shared values and mental models (ibid.). However, a closer reading of McAllister's (1995: 30) discussion on the relationship between cognition-based trust and affect-based trust indicates that, while both forms of trust represent and should be treated as distinct constructs, 'some level of cognition-based trust may be necessary for affect-based trust to develop'. McAllister's (1995) study indicates that cognition-based trust served as the platform for the development of affect-based trust. Similarly, Gillespie (2003: 29-30) proposes that reliance and disclosure trust, while being identified as distinct dimensions, can operate 'in a multiplicative manner'. Accordingly:

> Relationships characterised by a willingness to both rely and disclose represent a higher level and different form of trust akin to relational trust, where there is a broad base of support, exchange of resources, interdependence and reciprocated interpersonal care and concern.

Conditions for relational trust include the assessed integrity of the engaged parties, their competence in ongoing exchanges and their predictability through the alignment of their goals and values (Butler, 1991; Hosmer, 1995; Rowley *et al.,* 2000). Based on this, it is likely that an interaction effect of reliance and disclosure trust, reflecting a higher level of trust akin to relational trust will have a significant and positive impact on knowledge transfer above and beyond the independent effects of each trust type. Following Lewicki & Bunker's (1996) discussion of the evolution of trust in work relationships as well as Rousseau *et al's* (1998) explanation of the developmental process of relational trust, it proposed that disclosure trust is more likely to build upon reliance trust than the reverse.

Hypothesis 3 (H3): *The higher the level of reliance trust, the stronger is the positive effect of disclosure trust on the transfer of knowledge*.

Levin & Cross (2004: 1485) left 'open for future research' a theoretical claim, which suggests that 'strong ties might have both direct and indirect effects on perceived trustworthiness'. However, they provide two explanations of how tie strength may affect either competence-based or benevolence-based trust. According to the first, tie strength is likely to exert its positive influence on competence-based trust through developing 'common ways of thinking and communicating (Walker, 1985), and this type of shared cognition – e.g., common goals (Tsai & Ghoshal, 1998), similar jargon (Levin,

1999) – is associated with greater [competence-based] trust' (Levin & Cross, 2004: 1480). Second, and in accordance to Krackhardt's (1992) view, 'benevolence-based trust…is more likely to occur among strong ties (Currall & Judge, 1995; Glaeser *et al.,* 2000), presumably due to greater emotional bonds' (Levin & Cross, 2004: 1480). In other words, what Levin & Cross (2004) suggest is that benevolence-based trust is likely to be linked directly to structurally strong relations, while competence-based trust is likely to be affected indirectly by tie strength via shared values and goals, and shared language. This shifts the attention to the role of the structural and cognitive social capital as key antecedents of distinct facets of trust. Despite the centrality of trust in social capital theory (Nahapiet & Ghoshal, 1998; Adler & Kwon, 2002; Moran, 2005), this is an area that has received little attention in the literature. A notable exception is Tsai & Ghoshal's (1998) study in which the structural and cognitive dimensions of social capital were found to be positively linked to trust. It is apparent that there is a need to expand on Tsai & Ghoshal's (1998) findings by considering both the relational and cognitive social capital as multidimensional constructs, thereby offering a richer examination of the subtle relationship between the form (i.e., structural social capital) and content (i.e., cognitive and relational social capital) of social relations in the context of knowledge transfer. It can be argued that reliance and disclosure trust are likely to be influenced differently by tie strength when the cognitive social capital "enters the equation". The antecedent roles of the structural and cognitive social capital on reliance and disclosure trust are examined in more detail below.

**Cognitive and Relational Social Capital**

There is increasing theoretical and empirical consensus on the importance of shared values and goals for trust development in a variety of intra- and inter-organisational relationships, processes and outcomes (e.g., Barber, 1983; Sitkin & Roth, 1993; Morgan & Hunt, 1994; Jones & George, 1998; Tsai & Ghoshal, 1998; Tracey & Clark, 2003; Gillespie, 2003; Siegrist *et al.,* 2003; Gillespie & Mann, 2004; Kang *et al.,* 2005; Li, 2005; Chiu *et al., 2006*). For example, Jones & George (1998: 536) stress that shared values 'structure the social situation and become the primary vehicle through which individuals experience trust'. In a similar fashion, Lewicki & Stevenson (1997) suggest three conditions under which identification-based trust is likely to develop in interpersonal relationships: similar interests, similar goals or objectives, and common values. In addition, Sitkin & Roth (1993) view value congruence as a core basis on which trusting relationships are developed. Tsai & Ghoshal's (1998) study has provided empirical support for the hypothesis that 'shared vision' among business units was positively associated with their perceived trustworthiness. In the context of

interpersonal relationships, Gillespie (2003) has also found that shared values and goals impact positively on both reliance and disclosure trust. Accordingly, it is proposed that:

Hypothesis 4 (H4): *Shared values and goals have a positive effect on reliance trust and disclosure trust*

Drawing upon research on sociolinguistics, it can be argued that shared language, or what Clark (1996) refers to as *common ground*, leads to increased interpersonal trust by providing individuals with mutually recognisable references (Mandelbaum, 2003) to exchange their experiences through storytelling (Orr, 1990), accessing others' ideas, beliefs and emotions (Staske, 2002), thereby making 'their relationships visible through talk' (Tracy & Haspel, 2004: 799). A noteworthy example that illustrates the centrality of language to individuals' perceptions of their social relationships is provided by Tracy & Haspel (2004: 800):

> That humans do work to avoid silence is evident even in their interactions with and through technology (Hutchby, 2001: 160). Chat room attendees frequently fill the void of silence with queries like "is anyone out there?", which has been seen as evidence of not only the persistence of interaction but the prevalence of relationship…In sum, the discursive practices of displaying one's knowledge of another show to the other, as well as analysts, that one is "with" or tied to the person.

Additional evidence is found in the trust and social cognition literatures. In their study of antecedents of general trust to management, Morrow *et al.* (2004) identify two major factors, namely cognitive processes and affective responses. The former refers to 'a careful, methodical process [that] involves the consideration of empirical evidence [and which develops] only after an individual is able to cognitively process and assess the available evidence' (ibid: 53). Rousseau *et al.* (1998) have further suggested that this process entails the gathering of credible information concerning the intentions and competences of trustees. However, when individuals are faced with information that is incongruent with their frames of reference (Berger & Luckmann, 1967; Nahapiet & Ghoshal, 1998) they may experience what Festinger (1957) has called cognitive dissonance. Accordingly, the absence of a shared reality can lead to internal conflict due to individuals' inability to identify, understand, appreciate, and predict the intentions, expectations, and reactions of others, thereby inhibiting their willingness to trust others at least at levels above calculus-based trust (Lewicki & Bunker, 1996). In addition, regular communication and courtship are seen as key processes in the development of knowledge-based trust (Shapiro *et al.,* 1992; Lewicki & Bunker, 1996), which is conceptually similar to reliance trust. Lewicki & Bunker (1996: 121) also note

that ‘courtship is conducted by “interviewing” the other, watching the other perform in social situations, experiencing the other in a variety of emotional states, and learning how others view this behavior’. Research on language and social interaction (LSI) suggests a similar process called “tracking” or “news updating” (Pomerantz & Mandelbaum, 2003, in Tracy & Haspel, 2004). Through this process ‘relational members enact involvement in each other’s lives and achieve closeness…Thus, being a relational partner is achieved and enacted in talk on an ongoing basis through these and other conversational methods’ (Tracy & Haspel, 2004: 800). Following this, the shift from knowledge-based trust to identification-based trust entails a parallel frame change from ‘extending one’s *knowledge* about the other to a more personal *identification* with the other’ (Lewicki & Bunker, 1996: 125, italics in the original). In his discussion of common ground, Clark (1996: 121) describes a similar shift from a communal to a more personal common ground. Accordingly, ‘personal common ground is information based on personal acquaintance’, which echoes the more affective, personal nature of disclosure trust. Taken together, the evidence provided above provides support to the claim that shared language may be important for both reliance and disclosure trust. Therefore:

Hypothesis 5 (H5): *Shared language has a positive effect on reliance trust and disclosure trust*.

**Structural and Cognitive Social Capital**

There is, however, relatively less evidence on the relationship between tie strength and shared values and goals. For example, Tsai & Ghoshal’s (1998) hypothesis of a positive link between the structural and cognitive dimensions of social capital was not supported in their study of inter-unit knowledge exchange. This was attributed to both methodological reasons as well as to the possibility that ‘different units may embrace the same organisational goals and values even when the units do not have strong interactions’ (ibid: 473). In the context of person-to-person exchange relations though, frequent and close social interaction may be essential for informing individuals’ perceptions of each other’s values and goals, and therefore for determining their trust decisions (Sherif & Sherif, 1953; Sherif, 1966). This is because strong ties formulated in the course of joint work activities, such as jointly implemented projects (Koskinen *et al.,* 2003), enable individuals to observe directly potential differences in others’ espoused and enacted values or what Weick (1995) refers to as differences in ‘ethos’ (i.e., general principles) and ‘ethics’ (i.e., general principles in practice). It could therefore be the case that individuals are likely to be more willing to trust another when they have verified that there are no, or at least a small, divergence of others’ espoused

and enacted values, which will in turn be indicative of their moral integrity (McFall, 1987). Based on the above, it is expected that shared values and goals between individuals will be positively linked to the strength of ties that characterises the relation between those individuals:

Hypothesis 6 (H6): *Strong ties have a positive effect on shared values and* goals.

Clark (1996) has convincingly demonstrated that language embodies both the individual and the social, for it is essentially used for social purposes, developed through joint actions, evolved into face-to-face conversational settings, and grounded in speakers' meaning and addressees' understanding. Accordingly, language provides the means through which individuals build their common ground; that is 'the sum of their mutual, common, or joint knowledge, beliefs, and suppositions (ibid: 93). Consistent with this line of thinking, language and social interaction research has shown that language is fundamental to relationship building and maintenance (Tracey & Haspel, 2004). Frequent communication is essential for the transfer of knowledge including both its transmission and absorption (Joshi, Sarker, & Sarker, 2007). This is likely to occur as frequent social interaction provides individuals with increased opportunities to develop language similarities with each other concerning domain-specific as well as wider organisational issues (Allen & Cohen, 1969; Zenger & Lawrence, 1989; Nahapiet & Ghoshal, 1998). This is consistent with Chowdhurry's (2005: 314) argument according to which close and frequent social interaction improves openness with shared mental models and perceptions. In particular, in the context of project work, 'face-to-face interaction is considered the richest medium because it allows immediate feedback so that understanding can be checked and interpretations corrected' (Koskinen *et al.,* 2003: 286). As Monteverde (1995: 1628) has emphasised, effective project management requires that specialized project members 'continuously share information in a rich format and in an interactive manner'. Based on the above, it seems that tie strength between individuals is likely to increase to the extent to which they share a common ground as this is reflected in a shared language. Thus:

Hypothesis 7 (H7): *Strong ties have a positive effect on shared language.*

**Structural, Cognitive and Relational Social Capital**

Empirical evidence suggests that perceptions of cognitive-based trust derive primarily from cognitive processes aiming at assessing trustees' past role performance, professional credentials and their cultural-ethnic similarity to the trustor (McAllister,

1995). In the context of knowledge transfer, a knowledge seeker's decision to place professional (i.e. reliance) trust in knowledge providers is likely to be based largely on assessing first their professional credentials. These are commonly reflected in the seeker's perception of the provider's knowledge, skills and abilities in a specific domain (Levin & Cross, 2004). To form a coherent perception of knowledge provider's competencies, individuals are often involved in what Rulke & Rau (2000) call an 'encoding process'. In the early stage of this process it is likely that knowledge seekers are likely to engage in close social interaction with knowledge providers as this will provide them with a structural opportunity to 'find out who had expertise in what domains' (Rulke & Rau, 2000: 391). A knowledge seeker's reliance trust, however, is also likely to be shaped by 'a cognitive "leap" beyond the expectations that reason and experience alone would warrant – they simply serve as the platform from which the leap is made' (Lewis & Weigert, 1985: 970). This is because 'the cognitive content of trust is a *collective* cognitive reality that transcends the realm of individual psychology' (ibid, italics in the original). In other words, perceptions of competence and skills are likely to be influenced by sources of evidence that go beyond the actual experience of the personal relation with the knowledge provider. Shamir & Lapidot's (2003: 485) study of 84 teams of the Israeli Defence Forces examining the role of interpersonal and institutional trust in leaders has provided support to this view by showing that subordinates' trust in their officers 'is not based only on the personal qualities and interpersonal behaviour of the leader, but also on subordinates' trust in the system that the leader represents'. Meyerson, Weick, & Kramer (1996) have shown in their study of temporary work groups that individuals are likely to develop swift trust in others with whom they have had no common history of frequent social interaction. This evidence suggests that a knowledge seeker's decision to place reliance trust in a knowledge provider can often be informed by factors exogenous to the actual seeker-provider relationship such as third-party referrals and/or the wider reputation of the knowledge provider (Krackhardt, 1990; Tseng & Fogg, 1999). It can also be affected by environmental factors, such as stressful working conditions, which, in turn, may substitute personal interaction with 'reliance on tradition or centralised coordinating' as criteria for the formation of reliance trust in a knowledge provider (Rulke & Rau, 2000: 394). Based on the above, it can be argued that strong ties are sufficient, although not necessary, for the creation of reliance trust. As Levin & Cross (2004: 1480) state:

> 'Although having a strong tie relationship with someone might mean you also trust that person (Currall & Judge, 1995, Sniezek & Van Swol, 2001), the two concepts – tie strength and trust – are not synonymous. For example, tie strength can be a function of work interdependence beyond the voluntary control of the individual. In such situations, a relationship can be characterised as a strong tie, yet not result in a person trusting a

> coworker with whom he or she is forced to work. Conversely, some times people *do* trust someone whom they do not know well…So, while trust and tie strength are related…the two concepts are conceptually distinct' (italics in the original).

On the other hand, disclosure trust can be viewed as conceptually closer to affect-based trust (McAllister, 1995). This, in turn, is founded in 'the motives of relationship partners' (ibid: 29). Consequently, since affect-based trust is based on 'an individual's attributions concerning the motives for others' behaviour, it should be limited to contexts of frequent social interaction, where there are sufficient social data to allow the making of confident attributions' (ibid:29; Lewis & Weigert, 1985). Based on a sample of 194 professionals and managers enrolled in an executive MBA course in a US university, McAllister's (1995) study examining the role and antecedents of trust in interpersonal cooperation provides strong empirical support for the positive effect of interaction frequency on affect-based trust. In addition, Gillespie's (2003) study on interpersonal trust conducted in a large R&D organisation in Australia found that frequent social interaction is a positive predictor of disclosure trust. The importance of frequent and close social interaction emerges prominently in Krackhardt's (1992) conceptualisation of philos (i.e., friend) relationships. In particular, Krackhardt suggests two necessary conditions for developing a philos relationship; that is, interaction and affection. In turn, these conditions mirror the opportunity and motivation conditions for knowledge transfer presented in Table 4.2 and, therefore, fit the distinction between the structural and relational dimension of social capital. Krackhardt (1992: 219) proposes that philos relationships are critical 'in generating trust and discouraging malfeasance'. This proposition, however, does not distinguish explicitly between distinct facets of trust. Drawing upon Fischer's (1982) cross-sectional study on the meaning of 'friends', Krackhardt describes the notion of philos as being consistent, though, with relationships characterised by both 'sociable interaction' and 'discussion of personal matters' (ibid: 220). Notably, the 'discussion of personal matters' is inherent in the definition of disclosure trust. In Krackhardt's view, there is a clear focus on the affective, emotional quality of strong ties. Thus, it seems plausible to suggest that strong ties are core aspects of those work relationships that go beyond what might be called professional arm's length connections (e.g., Graen & Scandura, 1987), or instrumental relationships (Lincoln & Miller, 1979; Gabarro, 1990) to include what Ibarra (1993) and Lincoln & Miller (1979) have defined as expressive and primary ties respectively. These ties reflect the socio-emotional side of social capital as 'they involve the exchange of friendship and social support' (van Emmerik, 2006: 26). Based on the above, it can be argued that strong ties are sufficient and necessary for the development of disclosure trust. Taken together, the above discussion leads to the view that strong ties and disclosure trust – although conceptually distinct – usually go

"hand-in-hand", whereas the relationship between strong ties and reliance trust seems to be mediated by cognitive social capital (i.e., shared values and goals, shared language). Stated formally:

Hypothesis 8a (H8a): *The positive effect of strong ties on disclosure trust is not mediated by shared values and goals and shared language.*

Hypothesis 8b (H8b): *The positive effect of strong ties on reliance trust is mediated by shared values and goals and shared language*.

## III. FIT BETWEEN THE PROPERTIES OF KNOWLEDGE TRANSFER

### Knowledge Characteristics

Research on social networks and knowledge transfer has examined the interrelationships between structural properties of network ties and properties of knowledge in regard to their moderating effects on knowledge transfer outcomes. Cumulatively, that research has provided strong support for the theoretical claim that the effect of tie strength on knowledge transfer is contingent upon the type of knowledge transferred. For example, Hansen's (1999) study conducted in a multidivisional research-intensive firm has examined the moderating role of knowledge tacitness in the effect of tie strength on knowledge transfer among R&D subunits. In that study, strong ties were found to favour the transfer of non-codified, complex knowledge, whereas weak ties were more pertinent to the transfer of codified knowledge between those subunits.

#### Relational Social Capital, Tacit Knowledge and Knowledge Transfer

There is also a body of research examining the ways through which relational properties of ties interact with knowledge properties towards influencing knowledge transfer and sharing outcomes. Most of that research has placed explicit emphasis on trust and tacit knowledge as key interrelated factors of social relationships conducive to knowledge transfer and sharing outcomes (Nonaka & Takeuchi, 1995; Epstein, 2000; Levin & Cross, 2004; Santoro & Saparito, 2005; Holste & Field, 2005; Lin, 2007). In particular, Levin & Cross's (2004) study tested the interaction effect of competence-based trustworthiness and non-codified knowledge on knowledge transfer efficiency and effectiveness at the interpersonal level of analysis. Their findings provided support for the hypothesis that knowledge seekers' perceptions of knowledge providers' competence-based trustworthiness is particularly important to the receipt of non-codified knowledge. At the same analytical level, Lin (2007) has also provided empirical

support for the positive impact of co-worker trust on tacit knowledge sharing. At the macro-level of analysis, Santoro & Saparito's (2005) study has shown a significantly positive interaction effect of relational trust and knowledge tacitness on university-industry knowledge transfer.

Despite the multidimensionality of trust, there is still a considerable gap in understanding the differential effect of various trust types on tacit knowledge transfer, particularly at the interpersonal level of analysis. It would seem that only one study (Holste & Field, 2005) has examined the simultaneous impact of affect-based and cognition-based trust on employees' willingness to use and share tacit knowledge. Based on a sample of professional staff working for a non-profit service organisation in the US, the results of that study indicate that both types of trust were required for developing the willingness of employees to share tacit knowledge with or use tacit knowledge from colleagues. It would therefore seem that it is likely that reliance and disclosure trust will be particularly important to the transfer of tacit knowledge. Therefore:

Hypothesis 9a (H9a): *Reliance trust is particularly important to the transfer of knowledge when the knowledge is non*-codified.

Hypothesis 9b (H9b): *Disclosure trust is particularly important to the transfer of knowledge when the knowledge is non*-codified.

### Social Similarity

According to Lazarsfeld & Merton (1954), there are two types of social similarity (or otherwise known as homophily): status similarity, and value similarity. The former is based on similarity in informal, formal and ascribed status, while the latter type is based on a range of psychological attributes (i.e., behaviour, attitudes, beliefs, and aspirations). The concept of homophily, in its broadest sense, includes a wide range of sociodemographic and behavioural dimensions, including formal hierarchical status (McPherson, Smith-Lovin, & Cook, 2001). However, the focus here is limited to ascribed homophily, which includes the demographic characteristics of age, gender, and ethnical similarity[4].

[4] The decision to treat hierarchical status as a distinct antecedent of knowledge transfer to that of social similarity stems from the interest of this research in highlighting the contrast between informal social relations (i.e., social capital) and formal social relations (i.e., hierarchical relations) in terms of their relative impact on interpersonal knowledge transfer. Yet, it is acknowledged that hierarchical status can also be viewed as a sub-category of status homophily (Lazarsfeld & Merton, 1954). Furthermore, the reason for limiting the scope of the concept of homophily to demographic similarity is because the inclusion of value homophily would be confounded with the cognitive dimension of social capital. Theoretically, the decision to focus on formal and ascribed homophily is congruent with the view expressed earlier in this chapter that

Social similarity is a well-known principle in sociological theory. It suggests that 'a contact between similar people occurs at a higher rate that among dissimilar people' (McPherson *et al*., 2001: 416). In other words, it suggests that 'similarity breeds connection' (ibid: 415), a claim that can be traced back to Aristotle's (1934: 1371, in ibid: 416) view that people 'love those who are like themselves'. Freeman (1996) observes that one of the first findings of social network analysts has been the positive relationship between the similarity of two individuals and the probability of the creation of a tie between them. Early systematic evidence of the homophily principle came from studies of small social groups such as schools and urban neighbourhoods suggesting its pervasive role in the formation of informal social ties (Bott, 1928; Loomis, 1946). Since then, the role of homophily in structuring a wide range of social relations, ranging from the closest ties of marriage (Kalmijn, 1998) and friendship (Verbrugge, 1983) to more circumscribed relations of career support at the workplace (Ibarra, 1992) and supervisor-subordinate relations (Jeanquarte-Barone & Sekaran, 1994) to mere contacts in the public space (Mayhew *et al.*, 1995; Wellman, 1996), has been a well-researched topic in the social sciences.

**Cognitive Social Capital, Social Similarity and Knowledge Transfer**

Cognitive theorists have long stressed that people are more likely to associate with, attract and be attracted to others as a result of social comparison processes (Festinger, 1954). Accordingly, it is suggested that people '"prefer" others whose positions and characteristics are similar enough to make a reasonable basis for self-comparison and self-evaluation' (Mayhew *et al.*, 1995: 39-40). In cognitive psychological terms, 'people like those who may be expected to have similar knowledge bases and cognitive structures' (ibid: 40). In this regard, Carley's (1991) sociological approach, termed 'constructuralism', calls for a strong positive relationship between frequency of social interaction and sharing of knowledge. As McPherson *et al.* (2001: 435) presume, 'if demographic similarity tends to indicate shared knowledge, we would expect people to associate with similar other for ease of communication, shared cultural states, and other features that smooth the coordination of activity and communication'. It is therefore expected that demographic similarity is likely to have a role to play in the context of interpersonal knowledge transfer through its differential impact on cognitive social capital. Stated formally:

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antecedents of knowledge transfer capture more stable characteristics of the social context within which knowledge transfer takes place.

*Hypothesis 10 (H10): Shared values and goals and shared language on the transfer of knowledge differs for socially similar and socially dissimilar knowledge transfer* dyads.

### Hierarchical Status

Hierarchy remains a prominent form of organising in contemporary work organisations (Kramer & Cook, 2004). Hierarchy also features as a prominent factor of social capital for it influences the structure and content of informal social relations in work organisations and, therefore, individuals' ability, motivation, and opportunity to access resources (Adler & Kwon, 2002). Drawing a line between formal organisational hierarchy and informal organisation is 'untenable in both theory and practice' (Adler & Heckscher, 2006: 59). In fact, hierarchy and more collaborative forms of social organising can symbiotically coexist in hybrid organisational forms (ibid.). However, 'research on how formal organisation hierarchy shapes informal social relations…has largely gone unanswered' (Adler & Kwon, 2002: 27). In particular, this is an area that has not received a great deal of attention in the context of interpersonal knowledge transfer.

It has long been argued in the literature, though, that access to resources is, to a large extent, a positive function of hierarchical level as higher-ups have commonly access to more resources (Bell *et al.,* 1990), which, in turn, enables them to act as resource allocators within the organisation (Mintzberg, 1976). Resources can include information, control, influence and power (ibid.), which also represent benefits accrued from social capital (Adler & Kwon, 2002). Since job positions at higher hierarchical levels are usually fewer than job positions at lower hierarchical levels (Tachibanaki, 1987), higher-ups will have fewer peers or superordinates but considerably larger numbers of lower-ups to turn to for information and advice. Moore (1990) suggests that higher positions are associated with more opportunities to create social capital compared to lower positions. Research has also shown that higher-ups are often more centrally positioned at intraorganisational networks compared to non-managers, and generally to low-status individuals (Ibarra & Andrews, 1993). This, for example, can provide higher-ups with structural opportunities resulting in a larger and more diverse pool of relatively distant and/or indirect contacts from which they can acquire non-redundant information and advice (Granovetter, 1973). In addition, research on the role of hierarchical level in trust in employee dyads has highlighted that the relative importance of various dimensions of interpersonal trust may vary depending on individuals' relative positioning in the organisational hierarchy (e.g., Butler & Cantrell, 1984; Schindler & Thomas, 1993). However, there is a scarcity of empirical evidence

on the ways through which hierarchical level affects the relative importance of the social capital dimensions in the context of knowledge exchange relationships.

**Structural Social Capital, Hierarchical Status and Knowledge Transfer**

Access to more resources is, to a large extent, a positive function of hierarchical level. Higher-ups commonly have access to more resources in the organisation (Bell *et al.,* 1990), which, in turn, enables them to act as resource allocators within the organisation (Mintzberg, 1976). Resources can include information, control, influence and power (ibid.). Since job positions at higher hierarchical levels are usually fewer than job positions at lower hierarchical levels (Tachibanaki, 1987), higher-ups will have fewer peers or superordinates but considerably larger numbers of lower-ups to turn to for information and advice. Moore (1990) suggests that higher positions are associated with more opportunities to create social capital compared to lower positions. Research has also shown that higher-ups are often more centrally positioned in intraorganisational networks compared to non-managers and low-status individuals (Ibarra & Andrews, 1993). This can provide higher-ups with structural opportunities resulting in a larger and more diverse pool of relatively distant and/or indirect contacts from which they can acquire non-redundant information (Granovetter, 1973). In other words, higher-ups are likely to be benefited from structural advantages deriving from the strength of weak network ties (ibid.). Accordingly, it is proposed that:

> Hypothesis 11a (H11a): *Weak ties are particularly important to the transfer of knowledge from hierarchically lower knowledge providers*.

**Relational Social Capital, Hierarchical Status and Knowledge Transfer**

Empirical evidence suggests, though, that as an individual's power and status increases with their hierarchical level, so does their social distance from subordinates (Messe, Kerr, & Sattler*,* 1992). Social interaction with subordinates is likely to be neither frequent nor based on emotional or affective foundations (Earle *et al.,* 1983). This is empirically confirmed in van Emmerik's (2006) recent study examining the role of gender in the formation of social capital among faculty members of Dutch universities. This study demonstrated that higher positions, regardless of their gender, lead to the creation of more hard social capital than soft social capital[5]. Prior research examining the role of hierarchical level in trust within employee dyads has highlighted that competence-based and integrity-based trust appear to be the top two facets of interpersonal trust regardless of dyads' relative position in the organisational hierarchy

[5] The distinction between hard and soft social capital resembles that between instrumental and expressive or primary ties (Lincoln & Miller, 1979; Ibarra, 1993).

(Butler & Cantrell, 1984; Schindler & Thomas, 1993). In Schindler & Thomas' (1993) study of interpersonal trust in supervisory and managerial level employees of a large health-care provider in the USA it was observed, though, that openness, defined similarly to disclosure and affect-based trust as the willingness to share ideas, beliefs and feelings, was of most importance for placing trust in peers but of least importance for placing trust in subordinates. Accordingly, it is proposed that:

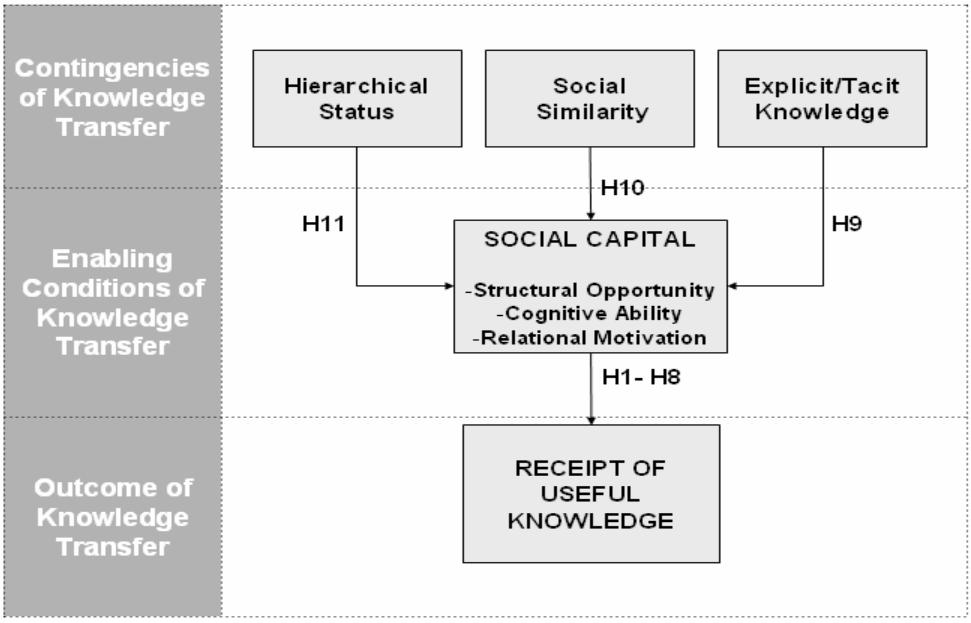
Hypothesis 11b (H11b): *Reliance trust is particularly important to the transfer of knowledge from hierarchically lower knowledge providers*.

Hypothesis 11c (H11c): *Disclosure trust is particularly important to the transfer of knowledge from hierarchically equal knowledge providers*.

## IV. DISCUSSION AND CONCLUSION

The chapter set out to provide an integrated micro-level analysis of knowledge transfer in work organisations. The aim of this analysis has been to unravel aspects of the knowledge transfer process, conceptualised from an outcome-based perspective at the dyadic level of analysis, that have received little or no attention in the KM literature. Based on this analysis, the chapter proposes an integrated model for testing that identifies the role of key socio-psychological mechanisms (i.e., tie strength, interpersonal trust, shared language, common values and goals) and their antecedents in facilitating the effectiveness and efficiency of interpersonal knowledge transfer as perceived by the knowledge seeker. The model, which is illustrated in Figure 3.3, is discussed below.

Figure 3.3 **An Integrated Micro-Level Model of Knowledge Transfer**



### Outcome of Knowledge Transfer

The first dimension of the model focuses on the purpose of the knowledge transfer process by clarifying what is meant by the term 'knowledge transfer'. First, knowledge transfer is conceptualised as dyadic in nature. In this sense, it requires a knowledge source and a knowledge recipient. Second, consistent with the behavioural tradition of organisational learning theory, knowledge transfer is theorised as a purposeful learning activity resulting in beneficial outcomes both for the individual and the wider organisation through its contribution to the accomplishment of a work assignment or project. Central to an outcome-based approach is the understanding of how the knowledge recipient experiences the knowledge transfer process. It should be noted that the interest here lies not in the knowledge recipient's propensity to seek out a knowledge source but rather in understanding the critical mechanisms by which knowledge transfer results in individual learning, which is considered the building block of organisational learning (Argote, 1999; Levin & Cross, 2004).

### Enabling Conditions of Knowledge Transfer

The second dimension of the model builds upon Adler & Kwon's (2002) tripartite schema of social capital sources and Nahapiet & Ghoshal's (1998) three-dimensional conception of social capital and identifies three key mechanisms of interpersonal knowledge transfer as experienced by the knowledge recipient: structural opportunity to access knowledge, cognitive ability to understand and internalise that knowledge, and relational motivation to take action (i.e., learn) from that knowledge. These three mechanisms correspond to the prominent typology of social capital as consisting of three main facets: the structural dimension, i.e., the pattern of ties that connect social actors; the cognitive dimension, i.e., the extent to which social actors agree upon a shared value framework and understand each other; and the relational dimension, i.e., the extent to which the relationship between social actors is characterised by trust, obligations, norms and identification (Nahapiet & Ghoshal, 1998).

Paradoxically, despite increasing consensus that social capital is (a) a multifaceted concept and (b) of particular importance for knowledge transfer outcomes, the exact ways through in it affects interpersonal knowledge transfer still remain a 'black box' in the KM literature (Moran, 2005). The proposed model, therefore, seeks to shed valuable light on the social capital-knowledge transfer relationship by: (i) considering the role of all three dimensions of social capital, (ii) treating the relational and cognitive dimensions as multidimensional constructs, (iii) distinguishing between the form and content of a personal tie utilised for instrumental purposes. By so doing, it seeks to

advance understanding of the interplay of the structure and quality of personal ties in facilitating the transfer of knowledge. The distinction made between structure and quality of personal ties reflects the fundamental distinction between structural and relational embeddedness (Granovetter, 1985, 1992a). Despite the fact that the concept of embeddedness points to the overlap between task-related transactions and more personal relations, the ways through which personal relations affect instrumental ends, such as the accomplishment of a job task or project, is largely overlooked in the literature. The question therefore remains: What is in a interpersonal tie that makes it conducive to the effective transfer of useful knowledge? The model seeks to unpack the socio-psychological foundations of knowledge transfer not only by looking at the simultaneous role of the structural, relational, and cognitive social capital, but also by treating its relational and cognitive facets as multidimensional constructs.

### Contingencies of Knowledge Transfer

Hierarchies remain prominent forms of social organising in many knowledge-based industries, since differences in proficiency are often reflected in career ladders, whereby employees are given a higher or lower ranking based on their technical expertise (Alvesson, 2004). Hierarchical relations are also evident in hybrid institutional forms such as ‘soft bureaucracies’ (Robertson & Swan, 2004), which characterise professional service firms and research-intensive firms. An implicit assumption underlying the concept of social capital is that it reflects the informal character of social relations and their potential for solidarity and resource exchange (Sandefur & Laumann, 1998). Yet, key benefits of social capital also include power, influence, and control which, in turn, are key characteristics of hierarchical relations (Weber, 1947). Despite a clear overlap of formal and informal social relations in organisations, there is a dearth of research addressing how hierarchical status may moderate the relative importance of social capital for knowledge transfer.

The concept of social capital is ‘inherently interpersonal’ (Sullivan & Transue, 1999: 646). Therefore, in the same way that demographic information is considered as indispensable to explaining individual-level phenomena in organisations, demographic similarity between knowledge recipients and knowledge providers is considered here as a basic attribute of social relations. However, despite the fact that demographic similarity has been a recent area of interest in research on social networks, surprisingly little is known about its role in the types of social capital utilised for effective knowledge transfer. Given the multiplexity of social ties in organisations, it is argued that the occurrence of old boys networks and differences in career advancement between men

and women (Campbell. 1988; Lyness & Thompson, 2000; Sheridan, 2002) will influence the extent to which homophilous relations affect differently the transfer of knowledge within the organisation. However, since homophily is an attribute of social relations, it is expected to exert its influence on knowledge transfer through its impact on social capital. It is thus proposed that social similarity will have a mediating role in the effect of social capital on the effective transfer of knowledge between similar individuals in terms of gender, age and ethnicity.

Another contingency that is identified in the model concerns the type of knowledge that is transferred between individuals. Although the difficulties associated with the transfer of tacit knowledge have been well documented in the KM literature, there is not much known about the types of personal ties that matter most to the transfer of tacit knowledge compared to that of explicit knowledge. In particular, while trust appears to be a factor of decisive importance in the transfer of tacit knowledge, little is known about which types of trust matter more than others in this regard. Thus, despite the multifaceted character of trust, there is still a considerable gap in understanding the differential effect of various trust types on tacit knowledge transfer, particularly at the interpersonal level of analysis. It is therefore proposed that different types of trust will impact differently on the transfer of explicit and tacit knowledge.

### An Integrated Approach to Knowledge Transfer

The proposed model seeks to advance understanding of the micro-foundations of knowledge transfer in a systematic and integrated fashion. First, it integrates structural, relational, and cognitive research on interpersonal knowledge transfer. By doing so, it fills a significant gap in understanding more holistically the role that dyadic social capital plays in the transfer of knowledge between individuals. Second, it adds complexity to the role of social capital by pointing to the intertwined role of formal and informal social relations in knowledge transfer. Given that hierarchical relations continue to be an important aspect of organisational life, it is important to understand how they affect and are affected by informal social relations. In addition, understanding the differential implications of horizontal and vertical relations for the effective transfer of knowledge is prerequisite for the design of appropriate KM interventions. Third, it adds further complexity by considering the 'sociodemographic space' in which knowledge flows may be localised (McPherson *et al.*, 2001: 415). If the homophily principle is accepted, it is important to know whether and how social similarity may hinder the ability of employees, such as women and ethnical minorities, to access and apply useful knowledge. If interacting with similar others, anything that individuals

experience as a result of their position gets reinforced, the homophily principle should be examined more closely in the context of interpersonal knowledge transfer. Finally, given the strategic importance of tacit knowledge, it is also important to specify the sociodemographic conditions under which tacit knowledge flows more smoothly between individuals. However, since sociodemographic similarities or differences are reflected in the structure and quality of social relations among employees, it is more likely that answers will be found in the interplay between social capital and type of knowledge transferred.

### A Micro-Level Approach to Knowledge Transfer

The model is informed by a micro-level analytical approach, thereby placing explicit emphasis on the individual as the primary loci of knowledge transfer. Contrary to the individual homogeneity assumption upon which much research on knowledge transfer and social capital in organisations is based, the proposed model views the individual as the 'natural starting point and microfoundation for explaining the creation of new value' (Felin & Hesterly, 2007: 213). This is reflected in the attention paid to knowledge recipients' perception of the value of the knowledge transfer process, which refers to what Cross & Sproull (2004) name actionable knowledge. Philosophically, such an approach concurs with a pragmatist conception of human nature at the heart of which is an 'insistence on the supremacy of the agent point of view' (Putnam, 1987: 70). The model acknowledges, though, another core assumption of pragmatism that 'the most distinctive and praiseworthy human capacity is our ability to trust and cooperate with other people' (Rorty, 1999: xiii). It is, thus, theoretically located within the emerging network paradigm in organisational research, which signals a shift 'away from essentialist and atomistic explanations toward more relational, contextual and systemic understandings' (Borgatti & Foster, 2003: 991). In the proposed model human nature is viewed as fundamentally relational. To use Emirbayer & Mische's (1998: 974) words:

> [Human nature is] conceived of as an internal conversation possessing analytic autonomy vis-à-vis transpersonal interactions. We conceptualise the self not as a metaphysical substance or entity, such as the "soul" or "will", but rather as a dialogical structure, itself thoroughly relational.

The following chapter shifts attention from the micro-social processes and context of knowledge transfer to examining whether, and the ways in which, the management of employees and their social relations can contribute to knowledge transfer and sharing.

# CHAPTER FOUR

# Human Resource Management in a Knowledge Context

## INTRODUCTION

This chapter sets out to provide a critical overview of the HR implications of managing knowledge-intensive work activities in organisations. The overarching aim is to explore the "black box" through which HR practices contribute to intra-organisational knowledge sharing and thereby to value creation. Underpinned by a social capital perspective combined with elements from social context theory, the chapter considers the importance of social relations and social climate. These are identified as key intermediate factors in the relationship between HR practices and employee knowledge sharing attitudes and behaviour.

The chapter is structured in three sections. The first section highlights some of the problems associated with categorical definitions of knowledge work, and argues for an approach that considers job variety and autonomy, reciprocal interdependence, and discretionary effort as distinctive features. The second section shifts attention to how knowledge work is managed in organisations. Based on a detailed review of various theoretical approaches to the linkages of HRM and KM, this section tackles the neglected issue of how managing knowledge sharing is intertwined with the management of social relations among knowledge employees and, more widely, the shaping of the organisational social climate. It also provides a critical overview of empirical studies, both quantitative and qualitative, that have examined aspects of this relationship. Based on this review, the final section identifies a number of research questions that bear further exploration.

## I. CONCEPTUALISING KNOWLEDGE WORK

The terms 'knowledge work' and 'knowledge workers' were coined by Drucker (1979) to signify the shift in the occupational structure of advanced societies from industrialism to 'post-industrialism' (Bell, 1973). This shift and the consequent importance of knowledge work for contemporary businesses is highlighted by Drucker (1993: 79) as follows:

> The most important, and indeed the truly unique, contribution of management in the 20th century was the fifty-fold increase in the productivity of the *manual worker* in manufacturing. The most important contribution management needs to make in the 21st century is similarly to increase the productivity of *knowledge work* and *knowledge workers.* The most valuable asset of a 20th-century company was its *production*

> *equipment.* The most valuable asset of a 21st-century institution (whether business or non-business) will be its *knowledge workers* and their *productivity* (italics in the original).

From the early-to-mid 1990s and onwards, the terms 'knowledge work' and 'knowledge workers' have entered the lexicon of organisational researchers and practitioners (e.g., Horibe, 1999) as well as policy-makers and inter-governmental organisations (e.g., OECD, 2001; World Bank, 2002). Yet, despite their widespread popularity, these terms are poorly defined (Kelloway & Barling, 2000). The main argument made in this section is that knowledge work is best understood as what knowledge workers do first, rather than who they are (Blackler, 1995). This approach overcomes problems associated with occupational or sector-specific definitions that are commonly found in the mainstream literature, by pointing to the importance of understanding knowledge work as non-routine discretionary behaviour.

## Knowledge Work as Occupation

According to Drucker (1993), the term 'knowledge workers' refers to individuals who have high levels of education coupled with specialist and analytical skills, and the ability to apply these skills to complex problem solving at work. Frenkel *et al.* (1995: 773) suggest that the term 'knowledge work' signals a shift toward 'people-centredness characterised by an emphasis on theoretical knowledge, creativity, and use of analytical and social skills'. For Horibe (1999: xi), knowledge workers add value to the firm through 'their ideas, their analyses, their judgement, their syntheses, and their design'. This, in turn, can be seen as a reflection of the wider move towards the so-called 'knowledge economy', in which 'symbolic resources are replacing physical resources, mental exertion is replacing physical exertion and knowledge capital is beginning to challenge money and all other forms of capital' (OECD, 2001: 148).

Knowledge work is frequently defined in terms of specific professions, typically comprising jobs associated with IT, R&D and high-tech industries, as well as professions with accreditation requirements in the form of third level qualifications and/or other formal qualifications approved by specific professional institutes (Warhurst & Thompson, 2006). Accordingly, knowledge workers are often equated with employees' professional status such as scientists, engineers, and lawyers, and with particular occupations such as R&D workers, software designers, financial analysts, and telecommunication specialists (Nomikos, 1989; Reed, 1996; Frenkel *et al.*, 1999). In summary, knowledge work is often equated with the so-called "new economy" sectors of IT, finance, and professional services.

## Knowledge Work as Non-routine Work

Occupational-specific approaches to defining knowledge workers can be problematic and misleading for a variety of reasons. First, they have seen as reflecting an elitist view of work that is rooted in the Tayloristic tradition of separating 'thinking' from 'doing' (Swan & Scarbrough, 2001). Thus, they ignore the expanding role of blue-collar occupations under new modes of production and work organisation, which require "traditional" employees to advance their technical and social skills. As Argyris (1991: 100) notes:

> The fact is more and more jobs – no matter what the title – are taking on the contours of 'knowledge work'. People at all levels of the organization must combine the mastery of some highly specialized technical expertise with the ability to work effectively in teams, form productive relationships with clients, and critically reflect on and then change their own organizational practices.

Second, occupational-specific approaches have been viewed as favouring credentialism over contribution (Warhurst & Thompson, 2006). Kelloway & Barling (2000: 290) argue that 'in defining knowledge workers as those that possessing educational or professional qualifications, researchers divert focus from what workers actually do in favour of a focus on what position individuals hold in the organization'. Third, some authors suggest that an occupational-specific approach to defining knowledge work is misleading since it leaves unquestioned the possibility that jobs in the so-called "knowledge-intensive" industries may still require routine tasks to be performed (Thompson & Warhurst, 1998). As Swart & Kinnie (2003: 62) note, 'doing a clever thing over and over does not mean that it is knowledge-intensive'. This echoes Alvesson's (2004: 237) claim that knowledge work is characterised not necessarily by a specific occupational profile, but instead by a 'high level of ambiguity in input, process, and output: knowledge may play a more limited and less robust role in work and for results. This means that we view the knowledge-intensive as *ambiguity-intensive*' (italics in the original). In summary, 'for the critics, the term "knowledge worker" itself is precisely where the trouble starts, leading to scholastic debates about the nature of knowledge, not to research on knowledge workers' (Rose, 2002: 156).

In an attempt to overcome the problems associated with occupational- or sector-specific approaches, Benson & Brown (2007) have recently put forward a definition of knowledge work based on the distinction between routine and non-routine work proposed originally by Pava (1983) and developed subsequently by Mohrman, Cohen, & Mohrman (1995). According to this, 'routine work (programmed, repeated patterns, analysable, well understood, static) is contrasted with the emergent, variable, unique,

interdependent and dynamic nature of knowledge work' (Benson & Brown, 2007: 125). Based on this distinction, knowledge work can be defined along three distinct yet interrelated job design attributes: (i) variety, (ii) reciprocal interdependence, and (iii) autonomy. A brief description of these attributes is presented in Table 4.1.

Table 4.1 **Three Attributes of Knowledge Work**

| Attribute | Description |
|---|---|
| **Variety** | Knowledge involves considerable variety; the key tasks are characterised by incomplete cause-effect understanding and uncertainty |
| **Reciprocal Interdependence** | Knowledge work involves a high degree of reciprocal interdependence with other tasks performed in the team or organisation; this is due to the multiple, concurrent conversation processes that influence each other; everything depends on everything else |
| **Autonomy** | Knowledge work requires high levels of autonomy; employees need to make judgements about a variety of job-related issues; this uncertainty is the key characteristic of knowledge work |

Source: Summarised from Benson & Brown (2007: 125)

Using a composite construct of knowledge work based on the aforementioned attributes, Benson & Brown (2007) tested empirically the extent to which knowledge workers may differ from routine-task workers with respect to their attitudinal and behavioural commitment. The results of a quantitative study of approximately 2,000 employees working in a large Australian semi-governmental, scientific and research organisation provide empirical support for the claim that the growth of knowledge workers cannot be measured by occupational changes, since knowledge workers were found to be distributed across all occupational groups including tradespersons, technicians, clerical staff, and managerial and research workers. The study indicates that knowledge workers had a significantly higher attitudinal commitment than routine-task workers and a lower intention to quit. Importantly, the key factor in maintaining commitment was found to be co-worker support, while the key factor in maintaining intention to stay was supervisor support. In contrast, job security and satisfaction with benefits were not important for knowledge workers, although they were important for routine-task workers. Benson & Brown's (2007) study highlights that knowledge work is better understood not as a strict set of occupational categories but as non-routine work characterised by high levels of variety, autonomy, and reciprocal interdependence. It further suggests that there may be considerable variation within (as well as across) occupations as knowledge workers choose to use (or not to use) their knowledge in the

best interests of the organisation. This brings to the fore the importance of understanding knowledge work as discretionary behaviour.

### Knowledge Work as Discretionary Behaviour

Kelloway & Barling (2000) put forward a conceptual model in which knowledge work is defined as discretionary behaviour focused on the use of knowledge. Based on a synthesis of research on KM (Nonaka, 1994; Davenport, Jarvenpaa, & Beers, 1996; Ruggles, 1998), this model depicts four generic forms of knowledge work in organisations: creation of new knowledge, application of existing knowledge to current problems, packaging and transmission of knowledge, and acquisition of knowledge through research and learning. Kelloway & Barling (2000: 292) suggest that each of these forms of knowledge work 'may be manifested by workers at all levels of the organization and that the organization's ability to "manage knowledge" will be a direct function of the ability to elicit these forms of discretionary behavior at work'. Drawing upon the tripartite framework of ability-motivation-opportunity (Wall, Jackson, & Davids, 1992), they further suggest that the use of knowledge at work can be enhanced by organisational practices that impact upon employees' ability, motivation, and opportunity to use knowledge. Leadership, job design, social interaction, and culture (e.g., organisational expectations and reward structures) are identified in this model as potential predictors of employees' ability, motivation, and opportunity to use knowledge at work.

In advancing the notion of knowledge work as discretionary behaviour Kelloway & Barling (2000: 293) 'deny any direct link between employees' knowledge and the intellectual capital of the firm'. Instead, they argue for a view of knowledge workers not as assets but as investors (Pfeffer & Sutton, 2000). Inherent in this view is that 'it is the discretionary use of knowledge by individuals that leads to organizational growth and survival' (Kelloway & Barling, 2000: 293). This view echoes Drucker's (1999: 84) claim that knowledge worker's productivity requires 'that knowledge workers want to work for the organization in preference to all other opportunities'. It also reflects a view of knowledge workers as 'the ultimate knowledge creators and bearers' (Oltra, 2005: 71). A focus on knowledge work as discretionary behaviour suggests that one of the most important differences between knowledge workers and routine-task workers is the significantly stronger bargaining position of the former group (Alvesson, 2004). As Drucker (1999: 54) states: 'In knowledge work, the means of production is now owned by the knowledge worker…Only the unskilled need the employer more than the employer needs them'. Considering knowledge work as discretionary behaviour and

knowledge workers as “active owners” of knowledge brings to the fore the issue of appropriateness of conventional employment management practices to stimulate greater use and application of knowledge to productive organisational ends. Specifically, it raises questions of how HRM systems impact on knowledge workers’ willingness to engage in knowledge sharing.

## II. MANAGING KNOWLEDGE WORK

In parallel with the widespread recognition of people-embodied knowledge as the most distinctive resource available to firms (Argote & Ingram, 2000), attention has recently focused on the role that people and HR functions can play in advancing the knowledge and knowing capability of organisations and, consequently, their value proposition (e.g., Storey & Quintas, 2001; Jackson, Hitt, & DeNisi, 2003; Svetlik & Stavrou-Costea, 2007). However, although both HRM and KM scholars are increasingly aware of the importance of fit between KM initiatives and people-related issues, there are significant gaps in understanding the synergies between HRM practices and KM activities (e.g., Oltra, 2005). In particular, the mechanisms through which HR practices affect employee attitudes toward participating actively in sharing knowledge with colleagues remain an unresolved question. The objective of this section is to address these gaps by arguing the case that HR practices can influence knowledge sharing attitudes and behaviour predominantly through their impact on both social relations and employee perceptions of the organisational social climate.

There are several approaches forwarded in recent years by HRM scholars aimed at shedding light on the HRM-KM linkage. In their vast majority, these approaches are underpinned by a common explanatory goal; that is to explain variation in value creation as a result of coordinating HR with KM strategy (Shih & Chiang, 2005; Kang *et al.*, 2007). There are some notable differences, though, regarding the theoretical mechanisms proposed to account for this variation. The review of the literature identified four distinct approaches.

The first approach represents an attempt to bridge the gap between KM and HRM by combining theoretical constructs developed originally in the field of KM with concepts more familiar to HRM theory. The starting point for building understanding of explanatory mechanisms is the acknowledgement of the relative importance of different types of knowledge that are more or less congruent with the strategic priorities of the firm (Hansen *et al.*, 1999). HR studies within this perspective reflect a ‘best fit’ approach to researching KM-HRM linkages (e.g., Haesli & Boxall, 2005; Shih &

Chiang, 2005). A second line of work seeks to fill the same gap by utilising well-established concepts and frameworks from HRM theory as the basis for developing HR approaches to managing knowledge workers. Particular emphasis here is placed on the role that commitment-based HRM can play in eliciting employee capabilities that contribute to the success of KM initiatives. This line of work can be seen as the 'best-practice' approach (e.g., Hislop, 2003). Viewed as an evolution of the 'best practice' research stream, a third line of work has recently started to place emphasis on the intermediate role of social relations, culture and climate in the HRM-KM relationship. This can loosely be termed as the 'relational' approach (e.g., Zárraga & Bonache, 2005; Cabrera, Collins, & Salgado, 2006; Collins & Smith, 2006; Kang *et al.*, 2007). Finally, there is an emerging body of mainly qualitative studies that take a more critical approach to the same topic (e.g., Hunter, Beaumont, & Lee, 2002; Currie & Kerrin, 2003; Swart & Kinnie, 2003; Willem & Scarbrough, 2006).

### The 'Best Fit' Approach: Codification and Personalisation Strategies

Theoretical developments in KM research suggest that the effective management of knowledge requires attention to be paid to the types of knowledge upon which organisations build their competitive advantage (e.g., Nonaka & Takeuchi, 1995). For example, by distinguishing between codified and non-codified knowledge, Hansen *et al.* (1999) argue that organisations focus to varying degrees on knowledge codification and personalisation strategies respectively. While these strategies are not necessarily incompatible with each other, organisations tend to favour the one over the other, typically as an '80-20 split' (ibid: 112). The core argument is that, since codified and non-codified types of knowledge contribute differently to task performance, the strategic decision to adopt a codification or personalisation approach depends on whether firms compete primarily on efficiency or quality (Haas & Hansen, 2007). Codification strategies suit firms with established products and/or services competing in relatively stable markets, whereas personalisation strategies are more compatible with innovative firms that compete in fast-moving, high-technology environments (Haesli & Boxall, 2005). As was highlighted in chapter two, codification and personalisation strategies are underpinned by two distinct economic models which, in turn, reflect different IT investment needs. As expected, the two strategies call for different approaches to managing human resources. Hansen *et al's* (1999) framework identifies three formal HR practice areas for attraction, retention, and motivation of knowledge workers. As shown in table 4.2, these strategies are aligned with the overarching competitive strategy of the firm focusing either on task efficiency or task quality. According to the "make-or-buy" principle underpinning this framework, 'companies that

straddle the two strategies may also find themselves with an unwieldy mix of people' (ibid: 113).

Table 4.2 **Aligning KM with HR Strategy**

| **Codification** | ***Competitive Strategy*** | **Personalisation** |
|---|---|---|
| Reuse Economics | ***Economic Model*** | Expert Economics |
| People-to-Documents | ***KM Strategy*** | Person-to-Person |
| Heavy Investment in IT Solutions | ***Information Technology*** | Moderate Investment in IT Solutions |
| -Hire people who are suited to the efficient reuse of knowledge<br>-Train people in groups and through e-learning<br>-Reward people for using and contributing to electronic knowledge repositories | ***Human Resources*** | -Hire people who like problem solving and can tolerate ambiguity<br>-Train people through one-to-one mentoring<br>-Reward people for directly sharing knowledge with colleagues |

Source: Adapted from Hansen *et al.* (1999: 109)

More recently, case-study research conducted in AlphaCo and BetaCo, two high-tech electronic goods companies in New Zealand, has extended Hansen *et al's* (1999) framework by specifying two logical KM-HR combinations: codification-recruitment and personalisation-retention (Haesli & Boxall, 2005). The findings of this research suggest that although the two combinations are not mutually exclusive they nevertheless represent two 'distinctively different blends of KM and HR strategies' (ibid: 1969). For example, the personalisation-retention approach to managing R&D engineers was found to fit well with AlphaCo's low requirements for formalisation, innovative culture and reputation as a caring employer. Emphasis in this firm was placed on providing engineers with challenging work tasks, high levels of autonomy, employment security, and adequate monetary compensation coupled with intrinsic rewards. AlphaCo was generally considered by its employees as successful in meeting their expectations predominantly in relation to the characteristics of the work itself. This was reflected in high levels of job satisfaction and low levels of employee turnover. On the other hand, the codification-recruitment approach of BetaCo was driven by 'fitting engineering to established market needs…guided by a "technology roadmap"…and the high needs for documentation' (ibid: 1968-1971). The balance of emphasis in HR strategy was found to fall clearly on extensive recruitment of "new blood" in order to overcome skill shortages due to high employee turnover. Although engagement with challenging work tasks was rated by the majority of its R&D engineers as the top reason for joining the company, BetaCo's new recruits were, contrary to their initial expectations, faced with

the ‘technology roadmap’. As a result, job satisfaction was significantly lower than that observed in AlphaCo. Haesli & Boxall (2005) suggest that the two KM-HR configurations are not the only possibilities, and that personalisation-recruitment and codification-retention may also occur as alternatives. Table 4.3 provides a summary of the four KM-HR configurations suggested by this research. Haesli & Boxall (2005: 1972-1973) conclude that, while ‘it would be tempting to argue that personalisation-retention is superior in all contexts…there is no “one best way” to manage knowledge and its links to HRM’.

Table 4.3 **Four KM-HR Configurations**

| | |
|---|---|
| *Configuration 1*<br>***Personalisation-Recruitment***<br>High levels of person-to-person knowledge sharing in an environment of high employee turnover and constant recruitment<br>*Proposition:* A tenuous and counter-productive pattern, which is costly and risks losing key knowledge to rivals | *Configuration 2*<br>***Personalisation-Retention***<br>High levels of person-to-person knowledge sharing and trust-building in an environment of high retention and low employee turnover<br>*Proposition:* A superior pattern in fast-moving, high-technology environments, which enables firms to build resource mobility barriers |
| *Configuration 4*<br>***Codification-Recruitment***<br>High emphasis on formal repositories and documentation in an environment of high employee turnover and constant recruitment<br>*Proposition:* May be undesirable in the long-run but not necessarily inferior in highly stable, mature markets | *Configuration 3*<br>***Codification-Retention***<br>High emphasis on formal repositories and documentation in an environment of high retention and low employee turnover<br>*Proposition:* An appropriate pattern where innovation is not an issue and the organisation has high needs for codification (e.g., certain public services) |

Source: Haesli & Boxall (2005: 1972)

A quantitative study by Shih & Chiang (2005) examining the interlinks between KM, HRM and corporate strategy in 147 Taiwanese firms – representative of the country’s general industry status (i.e., banking, services, manufacturing) – provides support for the personalisation-retention and codification-recruitment configurations proposed by Haesli & Boxall (2005). This study shows that firms pursuing cost leadership corporate strategy adopted codification KM strategy, whereas firms pursuing differentiation corporate strategy adopted personalisation KM strategy. In addition, firms pursuing ‘make-organic’ HR strategy (a concept similar to that of ‘retention-focused’ HR strategy) tended to adopt personalisation KM strategy. In contrast, firms pursuing ‘buy-bureaucratic’ HR strategy (a concept similar to that of ‘recruitment-focused’ HR strategy) tended to adopt a codification KM strategy. Finally, the fit between KM and HRM strategy was related positively to higher KM effectiveness in terms of process efficiency, learning capability, and organisational performance.

Hansen *et al's* (1999) 'best fit' framework and the extended version put forward by Haesli & Boxall (2005) provide a useful heuristic for identifying KM-HR combinations that are more or less strongly related to KM effectiveness and, consequently, to organisational performance. The key explanatory mechanism for performance variation is the strategic alignment between HRM and KM (Shih & Chiang, 2005). The appropriateness of HR practices is contingent upon external (i.e., vertical) fit with the business strategy on the one hand, and internal (i.e., horizontal) fit with the knowledge requirements of that strategy on the other (Boxall & Purcell, 2003). However, these frameworks are reflective of a top-down rationale (Schuler & Jackson, 1987). In this sense, they suffer from a major shortcoming that reduces their usefulness for understanding why knowledge sharing may or may not take place in the firm. This stems from a lack of sensitivity to the motivational mechanisms that underpin employees' knowledge sharing attitudes and behaviours. Given that the 'best fit' approach is 'essentially *managerial* in its focus' (Newell *et al.*, 2002, italics in the original), it takes for granted that employees will openly share their 'know-how' with colleagues, and that they will contribute their 'know-what' to electronic knowledge repositories for organisational benefit. In other words, it underestimates the importance of human agency for KM initiatives. Yet, as Storey & Quintas (2001: 359) point out, the effectiveness of KM initiatives requires that 'employees are *willing* to share their knowledge and expertise' (italics in the original). There are several empirical studies that have reached the same conclusion. For example, Flood *et al's* (2001: 1155) quantitative study of the causes and consequences of psychological contract perceptions of 402 knowledge workers from eleven Irish-based organisations in the high-tech and financial sectors stresses that the personal character of knowledge makes its extraction and sharing possible only if 'the employee is willing to part with it on a voluntary basis'.

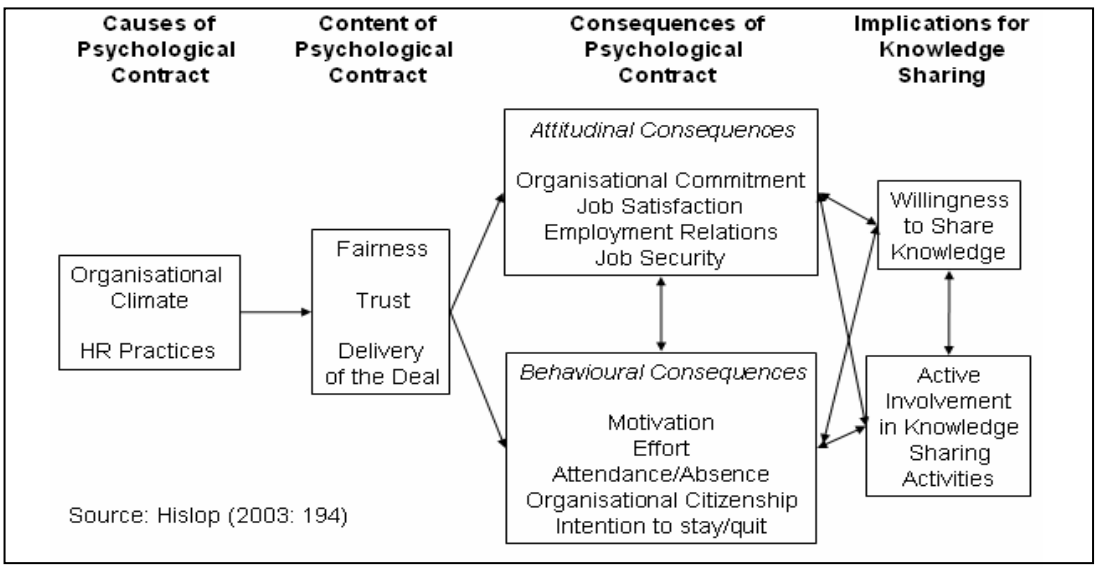
### The 'Best Practice' Approach: Commitment and Knowledge Sharing

One factor that has recently emerged as particularly important for affecting knowledge sharing attitudes and behaviours is organisational commitment. The concept of commitment is among the most researched topics in the fields of industrial psychology, organisational behaviour, and HRM (e.g., Morrow, 1993; Meyer & Allen, 1997; Cohen, 2003). Extensive empirical evidence suggests that employee commitment to the organisation – conceptualised typically as a three-dimensional construct including affective, normative, and cognitive-continuance facets – is a strong predictor of employee intentions to stay in the organisation, of low absenteeism, and of improved task (i.e., in-role) and contextual (i.e., extra-role) performance (e.g., Meyer, Allen, &

Smith, 1993; Meyer & Allen, 1997; Coyle-Shapiro & Kessler, 2000). Probably the most critical factor affecting employee commitment is the quality of the employment relationship or what is known as the psychological contract employees have with their employing organisations (Rousseau, 1995). Considerable attention has been paid to the impact of HRM practices on employee commitment. Within the strategic HRM literature, a consensus exists that companies can manage the employment relationship by applying a commitment-oriented system of HR practices (Tsui *et al.*, 1997; Wood, 1999). The commitment-based approach places emphasis on the design and implementation of synergistic bundles of HR practices (e.g., employee participation, internal promotion, team-based rewards, cross-training and job rotation, employment security and so on) that 'signal commitment to the employees, with the expectation that employees will commit to the organization in return' (Xiao & Tsui, 2007: 2).

More recently, a growing number of scholars in the areas of knowledge work and knowledge-intensive firms suggest that organisational commitment and the management of psychological contract are closely related to the effective management of knowledge workers and the successful implementation of KM activities (e.g., Scarbrough & Carter, 2000; Flood *et al.*, 2001; Storey & Quintas, 2001; Hislop, 2003; Thompson & Heron, 2005, 2006; Bhatnagar, 2007; O'Neill & Adya, 2007). The main argument put forward is that committed employees 'are less likely to leave, and more likely to be highly motivated, and will probably be more willing to provide extra discretionary effort and be generally more willing to share their knowledge within the organisation' (Hislop, 2003: 192). The ways through which commitment is linked to knowledge sharing attitudes and behaviour are depicted in a conceptual model forwarded by Hislop (2003). This is illustrated in Figure 4.1.

Figure 4.1 **Linking Psychological Contract, Commitment and Knowledge Sharing**

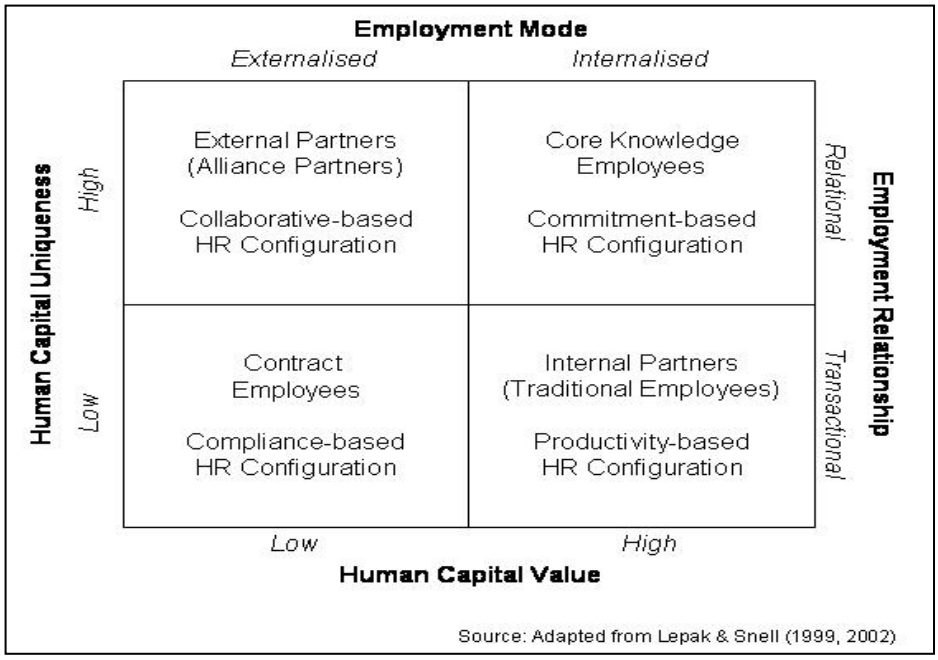


From an empirical perspective, studies that have investigated the link between organisational commitment and knowledge sharing have produced conflicting findings. For example, the results of a quantitative study of 429 R&D workers in six leading high-technology firms in the UK, including 3M Healthcare, HP Labs, and Pfizer, indicate that four dimensions of psychological contract (i.e., job design, performance-related pay, opportunities for progression and development, and work-life balance) were strongly related to affective commitment. This, in turn, was positively related to knowledge-sharing behaviours and, finally, these knowledge-sharing behaviours were found to be positively associated with innovative performance (Thompson & Heron, 2006). However, the results of a study of 372 employees from a large multinational in Spain indicate that, while organisational commitment was positively related to knowledge sharing, this effect disappeared once other organisational variables, such as rewards and job autonomy, were considered (Cabrera *et al.,* 2006). In order to clarify these conflicting findings, it is important to take a step further and to examine more systematically the changing nature of the employment relationship and its implications for managing knowledge sharing.

**The HR Architecture: Managing Knowledge Stocks and Human Capital**

A systematic analysis of the employment relationship needs to take into account the existence of different employment sub-systems that may co-exist within the same organisation. Research on psychological contracts suggests that differences in the employment relationship are often reflected in differences between long-term relationships with core employees and short-term relationships with peripheral employees (Legge, 1995; Rousseau, 1995). There may also be differences in the employment modes reflecting organisations' make-or-buy decisions regarding employment sourcing (Davis-Blake & Uzzi, 1993). Differences in preferences for internalised or externalised employment can be attributed to differences in firm-specific employee knowledge, skills, and abilities, as well as to other factors such as occupational differentiation, technology intensiveness, and a turbulent industrial environment (Baron, Davis-Blake, & Bielby, 1986). Different combinations of employment relationships and modes may also be characterised by distinct and, sometimes conflicting, HR approaches to the management of different employee groups based on the relative strategic value and uniqueness of their human capital. In this regard, the model of HR architecture forwarded by Lepak & Snell (1999, 2002), identifies four generic HR configurations pertinent to the management of four employee sub-groups (ibid.). This model is illustrated in figure 4.2.

Figure 4.2 **The HR Architecture**




The HR architecture has been tested empirically in a study of more than 9,000 employees in 148 US-based firms representing a broad range of industries and job types (Lepak & Snell. 2002). The results of this study indicate that organisations' employment decisions may vary depending on the relative importance that is ascribed to the uniqueness and value of the skills, knowledge and abilities required for a particular type of job. It was found that the commitment-based HR configuration was significantly higher for knowledge workers than for those within the other three groups. In addition, the compliance-based HR configuration was found to be used most extensively for contract employees. This provides support for earlier research which has shown the presence of two main approaches to HR: commitment-based and compliance-based (Arthur, 1992). However, Lepak & Snell's (2002) study provides mixed support to the remaining two HR configurations, since it was found that both the collaborative-based and the productivity-based HR configurations were used relatively equally for knowledge-based, traditional, and alliance employees. In addition, although the commitment-based HR configuration was associated predominantly with knowledge-based employees, no significant differences were found within this group regarding the use of commitment-based, productivity-based, and collaborative-based HR configurations. This finding is consistent with previous research pointing to the slow diffusion of high-performance work practices across firms (Osterman, 1994). It also suggests that it is likely that organisations will combine components of more than one HR configuration to manage knowledge workers. In this sense, the HR function is possible to be faced with the key challenge of balancing between the management of a

"flexible" and a "committed" workforce. In fact, as Rousseau & Arthur (1999: 7) argue, 'the twin pressure for flexibility and stability – making both people and firms more successful – is the essence of the new role of contemporary HR'. Yet little research has hitherto addressed theoretically and examined empirically how exactly this new role is translated into a system of HRM practices that is compatible with the evolving nature of the employment relationship in the context of an increasingly networked and globalised economy:

> In the new era, "boundaryless" means employment and careers unfolding over time across multiple employment opportunities and employer firms. Workers and firms will have difficulty predicting at any point in time what their future relationship might be' (ibid: 8).

The "blurring" of the employment relationship signifies not only that trust becomes increasingly important as an organising principle (McEvily, Perrone+, & Zaheer, 2003), but also that a new type of trust may be pertinent to supporting KM activities; a trust that is 'modern and reflective rather than traditionalistic and blind' (Adler, 2001: 228); a trust that enables 'full knowledge sharing in truly collaborative relationships' (Käser & Miles, 2002: 14).

**Commitment, Understanding and the Interactive Social Character of the Firm**

There is little doubt that employee commitment – viewed as the 'affective attachment to the values and goals of the organisation' (Buchanan, 1974: 533), and the 'totality of internalized normative pressures to act in a way that meets organizational goals and interests' (Wiener, 1982: 471) – fits well with the "lifetime employment" and "one-company career" ideals of Gemeinschaft (Rousseau & Arthur, 1999). In other words, it suits traditional corporate cultures in which the employment relationship is characterised by trust which is mainly fuelled by loyalty, honour and duty (Adler & Heckscher, 2006). It is, however, questionable whether such cultures are compatible with the needs of collaborative communities for coordinating knowledge-intensive and solution-oriented work among diverse yet highly interdependent functions (ibid.). The key requirement for effective coordination of complex knowledge processes is related less to the extent to which individuals feel morally obliged to contribute their knowledge to the organisation as such, than to the extent to which there is a shared understanding between individuals across functions that makes 'possible a process of bestowing of tacit knowledge by the individual' (Nonaka & Nishigushi, 2001: 5). The notion of 'understanding' takes here the meaning of 'sympathy under uncertainty' (DiMaggio, 1992), while the notion of 'knowledge bestowing' resembles the concept of 'taking care' (Appley & Winder, 1977; Ciborra, 1996; von Krogh, 2003). Both notions are

underpinned by a distinct type of trust fuelled mainly by mutual contribution, concern, honesty, tolerance and collegiality. This type of trust, in turn, fits the interactive social character and the socioeconomic base of the modern organisation viewed through the lens of a collaborative community (Adler & Heckscher, 2006; Maccoby, 2006). Table 4.4 provides a summary of changes in socioeconomic base, the social character, and the ideology rooted in the bureaucratic and interactive social characters.

Table 4.4 **Organisational Social Character**

| | ***Bureaucratic*** | ***Interactive*** |
|---|---|---|
| *Ideology and Ideals* | - Stability<br>- Hierarchy<br>- Organisational loyalty<br>- Moralism | - Innovation<br>- Networks<br>- Free agency<br>- Tolerance |
| *Social Character* | - Inner directed<br>- Identification with parental authority<br>- Methodical, cautious | - Interactive<br>- Identification with peers and siblings<br>- Consumers, adventurers |
| *Socioeconomic Base* | - Market-controlling bureaucracies<br>- Slow changing technology<br>- National markets<br>- Lifelong employment<br>- Traditional family | - Entrepreneurial companies<br>- New technologies<br>- Global markets<br>- Employment uncertainty<br>- Diverse family structures |

Source: Maccoby (2006: 161)

A view of the firm through the lens of a collaborative community points to a subtle but important difference between understanding and commitment:

> [W]ithin traditional communities understanding is the same as commitment: understanding others in effect means one has to agree with them and to become one with them. A key aspect of collaborative community is that one can understand without committing – that one can take the perspective of others and gain a sense of their motivation without bonding to them and 'joining' them in a moral unity…In a collaborative community commitments and their enforcement are neither part of the informal culture nor automatically linked to the hierarchy: they must be deliberately agreed to (Adler & Heckscher, 2006: 53).

Along these lines, Adler & Heckscher (2006: 43) introduce the notion of 'interdependent process management' as a new way of organising 'how people relate to each other':

> Collaborative community in modern industry needs to coordinate interactions that span a wide range of competencies and knowledge bases, and that shift constantly to accommodate the evolving nature of knowledge projects. The challenges it faces cannot be met through 'teamwork' in the usual sense of small, homogenous, and informal groups. Process management coordinates large, diverse communities and high levels of complexity (ibid: 44).

The objective of interdependent process management is the 'deliberate and formal organizing of cooperation' by focusing on 'processes for building a shared sense of

purpose, and processes for coordinating work relations among people who are pursuing this purpose from different bases of knowledge and skill' (ibid: 44-45). To a large extent, the need for cooperation both at intra- and inter-group levels is associated with the requirements for faster cycles of knowledge exploitation and exploration, more decentralisation of decision making, and the increasing importance of group-based work structures (Malone, 2004). In this regard, knowledge processes diffuse from specialist groups, such as R&D and marketing, to a far larger number of employees distributed within and across the boundaries of the firm. As Nahapiet *et al.* (2005: 5) have recently observed: 'the need for cooperation has moved from a relatively narrow domain to the whole organization'. This brings to the fore the central, though as yet understudied, role that HR practices can play in influencing the types of social relations that employees develop, maintain, and utilise for knowledge sharing and learning purposes. As Jerez-Gómez *et al.* (2005: 724) recently noted, 'human resource practices can be a fundamental tool in developing the organization's learning capability, which means that analyzing their possible influence opens a new field of study that has rarely been dealt with'.

### The 'Relational' Approach: The Importance of Social Relations

More than a decade ago Kogut & Zander (1992) put forward the argument that knowledge transfer is of overriding importance for the development of a firm's learning capability. Their argument is underpinned by three key presumptions. The first is that organisational knowledge is embedded in the social fabric of the firm and, more precisely, in the social relations among its members. The second posits that learning capability is developed 'by building on the social relationships that currently exist in a firm' (ibid: 383). According to the third presumption, 'the knowledge of the firm must be understood as…resting in the organizing of human resources' (ibid: 385). Managing human resources may, therefore, have a strong impact on the learning capability of the firm by influencing the quality of the social relations among employees (Kang *et al.*, 2007). This matches Lado & Wilson's (1994: 699) early suggestion that HRM can contribute to sustained competitive advantage 'through facilitating the development of competencies that are firm specific, produce complex social relationships…and generate organizational knowledge'.

While the general tendency of the HR literature is to treat knowledge as an individual characteristic typically viewed as "skills" or "behaviour", Wright *et al.* (2001) propose that the concept of "skills" can be expanded to include not only the knowledge and abilities of individual employees (i.e., human capital) but also the value of their social

connections (i.e., social capital). Similarly, the concept of "behaviour" can be 'reconceptualized as the *flow* of knowledge within the firm through its creation, transfer, and integration' (ibid: 716, italics added). Accordingly, they propose that HRM systems 'create value to the extent that they impact the stock, flow, and change of intellectual capital/knowledge that form the basis of core competencies' (ibid: 715). Drawing on a synthesis of knowledge-based views of the firm, Wright *et al.* (2001) argue that research is required for understanding the linkages between HRM practices and the management of both knowledge stocks and flows.

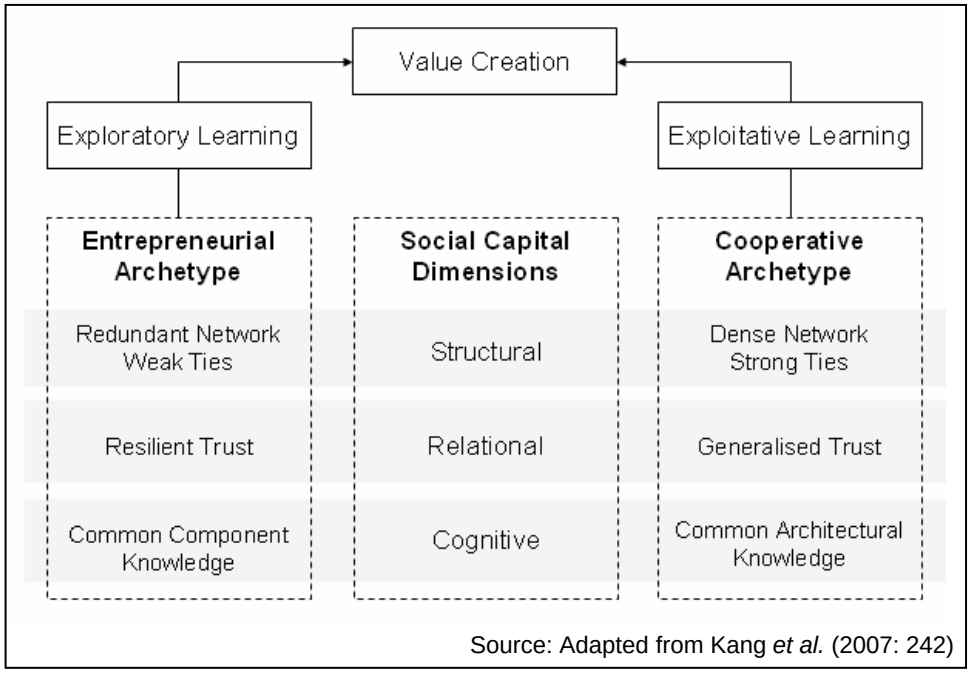
**The Extended HR Architecture: Managing Knowledge Flows and Social Capital**

Wright *et al.*, (2001: 715) suggest that strategic HRM 'has missed much of the organizational view of knowledge'. The key exception at the theoretical level is the recent work of Kang *et al.* (2007). In building their model of 'relational archetypes', Kang *et al.* (2007) point out that variations in value creation between firms are associated with the extent to which exploitative and explorative learning are pursued in a complementary manner (Argyris & Schön, 1978; March, 1991; Miner & Mezias, 1996). Consistent with a relational view of competitive advantage (Dyer & Singh, 1998), they emphasise that both exploratory and exploitative learning take place in the context of social interaction (Kogut & Zander, 1992). Furthermore, utilising theoretical insights from social capital theory, social networks and social embeddedness, they stress that these two learning activities are likely to be shaped differently by structural and more qualitative features of social relations (Granovetter, 1985; Coleman, 1988; Burt, 1992; Nahapiet & Ghoshal, 1998; Leana & Van Buren, 1999). In particular, building on Nahapiet & Ghoshal's (1998) three-dimensional framework of social capital, they identify how the structural, relational, and cognitive facets of social networks are associated with either exploitative or explorative learning. Accordingly, they identify two relational archetypes referred to as cooperative and entrepreneurial. Figure 4.3 provides a summary of the two archetypes in terms of the social capital attributes that are aligned with the two learning modes.

The cooperative archetype is characterised by high levels of generalised trust and associability (Leana & Van Buren, 1999). It reflects interpersonal and inter-group relations governed by generalised norms of reciprocity based on mutual interests and low concern for immediacy of exchanges (Sparrow & Liden, 1997). Using social capital terminology, it is loosely connected to Coleman's (1988) notion of 'network closure', Granovetter's notion of 'relational' embeddedness, and what Adler & Kwon (2002) term as 'bonding' or 'internal' social capital, which 'gives the collective cohesiveness and thereby facilitates the pursuit of collective goals' (ibid: 21). In brief, the cooperative

archetype sits theoretically within the 'connectionist' tradition of social capital (Borgatti & Foster, 2003).

Figure 4.3 **Two Relational Archetypes of Organisational Learning**




Source: Adapted from Kang *et al.* (2007: 242)

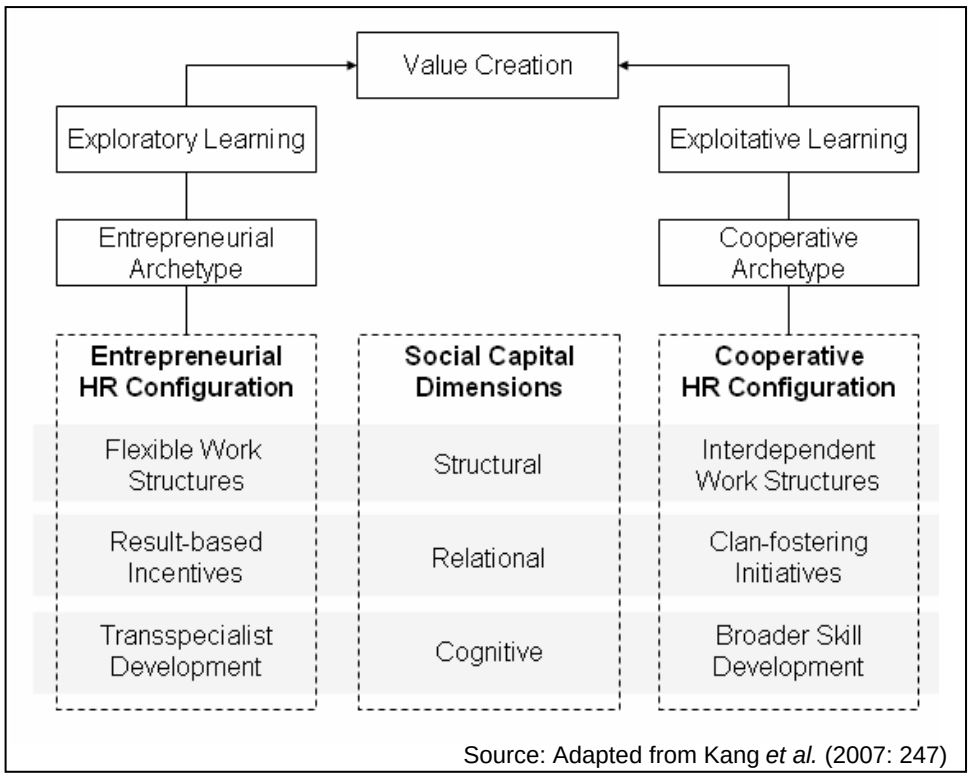
In contrast, the entrepreneurial archetype refers to a more loosely connected social network rich in structural holes offering information brokerage opportunities to individuals (Burt, 1992). 'The social connections are based on dyadic trust among some of the parties, rather than generalised trust over the whole unit' (Kang *et al.,* 2007: 242). In addition, shared mental models are developed between parties based on common component knowledge thus making unnecessary a 'shared architectural linkage for deep integration' (ibid.). Using again social capital terminology, the entrepreneurial archetype refers to 'bridging' or 'external' social capital (Adler & Kwon, 2002). This archetype sits theoretically within the 'structuralist', ego-centric tradition of social capital (Borgatti & Foster, 2003).

The two relational archetypes provide the basis for extending the HR architecture (Lepak & Snell, 1999, 2002) by placing explicit emphasis on how HR practices can support knowledge flows between different employee cohorts. In the HR architecture, knowledge workers are the most valued employee cohort. However, it is important, as Kang *et al.* (2007: 244) argue, to extend attention beyond core employees' knowledge stocks, and to consider how knowledge is exchanged between knowledge workers and their internal and external relationships:

> '[I]n the contemporary setting, few organizations can create value by relying on the knowledge stocks of core employees alone. The exchange and combination of knowledge from internal and external partners is needed to constantly renew knowledge stocks…Put it differently, to effectively manage knowledge flows into the core employee group, we need to look at the two overall networks that exist between core employees and internal partners an between core employees and external partners'.

Kang *et al.* (2007) devise two alternative bundles of HR practices focusing on helping knowledge workers interact and build value-creating relations with internal and external partners: cooperative and entrepreneurial HR configuration (see Figure 4.4).

Figure 4.4 **Extended HR Architecture: HR Configurations for Managing Social Relations**




Source: Adapted from Kang *et al.* (2007: 247)

The classic AMO framework, which has guided much 'best practice' research on the HRM-performance relationship (e.g., Huselid, 1995; Becker & Huselid, 1998), provides the basis on which Kang *et al.* (2007) cluster a number of HR practices within each of the two alternative HR configurations. The key difference, however, is that the scope of HR practices expands beyond managing human capital to managing social capital. Essentially, the design of HR configurations is informed by the three enabling conditions of knowledge transfer identified in chapter three: structural opportunity, cognitive ability, and relational motivation. In Kang *et al's* (2007) modelling, these conditions are reflected in three HR practice areas: (i) work design structures (e.g., job variety, autonomy, interdependence) 'conditioning employees' opportunity to interact with others for task accomplishments'; (ii) incentive structures (e.g., pay, performance

appraisal, employment security) 'providing a mechanism to influence employees' motivation to search for and absorb new knowledge'; and (iii) skill development (e.g., staffing, training, mentoring) 'to affect employees' ability to understand and combine new knowledge' (ibid: 246).

Kang *et al's* (2007) theoretical extension of the HR architecture adds significantly to a deeper understanding of the central role that HRM systems can play in supporting the organisational learning that helps firms achieve strategic renewal and innovation. Its contribution lies in that it seeks to understand the "black box" of the HRM-organisational learning relationship by placing explicit focus on the mediating role of value-creating social relations. By identifying two relational archetypes and the ways through which they are supported by two distinct configurations of HR practices, Kang *et al.* (2007) reframe the problem the modern HR function faces as it strives to balance between efficiency and flexibility (Rousseau & Arthur, 1999).

### HRM, Social Relations and Knowledge Sharing: The Empirical Evidence

Despite a growing consensus that HRM systems are the primary means by which firms can manage value-creating social relations (e.g., Lado & Wilson, 1994; Leana & Van Buren, 1999; Jackson, Hitt & DeNisi, 2003; Kang *et al.,* 2007), there have been few empirical studies examining whether and the conditions under which HR practices actually impact on knowledge sharing and, by extension, on organisational performance. This review of the literature identified only a handful of qualitative studies (Hunter *et al.,* 2002; Currie & Kerrin, 2003; Swart & Kinnie, 2003; Willem & Scarbrough, 2006) and even fewer quantitative studies (Youndt & Snell, 2004; Collins & Smith, 2006) that focused explicitly on this relationship.

While the overall goal of those studies is to understand the role of HR practices in managing organisational knowledge and learning, there are some notable differences in perspective. It is thus useful to distinguish between two groups of empirical work. The first group, which comprises mainly large-scale, survey-based quantitative studies (e.g., Youndt & Snell, 2004), examines the relationship between HR practices, social relations and knowledge sharing by seeking to identify 'strong situations' (Mischel, 1977), such as social capital, culture, and climate, that both influence and influenced by the impact of HRM systems on knowledge sharing and, consequently on business performance. Essentially, by adopting a 'best practice' approach to HRM, this body of work seeks to explain variation in knowledge sharing effectiveness and performance success as a function of the systemic effects of HR practices on the firm's internal

social structure. The second group comprises mainly in-depth, case-based empirical work (e.g., Currie & Kerrin, 2003). While placing equal emphasis on the role of strong situations, it seeks to go a step further to examine the underlying layer of HR processes and how these intertwine with the social context of knowledge sharing. Although the two perspectives are analytically and theoretically different, they are and should be treated as complementary (Boxall & Purcell, 2003).

**Quantitative Studies**

In regard to quantitative research, Youndt & Snell's (2004) study, which is based on organisational-level data obtained from top managers of 208 public, single business-unit organisations in the USA, provides the first systematic evidence of how six distinct bundles of HR practices affect business performance through their impact on three dimensions of intellectual capital: human capital, social capital, and organisational capital. The results of this study yield several important findings regarding the types of HRM systems that are more likely to foster social capital. First, egalitarian HRM systems focusing on the reduction of vertical, hierarchical barriers through minimising status differences were found to be unrelated to social capital. In contrast, 'the reduction of horizontal barriers through the use of collaborative HR activities was related to an organisation's knowledge sharing and transfer [i.e., social capital]' (ibid: 353). Second, the collaborative HR configuration, which resembles Pfeffer's (1994, 1998) well-known list of best HR practices, remained a strong predictor of performance even after controlling for the three dimensions of intellectual capital. Finally, social capital emerged as the strongest predictor of business performance.

Taken together, the results of Youndt & Snell's (2004) study highlight that collaborative-based HR practices are particularly important for enhancing social capital which, in turn, facilitates the sharing of knowledge. However, a closer look at this study indicates three important limitations. First, social capital is operationalised in a rather abstract manner, which makes it impossible to distinguish between its structural, relational, and cognitive dimensions. In fact, Youndt & Snell (2004) succumb to equating social capital with knowledge sharing. This simplification certainly hinders understanding of how the distinct dimensions of social capital are shaped differently by HR practices. It also ignores the appropriability of social capital (Coleman, 1988). In this sense, it downplays the possibility that, in some cases, knowledge sharing could be a positive spill-over from power and influence relations (Portes, 1998). A second limitation concerns the poor operationalisation of the HR bundles. The collaborative HR configuration, for example, comprises eight items, while the egalitarian one only five items. This raises

questions about the extent to which these HR bundles capture adequately the large and diverse array of HR practices required for managing complex social relationships. In fact, as Youndt & Snell (2004: 356) note as a limitation of their study, 'the HR configurations explained only twenty-eight percent of the variance in social capital, the most important predictor of organizational performance'. Finally, the study is based on CEOs views and, therefore, leaves unanswered how knowledge workers, 'the ultimate knowledge creators and bearers' (Oltra, 2005: 71), experience their social relationships and HR practices.

Based on a sample of 136 high-technology US firms, Collins & Smith (2006) study corrects most of the limitations identified in Youndt & Snell's (2004) study by developing and testing a more refined model. This model depicts how commitment-based HR practices affect knowledge exchange and organisational performance through social relations. First, commitment-based HR practices are defined here more comprehensively in terms of selection (four items), training and development (eight items), and pay incentives (four items). Second, Collins & Smith (2006) identify organisational social climate as a key mechanism through which commitment-based HR practices affect employee-based capabilities to exchange knowledge. Social climate is defined as 'the collective set of norms, values, and beliefs that express employees' views of how they interact with one another while carrying out tasks for their firm', and it is operationalised along three dimensions (i.e., cooperation, trust, shared language and codes). In this sense, it resembles the relational and cognitive dimensions of social capital (Nahapiet & Ghoshal, 1998). The results of this study indicate that commitment-based HR practices are strong predictors of all dimensions of social climate. Second, they show that social climate mediates partially the effect of HR practices on knowledge exchange. Third, they demonstrate that the effect of HR practices on firm performance is mediated not only by knowledge exchange, but also by social climate. Probably the most important contribution of Collins & Smith's (2006) study is that it highlights the crucial role of 'relational social climates' as key mediating mechanisms through which HRM systems affect employees' motivation and ability to share knowledge. In this regard, it refines the notion of 'relational archetypes' by re-emphasising that HRM systems are transmitters of core cultural values.

Notwithstanding its advantages, this study has a number of limitations. First, the composition of commitment-based HR practices does not take into consideration fundamental aspects of job design (i.e., reciprocal interdependence, autonomy, and variety), which are considered the building blocks of knowledge work (Benson &

Brown, 2007). In this sense, the study leaves unanswered how the design of work structures may condition not only employees' interaction opportunities with others but also their perceptions of social climate and, ultimately, their motivation to engage in knowledge sharing. Second, the study takes an additive approach for testing complementarity between the three sub-facets that comprise the HRM system. By doing so, the possible differential as well as interaction effects (Ichniowski, Shaw, & Prennushi, 1997; Evans & Davis, 2005) of individual HR practices on social climate are sidestepped. Third, the study focuses only on the HR implications for 'bonding' social capital but provides no guidance on the HR implications for the 'bridging' (Adler & Kwon, 2002) qualities of social relations. Although Collins & Smith (2006) appear to have consciously decided to test their model in 'firms in rapidly changing industries', the dynamic character of this setting is to a large extent consistent with the entrepreneurial requirements of pursuing exploratory learning. A final and significant limitation of the study is that it downplays the key role that line managers play in influencing employees' experience of HRM.

Several studies have highlighted the important role of front line management's support in influencing employees' knowledge sharing attitudes and behaviours. For example, in Cabrera *et al's* (2006) study of 372 Spanish employees of a large multinational company, management support emerged as the most important factor affecting knowledge seeking and proving behaviours. Similarly, based on a sample of 363 employees of twelve Spanish-based multinational companies, a quantitative study examining the causes and consequences of social climates in self-managed teams found that the figure of a coordinator actively involved in team processes was particularly important in enhancing a collaborative atmosphere conducive to knowledge sharing (Zárraga & Bonache, 2005). Furthermore, a study of 126 MBA students at four Canadian universities indicates that employees' perceptions of a positive knowledge sharing culture are associated strongly with management's support for knowledge sharing (Connelly & Kelloway, 2003).

**Qualitative Studies**

The important role of line managers in knowledge sharing has also been described in a number of mainly qualitative case studies. For example, a study conducted in five Scottish law firms examining the issue of strategic coordination between HRM and KM shows that the extent to which partners and senior staff were actively involved in knowledge-sharing practice, such as participating systematically in debriefing at the end of projects, sent a strong signal to non-partner staff as to whether knowledge

sharing was part of the organisational culture (Hunter *et al.,* 2002). Hunter *et al.* (2002: 18) recommend that more attention, therefore, needs to be paid to the management of process upon which informal knowledge sharing depends. In this regard, they note:

> This is essentially a matter for the professionals, through performance management and appraisal of fellow professionals, the informal elements of training and development and the personal involvement of partners and senior staff in teamworking, mentoring and coaching.

Yet they argue that while much of the delivery of HR practices comes from line management (the professionals in the specific case) the HR function does have an important role to play as well. This role, though, is 'less in the actual delivery than in guiding the professionals, developing consistency of approach and contributing to design' (ibid: 18). Achieving balance between the involvement of the HR department and that of line managers in KM practice echoes an important distinction made in the literature between human capital and human process advantage. These are considered as the building blocks of HR advantage (Boxall, 1996, 1998). As Boxall & Purcell, (2003: 86) succinctly put it, 'in a nutshell, human resource advantage, or exceptional value in human resources, can be traced to better people employed in organisations with better process'.

The notion of human process advantage is depicted in Swart & Kinnie's (2003) study of the relationship between HR strategies and knowledge sharing in SoftWareCo, a small software development company in the south-west of England. What characterised this company was a lack of a formal organisational structure, since there were no specialist departments or standardised HR policies. The key operational processes were instead distributed across three flat sub-structures (i.e., the committee structure, the mentoring structure, and the project structure). These, according to Swart & Kinnie (2003), provided the company with a unique operational quality. In addition, they served as vehicles through which HR processes evolved into actual practice:

> [I]t was through suggestions made in the committees or social practice that is shared throughout the organisation that specific HR processes were shaped. The employees themselves generated the manner in which people are managed and it is the ownership that then drives coherent practice…[T]here is less discrepancy between espoused theories and theories-in-use at SoftWareCo (ibid: 67).

Although SoftWareCo is a somewhat atypical case in the sense that it is characterised by a non-conventional organisational structure, Swart & Kinnie (2003: 73) argue that its distinct process-based approach to managing knowledge work was mainly the result of a 'series of conscious and unconscious choices which reflect and sustain "the way

things are done"…managing people and managing knowledge become embedded in the organisational routines'.

A less harmonious relationship between HRM and KM is depicted in Currie & Kerrin's (2003) case study of Pharmco, a UK-based sales and marketing company responsible for the brand planning and promotion of the pharmaceutical products of its multinational parent firm. Building on organisational knowledge and learning theory (Lave & Wenger, 1991; Nonaka, 1995; Willmott, 2000), this study sheds some valuable light on the HR challenges that Pharmco faced in managing knowledge sharing across its functional boundaries. A main reason why knowledge was not flowing smoothly across the sales and marketing departments was found to be the 'presence of functionally based organisational sub-cultures' (Currie & Kerrin, 2003: 1040). Strong functional norms were reflected in, and reinforced by, the selection process since sales and marketing assessment centres were run separately. They were also reflected in performance management which had placed strong emphasis on functional rather than cross-functional contribution. As a result, the newly formed trade marketing function, which was established with the purpose of enhancing knowledge sharing between sales and marketing, did not have any substantial effect on breaking down sub-cultural barriers. Similarly, organisational development activities and social events targeted at enhancing more informal social ties between sales and marketing staff did not work well and were suspended soon after their introduction. A positive exception was found to be the introduction of lateral career movement. This enabled employees, particularly graduate trainees, to create informal advice networks that facilitated the sharing of knowledge across functions. Currie & Kerrin (2003) conclude by arguing that a fuller understanding of the HR implications of employees' unwillingness to share knowledge may need to consider that social capital means not only reciprocal knowledge-exchange relations but also power relations.

The power and control implications of social capital for knowledge sharing have been the subject of a recent qualitative study of two Belgian companies in the financial services and energy supply sectors (Willem & Scarbrough, 2006). This study shows that social capital can have differential effects on knowledge sharing depending on whether emphasis is placed on its 'consummatory' or 'instrumental' dimension (Portes, 1998). This study indicates that both companies were characterised by high levels of instrumental social capital, which led to knowledge exchange, but only if the anticipated benefits of the exchange were directly related to personal or sub-unit goals. Willem & Scarbrough (2006: 1364) conclude that in both companies, 'informal networking was

more widely used for influencing and politicking than for regular cooperative episodes or knowledge sharing'.

## III. DISCUSSION AND CONCLUSION

The body of literature reviewed makes a strong case for challenging some deep assumptions underlying the role of HRM within a knowledge-intensive organisational context. From a strategic perspective, the resource-based view of the firm with its persistent focus on knowledge stocks is limited by its inability to explain how knowledge flows contribute to competitive advantage. In contrast, under a dynamic capability framework, while knowledge stocks are considered important, knowledge transfer and exchange are equally if not more important for facilitating organisational learning by enabling a firm to refine, modify and renew its knowledge stocks. The fundamental premise here is that knowledge transfer and, more widely, learning are situated social activities embedded in the social structure of the firm. This suggests that managing the social context of knowledge sharing is inextricably linked to the organising of the social relations employees experience at work. However, current HR research, by focusing its energy on the management of individuals' skills and behaviours, has made little progress in identifying how HR practices impact upon how individuals' social resources might be utilised for value-creating knowledge exchanges.

In response to this gap in the literature, the latest advances in strategic HRM theory call for a relational approach to managing people for knowledge-based competition. In particular, the extended HR architecture identifies two distinct HR configurations pertinent to managing knowledge transfer and sharing in two distinct relational archetypes (i.e., cooperative and entrepreneurial) that characterise knowledge workers' relations with their internal and external partners. The core premise here is that organisations implement differently configured HRM systems throughout the entire organisation. Internal efficiency is achieved through a cooperative HR configuration by enabling exploitative learning, whereas flexibility is possible through an entrepreneurial HR configuration by enabling explorative learning. The two relational archetypes and their associated HR configurations are, however, only theoretically derived and, therefore, deserve empirical investigation. There are still a number of important issues that remain unresolved.

### The HRM System

In their discussion of the theoretical implications of the extended HR architecture, Kang *et al.* (2007: 252) note that in the context of an increasingly networked and globalised

economy, knowledge workers may differ from organisational strategists in their views of which type of social capital is most valued and rewarded:

> Considering the nature of their human capital as “firm specific”, the employment mode as “internalized”, and the employment relationship as “relational” in the context of the HR architecture, core employees are likely to develop the cooperative relational archetype among themselves. However, it is possible to see some organizations develop the entrepreneurial archetypes even within core employee groups, as in the network-type organization as a loosely coupled system (Snow, Miles & Coleman, 1992). This presents an interesting issue for future study.

This view highlights the complicated issue of demarcating employment modes and specifying which employee relations constitute the core competence of the firm. The relational archetypes, as the term implies, are ideal patterns. However, in practice it may be difficult to demarcate the boundary between cooperative and entrepreneurial social relations. This is because, as Evans & Davis (2005: 772) note: ‘dynamic environments appear to be more the norm than the exception for organizations, limiting the applicability of the boundary condition’. Empirical evidence suggests that organisations are likely to implement hybrid HRM systems, particularly with respect to their core employee group – their knowledge workers (Lepak & Snell, 2002).

A key question, therefore, concerns the extent to which HR practices comprising seemingly coherent HR bundles send contradictive messages to knowledge workers on which types of social relations are most valued (Kang *et al.,* 2007). While recent empirical evidence demonstrates the additive effects of commitment-based HR practices on cooperative social climate and knowledge sharing (Collins & Smith, 2006), the literature still lacks a systematic study of the individual and multiplicative effects of HR practices on employees’ perceptions of that climate. It is therefore useful to disaggregate the HRM system and examine the influence of each HR practice on employees’ perceptions of organisational social climates favourable to knowledge sharing.

The HRM system can be understood as a multi-level construct consisting of multiple hierarchically arranged components. Each component denotes the level of abstraction in the overall HRM system structure. Based on a synthesis of previous work on strategic HRM, Arthur & Boyles (2007) identify five components of the HRM system structure: HR principles, HR policies, HR programs, HR practices, and HR climate. These are presented in table 4.5.

Table 4.5 **Five Components of the HRM System Structure**

| HRM System Component | Definition | Level of Abstraction in the HRM System |
|---|---|---|
| *HR Principles* | Stated values, beliefs and norms regarding what drives employee performance and how organisational resources and rewards should be allocated | *Highest* |
| *HR Policies* | Organisational goals or objectives for managing human resources |  |
| *HR Programs* | The set of formal HR activities used in the organisation | |
| *HR Practices* | The implementation and experience of an organisation's HR programs by lower-level managers and employees | |
| *HR Climate* | Shared employee perceptions and interpretations of the meaning of HR principles, policies and programs in their organisation | *Lowest* |

Source: Arthur & Boyles (2007: 79)

The most abstract component of the HRM system structure is that of HR principles. This component matches closely what Becker & Gerhart (1996) name as the HR system architecture, which is defined as the guiding management principles and assumptions that underpin organisations' strategic choices of HR policies, programs and practices. While the notion of management principles has a long history in the literature (McGregor, 1960), more recently management scholars have stressed its importance for shaping organisational culture (O'Reilly & Pfeffer, 2000). It is noteworthy that organisational culture and organisational principles are not synonymous:

> [organisational principles are] an explicit set of values and beliefs that may or may not be practiced, whereas organizational culture is treated as an implicit set of assumptions and norms that are being applied by existing employees. To the extent that the explicit philosophy is actually practiced, it may reflect the organizational culture (Yeatts & Hyten, 1998: 116).

The second component in the HRM system structure, namely HR policies, is defined as the 'organizational goals or objectives for managing human resources' (Arthur & Boyles, 2007: 79). A typical example of HR policies is found in Lepak & Snell's (1999, 2002) employment modes that compose the HR architecture. Employment modes reflect the make or buy strategic choices of organisations regarding their investments in internal or external human capital respectively. Other HR policy typologies include Osterman's (1988) industrial, salaried and craft employment subsystems, Walton's (1985) control and commitment strategies, and Ouchi's (1980) market, clan, and bureaucracy. Although discussions on HR policies may make reference to specific HR programs and practices, Tsui & Wang (2002) suggest that the identification of a coherent set of HR programs and practices is beyond the scope of HR policies.

Instead, the component of HR policies places attention to the 'overall objectives and strategies for managing human assets and shaping (or controlling) behavior' (Arthur & Boyles, 2007: 80). In this sense, HR policies can be best understood, on the one hand, as intended rather than actualised HR strategy, and on the other, as representing a higher level of abstraction than HR programs or practices' (ibid: 80).

The component of the HRM system structure that has received most attention in the literature is that of HR programs. Arthur & Boyles' (2007) definition of HR programs places emphasis on the formal character of HR activities as usually perceived by senior managers and often reflected in organisations' strategy statements or employment manuals. HR programs have been labelled with various names in the literature including Huselid's (1995) high performance work systems, Arthur's (1994) typology of control- and commitment-based HRM, and Ichniowski *et al's* (1997) traditional, innovative and mixed HR programs and practices. HR programs can, therefore, be viewed as sets of formally expressed rather than actualised or experienced HR practices.

On the other hand, HR practices refer to the implementation and experience of HR programs by employees and lower-level managers (Arthur & Boyles, 2007). Yet, the distinction between HR programs and HR practices, according to Arthur & Boyles (2007: 80), differs from Huselid & Becker's (2000) one between intended HR policies and actual HR practices. This is because the HR practices component captures the potential for variation in employees' perceptions and experiences of an HR program based on the quality of the HR program implementation. Arthur & Boyles (2007) emphasise that the quality of the HR program implementation depends mainly on the extent to which middle and lower managers can communicate effectively the HR program to employees and support actively its use. This echoes Purcell & Hutchinson's (2007: 17) study of the mediating role of front line managers in the HRM-performance relationship. Purcell & Hutchinson (2007: 16) observe that employees' experience of HR practices is 'inexorably linked with their relationship with their FLM [front line manager] because the FLM is seen as the agent of the organisation, and in most cases the deliverer of the HR practices'.

The HR climate component of the HRM system structure is consistent with the notion of organisational climate, since it is based on employees' shared perceptions of 'organisational expectations and rewards derived from the combination of other components of the HR system structure' (Arthur & Boyles, 2007: 80). Arthur & Boyles

(2007: 81) argue that much of the empirical research on HRM 'has generally assumed HR systems to be objective and observable characteristics of organizations, not individuals or groups'. Yet, there is a possibility that the 'source of the HR system component being assessed originates at the individual-level and not the unit level of analysis' (ibid: 81). In this regard, empirical evidence from a study of over 900 employees in forty six Turkish organisations suggests that HR practices at the organisational level may carry with them and underlying set of values that 'provide the basis for *shared* perceptions of the organizational culture at the individual level' (Robert & Wasti, 2002: 549).

### The HRM System in Context

Kang *et al's* (2007) model of the extended HR architecture says little about the role of the organisational culture as a boundary condition. Yet a closer look at the model suggests that the two relational archetypes reflect two different kinds of organisational culture. The cooperative archetype is underpinned by a collectivist culture, in which social relations are based on strong norms of cooperation and reciprocity, mutual trust and identification. On the other hand, the entrepreneurial archetype reflects a somewhat more individualist or ego-centric culture, in which social relations are seen as an asset that 'inheres in a focal actor's external network that give the actor advantages in his or her competitive rivalries' (Xiao & Tsui, 2007: 3). From a social network perspective, these two different cultures mirror two contrasting views of social capital – bonding and bridging social capital respectively (Adler & Kwon, 2002). What is therefore missing from Kang *et al's* (2007) conceptual framework of relational archetypes is an explicit emphasis on the social context through which HRM systems are shaped.

The term social context 'embodies the very essence of organizational science and, as such, serves as an effective mechanism through which to more precisely articulate how HRM systems relate to organization effectiveness' (Ferris *et al.,* 1998: 237-239). A social context approach to HRM encompasses culture, climate, and social and political processes as essential features of work environments that contribute to organisational effectiveness. Accordingly, the core values, assumptions, beliefs, and political issues that comprise the culture of the organisation shape the design and implementation of HRM policies and practices. For example, HRM cultures can be characterised by a stronger concern for employee welfare and a weaker focus on task performance expectations (Von Glinow, 1985). Performance evaluations in 'caring' HRM cultures focus less on criteria such as in-role performance, and more on criteria of contextual

performance such as teamwork, cooperation and cultural fit (von Krogh, 2003; Zárraga & Bonache, 2005).

HRM systems shape employee attitudes and behaviour mainly through their impact on employees' interpretations of the organisational climate. This refers to the 'more temporary and changeable interpretation of an environment by participants operating within that context' (Ferris *et al.,* 1998: 243). According to Kopelman, Brief, & Guzzo (1990: 296), key dimensions of the organisational climate include: goal emphasis (i.e., types of outcomes that employees are expected to accomplish), means emphasis (i.e., methods and procedures that employees are expected to use in performing their jobs), reward orientation, task support, and socioemotional support (i.e., humane management). A core premise of the social context approach is that the extent to which HR practices affect one or more of the dimensions of the organisational climate depends on the extent to which these practices are internally consistent and reflective of the wider organisational culture. While the HRM-culture linkage is usually present in the formulation of HR policies, the strength of that linkage may be weakened during the implementation of HR practices (Ferris *et al.,* 1998). This can result from 'errors of commission' whereby multiple stakeholders, particularly line managers, may use the HRM system politically to satisfy agendas other than operational effectiveness (ibid.). As Purcell & Hutchinson (2007: 5) note:

> Managers may well not transmit the articulated values of top management but reflect instead the "informal" culture of the firm. While some HR policies may impact on employees directly, most rely on line manager action or support, and the quality of the relationship between employees and their immediate line managers is liable, too, to influence the perceptions not only of HR practices but of work climate, either positively or negatively.

## Conclusion

Based on the review of the literature, there are at least five questions that bear further exploration:

(i) What are the individual and multiplicative effects of employees' experiences of HR practices on their perceptions of a cooperative social climate conducive to knowledge sharing?

(ii) Are these effects mediated by employees' perceptions of management support for knowledge sharing?

(iii) Are employees' perceptions of management support for knowledge sharing related to their perceptions of the effectiveness of the HR function?

(iv) Are employees' perceptions of the effectiveness of the HR function related to their perceptions of a cooperative social climate?

(v) Are employees' perceptions of a cooperative social climate and of the effectiveness of the HR function related to and/or predicted by the same or different HR practices?

Taken together, these questions address: (i) the issue of differential effects of HR practices on social climate, (ii) the issue of expanding the scope of HRM systems to include the role of line managers as strategic HR and KM partners, and (iii) the issue of conflicting messages that hybrid HRM systems may send to knowledge workers. In turn, answers to these issues help shed valuable light on the HRM-knowledge sharing relationship by identifying: (i) the possibility that various HR practices may impact to varying degrees on the creation of a cooperative social climate conducive to knowledge sharing, (ii) the potentially significant role that line managers play not only in fostering such a climate but also in mediating the effect of HR practices on that climate, and (iii) the possibility that employees ascribe the role of 'relationship builder' mainly to line management, and the role of 'human capital steward' (Lengnick-Hall & Lengnick Hall, 2003) mainly to the HR function.

# PART TWO
# Methodology

## Overview

The second part of the thesis contains three chapters which provide a detailed description of the empirical work. Chapter five describes the methodological strategy and design employed to investigate the research hypotheses and questions identified in chapters three and four. The chapter concludes by arguing for the advantages of adopting a mixed methods approach for achieving the research objectives set out in the study. Chapter six details the research process followed in the study including the identification of the target population, the research instruments utilised for the collection of quantitative and qualitative data, and the pilot phase of the research process. It also offers an analytical overview of the methods and techniques by which both qualitative and quantitative data were collected, prepared and analysed. Finally, chapter seven provides an overview of the organisational context within which the research was conducted by outlining the profile of ConsultCo, StateCo, and TeleCo. Based on interviews with the HR and knowledge managers of the three organisations, it also offers a description of the HR practices and KM practices in each of the three organisations.

# CHAPTER FIVE
# Research Paradigms and Methods

## INTRODUCTION

This chapter provides an overview of the methodological strategy and design employed to investigate the research questions and associated hypotheses identified in the previous chapters. The chapter is organised into three sections. The first section focuses on the two dominant research paradigms of positivism and interpretivism followed by an overview of quantitative and qualitative research methods. A third methodological avenue, namely, mixed methods research, is introduced as a promising alternative framework transcending the so-called quantitative-qualitative divide. The second section provides an overview of the research methods used in previous empirical work addressing similar questions. The third section discusses the concurrent nested strategy as the appropriate strategy for the purposes of the study. Following this, the research design, operational instruments, and the supporting rationale for their selection are discussed. The chapter concludes by arguing for the advantages of adopting a mixed methods approach for achieving the research objectives set out in the study.

## I. RESEARCH PARADIGMS AND METHODS

Every research process is underpinned by philosophical assumptions which dispose social scientists towards adopting various paradigms, methodologies, and research tools in the pursuit of their inquiries into social phenomena. This also holds true for research in organisational phenomena (Burrell & Morgan, 1979). According to Kuhn (1962: 162), a paradigm refers to an 'entire set of beliefs, values, techniques, and so on, shared by members of a given community'. It is a 'set of propositions that explain how the world is perceived; it contains a world view, a way of breaking down the complexity of the real world' (Sarantakos, 1993: 30), which informs researchers' choices of 'what is important, what is legitimate, what is reasonable' (Patton, 1990: 37). Burrell & Morgan (1979) have developed a schema for analysing the philosophical assumptions that guide research in the social sciences. This includes ontological assumptions and beliefs concerning the nature of reality, epistemological assumptions about the nature of knowledge and what is possible for one to know, and assumptions about human nature concerning the relationships between human beings and their environment. Other theorists have suggested that a research paradigm also includes

axiological beliefs concerning the role of values and ethics in research (e.g., Greene & Caracelli, 1997).

## Research Paradigms

There are many and diverse theoretical perspectives that have historically influenced the direction, structure, and process of research in the social sciences. However, two research paradigms are most dominant in the literature and have provided the basis for various methodologies. These paradigms are positivism and interpretivism (Sarantakos, 1993; Bryman, 2001). Their main characteristics and underlying assumptions are summarised in table 5.1.

Table 5.1 **Two Dominant Research Paradigms in the Social Sciences**

| Underlying Assumption | Positivism | Interpretivism |
|---|---|---|
| *Reality is…* | -objective<br>-perceived uniformly through the senses<br>-governed by universal laws<br>-well integrated for the good of all | -subjective<br>-created, not found<br>-interpreted |
| *Human beings are…* | -rational<br>-obeying external laws<br>-with no free will | -creators of the world<br>-assigning meanings to the world<br>-not restricted by external laws<br>-creating systems of meaning |
| *Science is…* | -based on strict rules and procedures<br>-deductive<br>-nomothetic<br>-based on sense impressions<br>-value free | -common sense<br>-inductive<br>-ideographic<br>-based on interpretations<br>-value driven |
| *Purpose of research is…* | -to explain facts, causes and effects<br>-to predict<br>-to emphasise facts and prediction | -to interpret the world<br>-to understand social life<br>-to emphasise meanings and understandings |

Source: Adapted from Sarantakos (1993: 38-39)

Historically, positivism has expanded into several branches including logical positivism, methodological positivism, and neo-positivism. Its philosophical assumptions are based on scientific realism, which asserts that reality is objective, and exists independent of the researcher and the ways in which he or she makes sense of the social world (Craig, 1998). The assumptions reflected in positivistic research are based on the notion of mind-independent reality (Popkewitz, 1980). Accordingly, in examining social events, researchers adhere to subject-object dualism in that they stand apart from their subjects and treat them as having independent existence (Wardlow, 1989). In brief, positivism is objectivist and dualist assuming that: (i) 'objective' reality can be captured, (ii) the observer is separated from the observed, (iii) observations are free from situational constraints and therefore universally generalisable, (iv) there are no causes without effects and vice versa, and (v) inquiry is value free (Wolfram Cox & Hassard, 2005: 112).

Interpretivism is related to the foundational works of Dilthey (1976) and foremost of Weber (1949) who placed emphasis on 'verstehen', that is 'the emphatic understanding of human behaviour' (Sarantakos, 1993: 34). On these foundations several theoretical strands have contributed to the development of the interpretive paradigm including phenomenology, symbolic interactionism, social constructionism, ethnomethodology, and hermeneutics. Interpretivism is philosophically rooted in the notion that reality and the social world are construed by assigning meaning to social events. It thus focuses on searching for systems of meaning and interpretation to make sense of the social reality. Knowledge is seen to be comprised of 'multiple sets of interpretations that are part of the social and cultural context in which it occurs' (Kim, 2003: 13). In contrast to positivism, interpretivism is subjectivist assuming that: (i) reality is internally experienced and based on the definition people attach to it, (ii) the observer is 'immersed in the phenomenon of interest' (Firestone, 1987: 17), (iii) observations help to interpret and understand the actors' reasons for social action, and (iv) 'value neutrality is neither necessary nor possible' (Sarantakos, 1993: 36).

## Research Methods

Based on the characteristics and assumptions of the two dominant paradigms outlined above, two principal methodologies, quantitative methodology and qualitative methodology, have emerged in the social sciences[1]. The former is based on positivism, while the latter builds on interpretivism. Quantitative methodology is essentially a nomothetic methodology drawn 'upon systematic protocol and technique' (Burrell & Morgan, 1979: 6). In contrast, qualitative methodology is an ideographic methodology, which 'stresses the importance of letting one's subject unfold its nature and characteristics during the process of investigation' (ibid: 6). As such, it is more fluid in process (Tsoukas, 1989). Some authors appear to favour one methodology over the other. For example, Denzin (1989: 20) suggests that studies based on a nomothetic methodology 'seek abstract generalisation about phenomenon [sic] and offer nonhistorical explanations', while ideographic studies assume 'that each individual is unique' and 'that every interactional text is…shaped by the individuals who create it'. However, as shown in table 5.2, both methodologies have their respective strengths and weaknesses.

[1] A third methodology, critical methodology, which entails Marxist and feminist research, has also emerged among social scientists. However, as Sarantakos (1993: 40) notes, it has not been 'fully accepted in the social sciences as a distinct, clear and independent methodology of the level of the other two'.

Table 5.2 **Strengths and Weaknesses of Quantitative and Qualitative Methodologies**

| Quantitative Methodology | Qualitative Methodology |
|---|---|
| *Strengths* | |
| -Testing already constructed theories about how phenomena occur (i.e., etic view)<br>-Allow generalisations when research has been replicated on different populations<br>-Useful for obtaining data that allow quantitative predictions to be made<br>-Eliminates the confounding influence of many variables allowing assessments of cause-and-effect relationships<br>-Results are relatively independent of the researcher<br>-Useful for studying large numbers of people | -Provides description and understanding of people's personal experiences of phenomena (i.e., emic view)<br>-Can describe in detail phenomena that are situated in local contexts<br>-Useful for understanding how participants interpret 'constructs'<br>-Responsive to local situations, conditions, and stakeholders' views<br>-Responsive to changes that occur during the conduct of a study<br>-Useful for studying a limited number of cases in depth |
| *Weaknesses* | |
| -The researchers' theories and categories that are used may not reflect local constituencies' understandings<br>-The researcher may miss out on phenomena occurring because of the focus on theory or hypothesis testing rather than on theory or hypothesis generation (i.e., confirmation bias)<br>-Knowledge produced may be too general and abstract for direct application to local contexts, settings, and individuals | -It is more difficult to make quantitative predictions, and test theories and hypotheses<br>-It takes more time to collect and analyse data compared to quantitative research<br>-Results are more easily influenced by the researcher's personal biases and idiosyncrasies<br>-Knowledge produced may not generalise to other people or settings |

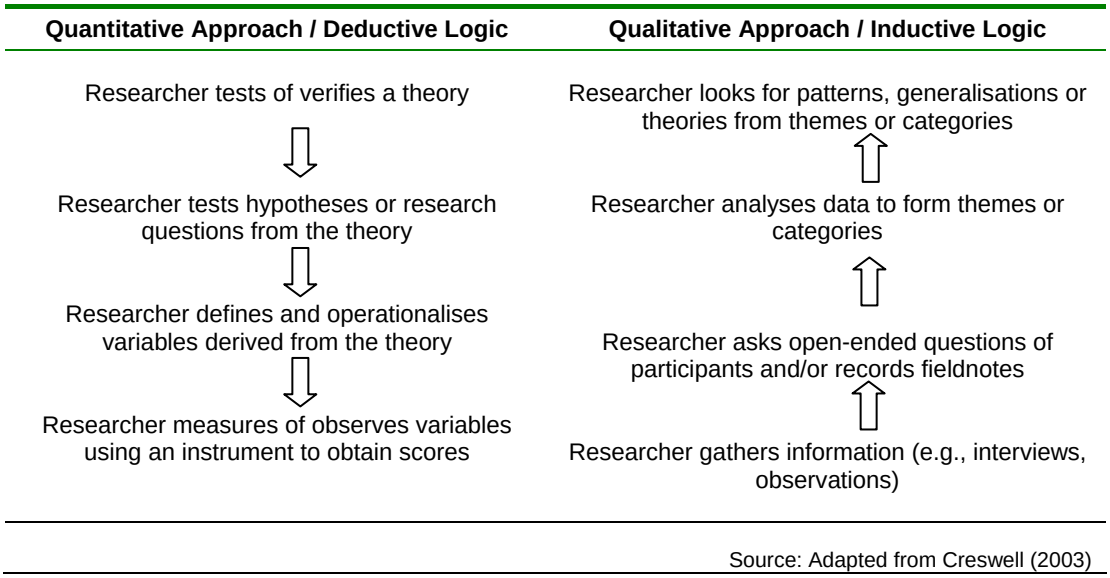
Source: Adapted from Johnson & Onwuegbuzie (2004: 19-20)

The differences between the two methodologies can also be viewed through the lenses of the anthropological dichotomy between 'etic' and 'emic' approaches (Pike, 1967), which are commonly found in studies of organisational culture (e.g., Van Maanen, 1979; Schneider, 1990). An etic or outside perspective is based on 'researcher's imposed conceptual frame of reference' (Wolfram Cox & Hassard, 2005: 114). Etic researchers are more likely to isolate particular aspects of a phenomenon and, by using deductive logic, to formulate hypotheses about its antecedents and consequences (Morris *et al.,* 1999). In contrast, an emic or insider perspective 'aims to understand the participants' frame of reference' (Wolfram Cox & Hassard, 2005: 114), by 'minimizing the use of…analytic labels, abstract hypotheses, and preformulated research strategies' (Van Maanen, 1979: 520).

The theoretical position that a researcher holds about the nature of reality and the philosophies of knowledge which he or she embraces is directly related to the methods adopted in the pursuit of knowledge (Findlay & Li, 1999). For the quantitative researcher, the motivating purpose is theory testing by applying a deductive logic, while for the quantitative researcher the intent is theory building by employing an inductive

logic (Newman & Benz, 1998). An example of the two methodological approaches to social research is presented in figure 5.1.

Figure 5.1 **Quantitative and Qualitative Research Approaches**




Source: Adapted from Creswell (2003)

Differences in the two methodological approaches identified above are often perceived as differences in the quality of social research. This has resulted in the classic 'conflict about which methodology is the best choice for a researcher' (Sarantakos, 1993: 55). In the research community this has taken the form of a heated debate between 'hard' and 'soft' or 'quantitative' or 'qualitative' science (Kim, 2003). This, in turn, is evident in two purist research cultures, 'one professing the superiority of deep, rich observational data and the other the virtues of hard generalisable…data' (Sieber, 1973: 1335, in Johnson & Onwuegbuzie, 2004: 14). Integral to this divide is the incomparability thesis according to which 'quantitative and qualitative research paradigms, including their associated methods, cannot and should not be mixed' (Johnson & Onwuegbuzie, 2004: 14). The purist position is illustrated in Guba's (1990: 81) contention that 'accommodation between paradigms is impossible…we are led to vastly diverse, disparate, and totally antithetical ends'. However, while purist science researchers perceive the two methodologies as incompatible (e.g., Lincoln & Guba, 1985; Guba, 1990; Denzin & Lincoln, 2000), others, who adopt a more integrative approach, argue that these can be combined fruitfully in a single study (e.g., Jick, 1979; Patton, 1990; Tashakorri & Teddlie, 2003; Creswell, 2003; Johnson & Onwuegbuzie, 2004). In line with this view, Newman & Benz (1998: 20) argue that 'neither the qualitative research philosophy nor the quantitative research philosophy encompasses the whole of research. Both are needed to conceptualize research holistically'.

## Mixed Methods Research

Mixed methods is defined as 'the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study' (Johnson & Onwuegbuzie, 2004: 17). Its ontological and epistemological assumptions can be found in the system of pragmatist philosophy (ibid; Morgan, 2007). According to Johnson & Onwuegbuzie (2004: 17), pragmatism offers a useful research avenue both methodologically and philosophically as it: (i) 'offers a practical and outcome-oriented method of inquiry that is based on action and leads, iteratively, to further action and elimination of doubt', (ii) 'offers a method for selecting methodological mixes that help researchers better answer many of their research questions', (iii) represents an 'expansive and creative form of research', and (iv) 'suggests that researchers take an eclectic approach to method selection…in a way that offers the best chance to obtain useful answers'.

Essentially, the mixed methods approach opts for pluralism and pragmatism rather than philosophical purity. It assumes that the research problem rather than a particular philosophical stance should dictate the choice of research methods and procedures (Creswell, 2003). In addition, mixed methods research takes a dialectical position which seeks synergistic benefits from integrating in a complementary way positivist and interpretivist paradigms, quantitative and qualitative methods (e.g., Greene & Caracelli, 1997; Maxwell & Loomis, 2003). The underlying assumption is that mixing methods results in stronger research (Rocco *et al.,* 2003) but also represents an ethical stance towards conducting research by placing emphasis on 'plurality of interests, voices, and perspectives' (Greene & Caracelli, 1997: 14). The main strengths and weaknesses of mixed methods research are summarised in table 5.3.

Table 5.3 **Strengths and Weaknesses of Mixed Methods Research**

| Mixed Methods Research | |
|---|---|
| *Strengths* | *Weaknesses* |
| -Words and narratives can be used to add meaning to numbers; numbers can be used to add precision to words and narrative<br>-Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach<br>-Can provide stronger evidence for a conclusion through convergence and corroboration of findings<br>-Can add insights and understandings that might be missed when only one method is used<br>-Quantitative and qualitative research used together produce more complete knowledge necessary to inform theory and practice | -Can be difficult for a single researcher to conduct both quantitative and qualitative research<br>-Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately<br>-More time consuming and more expensive<br>-Some of the details of mixed research require closer examination (e.g., problem of how to analyse qualitatively quantitative data and vice versa) |

Source: Adapted from Johnson & Onwuegbuzie (2004: 21)

Mixed methods research can be juxtaposed to the quantitative and qualitative approaches along three issues that are central to social research methodology: (i) the underlying logic that guides a research design in relation to how theory is connected to data, (ii) the relationship between the researcher and the research process, and (iii) the inferences made from research results, that is whether results are context-dependent or generalisable. Based on these issues, Morgan (2007) builds on Patton (1990) and offers an organising framework which illustrates how the pragmatic approach translated into mixed methods research can contribute to social science methodology. This framework is presented in table 5.4.

Table 5.4 **Quantitative, Qualitative and Mixed Research Methodology**

| | **Quantitative Methodology** | **Qualitative Methodology** | **Mixed Research Methodology** |
|---|---|---|---|
| *Connection of theory and data* | Deduction | Induction | Abduction |
| *Relationship to research process* | Objectivity | Subjectivity | Intersubjectivity |
| *Inference from data* | Generality | Context | Transferability |

Source: Morgan (2007: 71)

In relation to the first issue, the goal of abductive reasoning is to search for useful points of connection between inductive and deductive reasoning (Morgan, 2007) in order to uncover 'the best set of explanations for understanding one's results' (Johnson & Onwuegbuzie, 2006: 17). This can provide room for a more 'holistic triangulation' by examining 'the same phenomenon under study from multiple perspectives but also to enrich our understanding by allowing for new or deeper dimensions to emerge' (Jick, 1979: 603-604). In relation to the second issue, Morgan (2007: 72) argues that 'intersubjectivity…represents the pragmatic response to issues of incommensurability':

> Rather than treating incommensurability as an all-or-nothing barrier between mutual understanding, pragmatists treat issues of intersubjectivity as a key element of social life…From a methodological point of view, this suggests a "reflexive" orientation where we pay more attention to the social processes that produce both consensus and conflict within our field.

The idea of transferability provides a viable alternative to the issue of whether the use of quantitative or qualitative approaches to research produces results, and consequently knowledge that is either context-dependent or generalisable. Morgan (2007: 72) argues that transferability 'arises from a solidly pragmatic focus on what people can do with the knowledge they produce and not on abstract arguments about the possibility or impossibility of generalizability'.

According to Creswell (2003) there are three key parameters that define the purpose, content, and structure of mixed methods strategies: implementation, priority, and integration. Implementation of quantitative and qualitative methods involves data collection in a sequential or concurrent manner, with priority given to one method over the other or both having equal status. A mixed methods research design requires that the two types of data should be mixed or integrated at one or several stages during the research process depending on whether one follows a sequential or concurrent strategy. Based on these parameters, Creswell (2003) outlines the following six mixed methods research strategies: sequential explanatory strategy, sequential exploratory strategy, sequential transformative strategy, concurrent triangulation strategy, concurrent nested strategy, and finally concurrent transformative strategy.

Based on a sample of 232 articles in five fields of the social sciences, including management and organisational behaviour (23%), published between 1994 and 2003, Bryman's (2006) study has recently investigated the ways by which quantitative and qualitative methods are combined in research. This study shows that 57% of the sample was based on a combination of a survey instrument and qualitative interviewing. In terms of research design, almost 42% of the articles included both a survey instrument and qualitative interviewing within a cross-sectional design for the collection of quantitative and qualitative data respectively. An interesting finding of Bryman's (2006) study is that for around 27% of the articles, quantitative and qualitative data collection was not based on the administration of separate instruments. According to Bryman (2006: 103), this may not correspond to a true combination of quantitative and qualitative research 'because one will tend to be subordinate to the other…since the data have not been gathered in line with its underlying principles'.

According to the mixed methods research, there are five purposes for combining qualitative and quantitative research methods in a single study (Greene *et al.,* 1989). These are triangulation, complementarity, development, initiation, and expansion. The effectiveness of triangulation is based on the premise that 'the weaknesses in each single method will be compensated by the counter-balancing strengths of another' (Jick, 1979: 604). Complementarity 'seeks elaboration, enhancement, illustration, clarification, of the results from one method with the results from another' (Greene *et al.,* 1989: 259). Development uses the 'results from one method to help develop or inform the other method' (ibid.). Initiation 'seeks the discovery of paradox and contradiction' (ibid.). This search for 'new insights' (ibid: 260) is likely to emerge than be planned into the research process. Finally, the aim of expansion is to widen the

scope of inquiry by 'using different methods for different inquiry components' (ibid: 259).

## II. DETERMINING AN APPROPRIATE RESEARCH FRAMEWORK

The epistemological basis of much research in the social sciences has been positivism. In fact, positivism has been the oldest and still influential mode of inquiry in the social sciences (Sarantakos, 1993). The tem 'social sciences' incorporates both psychological and organisational approaches to research. From an ontological perspective, this research tends to adopt a realistic stance on predicting and explaining 'what happens in the social world by searching for regularities and causal relationships between its constituent elements' (Legge, 1995: 308). Hence, In terms of its methodological approach, it is 'hypothetico-deductive' (ibid.). Legge (1995: 308) observes that 'to a greater or lesser extent this is the logic that reigns in much of the research on HRM'.

However, in organisation and management studies, qualitative approaches have also been used since their inception almost a century ago. More specifically, in the field of industrial and organisational psychology researchers have more recently shifted their attention to the possibilities for inquiry based on those approaches (Locke & Golden-Biddle, 2002). In the field of management studies, Karami, Rowley & Analoui (2006) explored the nature of the methodology employed in 120 articles published in 20 leading management journals between 1991 and 2000. Their study found that, despite the wide range of methods employed in management research, 'the dominance of questionnaires [69%] as data collection tools suggests a leaning towards positivism'. However, it was found that more qualitative approaches, methodologies and tools such as case studies and open-ended interviews were also used suggesting that scientists acknowledge the utility of those approaches for management research.

### Research Paradigms and Methods in KM, Social Capital and HRM

Creswell (2003) suggests that the choice of a paradigm adopted by researchers depends upon the 'worldview' that exists within their discipline. Hence, the paradigm chosen depends largely on the ways in which previous studies have addressed similar problems, existing theories in the area, research questions, known variables, and the extent to which validated measures have been developed to assess those variables. In addition, practical factors such as time constraints, access opportunities and availability of resources should also be taken into account.

Research on KM can be viewed through two main paradigms, namely the technological or computational paradigm, and the socio-organisational or organic paradigm (Hazlett *et al.,* 2005). The former is placed in the domain of Information Systems (IS) research. It is based on predefined assumptions and models, and characterised by heuristics and mathematical models developed to deal with hardware and software issues. In this sense, it represents a '"hard-wiring" approach to KM that is typified by the institutionalisation of "best practices" that is fine for routine, linear, and predictable solutions' (ibid: 37). Chen & Hirschheim (2004) assessed the methodological trends in IS research in a study of 1,893 published articles in eight major IS journals between 1991 and 2001 and identified the dominance of a positivist paradigm accounting for 81% of empirical research. In terms of methodological approach, 60% of this research was characterised as quantitative, 30% as qualitative, and 10% characterised as a combination of quantitative and qualitative. In addition, survey research was found to be the most widely used method accounting for 41% followed by case studies, laboratory experiments, action research, and field experiments accounting for 36%, 18%, 3%, and 2% respectively.

The socio-organisational paradigm, without rejecting the role of technology, places explicit emphasis on people and organisational related issues within the wider KM field. It seeks to understand the role of behavioural aspects of knowledge work, employees' social networks, work structures and practices, and organisational culture in knowledge processes and outcomes (Hazlett *et al.,* 2005).

Empirical studies examining socio-relational aspects of knowledge transfer and sharing within the socio-organisational paradigm have employed either quantitative methods (e.g., Hansen, 1999; Cross & Borgatti, 2004; Levin & Cross, 2004), or qualitative methods (e.g., Andrews & Delahaye, 2000) or a combination of both (e.g., Cross & Sproull, 2004). Non-codified or tacit knowledge has been measured quantitatively using a survey method (e.g., Hansen, 1999; Sternberg *et al.,* 2000; Levin & Cross, 2004; Holste & Fields, 2005). Tacit knowledge sharing has also been examined in qualitative case studies (e.g., Desouza, 2003). A mixed methods approach to investigating tacit knowledge flows has been employed by Busch *et al.* (2003). These researchers initially applied a survey method followed by a formal concept analysis to represent results visually and social network analysis (SNA) to map tacit knowledge flows between individuals in order to provide a qualitative interpretation of those results.

Research on trust and knowledge transfer and sharing is predominantly of a quantitative nature utilising self-report questionnaires for measuring trust and its impact on knowledge transfer outcomes (e.g., Levin & Cross, 2004; Szulanski *et al.,* 2004; Chowdhurry, 2005; Holste & Fields, 2005; Li, 2005; Levin *et al.,* 2006; Mooradian *et al.,* 2006). A smaller number of qualitative studies have examined relational and cognitive aspects of social capital and their role in knowledge transfer and sharing by employing an interpretive, case study based methodology utilising on-site observation, semi-structured interviews and informal dialogues (e.g., Bresnen *et al.,* 2003, 2004; Huang & Newell, 2003; Edelman *et al.,* 2004).

The research domain examining the links between HR practices, social capital, and knowledge transfer and sharing within organisations is characterised by empirical studies adopting a variety of methodological approaches and data collection tools. For example, Collins & Smith's (2006) recent investigation of the links between commitment oriented HR practices, social capital, knowledge exchange, and organisational performance adopts a quantitative methodology utilising self-report questionnaires to collect data from a large sample of manufacturing organisations in the USA. Similarly, studies by Yahya & Goh (2202), Zárraga & Bonache (2003) and Minbaeva (2005) are hypothetico-deductive, based on cross-sectional design, and quantitative data collection techniques including self-report questionnaires. In contrast, other studies such as that by Swart & Kinnie (2003) are case-based and characterised by a grounded theory methodology utilising semi-structured interviews for data collection. Other case-based studies, such as that by Currie & Kerrin (2003) combine both quantitative and qualitative data collection techniques including questionnaires, logbooks, and semi-structured interviews. A similar approach has been adopted in Hunter *et al's* (2002) study of KM and HRM practices in Scottish law firms.

Based on the above, it is clear that 'there is no "right" methodology' (Sarantakos 1993: 56). Instead, as Sarantakos points out:

> Quantitative and qualitative methods are the tools of trade for social scientists, who use them according to the circumstances, that is, according to the research question, the available resources, the research conditions and most of all the type of information required. The two methods are different, they serve different research needs and produce equally useful but different forms of data (ibid: 56).

In a sense, as Sarantakos (1993: 33) further argues, 'methods are a-theoretical and a-methodological...The same methods can be used in the context of different methodologies, and the same methodology can employ different methods'. For

example, interviews can be used both in a quantitative and qualitative methodology. In the former case, interviews are structured and standardised, whereas in the latter case they are designed in an unstructured and open manner. Bryman (2006: 111) argues against the dichotomisation of quantitative and qualitative research. Instead, he suggests that when both approaches are conducted imaginatively 'can result in new understandings'. In addition, when both research approaches are 'conducted in tandem, the potential – and perhaps the likelihood – of unanticipated outcomes is multiplied' (ibid.). This is consistent with the expansion criterion of mixed methods approach, which calls for combination of quantitative and qualitative components to 'extend the breadth and range of the study' (Greene & Caracelli, 1997: 259).

## III. THE RESEARCH STRATEGY AND DESIGN

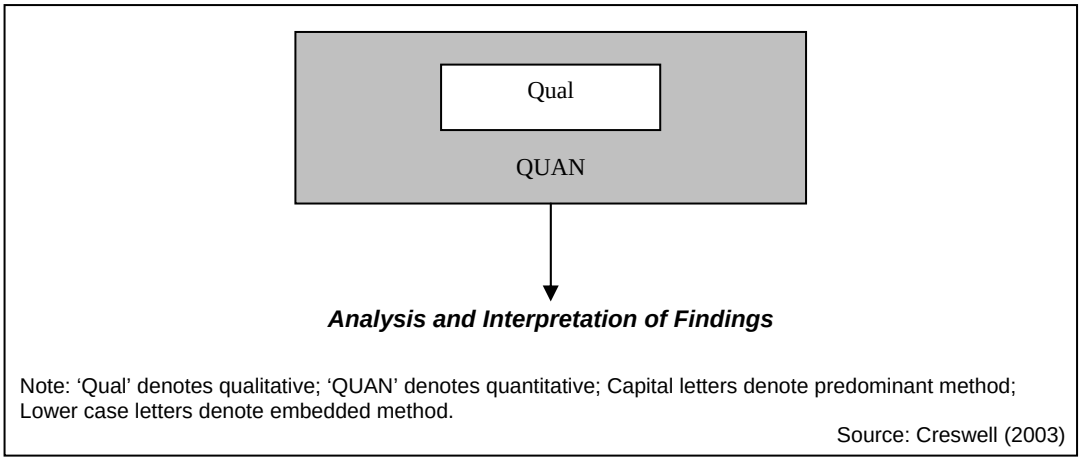
A number of criteria were considered to determine the research strategy and design. These included: (i) the degree of fit between research objectives, methodological choices available to the researcher, and appropriate type of data required to meet those objectives, (ii) the extent to which findings are comparable to those of previous studies addressing similar questions, (iii) appreciation of the possibility of yielding unanticipated findings, (iv) a belief in pluralistic research, and (v) practical issues such as time constraints and available resources. According to these criteria, it was decided to adopt a mixed methods research strategy incorporating both quantitative and qualitative methods and data collection techniques. On this basis, the research design included a self-report questionnaire survey and semi-structured interviewing respectively.

### The Research Strategy

Consistent with a mixed methods approach, a concurrent nested strategy (Creswell, 2003) was adopted with the primary aim to gain broader insights than would be achieved by using a single mode of inquiry. In terms of the key parameters of implementation, priority, and staged integration that apply to mixed methods research (ibid.), the concurrent nested strategy, as illustrated in figure 5.2, was designed as follows: First, in relation to implementation, separate instruments were developed to collect quantitative and qualitative data simultaneously from different sources corresponding to different levels of analysis; second, in terms of priority, the quantitative method was the predominant method within which the qualitative method was embedded; and third, in terms of staged integration, quantitative and qualitative findings were integrated at the analysis and interpretation phase of the research process. The rationale behind the adoption of the concurrent nested strategy is

explicated in the following sub-sections, which correspond to the five choice criteria identified above.

Figure 5.2 **Concurrent Nested Strategy**



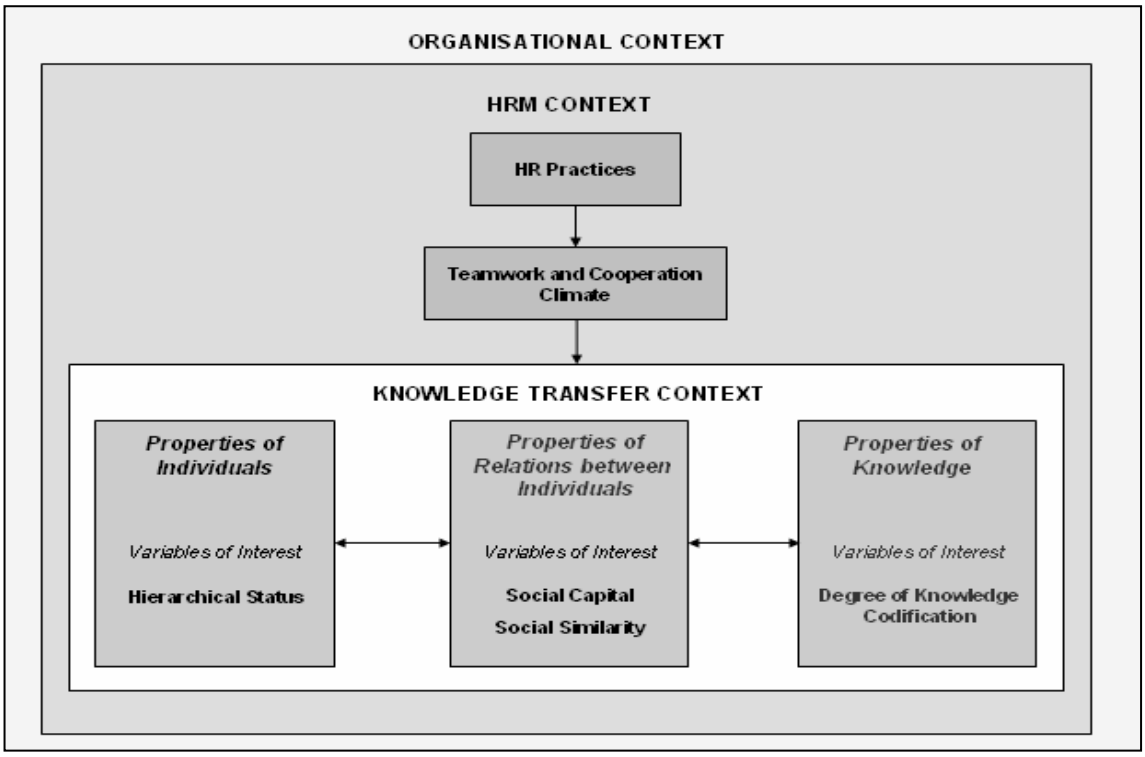

Note: 'Qual' denotes qualitative; 'QUAN' denotes quantitative; Capital letters denote predominant method; Lower case letters denote embedded method.

Source: Creswell (2003)

**Achieving Fit between Research Objectives, Methods and Type of Data**

Consistent with the purpose of 'complementarity' that characterises the concurrent nested strategy, a clear distinction was drawn between the predominant quantitative method and the embedded qualitative method with respect to their research objectives and type of data required to meet those objectives (Creswell, 2003). The first objective is to identify the combined effect of the three pillars that compose the integrative model of interpersonal knowledge transfer explicated in chapter three (see figure 5.3).

Figure 5.3 **Conceptual Model of the Present Study**



The aim here is to unpack the causal links between the theoretically driven and empirically validated social capital variables (i.e., properties of relations) and knowledge transfer effectiveness and efficiency by taking into account the type of knowledge transferred (i.e., properties of knowledge), the role of social similarity (i.e., properties of relations), and hierarchical status (i.e., properties of individuals). Quantitative methods were considered appropriate to examine those links. All variables under the three pillars were therefore operationalised into concrete, quantifiable constructs that had been used in previous empirical research. By doing so, it is feasible to gain an analytical and comparative understanding of the direct and indirect causal relations between social relationships and knowledge transfer that would not be possible by applying ideographic approaches.

The second objective is to determine the effects of theoretically driven components of the HRM system on aspects of organisational climate of teamwork and cooperation conducive to knowledge transfer and sharing (see figure 5.4). The aim here is to determine the extent to which individuals' experiences of work design, HR practices and management support for knowledge sharing have a positive or negative impact on their perceptions of teamwork and cooperation climate. Similar to the first research objective, quantitative methods were therefore employed to assess the magnitude of those relations. However, given the lack of available measures on HR practices, it was necessary to develop a number of valid and reliable measures for those practices.

The third objective is to elaborate on the contextual influences on the relations as observed in the empirical testing of the research questions and hypotheses corresponding to the two objectives outlined above. The aim is to gain broader perspectives on the HR infrastructure and wider organisational factors than would be achieved by relying on the predominant quantitative method alone. Qualitative methods of inquiry, such as semi-structured interviewing, were deemed appropriate here in that they can complement, enrich, and extend understanding by gathering information on the role of the KM, HRM, and wider organizational context within which social relationships and knowledge transfer activities take place. This relies on explanations embedded in elaborated responses collected from key informants whose elaborations can provide insights into the 'how' and 'why' of organisational phenomena (Yin, 1994). Therefore, in order to obtain a rich account of those factors it was decided to focus on contextual descriptions provided by KM and HR managers.

**Comparability of Findings to Previous Studies**

The extent to which the findings of the study can be compared to those of previous empirical research addressing similar questions was taken into account in deciding the appropriate research strategy. The concurrent nested strategy allows for quantitative and qualitative comparability with existing studies utilising quantitative and/or qualitative frameworks respectively.

**Appreciation of Unanticipated Findings**

Consistent with the 'initiation' or 'holistic triangulation' purpose of mixed methods research (Jick, 1979; Greene *et al.,* 1989), the analysis and interpretation of quantitative and qualitative findings is likely to emerge with new perspectives as well as inconsistencies and contradictions that would not be easily identified by drawing upon a single methodological approach or pool of respondents. Greene *et al.* (1989: 268) suggest that 'purposive sampling of particular cases with random sampling for survey or other structured data collection' represents a combination that can 'maximize both discovery and generalizability'. Initiation is encouraged in the study by searching for 'fresh insight…rather than seeking confirmatory evidence' (Rossman & Wilson, 1985, in Greene *et al.,* 1989: 257). Hence, the purpose of initiation here is to first juxtapose the views of KM managers with those expressed by HR managers; and second to unravel both similarities and inconsistencies of findings obtained from the predominant quantitative method with findings obtained from the embedded qualitative method.

**A Pluralistic Approach to Research**

The concurrent nested strategy 'endorses eclecticism and pluralism', which is integral to a pragmatist methodological approach to conducting research (Johnson & Onwuegbuzie, 2004: 14). The purpose of a pluralistic approach here is to reflect on employee perceptions along with views expressed by KM managers and HR managers in order to understand the relative importance ascribed to knowledge transfer and sharing by those groups. In addition, a pluralistic research approach enables the exploration of the role of variables potentially relevant to the links between social capital, knowledge transfer, and HR practices for which no established associations may have been identified in previous research. Essentially, a pluralistic approach builds on the strengths of the concurrent nested strategy by gaining new perspectives from different types of data that reflect different levels within the study (Creswell, 2003). The combination of quantitative and qualitative methods and data collection techniques applied separately to distinct groups is congruent with a focus on a multi-level understanding of the three research objectives outlined above.

### Practical Considerations

One of the advantages of concurrent nested strategy is that quantitative and qualitative data collection can be done simultaneously. This can provide considerable time savings. In addition, the development and administration of separate data collection instruments targeted at distinct groups represents an effort to combine quantitative and qualitative research in a genuine manner by minimising confounding effects that would result from gathering data in a way inconsistent with their underlying methodological principles (Bryman, 2006).

## The Research Design

Consistent with the concurrent nested strategy described above, the research design included two main data collection techniques: First, a self-report questionnaire was developed with the aim to gather quantitative data pertinent to the first two research objectives. Second, semi-structured interviewing was employed to gather more qualitative and contextual information in line with the third research objective. In addition, secondary information was also collected.

### Questionnaire Survey

A self-report questionnaire survey was developed to measure the variables of interest falling under the first two research objectives. It incorporated a number of instruments through which quantitative data was collected on all the variables of interest. The questionnaire consists of a variety of both previously validated instruments and measures developed specifically for the purposes of the study. All measures involve self-report perceptions where respondents quantify whether, how often or how intensively they experience the phenomena under study. The questionnaire was designed in both electronic and paper format to adapt to the preferences of respondents thereby yielding higher response rates than would be achieved by relying solely on a single response mode (Schonlau, Fricker & Elliott, 2002).

In relation to the first research objective, standard egocentric network techniques (Scott, 1990; Wasserman & Faust, 1994) were applied to measure characteristics of the relationship between the knowledge seeker (respondent) and knowledge sources as perceived by the former. Respondents were first asked to identify a project that they had currently been involved with or in the last three months that held significance for them and/or their organisation (Cross & Sproull, 2004; Levin & Cross, 2004). They were then asked to list up to 10 people within their organisation to whom they turned for information and advice to get their work done at that specific project. In order to get

a balanced view of each respondent's network, respondents were asked to select the most helpful and least helpful knowledge provider from their initial list (Levin & Cross, 2004). Respondents were asked questions on their relationships with those two individuals, the type of knowledge received from those individuals, and the extent to which this knowledge had a positive or negative impact on the efficiency and effectiveness of their project work.

In relation to the second research objective, respondents were asked to indicate their experiences of work design, HR practices, management support for knowledge sharing, and their perceptions of teamwork and cooperation climate within their organisation. Given the lack of available measures for HR practices of interest to the purposes of the study, new scales were developed by the researcher. All measures included in the questionnaire are detailed in Chapter Six.

**Benefits and Limitations of Questionnaire Survey**

There are a number of benefits and limitations associated with the questionnaire survey method (Kerlinger, 1986; Fowler, 1988). The cost of administering surveys is relatively low, and respondents have time to think about their answers. Surveys promote anonymity and confidentiality, provide access to widely dispersed respondents, and minimise the potential for interviewer bias. Questionnaires can be standardised, tested and validated producing large amounts of data from sample populations. These can be analysed by applying rigorous and sophisticated statistical techniques, and inferences can be made for a wider population. In this sense, quantitative data gathered through questionnaire survey research is regarded as relatively accurate (Kerlinger, 1986). There are, however, a number of limitations including the potential for poor response rates, lack of opportunities to probe (Kidder, 1981), and lack of interviewer control (Fowler, 1988).

A main issue in using self-report measures is mono-method bias or common method variance (Campbell & Fiske, 1959; Fiske, 1982; Podsakoff & Organ, 1986; Podsakoff *et al.,* 2003). This is defined as the 'variance attributable to the measurement method rather than the constructs the measures represent (Podsakoff *et al.,* 2003: 879). Potential sources of common method bias usually result from the fact that predictor and outcome variables are obtained from the same respondents. In this case, common method bias can result from consistency motif, social desirability, leniency biases, acquiescence with response set, and transient mood states (Podsakoff & Organ, 1986; Podsakoff *et al.,* 2003). Item characteristics can also have an effect on common

method bias. This can result from item complexity and/or ambiguity, use of negatively worded items, and scale formats (ibid.).

Podsakoff *et al.* (2003) recommend a number of procedural and statistical remedies for controlling common method bias. In relation to the first, a study may be designed so that measures for criterion and outcome variables are obtained from different sources. When this is not possible, measures for those variables can be separated by applying temporal, proximal, psychological or methodological separation. A further procedural remedy is to ensure anonymity and reduce evaluation apprehension. Counterbalancing the order of the measurement of criterion and outcome variables can also help minimise common method bias, such as the outcome variable following, rather than preceding, the criterion variables (Salancik & Pfeffer, 1977; Podsakoff & Organ, 1986). Finally, common method bias attributed to item characteristics can be avoided by improving scale items. For example, acquiescence bias can be reduced by avoiding ambiguity, use of bipolar numerical scales, and negatively worded items (Idaszak & Drasgow, 1987; Tourangeau *et al.,* 2000).

Statistical remedies can also be used to deal with common method bias. In particular, Harman's single-factor test is one of the most common tests available for diagnosing common method variance (Podsakoff & Organ, 1986; Podsakoff *et al.,* 2003). According to this test, all variables of interest are hypothesised to load on a single factor that represents the common method. If a substantial amount of bias exists then a single factor is most likely to emerge from the factor analysis or one general factor will amount for the majority of covariance among the measures. Although the results of Harman's test do not exclude the possibility of common method bias, they provide an indication that it is not of a major concern.

**Interviews**

Interviews were utilised as the method for collecting qualitative data pertinent to the third research objective; that is to obtain a contextual understanding of the KM, HRM and wider organisational factors by which social relationships and knowledge transfer and sharing are likely to be influenced. Two separate interview schedules were designed in a semi-structured format: one for KM managers and the other for HR managers. Both schedules included shared elements to allow comparisons between KM and HR managers' views on common issues.

The KM interview schedule included a structured section in which interviewees were asked close-ended questions to prioritise various definitions of knowledge workers provided by Horwitz *et al.* (2003). On this basis, they were also asked to identify which and in what proportions employees could be described as knowledge workers (ibid.). The less structured part included open-ended questions on a number of KM issues such as KM strategy, people-related aspects of KM, KM and HRM, social relationships and their role in knowledge sharing, cultural and IT factors associated with knowledge sharing, KM and management support. In addition, KM managers were asked to provide examples of project-based work activities in which the role of social capital in knowledge sharing could be identified. Furthermore, their views of the role of the HR function in supporting KM initiatives were also sought. Given the exploratory aim of the interviews, the design was decided to be flexible seeking rich, contextual information on the above issues as well as allowing interviewees to raise issues that may have not been identified in the interview schedule.

A similar design was followed for the HR interview schedules. These included a structured part in which HR managers were asked to provide an overview of their workforce in terms of employment categories and status, and turnover rates. Interviewees were also asked to prioritise various definitions of knowledge workers (ibid.). Following this, the interview schedule included more open-ended questions focusing on gathering information on the full array of HR practices, and particularly on those practices related to social relationships and knowledge sharing issues. Questions were also included in order to obtain HR managers' views of the role of the HR function in supporting KM initiatives.

In summary, the aim of the interview schedules was to gain a wider and comparative organisational-level understanding of the associations between KM and HR issues with emphasis placed on the role of social capital in knowledge transfer and sharing.

**Secondary Information**

Secondary resources in the form of internal reports, HR manuals, power point presentations and other useful material was collected to complement the qualitative data gathered from the interviews. The aim of this material was to help obtain an understanding of the characteristics of the participating organisations in terms of their products and/or services, workforce, business strategy, values and mission as well as on issues related to HR and KM practices.

## IV. CONCLUSION

This chapter has provided an analytical overview of the methodology, research strategy and design that were employed to meet the research objectives of the study. The choice of a concurrent nested strategy is based on a mixed-methods research approach. This is consistent with the philosophical system of pragmatism under which the notion of knowledge is viewed as inextricably linked to human action and the social context within which this occurs. Essentially, pragmatism is an outcome-oriented type of inquiry calling for plurality and eclecticism rather than philosophical purity in the choice of methods and research tools.

The concurrent nested strategy was identified as a suitable methodological approach for the multi-fold objective of the study. Its main strength lies in that it can be implemented simultaneously providing advantages of both quantitative and qualitative methods. In addition, it can be used to gain perspectives from different types of data as well as from different sources and levels of analysis (Creswell, 2003). In the present study, the predominant method was operationalised with the use of a self-report questionnaire survey, whereas the embedded method was operationalised with the use of semi-structured interviews. The two methods correspond to three distinct, yet interrelated research questions. First, the predominant method seeks to offer a micro (individual and dyadic) level understanding of the impact of social capital on knowledge transfer; and second, it aims at identifying the effect of employees' experiences of HR practices on teamwork and cooperation climate. The embedded method seeks to expand on the above by offering a macro-level explanation of the HR and wider organisational context within which social relationships and knowledge sharing occur. The results stemming from each of the two methods are integrated into the analysis and interpretation stage of the research process with the aim to gain an intersubjective and multi-level understanding of the interrelations between social capital, knowledge transfer/sharing, and HR practices that would not be feasible by relying on a single method of inquiry. A detailed description of the research process is presented in the following chapter.

# CHAPTER SIX
# The Research Process

## INTRODUCTION

The aim of this chapter is to detail the research process followed in the study. The chapter is organised into four sections. An overview of the target population is provided in the first section. The second section describes the research instruments utilised for the collection of qualitative and quantitative data. The pilot phase of the research process is outlined in the third section. The fourth section offers an analytic overview of the methods and techniques by which both qualitative and quantitative data were collected, prepared and analysed. The chapter concludes with a summary of the research process.

## I. IDENTIFICATION OF POPULATION

The population of interest included core employees with relatively valuable and unique human capital representing the knowledge base on which knowledge-intensive organisations are most likely to build their strategic advantage (Lepak & Snell, 2002). The term 'knowledge-intensive' applies not only to single firms or industries but more importantly encompasses the social recognition of knowledge-intensiveness by employees, management, clients, and other stakeholders including the informed public (Alvesson, 2004). In this view, 'it is perhaps the claim to knowledge-intensiveness that is highly distinctive of KIFs compared with many other (average) companies' (ibid: 29). Hence, the target population included organisations claiming and being recognised internally and externally for placing emphasis on the strategic role of knowledge in creating business value. This was expected to be reflected in the existence of some form of a KM system or KM initiative or, at least, in organisational values and/or mission statements in which the importance of knowledge as a strategic asset was expressed. The target organisations were also expected to have well-established HR policies and practices the impact of which would be recognised by both management and employees. In order to increase the generalisability of the study, it was deemed appropriate to pursue a cross-sectional sample reflecting well-defined categories of knowledge-intensive organisations including professional service firms, high-tech firms (Alvesson, 2004), and the less examined category of public sector organisations.

An extensive search for potential participant organisations was first conducted by visiting the websites of various knowledge-intensive organisations located in Ireland.

The aim was to gather information on corporate profiles including products and services, corporate structure and culture, and employment practices. Information was gathered in the form of annual reviews, press releases, overviews of HR policies and practices, corporate values and mission statements, and employees' profiles. An initial pool of organisations fitting the criteria for the target population was selected. This consisted of two professional service firms, two IT companies, two telecommunication companies, a pharmaceutical firm, a semi-state business development agency, and a bank. A research proposal was prepared in which the aim, objectives, required resources and timing of the research were outlined along with the anticipated benefits for the participating organisations.

The Dublin City University Alumni was utilised to explore the possibility of contacting key informants within the aforementioned organisations and negotiate access. On this basis, three Irish-based organisations agreed to participate in the study. The pseudonyms TeleCo, ConsultCo, and StateCo are used to refer to the three organisations. An overview of each organisation in terms of its ownership, size, operations, structure, and workforce characteristics is provided in chapter seven.

## II. DESIGN AND DEVELOPMENT OF RESEARCH INSTRUMENTS

Two main research instruments were developed to collect data from the participant organisations (See Appendices A and B). First, interview schedules were designed for collecting mainly qualitative data from the HR managers and KM managers. Second, a self-report questionnaire was developed to collect quantitative data from the employees within the three organisations. The two instruments are described below.

### Interview Schedules

Two interview schedules were designed; one for the HR managers and the other for the KM managers. The interview schedules included shared elements based on which it was possible to draw meaningful comparisons between HR managers' and KM managers' views on common issues. For example, both HR and KM managers were asked to select from a list of five definitions of knowledge workers (Horwitz *et al.*, 2003) the most important factors that differentiate their core employees as knowledge workers. Each of the five definitions placed emphasis on distinct characteristics of knowledge workers such as contribution to knowledge creation, willingness to share knowledge, use of abstract reasoning, understanding of key requirements of process design, and ability to use conventional scientific methods as well as intuitiveness and imagination. The managers were asked to indicate the proportion of employees within

their organisation who could be described as knowledge workers. In addition, a number of questions were designed to juxtapose HR and KM managers' views on key issues such as knowledge sharing and knowledge integration across the organisation, the role of HR function in facilitating KM processes, and the role of senior and line management in supporting KM initiatives.

The HR interview schedule included questions on the HR practices within each firm, as well as on strategic aspects of HRM, such as its role in supporting the wider business strategy, and also the future challenges for the HR function. Finally, questions on how project work was organised in the organisations were also included in the interview schedule. The KM interview schedule included questions on the historical background of KM initiatives, strategic aspects of KM, links between KM and management support as well as on KM and IT respectively. Questions were also asked on the relationship between KM and HRM, and project management issues (Edelman *et al.,* 2004). Finally, KM managers were asked to express their views on the future challenges for KM in their organisations.

### Questionnaire Design

The questionnaire survey was developed to ensure content clarity, ease of use, confidentiality and anonymity, high response rate, and to minimise the effects of common method bias (Roberson & Sundstrom, 1990; Dillman, 2000; Schonlau, Elliott & Fricker, 2002; Podsakoff *et al.,* 2003; Diaz de Rada, 2005). The questionnaire was designed in an electronic format. However, it was decided to include a paper version in order to reduce opt-out that may be caused by technical factors (e.g., unexpected technical problems that could create difficulties in accessing the on-line survey) or personal factors (e.g., reluctance to complete on-line surveys based on fear of confidentiality being breached) (Morrel-Samuels, 2003). Surveys using both a mail and electronic response mode tend to have higher response rates than those using just one or the other (Schonlau, Elliott & Fricker, 2002).

The paper questionnaire was designed in a booklet format (Dillman, 2000). Given its relatively lengthy size, particular emphasis was placed on the structure of the questionnaire. Roberson & Sundstrom (1990) suggest that special attention should be paid to the beginning items of questionnaire surveys. This is due to the 'completion tendency' phenomenon (Martin & McConnell, 1970) according to which 'once the participant has been "hooked" into completing part of questionnaire, he or she is more likely to finish and return it' (Roberson & Sundstrom, 1990: 357). Hence, it was decided

to adopt a funnelling approach in order to engage the interest of respondents quickly (Peterson, 2000). Roberson & Sundstrom's (1990) study of approximately 1,200 office employees in the USA suggests that surveys in which the topics are prioritised according to respondents' interests yield substantially higher return rates than surveys in which the topics are randomly prioritised. The same study also indicates that it is more likely to obtain higher return rates when demographic details are located at the end of the questionnaire. Schwab (2005) suggests asking for demographic information last since respondents are often reluctant to provide personal information. Asking for it last also increases that it will be provided as respondents will have already completed the earlier part of the questionnaire (ibid.).

Consistent with this approach, it was decided to structure the questionnaire into three parts. The focus of the first part was on attracting respondents' interest quickly by asking them to identify a project in which they were involved currently or in the short past that held importance for them and/or their company. Following this, the first part included the measures for relational demographics, social capital, knowledge transfer effectiveness and efficiency, and type of knowledge transferred. The second section asked respondents to indicate their experiences on work design, HR practices, and management support for knowledge sharing as well as their perceptions of teamwork and cooperation climate and the effectiveness of the HR department. Demographic questions were finally placed at the third part of the questionnaire. Special attention was paid to issues of validity related to the social capital and knowledge transfer measures requiring respondents to report on past events. In order to reduce recall problems and biases, the reference period was narrowed to three months (Levin & Cross, 2004). In addition, key words were used as reference points in order to increase accuracy of responses to past events (Converse & Presser, 1986).

The on-line version of the questionnaire was tested for compatibility with different operating systems, web browsers, and other interfaces that the application was intended to be used on. Respondents could access the on-line questionnaire through a Uniform Resource Locator (URL). To facilitate ease of navigation, modes of interaction enabled respondents to use a combination of radio buttons, check boxes, and text input boxes. To minimise loss of information, selections were automatically stored as respondents processed through the sections of the questionnaire. If any items were left uncompleted, respondents were redirected back to those unanswered questions before they were able to submit successfully the questionnaire. At the point of submission,

respondents' answers were processed and stored in a database. The researcher could then retrieve and view the answers through a dedicated and secure URL.

## Questionnaire Development

In order to develop the questionnaire, relevant measures for all the variables in the study were sourced from existing studies or developed by the researcher. All measures are described below.

### Tie strength

Tie strength represents the structural dimension of social capital. Given the focus of the study on work-based relationships within organisations, it was considered appropriate to use a measure that would reflect a work-related meaning of tie strength between knowledge seekers and knowledge providers. Based on a thorough review of the social networks and social capital literature (e.g., Granovetter, 1973; Wellman, 1982; Marsden & Campbell, 1984; Krackhardt, 1992; Tsai & Ghoshal, 1998; Hansen, 1999), it was considered appropriate to use Levin & Cross' (2004) three-item construct. This is an enhanced version of Hansen's (1999) two-item scale. Rated on a 7-point Likert-type scale, it measures tie strength at the interpersonal level of analysis along three dimensions: closeness of working relationship, communication frequency, and interaction frequency. In line with Levin & Cross (2004), the first two items were reverse coded. Since each of the three items used a different scale, it was normalised before creating the overall variable. In Levin & Cross' (2004) study, tie strength exhibited a satisfactory reliability of .90.

### Interpersonal Trust

Interpersonal trust represents the relational dimension of social capital. Two main approaches to the measurement of interpersonal trust are identified (e.g., McKnight, Cummings & Chervany, 1998; Shamir & Lapidot, 2003). The first, namely character-based approach, focuses on trustor's beliefs about the trustworthiness of the trustee, which include positive expectations about their motivations, intentions and behaviours (e.g., Butler, 1991). The second, namely relationship-based approach, focuses on trustor's behavioural intentions, which reflect their willingness to engage in trusting behaviour with the trustee (e.g., Currall & Judge, 1995). According to these approaches, trustworthiness is viewed as antecedent or condition of trust and behavioural intentions as indicators of the actual level of trust respectively (Shamir & Lapidot, 2003).

Consistent with a relationship-based rather than a character-based perspective of trust (Dirks & Ferrin, 2002), a behavioural approach to the definition and thus measurement of interpersonal trust was adopted (e.g., Currall & Judge, 1995; Gillespie, 2003). Accordingly, trust is viewed as the individual's willingness to engage in trusting behaviour in their relationship with another person, which is distinguished from the perceptions of this person's trustworthiness (Mayer, Davis & Schoorman, 1995).

It was decided to use a validated instrument specifically designed to measure trust in terms of individuals' willingness to trust another person. A review of the research literature revealed the relative lack of available instruments, which echoes Mayer *et al's* (1995: 729) assertion that 'the most problematic component of the [integrative trust] model from the standpoint of measurement is trust itself'. Four measures were identified in the literature to be consistent with a behavioural approach to trust (Cummings & Bromiley, 1996; Currall & Judge, 1995; Gillespie, 2003; Schoorman et al., 1996). The trust measures developed by Cummings & Bromiley (1996) and Currall & Judge (1995) were considered inappropriate because they are not only one-dimensional but also designed to measure trust between departmental units and between boundary role persons respectively. Schoorman *et al's* (1996) four-item trust measure appears to lack adequate reliability, and as the same authors have pointed out additional work is required for its further improvement.

Gillespie's (2003) Behavioural Trust Inventory (BTI) is designed to assess individuals' willingness to engage in trusting behaviour in working relationships between leaders and members, and between peers in group settings but is also applicable to non-group contexts. The instrument is developed from data collected from members of knowledge-based project teams. The sample comprised of staff (N=315) working in project teams (N=81) at two divisions of a large public R&D organisation in Australia (ibid.). The BTI comprises ten-items which assess individuals' willingness to engage in two distinct dimensions of trusting behaviour. That is reliance trust and disclosure trust. Each dimension contains five items rated on a seven-point Likert-type scale.

Gillespie (2003) has performed confirmatory factor analysis that provides solid support for the distinction between reliance and disclosure trust. Both dimensions exhibited high reliability that exceeded .90. The dimensionality of the BTI has been cross-validated on a second sample (N=281) drawn from two Australian organisations, a large public transport company and an energy firm. The cross-validation sample provided further evidence of the discriminant and convergent validity of the instrument.

Given its robust psychometric properties and conceptual congruence with a behavioural and multi-dimensional approach to trust, the BTI was considered as a suitable instrument to measure interpersonal trust.

**Shared Values and Goals**

Shared values and goals represent one of the two facets of the cognitive dimension of social capital. Tsai & Ghoshal (1998) have operationalised this dimension by developing the two-item construct of 'shared vision'. This is designed to measure the extent to which the same ambitions and values are shared between business units, and also the extent to which business units pursue the collective goals and mission of the organisation. Tsai & Ghoshal (1998) have expressed concerns about the way they operationalised, defined and measured the cognitive dimension of social capital, pointing to the need for its further development.

Tsai (personal communication, February 13, 2004) suggested that a construct such as 'value and goal congruence' would be an appropriate measure for operationalising 'shared vision' at the interpersonal level of analysis. After reviewing the relevant literature for available measures (e.g., Kang *et al.*, 2005; Li, 2005), it was considered appropriate to use the composite four-item construct developed by Gillespie & Mann (2004a; 2004b). Rated on a seven-point Likert-type scale, this construct assesses the extent to which members of project teams share common values and goals with their leaders as well as with their team members. The sample in this study included 89 teams, 79 team leaders, and 230 team members working in two divisions of a large Australian R&D organisation. The reliability of the measure in Gillespie & Mann's (2004a) study was well above .70. The measure was adapted to assess value and goal congruence between knowledge seekers and knowledge providers. All items were therefore slightly modified as the words 'leader' and 'team member' were replaced with the word 'person'. The four items were averaged and aggregated to create the composite variable of shared values and goals.

**Shared Language**

Shared language, which represents the second facet of cognitive social capital, has received relatively limited attention in the research literature. The majority of studies focusing on its role in a variety of outcomes and settings have employed mainly a qualitative approach to its operationalisation (e.g., Argyres, 1999; Eriksson & Sundgren, 2005; Jacobs & Coghlan, 2005). Therefore, there is a relative lack of available measures particularly at the interpersonal level of analysis.

Following a thorough review of the available literature, it was deemed appropriate to use the three-item construct of shared language that has been used as a sub-construct in Levin, Whitener & Cross's (2006) study of the antecedents of trustworthiness of knowledge sources in the context of dyadic knowledge transfer. This measure was specifically developed to assess the extent to which knowledge seekers understand, use similar jargon and terminology, and can communicate on the same wavelength with knowledge providers. All items were rated on a seven-point Likert-type scale. In a sample of 397 dyadic relationships drawn from three knowledge-intensive companies located in the USA, UK and Canada, the measure demonstrated acceptable reliability of .72 (Levin *et al.*, 2003). In Levin, Whitener & Cross' (2006) study, the same measure exhibited high discriminant validity. Hence, shared language appeared to be distinct from that of shared values and goals. This provides additional support for conceptualising and measuring the cognitive dimension of social capital with two related yet distinct constructs.

**Non-codified Knowledge**

This measure captures knowledge codification in a continuum ranging from self-explanatory knowledge such as a clearly written market report and knowledge that is difficult to articulate such as personal practical know-how. The measure was developed in Hansen's (1999) study based on a sample of R&D managers of 54 divisions of a large, multidivisional, multinational electronics and computer firm located in the USA. Given the focus of Hansen's (1999) study on inter-divisional knowledge transfer, the scale measures knowledge codification at the project team level with three items rated on seven-point Likert-type scales. The reliability of the measure in the same study was reported to be .81. An adapted version of Hansen's (1999) scale has been utilised in Levin & Cross' (2004) study in order to measure knowledge codification at the interpersonal level of analysis. This version exhibited reliability of .79. Levin & Cross' (2004) adapted version of non-codified knowledge was therefore utilised.

**Interpersonal Knowledge Transfer**

Interpersonal knowledge transfer is a key building block of organisational learning (Argote, 1999). Focus is therefore placed on the behavioural rather than cognitive aspects of learning development in organisations (e.g., Cyert & March, 1963). Schneider, Parkington & Buxton (1980: 254) assert that 'no behaviour in, or of, organisations can occur in the absence of perceptions'. Hence, judgements of effectiveness and efficiency are largely subjective (e.g., Campbell, 1960). Tsui (1990:

480) further argues that 'it is unclear how a subjective measure of effectiveness can be obtained independent of the assessor's perceptions'.

Accordingly, it was decided to adopt a perceptual measure of interpersonal knowledge transfer effectiveness and efficiency. The use of objective measures to assess the impact of knowledge received from particular individuals on a knowledge seeker's project work outcomes may be problematic. As Faraj & Sproull (2004: 1560) argue, the use of objective measures presupposes comparability across projects with unique characteristics and potential constraints, which 'raises a new set of methodological measurement issues'. While additional sources such as supervisor ratings and project results could be used for assessing the usefulness of knowledge received from knowledge providers, it was deemed appropriate to focus on the perceptions of the knowledge seekers. This is based on the premise that at the interpersonal level of analysis 'a knowledge seeker is the best, perhaps the only, judge of the usefulness of knowledge received from a particular source' (Levin & Cross, 2004: 1482).

Hence, the self-report construct of perceived receipt of useful knowledge was utilised for measuring interpersonal knowledge transfer. This eight-item construct was designed by Levin & Cross (2004) based on a synthesis of items developed by Keller (1994), Szulanski (1996), Hansen (1999), and Hansen & Haas (2001). Four of its items assess the extent to which the knowledge received from a specific knowledge provider contributes positively or negatively to a project's effectiveness, while the remaining four items focus on project's efficiency in terms of budget and time. All items are rated on a seven-point Likert-type scale. In Levin & Cross' (2004) study, the construct demonstrated good discriminant validity based on confirmatory factor analysis. It also exhibited high reliability that exceeded .90.

**Control Variables**

A number of control variables were included in the questionnaire. First, the relative position of knowledge seekers and knowledge providers in the formal organisational structure in terms of hierarchical level and project interdependence were assessed. In line with Levin & Cross (2004), hierarchical level was measured with a five-point Likert type scale indicating respondents' hierarchical level relative to that of each knowledge provider. Project interdependence was measured with a binary item asking respondents to indicate whether each of the knowledge providers was working on the same project with them. Second, organisational proximity was measured with a single item assessing whether knowledge providers did have managerial responsibilities at the time of the project. Third, the longevity of the working relationship between

knowledge seekers and knowledge providers was assessed with a single item asking the former to indicate how long they had been working with each knowledge provider (Currall & Judge, 1995; Levin *et al.,* 2006). Fourth, in order to control for respondents' demographic similarity (i.e., homophily) with knowledge providers, the questionnaire included three questions assessing whether knowledge seekers were the same age, same gender, and same nationality with knowledge providers. Finally, data was gathered on several characteristics of project work including: type of project, number of people working on project, time span of project, length of respondents' involvement in project, and status of project (i.e., completed or on-going).

**Work Design**

The measures for the work design variables were adapted from pre-existing scales found in the research literature. In particular, autonomy, skill variety, and feedback from others (i.e., managers and co-workers) were measured with three scales provided in Hackman & Oldham's (1975, 1980) Job Diagnostic Survey (JDS) and in Idaszak & Drasgow's (1987) revised version of the JDS. The measure for task interdependence was taken from Pearse & Gregersen's (1991) reciprocal task interdependence scale.

Hackman & Oldham's (1975, 1980) JDS is one of the most widely used instruments in work design research. It is characterised by known and acceptable psychometric properties (Griffin, 1991). However, research has indicated that the reverse scored items included in the JDS are likely to cause problems of inconsistent dimensionality and low reliability. To avoid those problems, the present study adopted the three items developed in Idaszak & Drasgow's (1987) revised version of the JDS to measure autonomy, variety and feedback from others. This version corrects the weaknesses of the original JDS scales by replacing reverse scored items with positively worded ones. By doing so, the revised JDS appears to measure adequately the work design variables explicated by Hackman & Oldham (1975, 1980).

Task interdependence was measured with the five-item scale developed by Pearse & Gregersen (1991) based on Thompson's (1967) distinction between reciprocal and sequential interdependence. It is designed specifically to assess perceptions of reciprocal interdependence. Rated on a seven-point Likert type scale, it assesses the extent to which one's job tasks and performance are dependent on receiving accurate information, resources and advice from others. In Pearse & Gregersen's (1991) study of 280 health-care professionals in the USA, the scale exhibited satisfactory discriminant validity and reliability of .76.

**HR Practices**

In the vast majority of the literature, the traditional measures for HR practices appear to focus predominantly on employees' human capital rather than on their social relationships with colleagues required for knowledge sharing activities (e.g., Keegan & Turner, 2001; Minbaeva, 2005). Given the relative lack of existing scales aiming at measuring the role of HR practices in shaping social relationships between employees conducive to collaboration and knowledge sharing, a set of 18 HR practices was developed by the researcher. Both conceptual and empirical studies examining the links between HRM, social relationships, and KM were used as the basis on which the HR practices were developed (e.g., Leana & Van Buren, 1999; Robertson & O'Malley Hammersley, 2000; Jackson *et al.,* 2003; Youndt & Snell, 2004; Zárraga & Bonache, 2005; Kang *et al.,* 2007).

The 18 items were designed to capture employees' experiences of HR practices centered on four HR practice clusters: selection and socialisation, training and development, performance appraisal, and rewards. Formulated in a statement format, each item asked respondents to indicate on a seven-point Likert-type scale the extent to which they had experienced a specific HR practice. The distribution of the 18 items between the four HR practice clusters together with a sample item per cluster is presented in table 6.1.

Table 6.1 **HR Practice Areas with Sample Items**

| HR Practice Cluster | Number of Items | Sample Item |
|---|---|---|
| Selection and Socialisation | 3 | New employees are typically hired based on their fit with the company's culture. |
| Training & Development | 6 | My training involves cross-functional group training and team building |
| Performance Appraisal | 2 | My work performance is evaluated based on the results of my team or work unit |
| Rewards | 7 | My company rewards employees who freely share information and/or advice with their colleagues |

Selection and socialisation included three items measuring the extent to which new entrants were selected based on the quality of their human capital, cultural fit with the organisation, and also whether they were encouraged to participate in company-sponsored social events. Six items were designed to capture both quantitative and qualitative aspects of training and development provided to employees. Two of these items focused on the extent to which employees were provided with adequate and well organised training and development opportunities. The remaining four items captured

the extent to which training and development included mentoring, cross-functional training and team building, on-the-job training, and social bonding.

Two items focused on the collective, team-based aspects of performance appraisal. They asked respondents to indicate the extent to which their performance targets were determined jointly by their manager and team/work unit members, and also the extent to which their performance was evaluated based on team/work unit results. Finally, the area of rewards included seven items. The aim of four of those items was to capture the extent to which employees perceived their rewards to be internally equitable (2 items) and externally competitive (2 items). The remaining three items asked respondents to indicate the extent to which rewards were tied to individual performance, team and organisational performance, and knowledge-sharing.

**Management Support for Knowledge Sharing**

This six-item measure was originally developed by Connelly & Kelloway (2003) to assess employees' perceptions of management's support for knowledge sharing. Rated on a seven-point Likert type scale, three items focus on managers' support for eliciting employees' knowledge sharing behaviours. The remaining three items focus on more formal, systemic aspects of organisational support for knowledge sharing. The measure was empirically tested in a sample of 124 MBA students at four Canadian universities representing a wide breadth of occupations, organisational size, and industrial sectors (ibid.). In the same study, the measure exhibited acceptable reliability of .79.

**Effectiveness of the HR Department**

Respondents' perceptions of the effectiveness of the HR department were measured with a construct originally designed by Tsui (1990). This comprises three items rated on a seven-point Likert type scale assessing the extent to which individuals are satisfied with the role, responsibilities, and performance of the HR department. Drawing on a cross-level sample of 1,866 employees working in three multi-unit organisations in the USA, Tsui's (1990) study indicates that the construct is both valid and reliable.

**Teamwork and Cooperation Climate**

This construct, originally developed by Valle & Witt (2001), assesses individuals' perceptions of the value of teamwork and cooperation climate within the organisation on a five-point Likert-type scale. In Valle & Witt's (2001) study of 355 employees of a customer-service organisation in the USA, the measure exhibited reliability of .64

approaching the minimum estimate of .65 that is recommended for three-item measures (Carmine & Zeller, 1979). In order to be consistent with the rating system applied to the rest of the measures included in the questionnaire, the rating format was altered from a five-point to a seven-point Likert-type scale.

**Demographics**

A set of demographic details were included in the questionnaire. Respondents were asked to indicate their age, gender, nationality, educational level, job position, employment status, company tenure, positional tenure, and industry/work tenure.

## III. PILOT STUDY AND SURVEY ADMINISTRATION

### Pilot Study

Questionnaire pretesting is an important stage of the survey development process as 'no amount of intellectual exercise can substitute for testing an instrument designed to communicate with ordinary people' (Backstrom & Hursch, 1963, in Hunt, Sparkman & Wilcox, 1982: 269). This entails the use of a questionnaire in a pilot study to ascertain how effectively the instrument will work in the target population (Reynolds, Diamantopoulos & Schlegelmilch, 1993). The pilot study is the process by which the questionnaire design is refined and errors are identified in order to avoid mistakes in the final version of the questionnaire (Reynolds et al., 1993).

A number of methods are recommended in the literature, which are pertinent to the effective implementation of a pilot study (e.g., Hunt *et al.,* 1982; Reynolds et al., 1993). The first issue is related to the method by which the pretest should be administered. Three main methods are usually employed in pretesting. These include a personal interview or a telephone interview followed by mail self-reports. The personal interview is often conducted by employing the debriefing method or the protocol method. According to the first method, respondents are encouraged to 'think out loud' as they complete the questionnaire in the presence of the researcher. The latter method involves the respondent completing the questionnaire and then discussing the various sections in detail with the researcher. Although both methods are considered effective, the protocol method can provide a greater volume of feedback for the researcher (Reynolds *et al.,* 1993). A second issue in pretesting is related to the nature and size of the sample selected for the pilot study. The literature suggests that the characteristics of the pilot sample should resemble those of the target population (Zaltman & Burger, 1975; Tull & Hawkins, 1976). In terms of the pretest sample size, it is generally

recommended that this be small (Zaltman & Burger, 1975). Other authors offer more specific sample sizes with a satisfactory level ranging from twelve to thirty respondents (Hunt *et al.,* 1982).

The pretesting of the questionnaire considered the above issues. The first step included the distribution of the pilot paper questionnaire to six academics in Dublin City University Business School in order to test for completion time, content clarity, and layout. A feedback form was attached at the end of the pilot questionnaires. In four cases, it was possible to conduct the pretesting by using the protocol method, while in the remaining two cases feedback was obtained through the feedback format.

Overall, the feedback was positive. The average completion time was reported to be seventeen minutes with respondents indicating completion time no more than twenty minutes. This was considered acceptable given the size of the questionnaire. All respondents found the layout satisfactory and did not report any difficulties in understanding and answering the questions. Positive comments were made about the ordering of the sections and the use of colour and shading. However, during discussions with four pretesters a common theme emerged in regard to the first section of the questionnaire. It was pointed out that respondents may be reluctant to list the names or even initials or nicknames of the people whom they turned to for information or advice because they would feel that by doing so the identity of those people could be possibly revealed. Instead, as one academic stated, 'they would be happier about an unidentified most helpful and least helpful person'. Therefore, it was decided to eliminate this part from both the electronic and paper versions of the questionnaire and instead to ask respondents to use a separate sheet to identify the two knowledge providers.

Following this, the second phase of the pilot study included the distribution of revised paper and on-line questionnaires to a sample of six employees working in a small-medium sized health and safety consultancy and seven employees working in an advertising agency in Ireland. The paper questionnaires were posted to the employees of the health and safety consultancy and included a cover letter, feedback form, and return envelope. The on-line questionnaires were sent to the employees of the advertising agency as a URL link via personalised emails and were accompanied by a cover letter and an attached feedback form. Overall, participants reported a completion time which in both questionnaire versions did not exceed the maximum of twenty minutes. They also commented on the questionnaire's layout and on-line functionality,

which they characterised as satisfactory and non-problematic. Finally, they reported no apparent problems with the relevance, content, and structure of the questionnaire. As a result of this second phase of pretesting, no further amendments were made.

### Survey Administration

The questionnaire survey was administered to the employees of the participating organisations between February and July 2005. Following advice from the HR and KM managers, different methods of administration were employed in each of the organisations. Paper questionnaires were given to the employees of the StateCo and on-line questionnaires were used in the TeleCo. Both versions of the questionnaire were used in the ConsultCo.

The survey administration was facilitated by the HR department and/or the KM manager within each of the participating organisations. In the StateCo and ConsultCo the researcher provided the printed material pack. This consisted of the paper questionnaire, a cover letter explaining the purpose of the survey, guaranteeing anonymity and confidentiality to the participants, indicating the URL in case some of the employees of the ConsultCo would prefer to complete the survey on-line, and a self-addressed envelope. The pack was also accompanied by a separate cover letter prepared by the HR Department stressing the support of the organisation, assuring that a report of the survey findings would be available to the participants upon request, and stating that participants would be provided with two reminders in the first and second week following the administration of the survey (Dillman, 2000). A similar process was followed in the TeleCo. Employees were first informed about the survey through e-mails sent by their KM manager. Following this, personalised emails were sent to the employees. Finally, two follow-up reminder emails were sent in the first and second week after the initial administration of the on-line questionnaire.

## IV. DATA COLLECTION, PREPARATION AND ANALYSIS

### Qualitative Data Collection

Six face-to-face semi-structured interviews with key informants across the three organisations were conducted between February and April 2005. All interviews were recorded verbatim to ensure that the data would be transcribed accurately reflecting what had been communicated. The organisational identity of the interviewees, and the duration of each interview are presented in table 6.2.

Table 6.2 **Interviews**

| Organisation | Number of Interviews | Key Informant | Interview Duration |
|---|---|---|---|
| TeleCo | 2 | Senior HR manager<br>KM manager | 60min<br>70min |
| ConsultCo | 2 | Senior HR manager<br>KM manager | 90min<br>70min |
| StateCo | 2 | Senior HR manager<br>Learning & Development manager | 60min<br>60min |

## Quantitative Data Collection

A total of 563 questionnaires were distributed to the three organisations, 138 of which were completed and submitted on-line or returned by post. The overall response rate was 24.5%. As table 6.3 indicates, the response rate ranged from 17% for the StateCo to 48% for the ConsultCo. The majority of questionnaires were completed on-line (60%), while the paper questionnaires accounted for the remaining 40% of the sample. Given that respondents referred to two knowledge providers, the final sample included 276 observations on dyadic relationships.

Table 6.3 **Summary of Response Rates**

| Organisation | Targeted Sample | Final Sample | Response Mode | Response Rate |
|---|---|---|---|---|
| TeleCo | 252 | 58 | On-line: 58 | 23% |
| ConsultCo | 90 | 43 | On-line: 25<br>Paper: 18 | 48% |
| StateCo | 221 | 37 | Paper: 37 | 17% |
| *Total* | *563* | *138* | *On-line: 83*<br>*Paper: 55* | *24.5%* |

### Power Analysis

A recurring issue in survey research concerns the number of observations required to draw meaningful conclusions from the collected data (Cohen, 1988; Cohen & Cohen, 1983; Green, 1991; Miles & Shelvin, 2001). Although various rules of thumb have been proposed in the literature regarding the estimation of acceptably minimum sample sizes (e.g., Green, 1991), it is recommended that the identification of appropriate sample sizes is achieved by conducting a technique called statistical power analysis (Cohen, 1988; Miles & Shelvin, 2001; Murphy, 2002). Power analysis provides a systematic exploration of the conditions under which a study is likely to either reject or fail to reject the null hypothesis. It is used both as a planning tool (i.e., to determine a priori the number of observations should be included in a study) and a diagnostic tool. In both

cases, the use of power analysis is likely to improve the quality of research 'first by discouraging reliance on samples that are too small to yield believable results, and second by forcing researchers to make and live with specific predictions about the effects they expect to find' (Murphy, 2002: 131).

Statistical power refers to the a priori determination of the probability of correctly rejecting the null hypothesis ($H_0$). This refers to the probability of making a Type II error. A Type II error is made when statistical tests fail to reject the null hypothesis when this hypothesis is actually untrue. A Type II error is usually symbolised by β, and power is defined as 1-β. It is worth mentioning that the standard criteria (e.g., alpha levels set at .05 or .01) used to test statistical hypotheses are usually set in order to minimise Type I errors. A Type I error refers to the failure to reject the null hypothesis when this is in fact true. From the above, it can be inferred that there is a trade-off between Type I errors and Type II errors. This means that efforts to minimise Type I errors can usually result in increasing the probability of making Type II errors, which can further lead to a substantial decrease of statistical power.

The decision criterion for determining an appropriate effect size for the present study was based on estimated correlations found in previous research investigating similar phenomena (e.g., Currall & Judge, 1995; Hansen, 1999; Connelly & Kelloway, 2003; Belout & Gauvreau, 2004; Cross & Sproull, 2004; Levin & Cross, 2004; Morrow et al., 2004; Youndt & Snell, 2004; Bryant, 2005; Chowdhurry, 2005; Minbaeva, 2005; Zárraga & Bonache, 2005; Collins & Smith, 2006). On this basis, the required sample size was determined by setting an ES of r =.30, at power .80, and specifying the level of alpha to be α = .05 (two-tailed). Power analysis was conducted by using the computer program G-Power (Erdfelder, Faul & Buchner, 1996). Accordingly, the required sample size was derived to be 82. Increasing the power level from .80 to .95 resulted in a required sample size of 111. Thus, the sample obtained in the present study met the sample criteria specified above and indicated sufficient power.

## Quantitative Data Preparation

The careful preparation of data is fundamental for conducting an honest analysis and for producing undistorted statistical results (Tabachnick & Fidell, 2007). This involves a series of screening and transformation procedures aiming at resolving problems commonly associated with missing data, presence of outliers, non-normality, non-linearity, heteroscedasticity, multicollinearity and singularity, which are crucial particularly in the framework of multiple regression analysis. The above issues were taken into consideration during the data screening process.

The collected data from both paper and online questionnaires were first transferred to a Microsoft Excel sheet where preliminary data preparation was undertaken. This included the provision of each questionnaire with an identification code, and sorting the questionnaire items into defined variables. The data were then entered to SPSS v14 for further preparation which is described below.

**Missing Data**

Three partially completed questionnaires equally distributed among the three participating organisations were identified. These questionnaires contained missing scores on a number of variables which accounted for 2% of the dataset for those variables. Although the amount of missing data was very small, it was deemed appropriate to test the pattern of missing data as the latter is considered more important than the former for informing decisions of how to handle missing data (Tabachnick & Fidell, 2007). SPSS missing value analysis (MVA) was employed to check whether missing data were characterised by randomness or not. The analysis produced a non-significant result (Chi-Square =11.394, DF=6, p =.077) supporting the probability that the pattern of missing values diverges from randomness is non-significant. Accordingly, it was inferred that the missing data was characterised as randomly distributed.

It is recommended that if only few cases include missing data and they also appear to compose a random sub-sample of the whole sample, listwise deletion represents a good choice as its potential negative effect on power is most likely to be negligible (Raymond & Roberts, 1987; Roth & Switzer III, 2002; Tabachnick & Fidell, 2007). Given the randomness and the very small percentage of the missing scores identified in the dataset, it was therefore decided to exclude those cases from statistical analysis. As a result, the final sample was reduced from 138 to 135 respondents and from 276 to 270 observations on dyadic relationships.

**Outliers**

The term outlier refers to a case with an extreme value on one variable (i.e., univariate outlier) or with a combination of extreme values on two or more variables (i.e., bivariate or multivariate outlier) that are likely to distort correlations and regression weights, and to lead to both Type I and Type II errors (Roth & Switzer III, 2002; Tabachnick & Fidell, 2007). Two approaches are usually employed to detect the potential existence of outliers or influential cases. The first includes the use of graphical analytical tools such

as frequency distributions, box plots, Q-Q normal probability plots, and steam and leaf plots, which are available in statistical packages such as SPSS. Although this is a useful first step, the use of more quantitative methods is highly recommended for detecting accurately potential outliers and their exerting influence on correlations and regression weights (Roth & Switzer III, 2002). Within the framework of multiple regression analysis, the most common method for detecting multivariate outliers is to examine the size of standardised residuals. A second more comprehensive approach involves the use of Mahalanobis distance, Cook's D (i.e., Cook's Distance), DFFITS (i.e., Welsch-Kuh Distance), and DBETAS which focus on both the leverage of the independent variable(s) and the residuals of the dependent variable.

Based on those criteria, all independent and dependent variables were tested for both univariate and multivariate outliers and their exerting influence. With the aid of visual tools described above no outliers were detected. The results of all regression analyses also indicated absence of outlying residuals (i.e., points with standardised values above 3 o below -3, $p<.001$, two-tailed test). Furthermore, the analysis met the criteria set by Mahalanobis, Cook's D, DFITS, and DBETAS. Specifically, the largest Cook's D value was found to be .058 which is well below the cut-off value of 1 (Tabachnick & Fidell, 2007). Similarly, none of the largest DFITS or DBETAS values exceeded a value of 1 nor appeared to significantly diverge from the next nearest distance value. This provided additional support for detecting no influential cases (Roth & Switzer III, 2002).

**Normality, Homoscedasticity, Linearity, and Multicollinearity**

Despite the absence of outliers or influential cases in the data, it is likely that the distribution of variables may still deviate from normality (Miles & Shelvin, 2001). To check for the normal distribution of variables, both graphical and statistical methods were used to assess the two components of normality, namely skewness and kurtosis. The histograms showed generally normal distributions for all variables except for the variable measuring relationship length, which was characterised by positive skewness and kurtosis. Moreover, the values for skewness and kurtosis for all variables were less than 1.0 except for relationship length, which were estimated to be 3.8 and 19.1 respectively. The raw responses for the relationship length variable ranged from 0 to 20 years ($M = 2.24$, $SD = 2.77$). Following Currall & Judge (1995) and Levin *et al.* (2006), this variable was transformed by calculating the logarithm of the number of months (plus one) that respondents reported having known the knowledge providers. This procedure was applied for two reasons. First, from a statistical point of view, a logarithmic transformation would most likely make the variable more normally

distributed by reducing both skewness and kyrtosis. Indeed, the transformed variable exhibited considerably lower levels of skewness (i.e., skewness=-.215, SE=.148) and kyrtosis (i.e., kurtosis=.408, SE=.295) indicating improved normality. Second, from a theoretical standpoint, logarithmic transformations account more accurately for how individuals perceive the length of their relationships with others. This is because knowing someone an extra month after only one month's relationship is substantially different than knowing someone an extra month after five years (Currall & Judge, 1995; Levin et al., 2006).

In the framework of regression analysis, the data were also tested for normality and homoscedasticity by looking at the standardised residual scatterplots to ascertain whether or not the residuals were dispersed normally throughout the range of the estimated dependent variable. The plots showed that the variance of residuals was fairly equal at each level of the predicted value providing support that the assumption of homoscedasticity was not violated. Residuals were also tested for normality using the Kolmogorov-Smirnov statistic. This produced non-significant results suggesting therefore no violation of normality. In addition, the data for all regressions were linear as the standard deviation for the dependent variable was higher than the standard deviation for the residuals. Moreover, the bivariate correlations were all well below the cut-off value of .80 that would indicate high collinearity (Kennedy, 1985). Finally, the data were further assessed for collinearity by inspecting both the tolerance and variance inflation factor (VIF) values for all variables in all regressions. All tolerance values were well above the recommended cut-off point of 0.1. Similarly, all VIF values were well below the cut-off point of 4.0 suggesting therefore no violation of the multicollinearity assumption (Miles & Shelvin, 2001). Based on the results of the above diagnostic tests, the data met the conditions for regression analysis.

## Establishing Validity and Reliability of the Measures

From a statistical standpoint, in order to assess the validity of a scale (i.e., the extent to which a scale measures what it intends to measure), scale items must be highly interrelated or internally consistent and must also reflect a single underlying construct. These two conditions refer to the reliability and validity of a scale. It is noteworthy that reliability is a necessary but insufficient condition for validity; a measure can be reliable without being valid, but it cannot be valid without being reliable (Nunnally & Bernstein, 1994).

Validity can be defined as the agreement between a test score or measure and the quality it is believed to measure (Anastasi & Urbina, 1997). Specifically, construct or factorial validity, an overarching term viewed by most psychologists to encompass all forms of validity, 'is a term used to indicate that the test scores are to be interpreted as indicating standing on the psychological construct measured by the test' (American Psychological Association, 1999: 174). In other words, it refers to the extent to which a measure adequately assesses the psychological construct it purports to assess (Nunnally & Bernstein, 1994). Campbell & Fiske (1959) proposed two key criteria of construct validity, namely convergent and discriminant validity. Convergent validity refers to the extent to which two or more measures of the same theoretical concept correlate highly. Discriminant validity is the degree to which measures of different concepts are distinct. There are two statistical procedures which are used in order to assess the discriminant and convergent validity of a measure. Factor analysis is particularly relevant to discriminant validation of a scale whereas Cronbach's alpha or reliability coefficient is regarded as the most widely used estimate of the convergent validity of a scale. The remaining part of this section describes the steps taken to establish both the discriminant and convergent validity of the scales employed in the present study.

**Factor Analysis**

The four core aims of factor analysis are: (i) to provide a summary of patterns of correlations between variables, (ii) to reduce a large number of observed variables to a smaller number of factors, (iii) to provide an operational definition for an underlying process by using observed variables, and (iv) to test a theory about the nature of underlying processes (Tabachnick & Fidell, 2007: 608). In the social sciences, factor analysis is usually applied to correlations between variables (Kline, 1994). Accordingly, a factor is 'a dimension or construct which is a condensed statement of the relationships between a set of variables', and is defined by its factor loadings, which in turn refer to the correlations of each variable with that factor (ibid: 5). There are two main types of factor analysis: exploratory and confirmatory. In the former type, the aim is to describe and summarise data by grouping together variables that are correlated. Confirmatory factor analysis is used to validate a theory about latent processes and is usually performed through analytical techniques such as principal factor analysis.

Confirmatory factor analysis was conducted to ascertain the discriminant validity of the psychological constructs underlying the perceptual items that had been validated in previous empirical studies. The only exception involved the set of variables describing

employees' experiences of HR practices. Since those variables were used for the first time, there was little scope for adopting a confirmatory approach. The goal here was to uncover the underlying structure of the items corresponding to the HR variables. Therefore, explorative factor analysis was conducted for the HR items. Oblique rotation was deemed appropriate for rotating all items based on the premise that in searching for factors that are core dimensions for understanding psychological phenomena it is highly unlikely that factors would be a priori uncorrelated (Cattell, 1978).

In accordance with Ford *et al's* (1986) guidelines, the following factor analytic techniques were utilised for examining the discriminant validity of the measures. With the exception of the HR items, all other items were factor analysed with principal axis factoring with oblique (i.e., direct oblimin) rotation. Maximum likelihood with promax rotation was used for the HR items. This represents an advantageous extraction technique as it includes statistical tests for the significance of each extracted factor (Kline, 1994). In addition, promax rotation, which belongs to the family of non-orthogonal rotations, was employed for its relative efficiency to achieve simple oblique structures (ibid.). The scree plots of the resulting eigen values were utilised for identifying how many factors were likely present in the data. In addition, the communalities between the variables were examined to estimate the sample size requirement (MacCallum *et al.,* 1999). The factor correlation matrix was also advised to assess the extent to which factors were highly correlated or not. Finally, the cut-off criterion of .40 was deemed plausible for labelling significant factor loadings (Ford *et al.,* 1986). The results of factor analyses for all the variables are described below, with first the factor structure for the social capital variables, which is presented in table 6.4.

Table 6.4 **Factor Structure: Social Capital Variables**

| **Items** | **Factors** | | | | |
|---|---|---|---|---|---|
| N=270 | **1** | **2** | **3** | **4** | **5** |
| Discuss how you honestly feel about your work, even negative feelings and frustration | **.915** | -.107 | .005 | .116 | -.052 |
| Confide in this person about personal issues that are affecting your work | **.854** | -.040 | -.072 | .033 | -.004 |
| Share your personal beliefs with this person | **.854** | -.023 | .089 | -.045 | -.063 |
| Discuss work-related problems or difficulties with this person that could potentially be used to disadvantage you | **.724** | .137 | -.066 | -.073 | .049 |
| Share your personal feelings with this person | **.626** | .208 | -.018 | .013 | .054 |
| Depend on this person to handle an important issue on your behalf. | -.035 | **.899** | -.080 | -.046 | .058 |
| Depend on this person to back you up in difficult situations. | -.002 | **.812** | .029 | .055 | -.138 |
| Rely on this person to represent your work accurately to others. | -.062 | **.787** | .132 | -.019 | -.039 |
| Rely on this person's work-related judgements. | .009 | **.778** | .002 | -.029 | .114 |
| Rely on this person's task related skills and abilities. | .225 | **.610** | -.081 | .043 | -.045 |
| Identify with this person's values | .064 | -.012 | **.987** | -.119 | -.018 |
| Share common values with this person | .057 | -.087 | **.871** | -.008 | .045 |
| This person's goals are compatible with mine | -.097 | .180 | **.648** | .154 | .001 |
| This person and I pursue different goals (reverse-coded item) | -.118 | -.007 | **.456** | .144 | -.044 |
| The extent to which I typically interact with this person | -.005 | -.020 | -.009 | **.976** | -.010 |
| The frequency of my communication with this person | .030 | -.037 | .036 | **.846** | -.005 |
| The closeness of my working relationship with this person | .042 | .064 | .064 | **.735** | .086 |
| I understand completely what this person means when he or she is talking | -.049 | .003 | -.068 | -.009 | **.957** |
| I am familiar with the jargon/terminology that this person uses | -.090 | -.033 | -.011 | .105 | **.746** |
| I feel like we can communicate on the same "wavelength" | .203 | -.004 | .135 | -.078 | **.604** |
| *Eigenvalue* | *7.393* | *2.451* | *1.940* | *1.594* | *1.455* |

| *Factor Correlation Matrix* | **Factor** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| | **1** | 1.000 | | | | |
| | **2** | .576 | 1.000 | | | |
| | **3** | .463 | .444 | 1.000 | | |
| | **4** | .267 | .295 | .374 | 1.000 | |
| | **5** | .323 | .235 | .377 | .208 | 1.000 |

As shown in the above table, the 20 items that comprise the five variables measuring the three dimensions of social capital were loaded into the right constructs with all expected factor loadings above .40 and no cross-loadings above .225, which indicated high discriminant validity. This was further supported by examining the scree plot of the eigen values in which an "elbow" emerged at the fifth factor. The factor correlation matrix indicated that the majority of the extracted factors were strongly correlated (i.e.,

above .30). In addition, the average communality level among the variables was found to be well above .60. This, in combination with the unambiguous determination of the extracted factors, suggested the sample size of 270 observations as being adequate.

The eight items that comprised the outcome variable 'perceived receipt of useful knowledge' along with the three items of the variable 'non-codified knowledge' were then factor analysed. The results of this analysis presented in table 6.5 provide support for the discriminant validity of both measures. The average communality level was above .60 offering further support for the sample size adequacy criterion.

Table 6.5 **Factor Structure: Knowledge Transfer and Non-codified Knowledge Variables**

| **Items** | | **Factors** | |
|---|---|---|---|
| N=270 | | **1** | **2** |
| *The information and/or advice I received from this person made (or is likely to make) the following contribution to…* | | | |
| Client's satisfaction with this project | | **.909** | .027 |
| The overall performance of the project team | | **.896** | .046 |
| The value of the project to my company | | **.889** | .011 |
| The quality of the project | | **.830** | -.015 |
| This project coming in or budget or closer to coming in on budget | | **.780** | .008 |
| The reduction in the project's costs | | **.742** | .023 |
| My being able to spend less time on the project | | **.723** | -.089 |
| Shortening the time this project took | | **.688** | -.039 |
| Degree of documentation of the information/advice that I received | | -.182 | **.867** |
| Degree of sufficient explanation in writing of the information/advice | | -.127 | **.773** |
| Type of information/advice that I received | | .134 | **.586** |
| *Eigenvalue* | | *5.931* | *1.865* |
| *Factor Correlation Matrix* | **Factor** | **1** | **2** |
| | **1** | 1.000 | |
| | **2** | *-.251* | 1.000 |

Following this, the 14 items comprising the work design variables (i.e., job autonomy, skill variety, and feedback from others) along with the task interdependence variable were factor analysed. The results of this analysis are presented in table 6.6.

Table 6.6 **Factor Structure: Work Design Variables**

| **Items** | **Factors** | | |
|---|---|---|---|
| N=135 | **1** | **2** | **3** |
| How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work? | **.710** | .010 | .013 |
| How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents? | **.708** | -.100 | -.068 |
| The job gives me considerable opportunity for independence and freedom in how I do the work | **.707** | .071 | .064 |
| The job requires me to use a variety of different skills | **.673** | -.076 | -.163 |
| The job requires me to use a number of complex or high-level skills | **.653** | -.079 | .084 |
| The job gives me a chance to use my personal initiative and judgment in carrying out the work | **.555** | .090 | .097 |
| I frequently must coordinate my efforts with others | .042 | **-.807** | .006 |
| I work closely with others n doing my work | -.001 | **-.764** | .057 |
| My work requires me to consult with others fairly frequently | .126 | **-.656** | -.078 |
| The way I perform my job has a significant impact on others | .005 | **-.639** | .094 |
| My own performance is dependent on receiving accurate information from others | -.092 | **-.612** | -.022 |
| To what extent do managers or co-workers let you know how well you are doing on your job? | .059 | -.012 | **.879** |
| Managers or co-workers often let me know how well they think I am performing my job | .062 | -.081 | **.840** |
| Managers and co-workers on this job almost always give me "feedback" about how well I am doing in my work | -.043 | .010 | **.573** |
| *Eigenvalue* | *4.194* | *2.352* | *2.003* |

| *Factor Correlation Matrix* **Factor** | **1** | **2** | **3** |
|---|---|---|---|
| **1** | 1.000 | | |
| **2** | -.351 | 1.000 | |
| **3** | .196 | -.074 | 1.000 |

The above table shows the emergence of three instead of four factors as it would normally be expected. The 3 items making up the 'feedback from others' scale, and the 5 items comprising the 'task interdependence' scale loaded strongly into the right constructs. However, the 3 items corresponding to the job autonomy scale loaded into the same factor as the 3 items comprising the skill variety scale. This was not considered a surprising result as previous studies have highlighted that the JDS may exhibit factor structure instability (e.g., Taber & Taylor, 1990). The lack of discrimination between the two specific scales is due to the probability that job autonomy and skill variety might have been ecologically correlated. As Taber & Taylor (1990: 493) claim, 'jobs that have high autonomy generally will have more variety' (ibid: 493). An estimation of the correlations among the three JDS scales confirmed the above claim by showing that the correlation coefficient between job autonomy and skill variety was higher (i.e., .619, $p<.01$, two-tailed test) than that between job autonomy and feedback from others, (i.e., .225, $p<.01$, two-tailed test), and between skill variety and feedback from others (i.e., 130, $p<.05$, two-tailed test). In order to test for the possibility that the

estimates of discrimination were confounded by organisational or individual factors (e.g., Cordery & Sevastos, 1993; Ang & Slaughter, 2001), the three JDS scales were factor analysed according to organisational group, job type, job status, gender, and educational level. None of the resulting factor structures provided support for the interpretation that the lack of discrimination between job autonomy and skill variety was confounded by any of these factors. Given the lack of a clear factor structure in regard to job autonomy and skill variety variables, it was decided to exclude both measures from further statistical analysis.

The next step involved the evaluation of the discriminant validity of the 18 items corresponding to the HR practices. All items were entered in a factor analysis to test the extent to which they loaded into distinct constructs. This was followed by examining the scree plot graph, in which an “elbow” appeared at the sixth factor. A Monte Carlo test was conducted to compare the eigen values from the factor analysis with the criteria values extracted from the parallel analysis in order to help identify the number of factors that should be retained (Tabachnick & Fidell, 2007). The results of this test were consistent with the “elbow” observed in the scree plot graph.

As shown in table 6.7, most of the items exhibited loadings above .40 and were structured into six distinct factors. The first factor included three items corresponding to the ‘types of rewards’ variable. The second factor included three items that refer to the ‘selection and socialisation’ variable. Each of the third and fifth factors comprised two items corresponding to the variable of ‘rewards internal equity’ and ‘rewards external competitiveness’ respectively. The fourth factor, which included two items, refers to the ‘quantity of training and development’ variable, while the sixth factor included four items corresponding to the ‘types of training and development’. One item (i.e., team-based performance appraisal) exhibited loading below .40, while the remaining item (i.e., team-based performance targets) loaded into the seventh factor. Accordingly, those two items were excluded from further statistical analysis.

Table 6.7 **Factor Structure: HR Variables**

| | **Items** | **Factors** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | N=135 | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| 1 | Rewards are closely linked to team or group performance | **.973** | .322 | .304 | .199 | .039 | .244 | .067 |
| 2 | Rewards are closely linked to individual performance | **.798** | .381 | .340 | .270 | -.029 | .329 | .037 |
| 3 | My company rewards employees who freely share information and/or advice with their colleagues | **.704** | .367 | .256 | .262 | .133 | .152 | .317 |
| 4 | New employees are typically hired based on their fit with the company's culture | .380 | **.868** | .133 | .195 | .026 | .335 | .195 |
| 5 | My company selects highly skilled and competent individuals to new posts | .315 | **.681** | .347 | .292 | -.045 | .220 | .000 |
| 6 | New employees are encouraged to take part in company-sponsored social activities | .327 | **.598** | .302 | .117 | -.105 | .369 | .182 |
| 7 | The pay levels in my company are relatively high compared to other firms in the industry | .343 | .286 | **.960** | .267 | .111 | .268 | .166 |
| 8 | The pay levels in my work unit are relatively high compared to other firms in the industry | .387 | .316 | **.839** | .283 | .120 | .287 | .139 |
| 9 | My company provides me with a well organised training and development programme | .343 | .297 | .290 | **.928** | -.050 | .398 | .273 |
| 10 | My company allocates a generous amount of time and resources for my training and development needs | .204 | .210 | .218 | **.736** | -.106 | .365 | .270 |
| 11 | There are small pay differences among the people in my work unit | -.035 | -.085 | .150 | -.082 | **.934** | .031 | .044 |
| 12 | There are small pay differences across the various work units in my company | .116 | .017 | .052 | -.074 | **.753** | .171 | .153 |
| 13 | My training involves cross-functional group training and team building | .177 | .351 | .318 | .228 | .195 | **.883** | .320 |
| 14 | My training involves developing work-related social relationships with other employees across different areas of my company | .251 | .256 | .214 | .275 | .155 | **.688** | .281 |
| 15 | Mentoring is an important development tool in my company | .276 | .196 | .261 | .333 | -.056 | **.575** | .236 |
| 16 | Much of my training is on the job | .068 | .163 | -.001 | .125 | -.083 | **.480** | -.059 |
| 17 | My work performance is evaluated based on the results of my team or work unit | .235 | .131 | .177 | .109 | -.017 | .247 | .167 |
| 18 | My work performance targets are jointly determined by my manager and my team or work unit members | .099 | .124 | .126 | .269 | .097 | .283 | **.988** |
| | *Eigenvalue* | *4.877* | *1.916* | *1.734* | *1.453* | *1.306* | *1.154* | *1.055* |

| *Factor Correlation Matrix* | **Factor** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
|---|---|---|---|---|---|---|---|---|
| | **1** | 1.000 | | | | | | |
| | **2** | .486 | 1.000 | | | | | |
| | **3** | .383 | .315 | 1.000 | | | | |
| | **4** | .329 | .304 | .300 | 1.000 | | | |
| | **5** | .049 | -.045 | .113 | -.070 | 1.000 | | |
| | **6** | .460 | .431 | .300 | .422 | .118 | 1.000 | |
| | **7** | .200 | .190 | .155 | .278 | .132 | .405 | 1.000 |

Following this, the 3 items that composed the 'effectiveness of the HR department' variable along with the 3 items of the 'importance of teamwork and cooperation' variable were factor analysed. The results presented in table 6.8 indicate that all items loaded strongly into their expected factors confirming the discriminant validity of both measures.

Table 6.8 **Factor Structure: HR Department's Effectiveness and Teamwork and Cooperation Climate Variables**

| **Items** | **Factors** | |
|---|---|---|
| N=135 | **1** | **2** |
| The HR Department in my company has met my expectations in its HRM roles and responsibilities | **.994** | -.030 |
| I feel the HR Department in my company is performing its job the way I would like to be performed | **.989** | -.075 |
| If I had my way, I would change the manner in which the HR Department is doing its job (reverse-coded item) | **.533** | .106 |
| The team orientation is valued at my company | -.042 | **.870** |
| There is a spirit of teamwork and cooperation in my department | -.051 | **.852** |
| There is a spirit of teamwork and cooperation across all departments at my company | .124 | **.619** |
| *Eigenvalue* | *3.101* | *1.519* |
| *Factor Correlation Matrix* **Factor** | **1** | **2** |
| **1** | - | |
| **2** | .392 | - |

Finally, the 6 items that composed the 'management support for knowledge sharing' variable were factor analysed in order to test whether they represented a single underlying construct. The resulting factor structure is shown in table 6.9.

Table 6.9 **Factor Structure: Management Support for Knowledge Sharing Variable**

| **Items** | **Factors** | |
|---|---|---|
| N=135 | **1** | **2** |
| My manager would like me to share more information and/or advice with other people in the company | **.897** | .006 |
| My manager has told me to share more information and/or advice with other people in the company | **.805** | -.062 |
| My manager doesn't really care if I share information and/or advice or not (reverse coded item) | **.465** | .242 |
| Management seems to be serious about getting employees to share information and/or advice with each other | -.101 | **.847** |
| I am rewarded for sharing information and/or advice with people in my company | .007 | **.591** |
| My company has a special knowledge-sharing initiative underway | .115 | .282 |
| *Eigenvalue* | *2.560* | *1.119* |
| *Factor Correlation Matrix* **Factor** | **1** | **2** |
| **1** | - | |
| **2** | .493 | - |

As indicated in the above table, the first factor comprised 3 items that reflected the immediate manager's support for knowledge sharing, while the second factor included 2 items reflecting more systemic, organisational-level aspects of management support for knowledge sharing. The loading of the sixth item was well below .40. Although the

extraction of two factors did not confirm the unidimensionality of the original scale devised by Connelly & Kelloway (2003), it was deemed appropriate to retain the two factors for further analysis by testing their reliability.

**Reliability of Measures**

In order to establish the reliability of pre-existing and newly developed measures the Cronbach's alpha coefficient or reliability criterion was employed. This is regarded as the most commonly used estimator of the internal consistency or reliability of multi-item measures and is also appropriate for questionnaires using Likert-type scales (Oppenheim, 1992). The reliability of a measure is defined as 'the correlation between the variable as measured and another equivalent measure of the same variable' (Miles & Shelvin, 2001: 133). Cronbach's alpha values can range from 0 to 1, with 0 translated into zero reliability, and 1 translated into 100% reliability. According to Nunnally (1978), the reliability of a scale is considered sufficient when Cronbach's alpha level is at least .70 or higher. Though, alpha levels above .65 are generally considered acceptable for three-item measures (Carmine & Zeller, 1980).

As shown in table 6.10, the reliabilities of the scales that comprised the social capital variables were found to be well above the cut-off criterion of .70 indicating therefore high internal consistency. Similarly, non-codified knowledge along with the outcome variable of perceived receipt of useful knowledge exhibited reliabilities of .79 and .94 respectively.

Table 6.10 **Scale Reliabilities: Social Capital, Non-codified Knowledge and Perceived Receipt of Useful Knowledge Variables**

| Scale | Number of Items | Cronbach's α |
|---|---|---|
| Disclosure Trust | 5 | .95 |
| Reliance Trust | 5 | .93 |
| Shared Language | 3 | .79 |
| Common Values and Goals | 4 | .86 |
| Tie Strength | 3 | .87 |
| Non-Codified Knowledge | 3 | .79 |
| Receipt of Useful Knowledge | 8 | .94 |

Table 6.11 presents the reliabilities for feedback from others, task interdependence as well as the measures of HR practices that developed in the present study.

Table 6.11 **Scale Reliabilities: Work Design, HR Practices, Line Manager's Support for Knowledge Sharing, HR Department's Effectiveness and Teamwork and Cooperation Climate Variables**

| Scale | Number of Items | Cronbach's α |
|---|---|---|
| Task Interdependence | 5 | .82 |
| Feedback from Others | 3 | .81 |
| Selection and Socialisation | 3 | .70 |
| Quantity of Training and Development | 2 | .84 |
| Type of Training and Development | 4 | .68 |
| Type of Rewards | 3 | .82 |
| Rewards' Internal Equity | 2 | .81 |
| Rewards' External Competitiveness | 2 | .89 |
| Line Manager's Support for Knowledge Sharing | 3 | .75 |
| HR Department's Effectiveness | 3 | .86 |
| Teamwork and Cooperation Climate | 3 | .82 |

As shown in the above table, the estimated reliabilities of 'feedback from others' and 'task interdependence were .81 and .82 respectively. In regard to the reliabilities of the HR variables, all scales, except the one associated with 'types of training and development' which was estimated to be .68, were equal or above .70. The two scales corresponding to 'effectiveness of the HR department' and 'importance of teamwork and cooperation climate' variables exhibited reliabilities of .86 and .82 respectively. Finally, the reliabilities of the two sub-constructs that emerged from the factor analysis of the 'management's support for knowledge sharing' were estimated. The results indicated that the first sub-construct, which included three items, exhibited satisfactory reliability of .75. In contrast, the reliability of the second sub-construct was found to be .57. Thus, it was decided to retain only the first factor for further analysis. In order to distinguish it from the original six-item scale developed by Connelly & Kelloway (2003), the reduced three-item measure was renamed 'manager's support for knowledge sharing' since it captured the direct role of managers in supporting employees' knowledge sharing behaviours.

**Testing for Common Method Variance**

A Harman's single-factor test was performed to diagnose for common method variance that is attributed to self-report measures obtained from the same source (Podsakoff & Organ, 1986; Podsakoff *et al.,* 2003). Common method variance can also result from consistency motives, respondents' awareness of existing theories, social desirability, and mood connotations with certain questionnaires (ibid.). The underlying assumption

of Harman' one-factor test is that if common method variance is an issue, either a single factor will emerge or one factor will account for the majority of variance among variables. Two tests were conducted. First, 23 items measuring social capital and non-codified knowledge and 8 items measuring the receipt of useful knowledge were included in a principal component analysis. The unrotated factor solution produced 7 factors, which accounted for 72.32% of the total variance, while the first factor accounted for 26.72% of the variance. The same procedure was followed for the HR items. The unrotated factor solution produced 10 factors, which accounted for 73.28% of the total variance, while the first factor accounted for 23.5% of the variance. Based on these results, it was inferred that common method bias was unlikely to be a major problem.

## Quantitative Data Analysis

Having completed the data preparation and established the discriminant validity and reliability for all measures, the next step in the research process involved the statistical analysis of the data. Given the relational character of the hypotheses formulated in the present study, the research design is fundamentally of a correlational nature, thereby incorporating statistical procedures aiming at testing for the hypothesised relationships between variables as well as the magnitude of those relationships (Kerlinger, 1986). In particular, the hypothesised relationships were examined using correlational analyses. These included bivariate correlations, and hierarchical multiple regressions with mediating and moderating effects. Prior to this, all key variables were examined for differences in their mean values between the three organisations.

### Analysing Means

Analysis of variance (ANOVA) was used as the statistical method to compare the means of key variables across the three organisations in order to assess whether there were statistically significant differences between them. ANOVA is essentially 'a set of analytic procedures based on a comparison of two estimates of variance' (Tabachnick & Fidell, 2007: 38), which determines whether a set of scores comes from the same population group or not. The first estimate is calculated based on differences between scores within groups, while the second estimate is derived from differences between group means. If these two estimates of variance do not differ substantially, it is concluded that any differences among group means are attributed to random error. In contrast, if they differ significantly, it is concluded that they come from different groups (ibid.).

**Correlation Analysis**

The first step in examining the relationships between variables included the use of Pearson's product moment correlation or correlation coefficient. This estimates the strength and direction of a linear relationship between two variables. The values of correlation coefficient can range from -1 to +1. A positive correlation represents a direct relationship indicating that two variables increase or decrease in the same direction, whereas a negative correlation represents an inverse relationship so that when one variable increases, the other decreases and vice versa. Bivariate correlation is symmetrical. In this sense, it can not demonstrate whether changes in a dependent variable are accounted for by changes in one or more independent variables. Partial correlation can provide some evidence of the predictive effect that one independent variable can have on a dependent variable while controlling for a second or more independent variables. However, when the goal of the research is to assess the effect of two or more independent variables on a dependent variable, partial correlation becomes redundant, thereby requiring the use of multiple regression analysis.

**Regression Analysis**

This can be viewed as an extension of correlation analysis. It is used to determine the extent to which a set of independent variables explains the proportion of variance in one dependent variable and also demonstrates the relative predictive significance of each independent variable. There are three major types of multiple regression analysis, namely standard regression, hierarchical or sequential regression, and stepwise or statistical regression (Tabachnick & Fidell, 2007). In the present study, the second type was used for examining the hypothesised relationships. This is due to the fact that hierarchical regression models allow the researcher to control the advancement of the regression process according to a specified theoretical rationale, whereas standard multiple regression is to a large extent a 'shotgun approach', and stepwise regression is 'based solely on statistical criteria', and therefore 'the meaning or interpretation of the variables is not relevant' (ibid: 143-144).

A number of variables in the present study were hypothesised to act as mediators or moderators (e.g., interpersonal trust, task interdependence). In general, a variable can function as a mediator 'to the extent that it accounts for the relation between the predictor and the criterion [dependent variable]' (Baron & Kenny, 1986: 1176). A number of mediated analyses were performed in order to test for the set of hypotheses predicting mediated relationships. According to Baron & Kenny (1986: 1177), the following four conditions must occur in order to establish mediation: (i) the independent

variable must predict significantly the dependent variable, (ii) the independent variable must predict significantly the mediator variable, (iii) the mediator variable must predict significantly the dependent variable while controlling for the independent variable, and (iv) if the effect of the independent variable on the dependent variable is zero (Baron & Kenny, 1986) or at least non-significant (Miles & Shelvin, 2001) when the mediator is included in the regression equation, then the mediation is characterised as perfect or complete. In case that the effect of the independent variable on the dependent variable is reduced but still remains significant when the mediator is included in the equation, then the mediation is considered partial.

Since a number of the hypothesised relationships reflected moderated relationships between variables, regression analyses with interaction effects were also conducted. A moderator variable can be defined as a continuous or qualitative (e.g., categorical) variable 'that affects the direction and/or strength of a relationship between an independent or predictor variable and a dependent or criterion variable' (Baron & Kenny, 1986: 1174). In order to avoid problems of collinearity caused by the interactions between independent and moderator variables, it is recommended that these variables should be 'mean-centered' (Aiken & West, 1991; Jaccard & Turrisi, 2003; Tabachnick & Fidell, 2007). Accordingly, mean-centering was applied to all the variables tested for interaction effects.

## V. CONCLUSION

The chapter has provided an analytic overview of the research process. Having identified the target population, the instruments by which both quantitative data and qualitative data collected, prepared, and analysed were described. Based on the results of power analysis, the minimum size requirements for the sample were met. The quality of quantitative data was ensured by conducting a series of statistical tests that are crucial in the framework of multiple regression analysis. Having established the quality of quantitative data, existing and new scales were assessed for discriminant and convergent validity. The results of factor and reliability analyses indicated that all scales were both valid and reliable. In addition, all measures were tested for common method bias revealing that it was not of major concern. The following chapter provides an overview of the profile of the participant organisations.

# CHAPTER SEVEN
# The Research Context

## INTRODUCTION

This chapter provides an overview of the organisational context within which the research was conducted. The information presented here derives from interviews with HR managers and knowledge managers of the three participating organisations as well as secondary resources including printed and electronic material made available to the researcher. The chapter is organised into three sections. First, the profile of the three organisations is outlined. The second section offers a description of the HR practices, and the third section provides an overview of the KM practices in each of the three organisations. The chapter concludes that, while the three organisations did not differ substantially in the composition of their HR practices, some key differences were nevertheless identified in regard to the way in which certain HR practices were implemented. In addition, some notable differences were also identified across the organisations regarding the philosophy, design, and implementation of KM practices.

## I. THE PROFILE OF PARTICIPANT ORGANISATIONS

### TeleCo

Formed in 1984, this organisation is a leading telecommunications supplier in Ireland. It provides a full range of services to home and corporate customers including fixed-line and mobile telephony, dial-up and broadband internet, and home monitoring equipment. The organisation, previously being a state monopoly, was privatised in 1999 in the wider context of the liberalisation of the EU telecommunications market. Despite the entrance of competitors in the domestic market, TeleCo still retains the lion's share of the Irish fixed-line customer base.

Over 7,800 people are employed by the organisation, 65% of whom are on civil servant contracts, while around 2,500 employees are on performance-related contracts. The remaining staff, which numbers around 250 employees, are indirectly employed in the company's call centre through an outsourced agency. As a result of the intensifying competition within the industry, the organisation recently shifted its strategic priorities towards maximising business efficiency. This was reflected in the implementation of a rationalisation programme introduced soon after its privatisation. Integral to this was the significant reduction of its headcount. This was implemented mainly on a voluntary

basis through the introduction of voluntary exit schemes. Following this, the organisation's headcount was significantly decreased by around 4,000 employees over the last six years.

The organisation is structured along three major lines: the operations unit, the wholesale and retail unit, and the network management unit. All lines are further organised in a matrix format which is line, customer or product/service-based. There are four management layers including the executive management team, senior management, line management, and general management. Each line is provided with support by the HR department and the finance department. Specifically, the HR department with 120 staff is organised around seven areas including: resourcing, organisation development, compensation and benefits, employee relations, internal communications, service delivery, and superannuation.

The present study focused on the network management line and more specifically on its network engineering unit (NEU). This is located in the greater Dublin area. The NEU is responsible for the architecture, development and maintenance of TeleCo's platforms and networks. Its role within the wider organisation is central as its major internal customers include the operations, wholesale and retail product management units. The NEU numbers 252 staff, most of whom are telecommunications engineers and technicians together with a smaller number of scientists and researchers.

### ConsultCo

This is one of the six units that compose the Irish subsidiary of a leading multinational professional services firm that employs approximately 135,000 employees in nearly 150 countries worldwide. Apart from consulting, the Irish subsidiary offers a range of professional services in tax, audit, financial advisory services, business services, and legal and secretarial services. Its clients are mainly large-size organisations from both the private and public sectors ranging from consumer businesses, financial services and healthcare to energy and resources, media and telecommunications, property and construction, and central government.

The Irish organisation employs approximately 750 staff, 90% of whom are professional accountants, tax consultants, financial analysts, management, organisation and IT consultants, while the remaining 10% comprise support and administration personnel. The majority of the organisation's workforce is employed in the tax and auditing units. Within these units there are also large numbers of graduate-level trainees as the firm

operates as a training firm within the Institute of Chartered Accountants. Over 80 graduates are recruited every year and trained over a period of three years to become professional accountants and tax/audit consultants. Over three quarters of the organisation's total workforce (i.e. 80%) are based in the headquarters offices in Dublin while around 150 professionals are equally spread into two regional offices located in Cork and Limerick respectively. Recent years have seen a steady increase in the organisation's headcount. In particular, since 1998, the number of people employed by the firm has almost doubled.

The HR department numbers eight full-time personnel responsible for the provision of HR support to all units. One HR person is dedicated to the consulting group providing administrative support and is also responsible for recruitment and selection in order to meet the resourcing needs of the group. For the last three years, the organisation has been placed in the top 50 companies in Ireland and top 100 companies in Europe to work for based on the results of an independent survey conducted by the Great Place to Work Institute Inc.

The present study focused on the consultancy unit. This numbers 90 employees. Similar to the other units within the organisation, ConsultCo is characterised by a structure typically found in other multinational professional services firms in the industry. Specifically, there are seven hierarchical levels including: partners, senior managers, managers, senior consultants, consultants, analysts and junior analysts. However, single status is promoted within the organisation. This is reflected in the organisation's fast track career path according to which progression from the lowest to the highest level generally takes only ten to twelve years.

### StateCo

Resulting from a merger of four smaller-size state agencies, this government-owned organisation was formed in 1999 with the aim of enhancing the further development of indigenous businesses in order to strengthen their competitive positioning both nationally and internationally. To achieve this aim, it offers customised services to client companies in three main areas: business development, technology innovation, and internationalisation. It is structured in seven divisions: international sales and partnering, applied research and commercialisation, regions and entrepreneurship, technology automation and productivity, client management development, SME scaling, and finally, high potential start-ups. There are three managerial layers in each division including an executive director, senior managers, and line managers.

The organisation operates 13 offices located in Ireland and 33 international offices spread globally. Its workforce numbers over 900 employees the majority of whom are based in Ireland while 60 market staff is placed overseas. The core workforce comprises business development professionals (e.g., economists, financial analysts, asset specialists, accountants), who work mainly with client companies, and researchers working on the commercialisation of research emanating from universities. The remaining non-core staff comprises of administration, technical, and clerical staff. As part of its recently launched strategic plan, the organisation has been reconfigured from a cellular to a matrix structure characterised by specialist teams in order to better meet client needs.

The present study focused on the 221 core employees of the Irish headquarters office located in Dublin. The HR department, which includes 18 full-time personnel, is also based in the same office. Its activities cover the full range of HR activities excluding training and development which is under the responsibility of the recently established organisation development department. This was formed in mid 2004 as a result of the strategic plan introduced earlier that year. Its aim is to foster the development of management and employee capabilities in order to facilitate a move to added value services. This has resulted in the resourcing of new HR staff with dedicated people development roles. The turnover rates for the last three years have been less than 10% and these apply mainly to non-core (i.e., secretarial, clerical) and younger staff. The organisation has also in place a liberal policy of providing career breaks to staff.

## II. HUMAN RESOURCE MANAGEMENT

This section outlines the HR practices within each organisation grouped into the following areas: recruitment, selection and socialisation, training and development, performance management, and rewards. The social side of HRM is also outlined by describing the role of social events and their implications for organisational social climate.

### Recruitment and Selection

Recruitment in TeleCo has been to a large extent outsourced to external agencies. However, when there is a need to fill a position, priority is given to the internal labour pool. Available vacancies are first posted on the corporate intranet. If suitable candidates can not be resourced internally, the jobs are advertised externally mainly through recruitment agencies but also through the corporate website and selected print

media. The only exception concerns senior management and call centre positions which are directly advertised externally.

The selection process consists mainly of interviews, the number of which depends on internal or external candidates. For internal candidates interviews are usually limited to one round, while on average two interviews are commonly held for external candidates, and three to four interviews for senior management positions. The interview process includes the use of psychometric tests, while assessment centres are used predominantly for senior management positions. The selection decision is based on whether candidates have met the required business and people competency criteria identified in the core competency framework, along with the technical requirements of the specific job.

In relation to whether cultural fit is considered as an important selection decision criterion, the HR manager in the TeleCo made explicit reference to the competency framework, which describes five key people competencies: leadership, coaching and development, teamwork, interpersonal skills, and influencing and winning commitment. The HR manager stressed the need to view these competencies as interwoven with the business competencies. The latter place focus on achieving results, building effective customer relationships, working effectively in an environment of change, creating new ideas, solutions and methods, analysing and solving problems, having a clear understanding of the organisation's mission and values and, finally, using relevant information of the business and the market to manage costs and pursue revenues at an individual and team level. When asked whether the above competencies could be successfully identified during the selection process, the HR manager made a distinction between internal and external candidates by favouring the former over the latter. In addition, apart from the interview, there were no other practices in place to assess the fit of prospective employees with the organisation's culture.

Recruitment and selection in ConsultCo is a structured process with different processes for trainees and senior level candidates. The recruitment of entry-level employees is managed in-house as graduates can apply directly to the HR department through the corporate website. On average, the department receives in excess of 1,500 applications every year for 80 graduate positions. Therefore, a set of strict criteria is applied during the filtering process. This includes a combination of educational achievements, work experience, and extracurricular activities. The selection process for graduate positions also includes the use of employment testing. An example of this

is a decision-making test focusing on how someone can assess the information provided and how she/he can come to a certain conclusion. There is also a mini-assessment centre used for graduate consulting positions. This was adapted from a prototype applied to the UK member firm to fit the specific needs of the consulting unit. The organisation relies on recruitment agencies for resourcing at more senior positions.

In regard to whether cultural fit is considered integral to the selection process, the HR manager indicated that 'we also assess candidates in a more informal way because we want to know whether and how they interact and communicate with other people effectively'. A typical selection process for entry level positions lasts a half-day. This comprises, on the one hand, the competency-based interview and testing and, on the other, spending time with existing employees with whom the candidates are likely to be working with in the future. The latter is a more informal process which usually takes the form of a chat after lunch between candidates and existing employees. The HR department makes sure that people from various levels (e.g., partners, senior managers and managers) get involved in this process by talking to candidates so that the latter can obtain in a more informal environment a fuller understanding of their future role expectations. The HR manager commented that the lunch was found to be a valuable part of the wider selection process because 'you put the one-to-one interview in a social context rather than a formal meeting'.

Recruitment and selection in StateCo is similar to that found in TeleCo. The HR department only occasionally manages direct recruitment campaigns. As a result, around 90 per cent of the recruitment process has been outsourced to external, mainly public-sector recruitment agencies. However, when needed, available vacancies are also posted on the corporate website and print media. There is a full range of selection techniques used in the selection process, depending on the requirements of the job. These include employment testing particularly for fixed-term, lower and entry level positions, while assessment centres are used only for overseas graduate recruits. There are several rounds of interviews, the number of which depends on the hierarchical level of the job. When was asked what constitutes the best candidate, the HR manager mentioned the importance of expertise in growth industries. The HR manager stressed the difficulties with which the department was faced in recruiting the best people, although she viewed this as a wider industry problem. When was asked what steps the HR department had taken to tackle this challenge, the HR manager commented: 'we try to ensure that our existing employees are prepared to recommend us to prospective employees' (HR Manager, StateCo).

In relation to the cultural fit aspect of the selection process, the HR manager stressed that the competencies required for each position would normally reflect the broader organisational culture and values. In addition, it was mentioned that the employee referral system was acting towards this direction as an efficient cultural filter by bringing in like-minded people. The recruitment and selection practices applied to the three organisations are highlighted in Table 7.1.

Table 7.1 **Composition of Recruitment and Selection Practices**

| | TeleCo | ConsultCo | StateCo |
|---|---|---|---|
| ***Recruitment*** | | | |
| Use of agencies | ✓ | ✓ | ✓ |
| Corporate website and/or print media | ✓ | ✓ | ✓ |
| Referral system | | | ✓ |
| ***Selection*** | | | |
| Employment testing | ✓ | ✓ | ✓ |
| Assessment centre | ✓[a] | ✓[c] | ✓[b] |
| Focus on candidate's competencies | ✓ | ✓ | ✓ |
| Focus on candidate's cultural fit | ✓[f] | ✓[d] | ✓[e] |

[a] Senior positions only; [b] Overseas graduates only; [c] Consulting graduates mainly; [d] Explicit through social activities; [e] Explicit through employee referral system; [f] Implicit through interview process

## Training and Development

The training and development approach of TeleCo is based on a series of practices that vary depending on employee level. There is a structured five-day induction training course for new employees. This provides newcomers with a detailed overview of the organisation along with a full description of the HR policies. This is extended to six weeks for sales managers so that they also become familiar with the organisation's products and services. Beyond entry-level, formal training programmes are offered either internally (e.g., pc skills in-house training), or externally by bringing in specialised training consultants (e.g., presentation and influencing skills). In addition, e-learning is available to all employees through the corporate intranet. The possibility of introducing life-long learning initiatives (e.g., language courses, photograph seminars etc) was also explored by the HR department at the time of the interview. Although some of the training is mandatory for all employees, it is important to note that no exact training targets, such as minimum amount of training hours per year, were set. The HR manager underlined the importance of promoting on-the-job training mainly in the form of shadowing and coaching.

StateCo recently started to invest in management development. Specifically, in the last year, all senior managers took part in a two-days programme called 'coaching for excellence'. This programme is envisaged to be expanded to middle and line managers

in the future. According to the HR manager, investing further in this area is deemed crucial for gaining the full-support of management in order to implement successfully coaching and shadowing at the bottom line. It is acknowledged that since its implementation, the 'coaching for excellence' programme has been received positively by both managers and employees. As the HR manager put it, 'people are beginning to see that we are investing in them now'. In relation to cross-functional and social relationships training, the HR manager stated that the former type is mainly under the discretion of local management within each unit. Specifically, for the employees of the network management unit there are initiatives in place supporting cross-functional training through an employee mobility program. Its aim is that employees would get a more holistic view of the organisation, which, in turn, would help them expand their network knowledge and problem-solving capabilities. In regard to the latter type, there were no distinct training practices identified. However, the HR manager mentioned that both on-the-job training and the mobility program could be seen as factors contributing to the creation of a positive social climate within the organisation by bringing managers and employees closer to each other, and by breaking functional and departmental silos. In terms of career development, emphasis is placed on promoting from within. Promotions were based solely on merit for those employees covered by performance-related contracts, while seniority was also considered to a certain extent for employees under civil servant contracts. In both cases though, the decision of whether an employee will be promoted or not is based on an interview with a panel which consists of HR specialists, the line manager, and the senior manager from the relevant unit.

ConsultCo has in place a structured training and development programme for both graduate recruits and newcomers above trainee level. There is a formal induction program for the former group which runs for a week and a half. This includes a welcome note from the head of the HR department followed by a short training course focusing mainly on HR policies. There is also some technical training involved which usually takes places off-site. Recruits above trainee level are provided with a formal two-week induction course covering mainly operational, structural and cultural issues as well as HR policies and procedures. Six weeks later, a follow-up one-day course takes place to provide newcomers with more detailed information on specific HR policies and ethical aspects of work. The overarching aim of the induction training is to integrate as fast as possible newcomers into their departmental teams. As the HR manager put it:

> Trainees would come in, and literally within two weeks they would be out as juniors…you know, it's that quick. It might be a bit traumatic for them, but it's the best way of learning how to learn' (HR Manager, ConsultCo).

When was asked how the HR department goes about enhancing newcomers' learning capabilities through training and development practices, the HR manager made explicit reference to the importance of the social aspect of the induction process as follows:

> We have lots of socialisation, like games to encourage interaction among trainees, so by the end of the second week they would know each other quite well. And then, around six weeks later we would have what we call it a training protocol 'Milestone'…we would have it offsite somewhere in a lovely hotel… again this is dealing more with technical but also with social training. And then they would come back in and have more on-the-job training, and structured learning programs… [Training] is quite structured but gives trainees a chance to get know each other and also gives them an opportunity to learn in a learning by doing style rather than learning just in a classroom style (HR Manager, ConsultCo).

There is also a well-established mentoring programme which is called 'buddy system'. This is viewed by HR management as integral to the training and development function. The 'buddy system' is described by the HR manager as follows:

> When trainees come in, there is a senior allocated to a particular person. Trainees usually have lots of queries when they just start, so they have a particular point of contact when they want to ask a question which is always available to them whether it's a procedural question or a cultural question or how to do a specific task. Their mentors are always there for them. So that would last for a year or so…and again it's more informal…it's not meant to meet their mentors on a regular basis…it's more like "this particular person is here, if you have any questions or if you need them please talk to them" (HR Manager, ConsultCo).

The HR manager also mentioned the existence of a peer-based support system which is complementary to the 'buddy system'. This is fundamentally an informal process through which new employees utilise their social relationships outside their particular mentor. In HR manager's words, 'the mentor is there, but there are probably more relationships developed among the trainees themselves that can support each other'.

In regard to the composition of training above graduate level, the organisation makes use of both internally and externally delivered courses. The former are related to the provision of specialised training on various areas (e.g., new methodologies) and are driven autonomously by each department depending on its specific, immediate needs. External trainers are also utilised in respect to soft skills training (e.g., negotiation, presentation skills). Particular emphasis is given on the corporate intranet as all employees have full access to the organisation's global resources where they can search for tools and methodologies to serve their training and wider learning needs. In

addition, e-learning was piloted successfully in ConsultCo in 2003, and at the time of the interview it was to be introduced to the rest of the firm. E-learning mainly includes IT and soft skills training material.

The mentoring process is not limited only to ascribing mentoring responsibilities to senior people but also includes the appraisers themselves. In general, the career development policy within the firm is characterised by the HR manager as transparent as it is based on performance and competencies which are highlighted in the 'jam' (i.e., performance appraisal) process. Career development is supported by an employee transfer system. This is implemented in two, mainly informal ways. Firstly, depending on the fluctuation in resource requirements at different times of the year within the different member firms, specialists from other counties can be requested to support local activities. This is viewed as a 'favour' which is expected to be reciprocated when similar shortages appear elsewhere in the member firms' network. Secondly, there are ample opportunities within the global firm for qualified staff to be transferred to other offices around the world on a temporary or permanent basis. Finally, international training applies mainly to senior staff in order that the various units are constantly synchronised with the latest methodologies which, in turn, are expected to be implemented in a global fashion.

Since the introduction of the new strategic plan, the training and development policy of StateCo has escalated into a top HR priority. According to the senior HR manager, 'the priority for HR is to help managers to make the best use of existing manpower resources'. This is reflected in the establishment of a separate Organisation Development (OD) department in mid-2004. The HR manager commented that since its formation, the OD department has contributed significantly to the provision of a good level of training to employees. The HR manager mentioned that employees appear to be generally satisfied with the amount of received training:

> A comprehensive training and development plan covering the entire organisation was created, with each staff member benefiting from group and individual training sessions with external trainers, particularly in areas such as marketing, finance and technical development. A significant amount of training continues to take place on a regular basis (HR Manager, StateCo).

However, it was acknowledged that the challenges currently faced by the organisation require more resources in this area and a re-orientation of the options available to staff.

Training for newcomers takes the form of a structured induction course, which lasts on average two weeks. There is also a more informal induction process that is similar to

the ‘buddy system’ found in ConsultCo. In addition, managers act as coaches during newcomers’ early days in the organisation. Normally new staff will have a more experienced ‘buddy’ to guide them in addition to the special attention of their manager in the initial stages.

There is a variety of both internal and external training courses available for staff aimed at serving the specific needs of each department. External training is mostly available to middle and senior level managers. Forty five managers took part in external courses in the last year. This was expected to increase in the coming years. External training includes participation in public courses and seminars, conferences, and further education courses. It is noteworthy that the organisation encourages existing staff to pursue higher-level educational qualifications, often at postgraduate and doctorate levels. The OD department is also networked to professional associations in the UK (e.g., CIPD), and the USA (e.g., ASTD). This has provided the department with access to valuable knowledge in the areas of training and development. According to the HR manager, the aim is to apply this knowledge selectively towards the further sophistication of training and development practices within the firm. It is important to note that the organisation has set training benchmarks for staff. According to these, all employees are expected to take part at least in one internal training programme. On-the-job training is a common practice within the firm. However, the way it is used is up to the discretion of local management.

In terms of its career development policy, the organisation has a clear ‘promotion from within’ orientation, which is mirrored in the fact that almost 70 percent of promotions apply to existing staff. Promotions are solely based on merit. As the HR manager put it: ‘moves from one level to the next are entirely by promotion through competitive processes’. However, the HR manager mentioned that expectations regarding career opportunities among staff are relatively low especially for ‘key, high value people’. The explanation provided by the HR manager to this is as follows:

> We have a middle and top management team that is almost entirely in the 50-60 age group. We have large numbers of talented people at lower levels. The problem is that for those people there are no promotion opportunities in prospect (HR Manager, StateCo).

In regard to cross-functional training, the OD department recently started to implement a pilot program which promotes internal transfer. This is expected to expand to other parts of the organisation in the coming years. The rationale behind internal transfers is described by the HR manager as follows:

> We try to ensure that people in knowledge working areas of the business have the opportunity to change jobs and learn from different parts of the business particularly in their early years (HR Manager, StateCo).

Finally, training needs are identified. This is done mainly during the performance appraisal process but also on an ad-hoc basis between employees and their immediate managers. The HR manager stated however that the organisation's performance management system is a developing area and therefore there is further potential to its contribution to the training and development function through a more efficient identification of employee training needs.

Table 7.2 provides a summary of the practices utilised by the three organisations in relation to the training and development of their employees.

Table 7.2 **Composition of Training and Development Practices**

| | TeleCo | ConsultCo | StateCo |
|---|---|---|---|
| ***Training*** | | | |
| Formal induction training | ✓ | ✓ | ✓ |
| Internal training courses | ✓ | ✓ | ✓ |
| External training courses | ✓ | ✓ | ✓ |
| On-the-job training | ✓ | ✓ | ✓ |
| Cross-functional training | ✓ | ✓ | ✓[a] |
| Social relationships training | | ✓ | |
| Training needs identified | ✓ | ✓ | ✓[b] |
| ***Development*** | | | |
| Mentoring | | ✓ | ✓ |
| Coaching/Shadowing | ✓ | | ✓ |
| Promotion from within | ✓ | ✓ | ✓ |
| Promotion based on merit | ✓ | ✓ | ✓ |
| Internal transfers | ✓ | ✓ | ✓[a] |

[a] Pilot stage; [b] Not fully;

## Performance Management

A core feature of TeleCo's rationalisation programme, which was introduced soon after its privatisation, was the design of a new performance management system that, however, applied only to the 2,500 employees covered under performance-related contracts. The HR manager characterised the pre-existing system as largely disciplinary and, therefore, inefficient in providing employees with constructive job feedback:

> Traditionally, we haven't been good at giving feedback to people. That's really the essence of performance management. Up to now, we used to view performance in a

> disciplinary manner and we used to deal mainly with underperformers' (HR Manager, TeleCo).

As a result, the performance management system was re-designed in order to be aligned with the strategic priorities set in the rationalisation programme. The new system, launched in 2004, is based on the 'Competency Framework'. This describes in detail the business and people competencies employees across all levels should have. This framework is used as a guideline for staff performance appraisals. The appraisal process consists of quarterly reviews. These reviews are documented every six months and at the end of each year employees receive a performance rating based on which pay and bonus levels are decided. The performance appraisal is mainly individually results-based but also contains team-level targets. These, however, apply mostly for employees working in sales. The appraisal process does not include 360° feedback and it is structured solely around the appraiser and the appraisee.

The HR manager mentioned the need to expand the scope of the performance management system from simply a performance measurement tool to an effective mechanism for capturing employee training and development needs. The provision of coaching skills for managers and the creation of a 'coaching culture' within the firm are viewed as key prerequisites in this direction. When asked whether the performance management system takes into consideration employee knowledge sharing behaviours, such as contribution and/or exchange of ideas with colleagues, the HR manager pointed that under the 'teamwork' competence area of the 'Competency Framework' there is explicit reference to this. In particular, the framework prescribes that employees are expected to 'share relevant information, ideas, opinions and feelings with other team members' (TeleCo, Competency Framework: 13).

Performance management in ConsultCo is based on the 'Solutions Competency Macro Model'. This is a framework that describes seven core competency areas that enable people to perform successfully in their jobs by achieving outcomes and performing tasks efficiently and effectively. This also acts as a career development blueprint within the global organisation. The seven competency areas are: interpersonal excellence, consulting process, engagement management, business development, practice management and development, people development, and finally self-development. These areas are further grouped into three clusters, namely process competencies, strategic business competencies, and foundation competencies. The competency areas and clusters remain constant across levels but there are differences between levels in how they are applied and the complexity of the issues being solved. The

specific competencies reflect the progression of knowledge, abilities and individual qualities required throughout the career path. The 'Solutions Competency Framework' defines competencies for six professional levels (i.e., Business Analyst, Consultant, Senior Consultant, Manager, Senior Manager, and Partner or Director). The competencies at a given level represent a progression of additional competencies over a prior level. Promotion is based on demonstrating most of the competencies at the next level of the framework but is also at the discretion of the consultancy practice leaders. The 'Solutions Competency Framework' was introduced during 2002. As the HR manager commented, 'it is a global tool that has been adapted to our culture, procedures and processes'.

Performance appraisals take place officially twice a year. In addition, employees are expected to complete project engagement reviews following the completion of project-based work. The HR manager describes the engagement review process as follows:

> At the end of each project, each project participant does a self-appraisal; then he or she passes the self-appraisal form to his/her manager who fills it in as well and also makes some comments. Then employee and manager are meeting up to discuss and reach an agreement; then they both sign it before sending it to the HR and the managing partner. This is a global practice (HR Manager, ConsultCo).

When was asked whether performance appraisal places emphasis on individual and/or team results, the HR manager stated that there are no explicit team or organisation-level performance targets for employees with the exception of senior managers. It was nevertheless mentioned that within a project team context, team-oriented performance is inherently linked to individual performance:

> It would be how you perform within a project team. This can include for example how effective you are in teamworking. So, it wouldn't be based on the overall team result but it would be your ability and your contribution to the team (HR Manager, ConsultCo).

Commenting on the extent to which knowledge sharing behaviours are incorporated into, and consequently assessed by the performance management system, the HR manager mentioned:

> Under the self-development area, there is the knowledge sharing criterion….The knowledge sharing criterion states that people are assessed according to what extent they support and facilitate knowledge sharing with peers around the practice and to what extent they contribute project summaries and qualifications in relevant knowledge networks. So, if you are a manager you should be doing this, if you are a consultant you should be doing that. In other words, there is official and written knowledge management policy. So, at the end of each project, people will be evaluated according to that criterion. I think this is strong evidence…Knowledge sharing is one of the seven competency areas (HR Manager, ConsultCo).

Performance management was a newly established and therefore developing area in StateCo. Until recently, performance, and consequently rewards and career development, were based on the Irish public service grading system. Employees were provided with a scale for their grade and periodic pay increases were to a large extent centrally negotiated. In contrast, under the new performance management system, moves from one level to the next are entirely by promotion through a competitive performance appraisal process. The HR manager stressed that redesigning the performance management system in combination with parallel initiatives including renegotiation of contracts and investment in training and development resulted in greater productivity and savings of over €1.5 million in reduced costs within the last six months.

Performance appraisals take place biannually and are based both on individual and departmental results. The appraisal process is similar to that found in the other two organisations. The organisation also utilises a corporate planning process, which ensures that all staff are aware of the level of achievement of the organisation's different departments against their targets. This provides departmental heads with clear performance indicators based on which training and development needs as well as process improvements can be identified. Knowledge sharing did not emerge as a criterion considered in the performance appraisal process. A core aspect of the philosophy surrounding the performance management system is what the HR manager described as a 'tolerance to failure' approach. Specifically, the HR manager stated that 'many of our jobs involve acceptance of failure or limited success even when people perform well…Some people find this hard to deal with'. Table 7.3 summarises the overall approach to performance management within each organisation.

Table 7.3 **Composition of Performance Management Practices**

| | TeleCo | ConsultCo | StateCo |
|---|---|---|---|
| Formal performance appraisals | ✓ | ✓ | ✓ |
| Individual results-based appraisals | ✓ | ✓ | ✓ |
| Team/Departmental results-based appraisals | ✓[a] | ✓[b] | ✓ |
| Training and development needs identified | ✓ | ✓ | ✓ |
| Knowledge sharing as performance criterion | ✓ | ✓ | |

[a] In certain business units; [b] Only for senior managers

## Rewards

The general approach to reward management was found to be similar across the three organisations. The basic features comprising the reward package within the three organisations include base pay and incentives that are mainly linked to individual

performance. Moreover, all organisations have in place team and/or organisation-level incentives which typically take the form of team- and/or organisation-level incentives (e.g., team bonuses for outstanding performance) and/or profit sharing plans. These are, however, applied mainly to senior level employees. There is also a range of benefits available to employees across the three organisations including health insurance, pension schemes, child care services, and subsidised subscriptions to social and sport clubs, and professional associations.

Incentives for knowledge sharing are not included directly in reward management in any of the three organisations. However, the HR managers underlined the existence of an indirect link as pay levels were linked to performance appraisal which, in turn, incorporated the knowledge sharing criterion. Comments highlighting this link include the following:

> This is actually the first year that people are rated based on their competencies and this will affect their pay. So, under the teamwork competency, I would say that rewards are influenced by knowledge sharing. However, this is not explicit (HR Manager, TeleCo).
>
> …Indirectly, as rewards are linked to performance appraisal, where the latter includes the knowledge sharing assessment criterion (HR Manager, ConsultCo).
>
> We have a scheme that provides small monetary amounts to celebrate individual and team achievements. I would expect that those teams which perform exceptionally well will also be particularly good at sharing knowledge (HR Manager, StateCo).

Non-monetary rewards were found to be embedded in the reward policy of ConsultCo Unit and to a lesser extent utilised in the other two organisations. In particular, its HR manager commented:

> A monetary reward in the form of a bonus is one, usually the simplest way to reward. It's not the only way though…Put it this way, simple words like 'thanks' and 'well done' that you rarely hear in offices are very good tools to motivate someone. I think that a very strong motivator is management's willingness to reward employees and more importantly the implementation of that through communicating in person but also publicly that someone has performed well. In addition, the company offers certain perks like dinners in nice restaurants when for example a project has been completed successfully. Another way to reward people is to offer training courses, especially abroad. This motivates people as they believe that they work for an A-class global company that offers them exceptional learning opportunities. People working in this industry are particularly interested in learning (HR Manager, ConsultCo).

The composition of reward practices within each organisation is presented in Table 7.4.

Table 7.4 **Composition of Reward Management Practices**

| | TeleCo | ConsultCo | StateCo |
|---|---|---|---|
| Salaried | ✓ | ✓ | ✓ |
| Individual incentive pay | ✓ | ✓ | ✓[a] |
| Team/Departmental incentive pay | ✓[a] | ✓[a] | ✓[a] |
| Pay linked to performance appraisal | ✓ | ✓ | ✓ |
| Performance recognition bonuses | ✓ | ✓ | ✓ |
| Incentives linked to knowledge sharing | ✓ | ✓ | ✓ |
| Profit sharing | ✓ | ✓[a] | |
| Stock purchase plans | ✓[d] | ✓[d] | ✓[d] |
| Health insurance | ✓ | ✓ | ✓ |
| Pension schemes | ✓ | ✓ | ✓ |
| Subsidised services/facilities | ✓[c] | ✓[b] | ✓[c] |

[a] Senior levels
[b] Two subscriptions to professional associations for all staff. Sports/social clubs subscriptions for manager levels and above
[c] Subsidised child care and subscriptions to sports/social clubs
[d] Not explicitly linked

## Social Events and Social Climate

While all HR managers acknowledged the importance of social events for their contributing potential to an organisational climate conducive to open communication and knowledge sharing, differences were found in regard to the purpose and types of those events. In turn, these differences, as described below, reflect the relative involvement of both the HR Department and line management in the initiation of both formal and informal socialisation among employees.

The organisational climate in TeleCo was seriously affected by the downsizing which was implemented few years ago as part of the rationalisation programme. Subsequently, most of the social life in the organisation was taking mainly the form of farewell parties. In its attempt to contribute to the creation of a more positive climate between management and employees, the HR department had recently implemented a set of initiatives. These were centred on team meetings organised twice a month in which employees were provided with updates on the business strategy of the organisation. In addition, employees' views are frequently sought through attitude surveys conducted by the HR department. The organisation has adopted a partnership model according to which HR management and trade unions work closely together towards reaching consensus on employee related issues. The HR department is also involved in providing assistance to problem solving groups. These are organised on ad hoc basis depending on departmental and/or interdepartmental needs.

In terms of formal socialisation, the organisation has a sports and social club which operates under the umbrella of the HR function. The activities of the club are communicated to staff via the corporate newsletter. The HR manager mentioned that

although many employees participate in the activities organised by the sports and social club, there is still potential for further employee involvement in it. This was attributed to the fact that the HR department had been to a large extent considered by employees as 'reactive'. The HR manager commented:

> All we are thought of to talk in the management meetings is "reduce the numbers, reduce the headcount". So that's definitely the perception many employees have about HR…taking costs out. That's really changing at the moment because I think we've started to invest in people (HR Manager, TeleCo).

Finally, in terms of more informal social events, the HR manager stated that these typically take the form of a dinner after the end of a project in a specific business area. While the HR department encourages those events, the frequency in which they take place is at the discretion of project managers.

Socialisation in ConsultCo is closely related to its communication policy, which the HR manager characterised as 'bottom-up' and 'open-door'. The HR department is heavily involved in the promotion of internal communication through a set of initiatives including: biannual staff briefings, monthly departmental communication meetings, social events (e.g., social weekends, teambuilding days, and conferences), and finally e-newsletters in which the activities of the sports and social committee are communicated. A recent addition to these practices is an employee survey, which is conducted externally by an independent research organisation. This survey offers a detailed comparative overview of workplace culture by focusing on the relationships between employees and their jobs, employees and management, and employees and their colleagues. It is seen as highlighting areas for improvement including employee trust towards peers and management, internal communications and knowledge sharing. The HR manager mentioned the benefits of participating in this survey as follows:

> The survey is another means to encourage communication because it's external, independent and therefore honest…The results of the survey are really beneficial…In the last three years we've been using those results to introduce new initiatives and programmes in order to improve certain areas…We are proud of the fact that we have been named for a third year in a row among the top fifty companies to work for in Ireland (HR Manager, ConsultCo).

When was asked how these benefits are reflected in the social life of the organisation, the HR manager highlighted the importance of upward communication channels through the establishment of open-door policies, and activities both internal and external to the firm that promote open communication and collaboration among

employees. The HR manager also mentioned the role of workplace design as integral to an open-door culture and collaboration.

In regard to the actual social activities within the consulting unit, reference was made to the 'Friday meetings', which are held every third Friday of the month. While their agenda includes mainly the provision of training in the form of morning lectures given by partners and senior managers, issues that are important to the whole group are also discussed during work lunches. In addition, as the HR manager stated, the Friday lunches provide consultants from all levels with the opportunity to exchange insights, information and advice with their colleagues.

Social events also take place outside the workplace. These can be in the form of either formal, company-wide social gatherings, an example of which was provided by the HR manager as follows:

> We used to have an old form Christmas party, which was very strange. People wouldn't go because they would probably mix the ball tables. Invariably what happens is that people sit with their own team, that's just natural. People were just finishing their meal and after a while would start mixing with people from their own teams. Last summer we took a risk to organise something different, a companywide barbeque. We decided to put a bit of more effort around this. So, we chose to make it on a Friday and we arranged with the partners that everybody could take a half-day off. Then, we thought it would be a good idea to include some games in the afternoon so that people from different areas could mix. So, we were all split up in teams and there was a random selection, so let's say, I was team leader on a team of consultants whom I wouldn't necessarily meet on a daily basis…Everyone said the games was great fun and the quality of the whole event was superb, and it was really nice to get know other people from those various areas. So, we are going to do it again this year and I'd say there will be more people out there than last year (HR Manager, ConsultCo).

Social events of smaller scale are also encouraged by the HR department through supporting line managers to initiate them as part of a wider reward and recognition policy.

> …To give you an example of ad hoc social event that took place last week: Performance was very good in a consulting team, and particularly because it's a busy season there at the moment, as a kind of reward for hard work and late hours, everyone was brought out. That happens regularly. That's not necessarily driven from HR, that particular event was driven from the department head, so it's quite in the mind of everyone that it's important to give a sort of a social reward for exceptional team results. This would be a social drink or a dinner (HR Manager, ConsultCo).

The social climate in StateCo was characterised by the HR manager as 'friendly, open and inclusive'. The HR manager mentioned that an integral aspect of that climate is the way in which communication is managed in the organisation. When was asked whether employees' views are sought on important issues, the HR manager said that 'more

often than not the answer is yes' and mentioned that in a recent strategy development initiative over 400 people contributed to the development of a new corporate strategy.

Similar to TeleCo, StateCo has a sports and social club, the activities of which are supported by the HR department. There is also a monthly newsletter communicating the activities of the club to employees via the corporate website. In terms of more informal social events and activities, the HR manager mentioned that individual and team achievements are celebrated, rewarded and communicated throughout the organisation. In addition, the organisation has recently placed emphasis on the office design by creating open spaces to facilitate communication and interaction among employees.

## III. KNOWLEDGE MANAGEMENT

This section outlines the ways in which knowledge is managed in each of the three organisations.

### TeleCo

TeleCo's NEU is characterised by high levels of expertise in telecommunications engineering. Traditionally, this expertise had been developed around the individual engineer and maintained over long periods of time as under the previous employment model employees would typically enjoy life-time employment within the same part of the unit. In recent years, competition within the Irish (and wider EU) telecommunications industry has been intensified substantially creating the need for continuous innovation translated into increasing technical complexity and rapid advances in the provision of sophisticated and competitive customer services. As a result, the organisation recently shifted its strategic priorities towards maximising business efficiency through the implementation of a rationalisation programme.

Parallel to this, the range of technological applications available to the unit is expanding. This, in combination with the increased staff mobility within the industry, posed a threat to unit's capability of supporting the technical complexity, expertise and innovation required by the organisation going forward. The importance of managing its workforce knowledge was acknowledged by the top management team as an action priority area otherwise the unit would be at risk of failing to meet its strategic objectives. Therefore, three years ago, a KM programme was launched in a small part of the NEU and within the following nine months it was expanded gradually to all other areas.

The core objective of the KM programme is the design and implementation of IT systems and work practices that will foster a more collective and organised approach to the productive utilisation of the unit's knowledge resources in order to deal successfully with the challenges of complex problem solving, innovation and learning. In particular, a number of key issues were identified by the KM team as barriers towards this goal. These issues included: dependence on single individuals with consequential risk to the company; tendency to overload experts and consequential difficulty in coaching less experienced staff; tendency for individuals to remain in the same post for a long period of time and consequential creation of 'stovepipe' thinking when interdisciplinary or complex problem arose; lack of centrally managed written documentation concerning standards procedures and thus increasing reliance on local experts; inability to fully leverage training investment as almost all of the training material was held with those individuals who received training courses.

The above issues were thought to be best dealt with via the development and implementation of an integrated KM system. This is based on two pillars, namely, 'People Strategies' and a 'Knowledge Repository System'. The former comprises a staff mobility programme, a cross-functional working initiative, and the incorporation of KM into performance management reviews. The latter refers to the development of an IT platform providing KM specific applications such as processes and procedures documentation, on-line technical handbooks and references, people's profiles indexes, project team folders, and a KM portal through which employees can contribute to and retrieve information.

### ConsultCo

In recent years the global organisation has placed explicit emphasis on managing its knowledge resources. This is reflected in the appointment of a Chief Knowledge Officer who is the head of a global KM team responsible for the design of the KM strategy. According to this, all country offices, which are clustered in three regions (i.e., America, EMEA, Asia Pacific), were recently advised to establish a KM team responsible for the effective implementation of this strategy at local level. The KM strategy has three key objectives. First, to create a knowledge sharing culture at global and local level by leveraging practitioners as contributors of knowledge to a recently redesigned KM/ICT system and by fostering a culture that will promote both the contribution and use of that knowledge. Second, to ensure the acquisition and organisation of 'best in class' knowledge content around issues relevant to the business and its clients. And finally, to leverage the value of knowledge resources across the global network through targeted

acquisition and delivery of knowledge which will reflect the priorities of the business at global and local level.

The above objectives were thought to be served best through the parallel development of three key global-based functions. The first two functions refer to a global support exchange service line, and a global research centre, both of which operate in India. The general aim of both functions is to provide regional and local offices with a unified, single point of contact in regard to acquisition and delivery of knowledge. More specifically, the focus of the former function is to provide services to local practice areas including practitioner enquiries on internal topics such as methodologies and tools, intellectual property, and software packages. The global research centre's services, on the other hand, include practitioner inquiries for external research. Therefore, the focus of the research team is to gather and maximise the value of knowledge acquired from third parties. Both functions operate as internal profit centres within the global organisation. The third function concerns the global KM team. This works directly with regional practice area leadership to develop knowledge account plans. These deal with the prioritisation of knowledge in the form of proposals, deliverables and accredited qualifications. The global team also coordinates its efforts with regional and country KM teams to ensure that locally applicable knowledge is available for use. Particular emphasis is placed therefore on improving the connectivity and communication among the various country offices. This is supported by a content management team based in India which is responsible of cleansing, tagging, abstracting and publishing content on the global KM system.

The benefits of the global KM strategy for the local offices were summarised by the KM manager as follows: first, through the provision of a global KM infrastructure means that there will be no need for local budgets for creating and maintaining information and content databases; secondly, the provision of content processing and cleansing by the content management team will reduce risks associated with client confidentiality issues; thirdly, the global KM system will enable local and global cross-firm knowledge transfer and collaboration on business opportunities and engagements; fourthly, the establishment of a unified global KM system will contribute to increased visibility within the global network; and finally, the global KM team will have both the opportunity and ability to design advanced KM products and services.

The Irish KM team, which was formulated in August 2004 and comprised of five people, has been responsible for the local implementation of the strategic objectives described

above. Initially the team was mainly involved in transferring data content from the local database to the new global platform. Following this, training courses were organised within the firm in order to familiarise the consulting group (along with other practice area groups) with the new KM system. Integral to this was the aim to increase people's awareness of the individual and organisational benefits derived from the utilisation of the platform. The team created a KM newsletter on KM issues and initiatives that take place globally and locally. Having ensured the smooth operation of the KM applications, the team was however soon faced with the challenge of how to motivate people to utilise the KM system in an efficient manner. As the KM manager put it, 'we have the application and it is running well; the thing is how we best go from here to get people to use it'.

### StateCo

As a result of the new strategic plan, the recently appointed CEO decided to promote KM initiatives with the aim to engrain a culture that would facilitate the achievement of the organisation's envisaged vision and mission. This is, in turn, expressed in a set of core values, which include integrity, innovation, learning, and business excellence as personal values, along with proactive leadership and teamwork as organisational values.

Part of the strategic reconfiguration of the organisation's internal structure was the establishment of the Organisation Development (OD) Department. The strategic objective of the OD Department is to integrate the various parts of the organisation by promoting a new culture through the implementation of good HRD practice in order to develop staff to deliver on top management's expectations that is to become the best enterprise agency in the world at helping SMEs to develop and grow. Accordingly, the OD Department in coordination with the HR Department, decided to place emphasis on the design of initiatives which could contribute to the challenging issue of organising and managing effectively the organisation's knowledge-driven work activities. The management of knowledge was viewed as core to this action framework and explicit emphasis was given to acquiring, developing, and retaining key know-how, including corporate memory.

To achieve the above objectives a number of KM initiatives have been introduced in the organisation in the last two years. These are related to: first, the advancement of the corporate intranet to a KM tool that would enable both the contribution and retrieval of codified internal know-how from employees; secondly, the development of an

internal information centre – similar to ConsultCo's research centre – staffed by high-calibre information professionals; thirdly, the encouragement of widespread use of informal know-how among staff. This was thought to best achieved through the introduction of extensive staff education programs and other training activities; fourthly, seeking constant feedback from clients about the effectiveness of provided services in order to stimulate acquisition of external know-how when required; and finally, consulting regularly best practice sources through membership to professional associations, and educational bodies nationally and internationally.

## IV. CONCLUSION

This chapter has provided an overview of the organisational context in which the research was conducted, by outlining the organisational profile of TeleCo, ConsultCo, and StateCo, and describing their HR and KM practices.

This overview indicates that while all three organisations are, in general, characterised by a similar approach to the management of human resources, there are some differences identified in the manner in which certain HR practices are implemented. For example, in regard to recruitment and selection, there is a variation in the relative emphasis placed on the role of employee cultural fit as a hiring criterion. Besides the interview process, which was common across the three organisations, two distinct practices linked to the cultural fit aspect of the selection process were identified: social activities (e.g., informal lunch) found in ConsultCo, and active use of an employee referral system found in StateCo. In regard to training and development, the most important differentiating factor appeared to be the extent to which employees, especially at entry-levels, are provided with activities that will enable them to develop a network of social relations which, in turn, can be utilised as complementary to mentoring and coaching for satisfying better their learning needs. This was found to exist only in ConsultCo. Furthermore, in regard to the KM orientation of performance management, with the exception of StateCo, knowledge-sharing behaviour appeared to be considered in the performance appraisal system. A closer look at TeleCo's competency framework indicates that knowledge sharing is part of a wider set of appropriate employee behaviours applied to a team setting. This behavioural set includes cooperativeness, collaborative spirit, helpfulness, shared responsibility, respect and supportiveness towards other team members. Taken as a whole, this behavioural set mirrors that of organisational citizenship behaviour. Instead, a rather different approach is found in ConsultCo. Under the 'self-development' competence, knowledge sharing appears to be a means by which employees can develop

themselves both professionally and personally. In addition, it is considered as a foundational competence since it is interrelated with all other competencies which employees are expected to maintain throughout their consulting careers. In other words, knowledge sharing is not necessarily viewed as an expression of extra-role behaviour but as a constituent of purposeful work activity towards meeting organisational objectives as well as supporting personal career development.

The analysis also indicates the existence of some differences between the three organisations in terms of the philosophy, design and implementation of KM practices. First, the strategic approach to managing knowledge in ConsultCo and TeleCo leans towards codification (Hansen, 1999). In contrast, StateCo's KM approach is closer to personalisation (ibid.). This difference is reflected in the design and implementation of KM. For example, the establishment and further development of IT-based KM tools appeared to be a top priority for ConsultCo and TeleCo. Instead, StateCo appeared to be placing more emphasis on fostering knowledge sharing through the introduction of extensive staff education programs and other learning activities.

# PART THREE

# Results, Discussion, and Conclusion

## Overview

The third part of the thesis is divided into four chapters which present and discuss the results of the empirical work. Chapter eight, first, presents the results of statistical analysis for the eleven hypotheses identified in chapter three regarding the properties of the knowledge transfer context. This is followed by presenting some qualitative results with respect to the role of social relations in knowledge transfer and sharing within the three organisations. Chapter nine shifts attention to the HRM context of knowledge transfer and sharing. First, the results of statistical analysis regarding the research questions that were identified in chapter four are first presented, followed by qualitative results regarding the role of HRM in supporting KM objectives. Chapter ten discusses and interprets the results presented in the previous two chapters in light of prior theoretical and empirical work. The eleventh and final chapter provides an integrated discussion of the central features of the present study by highlighting key conclusions in relation to the process, context and management of knowledge transfer in work organisations. The thesis concludes by addressing a number of limitations and recommendations for further research.

# CHAPTER EIGHT
# The Knowledge Transfer Context

## INTRODUCTION

The chapter presents the results of statistical analysis for the hypotheses regarding the role of social relations in knowledge transfer as established in chapter three. This is followed by presenting some qualitative results regarding the role of social relations in knowledge transfer and sharing within the three organisations. The chapter concludes with a summary of the quantitative and qualitative results.

## I. DESCRIPTIVE RESULTS

### Demographics

A total of 135 individuals were included in the final sample. The distribution of the sample is approximately equal between males (N=68) and females (N=67). The average age of respondents is 35.5 years with a range from 23 to 60 years. Four out of ten are in the 31-40 age bracket, followed by 38% aged between 23-30 years. Almost 14% of respondents are between 41-50 years, and the remaining 8% of the sample is aged between 51 and 60 years. The vast majority (95%) of respondents holds a third-level educational qualification either at postgraduate level (52%), undergraduate level (34%) or diploma level (9%) while the remaining 5% has a leaving certificate. Almost half of respondents are employed in management positions (51%). Management positions are classified into middle management (27%), followed by junior management (14%), and senior management (10%). The remaining 49% of respondents describe their jobs as professional (31%), technical (10%), and support/administrative (8%). The dominant employment status is that of full-time permanent contracts, which accounts for 89% of the sample. This is followed by 6.5% of respondents employed on a full-time contract basis, while the remaining 4.5% are employed on a part-time basis.

There is considerable variation in respondents' organisational and positional tenure. The former ranges between 1 and 35 years while the latter ranges from 0.5 to 26 years. The average length of organisational and positional tenure is 8.5 and 2.5 years respectively. The average length of full-time work experience of respondents is approximately 13 years with a range between 1 and 39 years. Almost 45% of respondents have been working in their organisations for between 2 and 10 years, and in their current position for less than 2 years. Almost half of respondents (48%) have

full-time work experience of more than 10 years followed by 47.5% of the sample with work experience between 2 and 10 years, while the remaining 4.5% has work experience less than 2 years.

### Project Work Characteristics

Respondents were asked to indicate a project in which they were currently involved or that ended in the previous three months, which they considered significant for them and/or their respective organisation. Almost 64% of respondents indicated an on-going project while the remaining 36% selected a completed project. As shown in table 8.1, almost 30% of respondents are involved in new product/service development projects followed by approximately 24% of respondents involved in consultation projects, 21% involved in new information systems projects and 9% involved in new marketing campaign projects. The remaining 16% of respondents reported involvement in a variety of other types of project including business process reengineering, the design and building of a new IT infrastructure, process development and change, performance management, and strategy development. The results of cross-tabulation analysis indicate that more than half of new product/service development projects are located in TeleCo, while the majority of consultation projects (19 out of 32) are located in ConsultCo. New information systems projects were divided equally between TeleCo and ConsultCo. Finally, half of the new marketing campaign projects were located in ConsultCo.

Table 8.1 **Types of Project per Organisation**

| | | | Organisation | | | ***Total*** |
|---|---|---|---|---|---|---|
| | | | **TeleCo** | **ConsultCo** | **StateCo** | |
| Project type | New product/service development | N | 27 | 4 | 10 | *41* |
| | | % | 20% | 3% | 7.4% | *30.4%* |
| | New information system | N | 11 | 11 | 6 | *28* |
| | | % | 8.1% | 8.1% | 4.4% | *20.7%* |
| | New marketing campaign | N | 3 | 6 | 3 | *12* |
| | | % | 2.2% | 4.4% | 2.2% | *8.9%* |
| | Consultation project | N | 5 | 19 | 8 | *32* |
| | | % | 3.7% | 14.1% | 5.9% | *23.7%* |
| | Other | N | 11 | 2 | 9 | *22* |
| | | % | 8.1% | 1.5% | 6.7% | *16.3%* |
| | *Total* | *N* | *57* | *42* | *36* | *135* |
| | | *%* | *42.2%* | *31.1%* | *26.7%* | *100%* |

The average project team consisted of 17 members and its modal size is 4 members. This difference is attributed to the wide range of reported sizes, which varies between 3

and 300 project team members. The majority of projects (51%) include 3 to 5 members followed by 27% numbering 6 to 10 members while 22% of projects include more than 10 members. The average time span of a project is 11.5 months ranging between 1 and 72 months, with a modal time span of 2 months. Approximately 47% of projects are short-term (less than 6 months). Mid-term projects (7-12 months) and long-term projects (more than 12 months) account for 27% and 26% of the total number of projects respectively. Involvement in project work varies between 1 and 24 months with an average of approximately 8 months and modal involvement time of 6 months. The majority of respondents (58%) reported involvement equal to or less than 6 months, followed by 29% and 13% of the sample reporting involvement from 7 to 12 months and more than 12 months respectively.

### Relational Demographics

A set of 270 observations on relational demographics was gathered from respondents who reported on their relations with the most helpful and least helpful knowledge providers during the time of the project. As shown in table 8.2, more than half of knowledge seekers were the of the same age (55%) as knowledge providers; less than two thirds of knowledge seekers were of the same gender (61%) as knowledge providers while the majority of knowledge providers were the same nationality (91%) with knowledge seekers. This reflects the homogeneity in ethnic background of both the sample and the workforce in the three organisations as the majority (95%) of the population are self-described as Irish.

More than half of knowledge providers (58%) have managerial responsibilities. 41% of knowledge providers are hierarchically superior to knowledge seekers in contrast to the 34% and 25% of the population whose hierarchical level is equal to or lower than that of knowledge seekers respectively. Finally, 72% of knowledge providers are identified as individuals who are working on the same projects as knowledge seekers.

Independent-samples t-tests were conducted to compare the relational demographic scores for most and least helpful knowledge providers. With the exception of project interdependence ($t=4.472$, $p<.001$), the relevant form of task interdependence for the purposes of this study, there were no significant differences in scores for the most and least helpful knowledge providers. It can therefore be inferred that respondents' choices of most helpful knowledge providers are strongly related to whether or not those knowledge providers work on the same project.

Table 8.2 **Relational Demographics**

| Category | Most & Least Helpful Persons (N=270) | Most Helpful Person (N=135) | Least Helpful Person (N=135) |
|---|---|---|---|
| | N (%) | N (%) | N (%) |
| Same Age (plus/minus 5 years) | 148 (55) | 75 (56) | 73 (54) |
| Same Gender | 164 (61) | 78 (58) | 86 (64) |
| Same Nationality | 246 (91) | 125 (93) | 121 (89) |
| On Same Project | 194 (72) | 113 (84) | 81 (60) |
| Hierarchical Level | Lower: 67 (25)<br>Equal: 92 (34)<br>Higher:111 (41) | Lower:34 (25)<br>Equal: 43 (32)<br>Higher: 58 (43) | Lower: 33 (24)<br>Equal: 49 (36)<br>Higher: 53 (40) |
| Managerial Responsibility | 157 (58) | 76 (53) | 81 (60) |
| Relationship Length (Average) | 2.2 years | 2.3 years | 2.1 years |

## Social Capital and Knowledge Transfer

Respondents were asked to indicate their perceptions of the structural, relational, and cognitive aspects of their relationships with the most and least helpful knowledge providers prior to seeking information or advice on a specific project. A total of 270 observations on those dyadic relationships was gathered. The responses to the variables composing the three social capital dimensions are presented in table 8.3.

As the table shows, the relationship between a knowledge seeker and knowledge provider is characterised by frequent and close social interaction (66%), common values and goals (46%), shared language (64%) and reliance trust (61%). Around half of the respondents (48%) report low levels of disclosure trust to their knowledge providers compared to 30% indicating high levels of disclosure trust.

Table 8.3 **Social Capital Variables**

| Category | Response Mode (%) | | |
|---|---|---|---|
| *Structural Social Capital* | Weak ties (%) | Neither strong nor weak ties (%) | Strong ties (%) |
| Tie Strength | 16 | 18 | 66 |
| *Cognitive Social Capital* | To a little or no extent (%) | To some extent (%) | To a good extent (%) |
| Common Values and Goals | 26 | 28 | 46 |
| Shared Language | 8 | 18 | 64 |
| *Relational Social Capital* | Unwilling (%) | Neither willing nor unwilling (%) | Willing (%) |
| Reliance Trust | 24 | 15 | 61 |
| Disclosure Trust | 48 | 22 | 30 |
| N=270 | | | |

Independent-samples t-tests were conducted to compare the scores of social capital variables for most and least helpful knowledge providers. Significant differences in all scores were found for most and least knowledge providers (i.e., tie strength: t=5.028, p<.001; common values and goals: t=10.134, p<.001; shared language: t=8.385, p<.001; reliance trust: 15.704, p<.001; disclosure trust: t=12.209, p<.001). In particular, respondents scored significantly higher on all social capital dimensions for most helpful compared to least helpful knowledge providers. On the basis of these results, it is inferred that knowledge seekers distinguished between most and least helpful knowledge providers in terms of the structural, relational, and cognitive properties of their prior relationships with them.

Respondents were asked to indicate the type of knowledge they received from most and least helpful knowledge providers. Table 8.4 shows that 43% of respondents were provided with non-codified knowledge followed by 38% of respondents indicating receipt of codified knowledge while 19% of respondents stated receipt of knowledge of average codification. The results of independent-samples t-test show a significant difference in mean scores for most and least helpful knowledge providers (t=-3.45, p=.001).

Respondents were asked to indicate the extent to which the knowledge they received from both knowledge providers either had or was likely to have a positive or negative contribution to the effectiveness and efficiency of the project in which they were currently involved. The results presented in table 8.4 show that 59% of respondents perceived the knowledge they received from knowledge providers as having a positive contribution to project's effectiveness and efficiency. Similar to social capital variables, independent-samples t-test indicate a significant difference in mean scores for most and least helpful knowledge providers (t=18.31, p<.001).

Table 8.4 **Degree of Knowledge Codification and Receipt of Useful Knowledge**

| **Category** | **Response Mode (%)** | | |
|---|---|---|---|
| | Low (%) | Medium (%) | High (%) |
| Degree of Knowledge Codification | 43 | 19 | 38 |
| | Negative contribution (%) | Neither negative nor positive contribution (%) | Positive contribution (%) |
| Receipt of Useful Knowledge | 17 | 24 | 59 |
| N=270 | | | |

## ANOVA Differences across Organisations

One-way analyses of variance (ANOVA) between groups were conducted to test whether significant differences occurred in the social capital, type of knowledge transferred, and receipt of useful knowledge variables across the three organisations. In regard to the social capital variables, as shown in table 8.5, significant differences are evident between organisations for tie strength and disclosure trust, while no significant differences were found in mean scores for common values and goals [F(2, 267)=1.04, p>.05], shared language [F(2, 267)=0.72, p>.05] and reliance trust [F(2, 267)=0.83. p>.05]. Post-hoc comparisons using the Tukey HSD test indicate that only the employees at ConsultCo displayed significantly higher levels of both disclosure trust and tie strength compared to employees at TeleCo. However, despite reaching statistical significance, the actual difference in scores between the two organisations is quite small as the effect size for both disclosure trust and tie strength was found to be $\eta^2$=.02, which corresponds to a small effect size (Cohen, 1988).

Table 8.5 **ANOVA: Social Capital Variables across Organisations**

| | N | Mean | SD | F | Effect Size |
|---|---|---|---|---|---|
| **Tie Strength** | | | | 3.96* | Small ($\eta^2$=.02) |
| TeleCo | 114 | 4.70 | 1.56 | | |
| ConsultCo | 84 | 5.28 | 1.21 | | |
| StateCo | 72 | 4.91 | 1.41 | | |
| *Total* | *270* | *4.94* | *1.44* | | |
| **Disclosure Trust** | | | | 4.31* | Small ($\eta^2$=.02) |
| TeleCo | 114 | 3.22 | 1.53 | | |
| ConsultCo | 84 | 3.86 | 1.65 | | |
| StateCo | 72 | 3.66 | 1.56 | | |
| *Total* | *270* | *3.54* | *1.59* | | |

N=270; * p<.05

In regard to the type of knowledge transferred, no significant differences were found in mean scores across the three organisations [F(2, 267)=2.67, p=.07]. Finally, in regard to the receipt of useful knowledge variable, no significant differences in mean scores were found across the three organisations [F(2, 267)=1.59, p=.29].

## Analysing Relationships

Table 8.6 shows descriptive and skewness statistics, internal reliabilities, and simple correlations among the control variables and the main variables. All skewness statistics were less than 1.0 indicating that the variables were relatively normally distributed (Miles & Shelvin, 2001).

**Control Variables**

Managerial responsibility was found to be positively related to hierarchical level (r=.47, p<.01) indicating that knowledge providers with managerial roles were more likely to be hierarchically superior to knowledge seekers. A Chi-Square test confirmed the above relationship by indicating that the number of hierarchically superior knowledge providers with managerial roles was significant different (larger) from those with no managerial roles ($\chi^2$=71.592, p<.001). In contrast, managerial responsibility was negatively related to age similarity (r=-.12, p<.05). In turn, age similarity was negatively related to hierarchical level (r=-.13, p<.05). It was not possible to control for the direction of age difference between knowledge providers and knowledge seekers. However, it was possible to test whether there was a significant difference between younger and older knowledge seekers in respect to their positioning in the formal organisational hierarchy compared to the positioning of knowledge providers in that same hierarchy. The results of a Chi-Square test indicate the existence of a significant difference ($\chi^2$=22.707, p<.001). The results of a cross-tabulation analysis indicate that 45% of knowledge seekers aged 40 years or less sought knowledge from hierarchically superior colleagues compared to 26% of those knowledge seekers aged more than 41 years. Accordingly, it can be suggested that the older the knowledge seekers were, the larger the number of their hierarchically inferior knowledge providers. The inter-correlation between the age of knowledge seekers and the hierarchical level of knowledge providers was found to be negative and significant (r=-24, p<.01), which provides support for this conclusion.

Gender similarity between knowledge providers and knowledge seekers was found to be negatively related to the relative position of knowledge providers in the organisational hierarchy (r=-.24, p<.01). This suggests that knowledge providers who were hierarchically higher than knowledge seekers were also more likely to be of the gender opposite to that of knowledge seekers. Nevertheless, it was found that this was the case only for female knowledge seekers (r=-.29, p<.01), whereas no significant relationship was found for male knowledge seekers (r=.02, p=.79). This reflects the possibility of a relatively smaller proportion of women than men occupying senior and/or management positions. A subsequent Chi-Square test provided support to the above ($\chi^2$=18.938, p<.01) indicating that the proportion of women in senior positions was significantly lower than that of men. Finally, knowledge seekers and knowledge providers of the same nationality reported longer working relationships with each other. The results of an independent samples t-test provided support to this by showing a

significant difference in the mean scores between nationally heterogeneous and homogeneous dyads (t=-2.628, p<.01).

**Main Variables**

Each of the social capital variables was found to be significantly and positively related to each other, as well as to the criterion variable (i.e., receipt of useful knowledge). Reliance trust was found to be the most highly related variable to receipt of useful knowledge (r=.68, p<.01), followed by disclosure trust (r=.56, p<.01), common values and goals (r=.54, p<.01), shared language (r=.46, p<.01), and tie strength (r=.28, p<.01). The strongest correlation among the social capital variables was that between reliance trust and common values and goals (r=.67, p<.01), followed by reliance trust and disclosure trust (r=.65, p<.01), and reliance trust and shared language (r=.48, p<.01). Non-codified knowledge was found to be negatively related to all social capital variables except tie strength. It was also negatively related to the criterion variable (r=-30, p<.01). Specifically, its strongest negative relationship was found to be with reliance trust (r=-23, p<.01) while its weakest one was with disclosure trust (r=-16, p<.01). No significant correlation was found between non-codified knowledge and tie strength (r=-.02, p>.05).

**Control and Main Variables**

Project interdependence was found to be the only control variable that was positively and significantly related to the receipt of useful knowledge (r=.16, p<.01). In addition, a significantly positive relationship (p<.01) was found between project interdependence and each of the social capital variables. This indicates that in-group social capital was significantly stronger than out-group social capital. Two additional significant correlations were also found between relationship length and shared language (r=.13, p<.01), and between age similarity and non-codified knowledge (r=-.13, p<.05) respectively. Accordingly, the longer the prior working relationship between knowledge seekers and knowledge providers, the greater the extent to which they were sharing a common language. In addition, knowledge seekers who were of the same gender with knowledge providers were likely to receive more codified knowledge (r=-.13, p<.05).

Table 8.6 **Social Capital and Knowledge Transfer: Means, Standard Deviations, Skewness, Correlations, and Internal Reliabilities**

| Variables | Mean (SD) | Skew | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Project Interdependence** | .72 (.45) | -.97 | - | | | | | | | | | | | | | |
| **2. Managerial Responsibility** | .58 (.49) | -.33 | .02 | - | | | | | | | | | | | | |
| **3. Same Age** | .61 (.49) | -.19 | .02 | -.01 | - | | | | | | | | | | | |
| **4. Same Gender** | .55 (.49) | -.44 | -.11 | -.12* | .08 | - | | | | | | | | | | |
| **5. Same Nationality** | .91 (.28) | -.91 | .04 | .05 | .07 | .03 | - | | | | | | | | | |
| **6. Relationship Length** [a] | 1.24 (.43) | -.21 | -.04 | .03 | .10 | .08 | .16** | - | | | | | | | | |
| **7. Hierarchical Level** | 3.31 (1.10) | .03 | -.02 | .47** | -.24** | -.13* | .10 | .00 | - | | | | | | | |
| **8. Non-codified Knowledge** [b] | 0.00 (1.44) | .01 | -.12 | .04 | -.05 | -.13* | -.10 | .07 | -.02 | (.79) | | | | | | |
| **9. Tie Strength** | 4.94 (1.43) | -.68 | .29** | -.06 | .01 | -.01 | -.05 | .01 | -.10 | -.02 | (.87) | | | | | |
| **10. Common Values and Goals** | 4.16 (1.32) | -.31 | .20** | .01 | .07 | .05 | .03 | .06 | -.03 | -.22** | .36** | (.86) | | | | |
| **11. Shared Language** | 5.37 (1.24) | -.57 | .20** | .04 | .07 | .09 | .06 | .13* | -.05 | -.19** | .25** | .47** | (.79) | | | |
| **12. Reliance Trust** [b] | 0.00 (1.55) | -.51 | .24** | .06 | -.03 | -.05 | .09 | .01 | .10 | -.23** | .26** | .67** | .48** | (.93) | | |
| **13. Disclosure Trust** [b] | 0.00 (1.59) | .08 | .20** | -.01 | -.06 | .05 | .07 | .06 | -.03 | -.16** | .38** | .57** | .41** | .65** | (.95) | |
| **14. Receipt of Useful Knowledge** | 4.71 (1.14) | -.37 | .16** | -.02 | .00 | -.05 | .08 | .04 | .00 | -.30** | .28** | .54** | .46** | .68** | .56** | (.94) |

N=270; Two-tailed tests; **p<.01; *p<.05; Internal reliabilities are shown along the diagonal in parentheses.
[a] Logarithmic transformation has been applied to variable; [b] Mean-centering has been applied to variable.

## II. HYPOTHESIS TESTING

A series of hierarchical regression analyses were performed to test the hypothesised relationships proposed in chapter three. The results are presented below.

### Structural Social Capital

*Hypothesis 1* stated: *strong ties have a positive effect on the transfer of knowledge*. To test this hypothesis a hierarchical regression was conducted to ascertain the extent to which strong ties account for unique variance in receipt of useful knowledge above and beyond the control variables. The results of the hierarchical regression are presented in table 8.7. First, the control variables together with non-codified knowledge were entered in equation 1, followed by strong ties in equation 2.

Table 8.7 **Hierarchical Regression of Receipt of Useful Knowledge on Tie Strength**

| | ***Receipt of Useful Knowledge*** | | | |
|---|---|---|---|---|
| | Equation 1 | | Equation 2 | |
| **Independent Variables** | B | SE | B | SE |
| (Constant) | 4.38*** | .41 | 3.44*** | .47 |
| ***Control Variables*** | | | | |
| TeleCo (Dummy) | -.32 | .18 | -.25 | .17 |
| ConsultCo (Dummy) | .02 | .19 | -.03 | .19 |
| Project Interdependence | .31* | .15 | .13 | .16 |
| Managerial Responsibility | -.06 | .16 | -.04 | .15 |
| Same Age | -.02 | .15 | -.02 | .14 |
| Same Gender | -.14 | .15 | -.15 | .14 |
| Same Nationality | .19 | .25 | .24 | .24 |
| Relationship Length | .23 | .17 | .20 | .16 |
| Hierarchical Level | -.03 | .07 | -.01 | .07 |
| ***Main Variables*** | | | | |
| Non-codified Knowledge | -.25*** | .05 | -.25*** | .05 |
| Tie Strength | | | .20*** | .04 |
| $R^2$ | .13 | | .18 | |
| $R^2_{adj}$ | .10 | | .15 | |
| F | 3.89*** | | 5.15*** | |
| $\Delta R^2$ | | | .05 | |
| $\Delta F$ | | | 15.59*** | |

N=270; B=unstandardised beta weight; SE=standard error
***p<.001; **p<.01; *p<.05

The results shown in equation 1 indicate that the control variables along with non-codified knowledge explain 13% of the variance in receipt of useful knowledge ($F_{10, 259}$ = 3.89, p<.001). Among these variables, project interdependence (B=.31, p<.05) and non-codified knowledge (B=.-25, p<.001) are the only significant predictors of receipt of

useful knowledge. Around 18% of the variance in receipt of useful knowledge is accounted by all of the variables included in equation 2, which is statistically significant ($F_{1, 258}$ = 5.15, p<.001). Strong ties significantly describe 5% of variance in receipt of useful knowledge above and beyond the control variables and non-codified knowledge (ΔF= 15.59, p<.001). The beta weight for strong ties is positive and significant (B=.20, p<.001). Therefore, *hypothesis 1* is fully supported.

### Structural and Relational Social Capital

*Hypothesis 2* stated: *the positive effect of strong ties on the transfer of knowledge is mediated by reliance trust and disclosure trust*. To test this hypothesis, a three-stage analysis was conducted to ascertain the four conditions for mediation were satisfied (Baron & Kenny, 1986): (1) strong ties significantly predict receipt of useful knowledge; (2) strong ties significantly predict each of the two types of trust; (3) both reliance trust and disclosure trust significantly predict the receipt of useful knowledge when controlling for the independent variable. If reliance trust and disclosure trust are complete mediators between strong ties and receipt of useful knowledge, the effect of strong ties when controlling for reliance and disclosure trust should be zero (Baron & Kenny, 1986) or at least not significant (Miles & Shelvin, 2001).

As shown in equation 2 of table 8.7, the first condition is satisfied since strong ties are a significantly positive predictor of receipt of useful knowledge. The results for the remaining three conditions of mediation are shown in table 8.8. In equations 1 and 2, reliance trust and disclosure trust were regressed on strong ties respectively. The second condition for mediation was satisfied since strong ties predicted significantly both reliance trust (B=.24, p<.001) and disclosure trust (B=.36, p<.001). In equation 3, receipt of useful knowledge was regressed on reliance trust and disclosure trust while controlling for strong ties. Both types of trust exert a significantly positive influence on receipt of useful knowledge. The third condition for mediation was met. It is noted that the inclusion of interpersonal trust in equation 3 increased the variance in receipt of useful knowledge by 30% above and beyond the effect of strong ties. As shown in equation 3, the effect of strong ties on receipt of useful knowledge is not significant (B=.07, p=.120) after controlling for both types of trust. It is thus inferred that reliance trust and disclosure trust mediate fully the positive effect of strong ties on receipt of useful knowledge. This provides support for *hypothesis 2.*

Table 8.8 **Relational Social Capital as Mediator between Structural Social Capital and Knowledge Transfer**

| | ***Reliance Trust*** | | ***Disclosure Trust*** | | ***Receipt of Useful Knowledge*** | | ***Receipt of Useful Knowledge*** | |
|---|---|---|---|---|---|---|---|---|
| | Equation 1 | | Equation 2 | | Equation 3 | | Equation 4 | |
| **Independent Variables** | B | SE | B | SE | B | SE | B | SE |
| (Constant) | 2.64*** | .61 | 1.27* | .61 | 2.28*** | .38 | 4.93*** | .37 |
| ***Control Variables*** | | | | | | | | |
| TeleCo (Dummy) | -.31 | .22 | -.56* | .22 | -.07 | .14 | -.06 | .14 |
| ConsultCo (Dummy) | -.20 | .24 | -.00 | .24 | .04 | .15 | .05 | .15 |
| Project Interdependence | .51 | .21 | .37 | .21 | -.11 | .13 | -.11 | .13 |
| Managerial Responsibility | .09 | .20 | .11 | .20 | -.09 | .12 | -.13 | .11 |
| Same Age | -.01 | .18 | .19 | .18 | -.13 | .11 | -.13 | .10 |
| Same Gender | -.08 | .19 | -.27 | .19 | .04 | .12 | .06 | .11 |
| Same Nationality | .33 | .32 | .37 | .32 | .07 | .19 | .06 | .19 |
| Relationship Length | .09 | .21 | .31 | .21 | .13 | .13 | .13 | .13 |
| Hierarchical Level | .11 | .10 | -.07 | .10 | -.04 | .06 | -.03 | .06 |
| ***Main Variables*** | | | | | | | | |
| Non-codified Knowledge | -24*** | .06 | -20** | .06 | -.14*** | .04 | -.13*** | .04 |
| Tie Strength | .24*** | .07 | .36*** | .07 | .07 | .04 | .06 | .04 |
| Reliance Trust | | | | | .38*** | .05 | .41*** | .05 |
| Disclosure Trust | | | | | .11* | .05 | .10* | .05 |
| Reliance Trust × Disclosure Trust | | | | | | | .06* | .02 |
| $R^2$ | .17 | | .22 | | .48 | | .49 | |
| $R^2_{adj}$ | .13 | | .19 | | .45 | | 46 | |
| F | 4.72*** | | 6.66*** | | 19.46*** | | 18.71*** | |
| $\Delta R^2$ | | | | | | | .01 | |
| $\Delta F$ | | | | | | | 5.42* | |

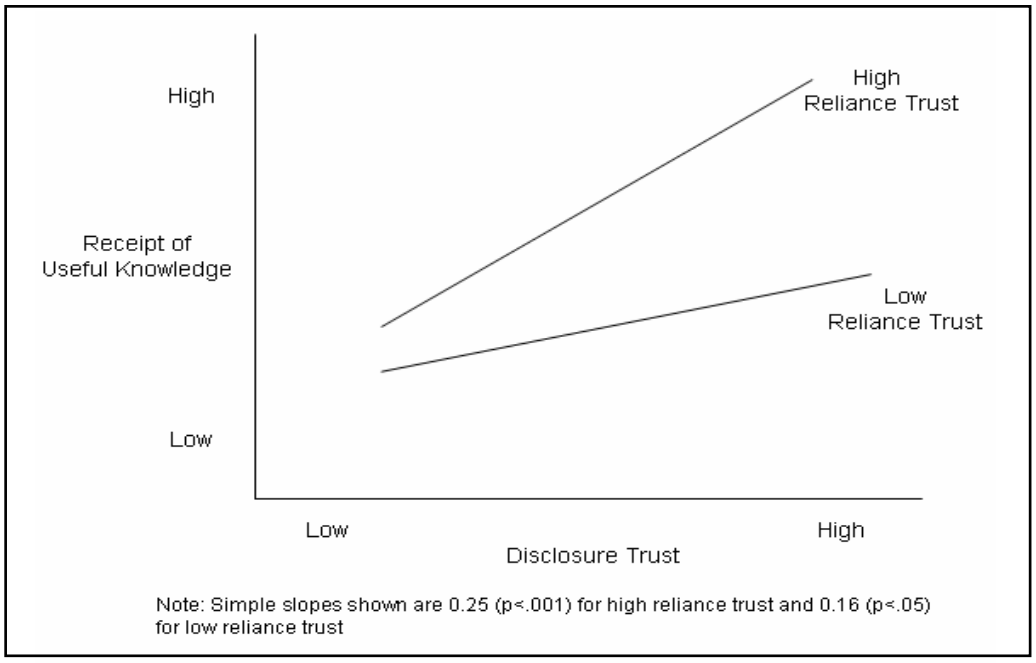
B=unstandardised beta weight; SE=standard error
***p<.001; **p<.01; *p<.05

*Hypothesis 3* stated: *the higher the level of reliance trust, the stronger is the positive effect of disclosure trust on the transfer of knowledge*. In order to test this hypothesis, a moderated regression analysis with interaction effects was conducted (Aiken & West, 1991; Jaccard & Turrisi, 2003). First, the independent variable (disclosure trust) and the moderator variable (reliance trust) were mean-centred to avoid problems of multicollinearity. Following this, an interaction terms was formed: disclosure trust × reliance trust. The results of the regression analysis are presented in equation 4 in table 8.8.

The inclusion of the interaction term in equation 4 resulted in a small yet significant increase in the total variance in the receipt of useful knowledge. In particular, the

interaction term explained an extra 1% of the variance in the outcome variable ($\Delta F_{1, 255}$ = 5.42, p<.05) above and beyond the rest of the variables included in the equation. The interaction term is found to be positive and significant (B=.06, p<.05), which provides support for *hypothesis 3*. To note the VIF value for the interaction term was 1.21, which indicates the absence of multicollinearity problems. Similarly all VIF values in equation 4 were below 3. Figure 8.1 illustrates the interaction effect between reliance trust and disclosure trust on the receipt of useful knowledge. A higher level of disclosure trust results in a higher level of knowledge transfer when reliance trust is higher than under conditions of lower reliance trust.

Figure 8.1 **Reliance Trust as Moderator of Disclosure Trust in Predicting Knowledge Transfer**




## Cognitive and Relational Social Capital

*Hypothesis 4* stated: *shared values and goals have a positive effect on reliance trust and disclosure trust*. *Hypothesis 5* stated: *shared language has a positive effect on reliance trust and disclosure trust*. The results of regression analysis are shown in table 8.9.

As shown in equations 1 and 2, shared values and goals are found to be significant and positive predictors of reliance trust (B=.66, p<.001), and disclosure trust (B=.54, p<.001) respectively. This provides support for *hypothesis 4.* Similarly, shared language is found to exert a significantly positive influence on reliance trust (B=.26, p<.001), and disclosure trust (B=.22, p<.01), which confirms *hypothesis 5*. It is noted

that both sub-facets of cognitive social capital account for a substantial variance in reliance trust ($R^2$=.53, $F_{12, 257}$ =23.74, p<.001), and disclosure trust ($R^2$=.36, $F_{12, 257}$ =213.84, p<.001). As shown in equation 1, hierarchical level is found to be a positive and significant predictor (B=.14, p<.05) of reliance trust. This suggests that relative positioning in the formal organisational structure is taken into account by knowledge seekers for trusting professionally their knowledge providers. In addition, as shown in equation 2, TeleCo's employees place significantly less personal trust (B=-.46, p<.05) in their knowledge providers than StateCo's employees. Furthermore, it is found that knowledge seekers place significantly more personal trust (B=-.34, p<.05) in knowledge providers of the opposite gender than in those of the same gender. In order to ascertain whether this difference was a characteristic of male or female knowledge seekers, two t-tests were conducted. The results revealed that male knowledge seekers' levels of disclosure trust were significantly higher for female knowledge providers than male knowledge providers (t=2.23, p<.05), whereas there were no significant differences found for female knowledge seekers (t=-1.37, p=.17).

Table 8.9 **Regression of Relational Social Capital on Cognitive Social Capital**

| | ***Reliance Trust*** | | ***Disclosure Trust*** | |
|---|---|---|---|---|
| | Equation 1 | | Equation 2 | |
| **Independent Variables** | B | SE | B | SE |
| (Constant) | .58 | .56 | .25 | .65 |
| ***Control Variables*** | | | | |
| TeleCo (Dummy) | -.13 | .17 | -.46* | .20 |
| ConsultCo (Dummy) | -.11 | .18 | .12 | .21 |
| Project Interdependence | .23 | .16 | .28 | .18 |
| Managerial Responsibility | -.05 | .15 | -.03 | .18 |
| Same Age | -.23 | .14 | .09 | .17 |
| Same Gender | -.17 | .15 | -34* | .16 |
| Same Nationality | .27 | .14 | .28 | .27 |
| Relationship Length | -.15 | .16 | .15 | .18 |
| Hierarchical Level | .14* | .07 | -.06 | .08 |
| ***Main Variables*** | | | | |
| Non-codified Knowledge | -.08 | .05 | -.06 | .06 |
| Shared Values and Goals | .66*** | .06 | .54*** | .07 |
| Shared Language | .26*** | .06 | .22** | .07 |
| $R^2$ | .53 | | .39 | |
| $R^2_{adj}$ | .50 | | 36 | |
| F | 23.74*** | | 13.84*** | |

N=270; B=unstandardised beta weight; SE=standard error
***p<.001; **p<.01; *p<.05

## Structural and Cognitive Social Capital

*Hypothesis 6* stated: *strong ties have a positive effect on shared values and* goals. *Hypothesis 7* stated: *strong ties have a positive effect on shared language*. The results of the regression analysis are presented in table 8.10.

Table 8.10 **Regression of Cognitive Social Capital on Structural Social Capital**

| | ***Shared Values and Goals*** | | ***Shared Language*** | |
|---|---|---|---|---|
| | Equation 1 | | Equation 2 | |
| **Independent Variables** | B | SE | B | SE |
| (Constant) | 2.98*** | .96 | 4.20*** | .55 |
| ***Control Variables*** | | | | |
| TeleCo (Dummy) | -.29 | .19 | .02 | .18 |
| ConsultCo (Dummy) | -.08 | .20 | -.17 | .20 |
| Project Interdependence | .28 | .17 | .36* | .17 |
| Managerial Responsibility | .13 | .17 | .21 | .16 |
| Same Age | .12 | .16 | .20 | .15 |
| Same Gender | .13 | .16 | .03 | .15 |
| Same Nationality | .06 | .27 | .12 | .26 |
| Relationship Length | .22 | .18 | .35* | .17 |
| Hierarchical Level | -.03 | .08 | -.05 | .08 |
| ***Main Variables*** | | | | |
| Non-codified Knowledge | -.20*** | .05 | -.15** | .05 |
| Tie Strength | .30*** | .06 | .19*** | .05 |
| $R^2$ | .20 | | .15 | |
| $R^2_{adj}$ | .17 | | .11 | |
| F | 5.99** | | 4.09*** | |

N=270; B=unstandardised beta weight; SE=standard error
***p<.001; **p<.01; *p<.05

The results as shown in equation 1 indicate that strong ties exert a positive and significant influence (B=.30, p<.001) on shared values and goals, which provides support for *hypothesis 6.* Similarly, *hypothesis 7* is supported since equation 2 indicates that strong ties predict positively and significantly (B=.19, p<.001) shared language. In the same equation, it is also shown that relationship length between knowledge seekers and knowledge providers is significantly and positively (B=.61, p<.05) related to shared language. Furthermore, project interdependence is also found to be a positive a significant predictor (B=.36, p<.05) of shared language. Taken together, the results suggest that knowledge seekers having a history of frequent social interaction in common projects are likely to develop a shared language for communication.

## Structural, Cognitive, and Relational Social Capital

*Hypothesis 8* predicted that cognitive social capital would act differently as a mediator in the relationship between strong ties and interpersonal trust. In particular, *hypothesis 8a* stated: *the positive effect of strong ties on disclosure trust is not mediated by shared values and goals and shared language.* In contrast, *hypothesis 8b* stated: *the positive effect of strong ties on reliance trust is mediated by shared values and goals and shared language*. To ascertain that the three conditions for mediation were satisfied, a three-stage analysis was conducted (Baron & Kenny, 1986; Miles & Shelvin, 2001). As shown in table 8.8 and table 8.10, the first two conditions are met since strong ties are found to be positive and significant predictors of both sub-facets of relational social capital (i.e., dependent variable) as well as of both sub-facets of cognitive social capital (i.e., mediator variable). The results regarding the third condition for mediation are presented in table 8.11.

Table 8.11 **Cognitive Social Capital as Mediator between Structural Capital and Relational Social Capital**

| | ***Reliance Trust*** | | ***Disclosure Trust*** | |
|---|---|---|---|---|
| | Equation 1 | | Equation 2 | |
| **Independent Variables** | B | SE | B | SE |
| (Constant) | .59 | .58 | -.24 | .67 |
| ***Control Variables*** | | | | |
| TeleCo (Dummy) | -.13 | .17 | -.41* | .19 |
| ConsultCo (Dummy) | -.11 | .18 | .07 | .21 |
| Project Interdependence | .24 | .16 | .16 | .18 |
| Managerial Responsibility | -.05 | .15 | -.00 | .17 |
| Same Age | -.23 | .14 | .09 | .16 |
| Same Gender | -.17 | .15 | -.33* | .17 |
| Same Nationality | .27 | .24 | .32 | .28 |
| Relationship Length | -.15 | .16 | .14 | .19 |
| Hierarchical Level | .14* | .07 | -.04 | .08 |
| ***Main Variables*** | | | | |
| Non-codified Knowledge | -.07 | .05 | -.08 | .06 |
| Tie Strength | -.00 | .05 | .17** | .06 |
| Shared Values and Goals | 66*** | .06 | .49*** | .07 |
| Shared Language | .26*** | .06 | .20** | .07 |
| $R^2$ | .53 | | .41 | |
| $R^2_{adj}$ | .50 | | .38 | |
| F | 21.83*** | | 13.76*** | |

N=270; B=unstandardised beta weight; SE=standard error
***p<.001; **p<.01; *p<.05

As shown in equation 2, strong ties exert a positive and significant influence (B=.17, p<.01) on disclosure trust even after controlling for shared values and goals, and

shared language. This suggests that cognitive social capital is not a mediator in the relationship between strong ties and disclosure trust, providing support for *hypothesis 8a.* In contrast, as shown in equation 1, the effect of strong ties on reliance trust is approximately zero (B=-.005, p=.930) after controlling for the two sub-facets of cognitive social capital. This suggests that shared values and goals, and shared language mediate fully the relationship between strong ties and reliance trust, which provides support for *hypothesis 8b.*

## Social Capital, Knowledge Characteristics, and Knowledge Transfer

*Hypothesis 9* predicted that the effect of the two sub-facets of relational social capital on receipt of useful knowledge would be moderated by the type of knowledge transferred. In particular, *hypothesis 9a* stated: *reliance trust is particularly important to the transfer of knowledge when the knowledge is non*-codified. Similarly, *hypothesis 9b* stated: *disclosure trust is particularly important to the transfer of knowledge when the knowledge is non*-codified. In order to test these hypotheses, a moderated regression analysis with interaction effects was conducted (Aiken & West, 1991; Jaccard & Turrisi, 2003). First, the independent variables (i.e., reliance trust, disclosure trust) and the moderator variable (i.e., non-codified knowledge) were mean-centred to avoid problems of multicollinearity. Following this, two interaction terms were formed: reliance trust × non-codified knowledge, and disclosure trust × non-codified knowledge. The results of the regression analysis are presented in table 8.12.

Table 8.12 **Moderated Regression of Receipt of Useful Knowledge on Interpersonal Trust and Non-codified Knowledge**

| | ***Receipt of Useful Knowledge*** | |
|---|---|---|
| | Equation 1 | |
| **Independent Variables** | B | SE |
| (Constant) | 3.75*** | .47 |
| ***Control Variables*** | | |
| TeleCo (Dummy) | -.07 | .14 |
| ConsultCo (Dummy) | .09 | .15 |
| Project Interdependence | -.14 | .13 |
| Managerial Responsibility | -.11 | .12 |
| Same Age | -.18 | .11 |
| Same Gender | .03 | .12 |
| Same Nationality | .06 | .19 |
| Relationship Length | .08 | .13 |
| Hierarchical Level | -.03 | .06 |
| ***Main Variables*** | | |
| Non-codified Knowledge | -.12** | .04 |

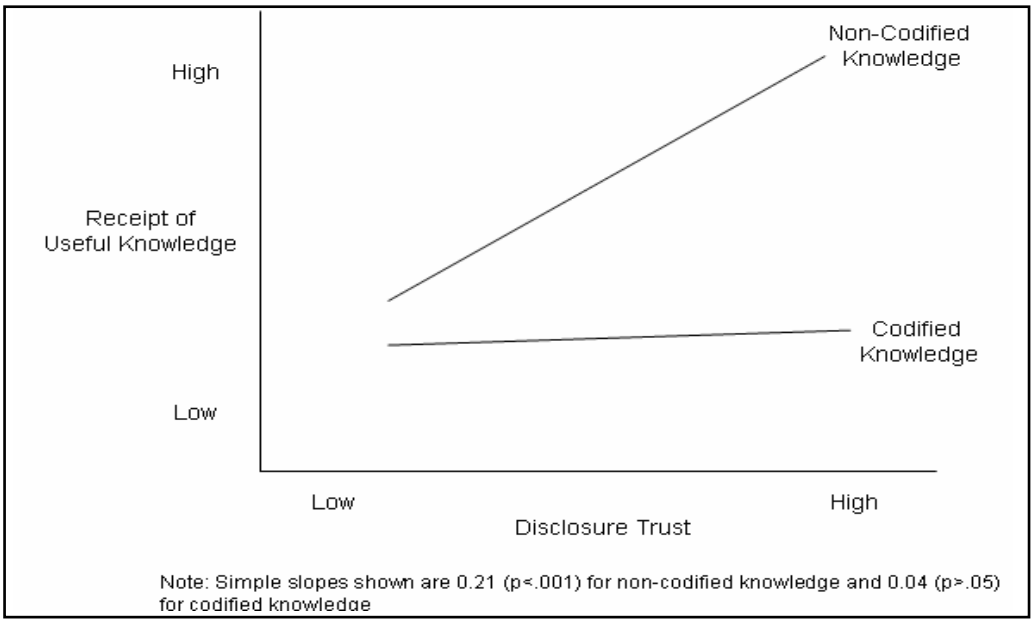
Table 8.12 **(Continued)**

| | ***Receipt of Useful Knowledge*** | |
|---|---|---|
| | Equation 1 | |
| **Independent Variables** | B | SE |
| Tie Strength | .04 | .04 |
| Shared Values and Goals | .04 | .06 |
| Shared Language | .15** | .05 |
| Reliance Trust | .34*** | .06 |
| Disclosure Trust | .10* | .05 |
| ***Interaction Terms*** | | |
| Reliance Trust × Non-codified Knowledge | -.05 | .03 |
| Disclosure Trust × Non-codified Knowledge | .06* | .03 |
| $R^2$ | .50 | |
| $R^2_{adj}$ | .47 | |
| F | 14.95*** | |

N=270; B=unstandardised beta weight; SE=standard error
***p<.001; **p<.01; *p<.05

Equation 1 indicates that non-codified knowledge exerts a significantly negative influence (B=-.12, p<.01) on receipt of useful knowledge, whereas reliance trust (B=.34, p<.001) and disclosure trust (B=.10, p<.05) are positive predictors of receipt of useful knowledge. Contrary to *hypothesis 9a*, the interaction term 'reliance trust × non-codified knowledge' exerted a negative (although not significant) influence on receipt of useful knowledge. The interaction term 'disclosure trust × non-codified knowledge', on the other hand, was found to be positive and significant (B=.06, p<.05) providing support for *hypothesis 9b*. Figure 8.2 illustrates the effect of disclosure trust on receipt of useful knowledge for non-codified and codified knowledge.

Figure 8.2 **Type of Knowledge as Moderator of Disclosure Trust in Predicting Knowledge Transfer**



It should be noted that the VIF values for all beta weights included in equation 1 were well below five, which indicates that there were no problems of multicollinearity present (Miles & Shelvin, 2001).

## Social Capital, Social Similarity, and Knowledge Transfer

*Hypothesis 10* stated: *the effect of shared values and goals and shared language on the transfer of knowledge differs for socially similar and socially dissimilar knowledge transfer* dyads. One way to test this hypothesis is to run regressions of receipt of useful knowledge on cognitive social capital separately for socially similar and dissimilar dyads in terms of age, gender, and nationality. It should be noted that, since the vast majority (91%) of dyads are of the same nationality (Irish), the number of nationally different dyads is too small (N=24) to perform a regression analysis. Therefore, social similarity is tested only in terms of age and gender. The results of regression analyses are presented in table 8.13.

Table 8.13 **Regression of Receipt of Useful Knowledge on Cognitive Social Capital: Effects of Social Similarity**

| | ***Receipt of Useful Knowledge*** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | *Same Age* | | *Different Age* | | *Same Gender* | | *Different Gender* | |
| | Equation 1 | | Equation 2 | | Equation 3 | | Equation 4 | |
| **Independent Variables** | B | SE | B | SE | B | SE | B | SE |
| (Constant) | 2.00** | .67 | 2.93*** | .81 | 2.75*** | .68 | 1.99** | .73 |
| ***Control Variables*** | | | | | | | | |
| TeleCo (Dummy) | .01 | .22 | -.28 | .23 | -.07 | .20 | -.28 | .24 |
| ConsultCo (Dummy) | .25 | .24 | -.03 | .24 | .38 | .23 | 54* | .25 |
| Project Interdependence | .07 | .19 | -.19 | .23 | -.06 | .19 | -.14 | .21 |
| Managerial Responsibility | -.08 | .18 | -.16 | .22 | -.21 | .19 | -.10 | .22 |
| Same Age | | | | | -.49** | .17 | .27 | .20 |
| Same Gender | -.20 | .17 | .24 | .19 | | | | |
| Same Nationality | -.13 | .30 | .42 | .31 | -.13 | .31 | .56* | .28 |
| Relationship Length | .12 | .18 | .03 | .23 | .19 | .18 | -.39* | .23 |
| Hierarchical Level | .08 | .09 | -.00 | .09 | .05 | .09 | .14 | .11 |
| ***Main Variables*** | | | | | | | | |
| Non-codified Knowledge | -.18** | .06 | -.17** | .06 | -.22** | .06 | -.12* | .06 |
| Tie Strength | .17* | .08 | -.04 | .06 | .05 | .07 | .11 | .07 |
| Shared Values and Goals | .32*** | .08 | .21** | .08 | .30*** | .07 | .29*** | .08 |
| Shared Language | .17* | .08 | .33*** | .08 | .27*** | .08 | .25** | .09 |
| $R^2$ | .42 | | .41 | | .40 | | .45 | |
| $R^2_{adj}$ | .37 | | .35 | | .35 | | .38 | |
| F | 8.19*** | | 6.42*** | | 8.30*** | | 6.43*** | |
| B=unstandardised beta weight; SE=standard error ***p<.001; **p<.01; *p<.05 | N=148 | | N=122 | | N=164 | | N=106 | |

As shown in table 8.13, all equations explain a substantial proportion of the variance in the outcome variable, which ranges from 40% to 45%. The results indicate that both sub-facets of cognitive social capital are positively and significantly related to the receipt of useful knowledge regardless of whether knowledge transfer dyads are socially similar or dissimilar in terms of age and gender. Therefore, *hypothesis 10* is not supported. However, there are some differences found regarding the role of structural social capital. As shown in equations 1 and 2, strong ties are positively and significantly related to knowledge transfer for dyads of the same age (plus/minus five years) compared to dyads of different ages. There are also some significant results emerged in terms of gender similarity. As shown in equation 4, ConsultCo's knowledge seekers prefer to receive knowledge from knowledge providers of a different gender. In addition, as shown in equation 4, there is a significant and positive effect of national homogeneity (B=.56, p<05) on knowledge transfer in dyads of different gender. Finally, relationship length (B=-39, p<.05) is significantly and negatively related to knowledge transfer in dyads of different gender.

### Social Capital, Hierarchical Status, and Knowledge Transfer

Three hypotheses were established to test whether the positioning of knowledge seekers and knowledge providers in the organisational hierarchy may affect the relative importance of structural and relational social capital to the receipt of useful knowledge. In particular, *hypothesis* 11a stated: *weak ties are particularly important to the transfer of knowledge from hierarchically lower knowledge providers*. Similarly, *Hypothesis 11b* stated: *reliance trust is particularly important to the transfer of knowledge from hierarchically lower knowledge providers*. Finally, *Hypothesis 11c* stated: *disclosure trust is particularly important to the transfer of knowledge from hierarchically equal knowledge providers*.

To test these hypotheses, the sample (N=270) was first divided into three groups: one group (N=67) including dyads in which knowledge seekers were at a hierarchical level higher than that of knowledge providers; a second group (N=92) including hierarchically equal knowledge transfer dyads; and a third group (N=111) including dyads in which knowledge seekers were at a hierarchical level lower than that of knowledge providers. Regression analyses were then conducted for each of the three groups. It was decided to include the two sub-facets of cognitive social capital in the regression analyses in order to explore any non-hypothesised effects of shared language, and shared values and goals on knowledge transfer. The results are presented in table 8.14.

Table 8.14 **Regression of Receipt of Useful Knowledge on Structural and Relational Social Capital: Effects of Hierarchical Status**

| | ***Receipt of Useful Knowledge*** | | | | | |
|---|---|---|---|---|---|---|
| | *Higher Hierarchical Level* | | *Equal Hierarchical Level* | | *Lower Hierarchical Level* | |
| | Equation 1 | | Equation 2 | | Equation 3 | |
| **Independent Variables** | B | SE | B | SE | B | SE |
| (Constant) | 2.42*** | .70 | 2.89*** | .98 | 2.29*** | .61 |
| ***Control Variables*** | | | | | | |
| TeleCo (Dummy) | .31 | .25 | -.03 | .28 | -.13 | .21 |
| ConsultCo (Dummy) | .23 | .24 | .32 | .37 | -.18 | .19 |
| Project Interdependence | .11 | .22 | -.37 | .26 | -.10 | .19 |
| Managerial Responsibility | -.16 | .20 | -.08 | .23 | -.45* | .25 |
| Same Age | -.45* | .20 | .03 | .25 | -.18 | .17 |
| Same Gender | -.13 | .23 | -.15 | .24 | .13 | .16 |
| Same Nationality | -.12 | .27 | -.04 | .48 | -.09 | .31 |
| Relationship Length | .31 | .21 | .02 | .27 | .03 | .19 |
| ***Main Variables*** | | | | | | |
| Non-codified Knowledge | -.06 | .07 | -.24** | .08 | -.12* | .06 |
| Tie Strength | -.21** | .07 | .18* | .09 | .09 | .06 |
| Shared Values and Goals | .30** | .10 | -.13 | .11 | .08 | .09 |
| Shared Language | .06 | .10 | .22* | .10 | .10 | .07 |
| Reliance Trust | .43*** | .10 | .21* | .11 | .43*** | .08 |
| Disclosure Trust | .01 | .09 | .14 | .10 | .03 | .07 |
| $R^2$ | .73 | | .44 | | .61 | |
| $R^2_{adj}$ | .65 | | .34 | | .55 | |
| F | 9.91*** | | 4.38*** | | 10.69*** | |
| B=unstandardised beta weight; SE=standard error ***p<.001; **p<.01; *p<.05 | N=67 | | N=92 | | N=111 | |

As shown in equation 1, tie strength exerts a significantly negative influence (B=-.21, p<.01) on the receipt of useful knowledge. This suggests that knowledge seekers connected to knowledge providers lower in the organisational hierarchy have a structural advantage for receiving knowledge as a result of the strength of their weak ties. Therefore, *hypothesis 11a* is supported. In the same equation it is also found that reliance trust exerts a significantly positive influence (B=.43, p<001) on the receipt of useful knowledge, whereas disclosure trust is found not significant. This result provides support for *hypothesis 11b.* Finally, as shown in the same equation, age similarity is found to exert a negative and significant influence on the receipt of useful knowledge (B=-45, p<.05).

Equation 2 indicates that the receipt of useful knowledge in hierarchically equal dyads is predicted by strong ties (B=.18, p<05), reliance trust (B=.21, p<.05), and shared

language (B=.22, p<.05). However, contrary to *hypothesis 11c*, the effect of disclosure trust on the outcome variable, while being positive, is only marginally significant (B=.14, p<.10).

Equation 3 indicates that the receipt of useful knowledge in dyads in which knowledge seekers are connected to knowledge providers higher in the organisational hierarchy is predicted positively only by reliance trust (B=.43, p<.001). Interestingly, the extent to which knowledge providers have managerial responsibility is negatively related to the receipt of useful knowledge (B=-45, p<.05). This finding echoes the organisational cliché that individuals with redundant domain-specific knowledge are often promoted to management positions (Constant *et al.,* 1996).

## III. KNOWLEDGE TRANSFER IN CONTEXT

This section presents qualitative findings based on semi-structured interviews conducted with the knowledge managers of the three organisations.

### The Value of Knowledge Transfer

The analysis of interviews depicted a consensus among the three knowledge managers regarding the importance placed on knowledge and its transfer. Knowledge transfer was, however, acknowledged as a major challenge for implementing successfully KM objectives. In particular, according to StateCo's manager, the major KM challenge the organisation was faced with was to support staff, especially recently integrated employees, share cross-functional know-how and more effectively leverage their knowledge in the service of clients. The manager stated:

> A number of parts of the organisation would definitely see the need to develop both process know-how and access to other internal knowledge resources (OD Manager, StateCo).

For TeleCo's network and engineering unit (NEU) the fundamental KM issue was related to the advancement of the problem solving and innovation capability of the unit:

> The biggest issues for us are how to solve problems in the best way and how to innovate in order to come up with a new product or service. These are the objectives we want to accomplish: problem solving and innovation (KM Manager, TeleCo).

The financial, operational, and problem-solving benefits associated with access to and sharing of knowledge were described by TeleCo's knowledge manager as follows:

> Engineers need to know how to expand the network. In other words, they need to figure out how much network to build. The network building costs **€**200 million a year. So if you can be two percent more efficient, that's a lot of money. We know cases that we have made the wrong technical decisions in the past. If people were more knowledgeable they wouldn't have made those decisions and the organisation would have probably saved a few millions in network development.

> Another example is in a network maintenance situation where someone comes across an unusual problem and he [sic] tries to fix it. Then somewhere else they come across the same problem and they are trying to fix it but they don't have access to the same information as the first guy. This happens a lot especially with the old equipment. In a network you get a lot of old equipment as it takes twenty years to retire equipment from the network. The problem starts when the people who put that equipment on are gone and then the people who maintain it don't know everything about it and therefore can't fix it. So you solve a problem here and then down there other people don't know how to solve the same problem…Knowledge sharing is a real factor in making the unit work better (KM Manager, TeleCo).

Knowledge sharing was viewed by ConsultCo's knowledge manager as a process embedded in consulting practice in order to meet successfully clients' needs. In this regard, the KM manager stated:

> We sell sophisticated, customised services. In other words, we sell knowledge, which means that we continuously supply our clients with it. For this reason, we couldn't do our work without relying on our knowledge resources, which means that we couldn't do our work successfully without sharing this knowledge with our people here in Ireland and also with other people from the global network (KM Manager, ConsultCo).

### The Role of Formal and Informal Social Relations in Knowledge Transfer

Given the importance ascribed to knowledge and its sharing, a common theme that emerged from the interviews concerns the tension between formal and informal knowledge sharing processes. This is particularly evident in the cases of TeleCo and ConsultCo, which are presented below.

According to its KM manager, this tension in TeleCo's NEU has a historical dimension. The NEU is one of the oldest parts of the wider organisation. Access to and retrieval of information and knowledge was to a large extent dependent upon engineers' informal social networks. These had been developed in a rather informal manner for a long period of time and, therefore, were embedded in NEU's informal culture:

> You have a system in place, which is working as a network. So, if you need some knowledge you know that, let's say, John knows and you ring John. It is a very Irish thing to work that way, to know people, you know. And this is a very strong culture in the company. So, you have an informal network, not like the organisation's formal one and this network has been developed for a very long time (KM Manager, TeleCo).

As a result of the massive reduction of TeleCo's headcount which took place few years ago, the informal network was starting to break down, since employees, especially

those with substantial experience in network engineering, were started leaving the organisation. According to the KM manager, this affected seriously the problem-solving capability of the unit. This, in turn, was viewed as one of the main drivers for introducing the KM project to the unit. However, as it was mentioned above, the KM team soon realised that the informal network was difficult to be influenced or manipulated through KM initiatives. The main reason behind this is described by the KM manager as follows:

> Because people use [the network] and rely on it so much, they look at knowledge management and say 'why do we need this? Why do we need management getting involved in this?' They see it [note: the network] as the way they work, so people are like 'don't touch it because it's already working'. However, this informal network, because it is not managed, just breaks down in places. That's why we have to get involved. But one of the things about the informal network is that it is hard to influence in any way…it's just very difficult to manage it (KM Manager, TeleCo).

The management of the informal social network was deemed necessary as part of the organisation's business process management initiatives. NEU's management recently decided to introduce a set of changes aimed at establishing clear processes and standards in the design, maintenance, and development of network platforms and systems. The route to standardisation was viewed by management as prerequisite for facilitating knowledge sharing and improving the overall efficiency of the unit. The KM manager described the KM and learning implications of lack of standardisation processes as follows:

> When you join the company, the way you mainly learn is by working with and for a particular manager in a particular area. We don't have defined processes, everything is non-standard and each person learns in a different way because he [sic] works differently, he [sic] uses different standards, forms etc. So when you move the person to a different area where things are done differently, still in the same unit, he [sic] has to learn again because in the new area they use different standards. We do need to get some level of standardisation in the way the organisation works so that we can make it more efficient (KM Manager, TeleCo).

The main problem with the efficient implementation of these changes was associated with network engineers' heavy reliance on their informal networks. This, in turn, was viewed by management as a major issue since informal networks were out of management's influential territory:

> One of the things the company tries to do as part of the business process management is to have clear processes so that they can be managed and changed and so that we can know what the effect of that changes will be. But the problem with these processes is that they lay down on top of this informal structure but they don't reflect it at all because the informal structure is not known. So, it is very hard to make these processes work because people are like 'yes, yes, I'll do this according to the processes' but they actually do the opposite (KM Manager, TeleCo).

The informal network was viewed by TeleCo's knowledge manager as a source of rigidity by hampering the innovation capability of the company.

> The problem with the informal network is that, while it works, when you decide to change how you operate as a company, to do something completely different, you can't manage it, you can't turn it because you have no control of it. It is very good for some things, but maybe the organisation relies too much on it; it is 100% informal and almost 0% formal. So, if you want to automate something or to standardise a system, how can you understand it, how can you describe the system? We have lots of issues around designing systems. The system doesn't work well because the real system underneath is very hard to understand and describe to the system designers. So we need to get it out of this informal system to a more formal system (KM Manager, TeleCo).

Nevertheless, the KM manager acknowledged the importance of the informal network for providing engineers with opportunities to access and share valuable information and know-how in order to solve problems. Therefore, management's approach to influencing this informal network was described by the KM manager as a 'behavioural pull strategy' opposed to a 'push-down model'. Management's view was that KM initiatives would be implemented successfully only if employees realised their advantages:

> What I think is important is that people need to understand the value of knowledge management…A simple push-down model is too simplistic to get people on your side. So we thought that we needed what we called a behavioural pull strategy. The main challenge is how to get people to see the advantages of the knowledge management project, to support and get involved in the project, to be able to see how to fit the project to their everyday work so that it makes sense to them, to see that 'oh yes, if I do this now, it will make sense for me because I will gain from this'. To get the minds switched is the main challenge. The technicalities we have to solve are very small in the scale of this challenge (KM Manager, TeleCo).

### The Role of Bridging and Bonding Social Relations in Knowledge Transfer

Three distinct types of social relationships utilised for knowledge transfer and sharing processes were identified in ConsultCo. These are described below along a continuum from bridging to bonding ties (Adler & Kwon, 2002; Newell, Tansley & Huang, 2004). Given the global size of the organisation, it is likely to expect that consultants would seek information and/or advice from colleagues located within (i.e., internal contacts) but also beyond (i.e., external contacts) the borders of the Irish section. Although both internal and external contacts were characterised as useful, the KM manager ascribed particular significance to the latter by highlighting not only their knowledge transfer benefits but also the personal and business development opportunities that accrued from bridging ties. These knowledge benefits of bridging ties are described by the knowledge manager with the use of the following example:

> A tender came out from a high-tech company. Because I wasn't that familiar with the specific area, I picked up the phone to two, three people I had worked with in the past, and asked 'guys who I need to talk to? Where will I find these people? Do we have a relationship with them?' And they gave me some contacts, and then I spoke to a guy in Singapore, a guy in Glasgow, and a guy in Texas I think it was. The information I got from those people was really valuable. Because they already had the relationship with the people I knew, I could create a relationship with them. And then, yesterday one of those three guys rang and asked me 'How about this? Do we have people who might know this?' In this context networking is a very powerful tool (KM Manager, ConsultCo).

Consultants' decisions to extend their social connections beyond the borders of the Irish office appeared to be informed by their judgements of the professional competences of their colleagues. In turn, the perceived level of knowledge providers' professional credentials was likely to be estimated mainly on the basis of the quality of their contributed knowledge (e.g., reports, project summaries etc) that knowledge seekers would be able to assess by accessing the global intranet. Accordingly, the diffusion of consultants' professional reputation was contingent upon their input into the global organisation's knowledge repository. Consultants' professional reputation, developed in the way described above was, in turn, found to be associated with benefits both for the individual consultant and the consulting group. The expected value of knowledge sharing was translated into useful knowledge but also into mutually anticipated gains in the form of internal career moves as well as business development opportunities for both knowledge providers and seekers.

> When you submit documents your name would be on the document, and people would go 'I've seen you've done this before, can you help us a little bit more?' The good thing about it is that when people would come along and use it for business advancement you may end up working on a nice project somewhere in the Continent with loads of money. It is also a good thing for the partners to be involved in. So, there are good business development reasons why we should get our names known throughout the world network and contribute more to it.
>
> Before my present role I used to know document management solutions and I would be known in Ireland and the UK for somebody who knew this area well. And through that, you just get connections in all different offices. In the UK people would ring you up and look for advice. A few times I could send one of our guys over and we might create some business development opportunities out of it and we would sell some of our resources for a couple of days (KM Manager, ConsultCo).

It can thus be inferred that the likelihood of knowledge exchange increased when the involved parties anticipated some value from the exchange. The knowledge manager mentioned that knowledge sharing ought to be more appropriately viewed as a revenue generating activity. Inherent in this view appeared to be the role of the relational and cognitive characteristics of social relations. Specifically, professional trust and value congruence emerged as the building blocks of bridging social capital:

> An added benefit of sharing knowledge is that you can generate revenue because often times you go and get an external contractor to come in, or you might go to a third party organisation to get that information. We actually have that information inside ourselves, and it's only the price of a phone call or the price of an airline ticket to get across to that. And it's a good sell because we are all professionals and for this reason we trust each other. We also know what the organisation values; we'll go and think of the same issues (KM Manager, ConsultCo).

Moving gradually along the continuum from bridging to bonding ties, a second type of knowledge exchange relationships was identified. This appeared to develop through consultants' involvement in projects spanning geographical borders and comprising consultants from other, mainly European and US, offices. Given their large size and long-term timeframe, international-level projects provided consultants with opportunities to interact with a large number of colleagues for longer periods of time. This enabled the utilisation of knowledge resources embedded in large and diverse networks, since direct involvement in big projects removed the need for intermediate people who would act as structural holes between knowledge seekers and knowledge providers:

> I worked in Switzerland for a year on a project. It was the biggest multinational project I have been involved. I think about 250 people from Europe and the US. I got to know quite well people from that project so that I can now pick up the phone to ask them directly for advice (KM Manager, ConsultCo).

Given the high complexity of international-level projects, project members' professional competence was expected to be exposed and challenged as the knowledge requirements were assumed to be high. Accordingly, the role of professional trust in such a context was expected to be particularly important for seeking and consequently relying on useful information and advice. Professional trust was galvanised as a result of 'first-hand' and continuous assessment of project members' skills, knowledge and abilities by other members during the execution of projects. The decision to trust someone on the basis of their professional credentials was informed in a more direct than 'reputation-based' way through sharing time, energy and, consequently, experience as a result of working in the same project.

As a result, some relationships entailed a more personal bond. This was attributed to a certain extent to a shared perception among project team's members of the complex and difficult nature of longer term and cross-functional projects. Involvement in challenging projects acted as a motivation trigger for initiating extra-role behaviour. It is logical to expect that intrinsically motivated members were more likely to 'run the extra mile'. This can provide the basis for the development of more personal trust among, at least some of, project members:

> The project I very recently finished upon involved 50 to 60 people, of which a lot were from the UK and continental Europe. Again, when the project ended and I was leaving, I was saying to some junior people and even more senior people who I happened to bond well with, 'when you move back to your country, don't forget about that we've done this particular piece of work together and it was good, so if you need something or have an opportunity feel free to pick up the phone, send us an email' and so forth. Because we had shared a lot of experience together in this project, we knew how good people were and the specific project was particularly difficult. So, if we got through this, we would be able to get through anything (KM Manager, ConsultCo).

The above extract indicates that some personal trust (e.g., 'I bond well with') developed in a relational context characterised by high professional trust (e.g., 'we knew how good people were'). A third type of knowledge exchange relations was identified among consultants working in the various departments and services across Ireland. Although these relations were generally considered helpful for providing direct and immediate access to information and advice, they were nevertheless viewed as barriers to what the KM manager referred as 'networking opportunities' both within the Irish firm and the wider global organisation. The KM manager also mentioned that despite the physical proximity between consultants working in the Irish section, there was still little 'experience cross-selling':

> We are roughly 800 people in Ireland and we've got a dozen different departments. In the UK, [ConsultCo] only has 1,200 people and they have four services areas, and so many divisions into public and private sector. The best they can do is to network among each other because of the size. However, we must be in a very unique position, we are a smaller firm, we are fairly self-contained, and therefore we should be able to know each other what we are doing. However, people still have different views of what we do; we all have probably wrong ideas of what all the different areas do. We could all cross-sell each other's services if we just knew what everyone was doing a little bit better (KM Manager, ConsultCo).

The cross-selling of each other's services was viewed by the knowledge manager as a way to build relations with people from other practice areas. This, according to the manager, could be possible mainly through involvement in cross-functional projects thereby providing people from different areas with opportunities to obtain a better understanding of the tasks and skills requirements of different functions:

> I've done some work for a partner in the audit team about a year ago, and through that you get to know people. And then they realise it's not all about computers and technology, we actually build other skills, and in fairness we understand that they are not adding up figures either (KM Manager, ConsultCo).

The knowledge manager highlighted consultants' tendency to affiliate and socialise mainly with other consultants with whom they were sharing similar organisational tenure:

> I noticed here that what we do is to affiliate ourselves with people above all that we started together. I've been here from 1999; so all the people roughly started at that time and we all know each other very well because we know each other for so long. I have to say though that we are a very friendly bunch of people. The same applies to the new people who started last year. They tend to be closer to each other, and it is the same for the people who started this year. I think we actually really need a little bit more of an effort to break down some of those barriers, to network a little bit more (KM Manager, ConsultCo).

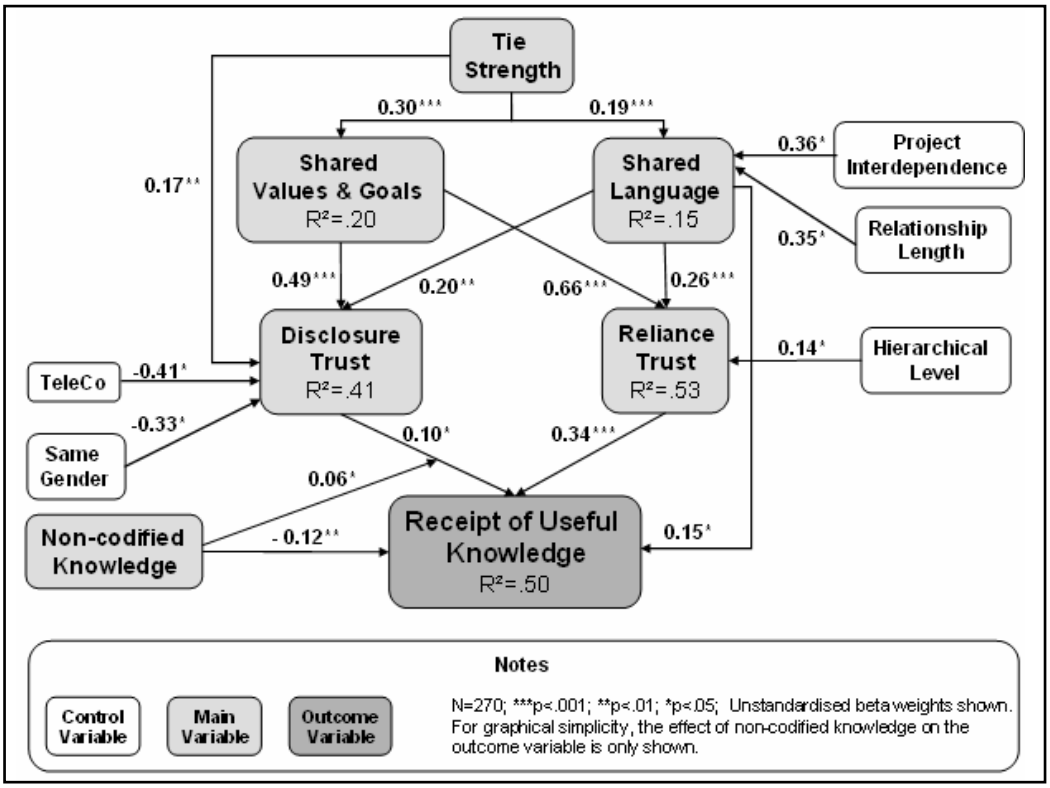
The KM manager mentioned that despite the 'lost networking opportunities', bonding relations were generally characterised by reciprocity, integrity, and mutual helping, which were, in turn, reflective of ConsultCo's 'good culture':

> We have a good culture here. People are not going to take information that belongs to me, put it in a proposal and say it was all their work. I'd say they would acknowledge that this is part of my work too. They would also come to you and ask you 'do you have this information?' and you will give them that, and you will see it in their proposals. To be honest, if the job is for 200 days and I get one day working by myself, fine, because there would be 199 days that somebody else will be busy. I think all people would think this way (KM Manager, ConsultCo).

## IV. CONCLUSION

The quantitative results presented in this chapter provide support to most of the hypotheses regarding the role of social relations in interpersonal knowledge transfer. The results are illustrated in figure 8.3.

Figure 8.3 **Social Relations and Knowledge Transfer: Emergent Path Diagram**



The above figure indicates the significant paths through which the three dimensions of social capital are interlinked to each other in affecting interpersonal knowledge transfer. It also shows the impact of hierarchical status and aspects of social similarity on certain social capital dimensions. Taken together, control and main variables explain half of the total variance in the outcome variable, which is indicative of the strong explanatory power of the hypothesised model. A summary of the results of hypothesis testing is provided in table 8.15.

Table 8.15 **Results of Hypothesis Testing**

| | Hypotheses | Results |
|---|---|---|
| H1 | Strong ties will have a positive effect on the receipt of useful knowledge. | *Supported* |
| H2 | The positive effect of strong ties on the receipt of useful knowledge will be mediated by reliance trust and disclosure trust. | *Supported* |
| H3 | The higher the level of reliance trust is, the stronger the positive effect of disclosure trust on the receipt of useful knowledge will be. | *Supported* |
| H4 | Shared values and goals will have a positive effect on reliance trust and disclosure trust. | *Supported* |
| H5 | Shared language will have a positive effect on reliance trust and disclosure trust. | *Supported* |
| H6 | Strong ties will have positive effect on shared values and goals. | *Supported* |
| H7 | Strong ties will have positive effect on shared language. | *Supported* |
| H8a | The positive effect of strong ties on disclosure trust will not be mediated by shared values and goals, and shared language. | *Supported* |
| H8b | The positive effect of strong ties on reliance trust will be mediated by shared values and goals, and shared language. | *Supported* |
| H9a | Reliance trust will be particularly important to the receipt of useful knowledge when knowledge is non-codified than codified | *Not Supported* |
| H9b | Disclosure trust will be particularly important to the receipt of useful knowledge when knowledge is non-codified than codified | *Supported* |
| H10 | The effect of shared values and goals, and shared language on the receipt of useful knowledge will differ for socially similar and socially dissimilar knowledge transfer dyads | *Not Supported* |
| H11a | Weak ties will be particularly important to the receipt of useful knowledge from hierarchically lower knowledge providers | *Supported* |
| H11b | Reliance trust will be particularly important to the receipt of useful knowledge from hierarchically lower knowledge providers | *Supported* |
| H11c | Disclosure trust will be particularly important to the receipt of useful knowledge from hierarchically equal knowledge providers | *Not Supported* |

The qualitative results drawn from interviews with the knowledge managers in the three organisations provide a more contextualised understanding of the intricacies inherent in knowledge transfer relations. All knowledge managers agreed on the value of knowledge transfer and sharing for enhancing the operational and innovative capability of the organisations. However, the analysis indicated that social relations were not frictionless in regard to their effect on KM objectives. For example, informal social relations in TeleCo, while considered valuable, were nevertheless viewed as a barrier to the implementation of business process management initiatives aimed at improving operational efficiency and process standardisation. In ConsultCo, bridging social relations were generally considered favourable to bonding social relations not only in terms of knowledge transfer benefits, but also and even more importantly in terms of

career and personal development benefits. Both quantitative and qualitative results are discussed in chapter ten, while the following chapter shifts attention to the HRM context of knowledge transfer.

# CHAPTER NINE
# The Human Resource Management Context

## INTRODUCTION

This chapter presents the results of quantitative and qualitative analysis regarding the HRM implications of managing knowledge work. The first part provides an overview of the descriptive statistics with respect to employees' experiences of HR practices as well as their perceptions of organisational social climate, and HR department's effectiveness. The second section describes the results of statistical analysis regarding the effect of employees' experiences of HR practices on their perceptions of teamwork and the climate of cooperation and the HR department's effectiveness. The third section presents the results of qualitative data based on interviews with HR and knowledge managers of the three organisations. The analysis here focuses on the role of HRM in supporting KM objectives. The chapter concludes with a summary of both quantitative and qualitative results.

## I. DESCRIPTIVE RESULTS

135 employees from the three organisations were asked to indicate their perceptions on the following variables: reciprocal task interdependence and feedback from others (i.e., work design); selection and socialisation, quantity and types of training and development, types of rewards, rewards' external competitiveness and internal equity (i.e., HR practices); manager's support for knowledge sharing (i.e., KM practices); HR department's effectiveness, and teamwork and cooperation climate (i.e., outcome variables). A summary of employees' responses is presented in table 9.1.

In terms of work design, the vast majority of employees (96%) reported high levels of reciprocal task interdependence. More than eight out of ten employees (84%) reported moderate to high levels of job feedback from managers and/or co-workers. Furthermore, a large majority of employees reported high levels of job autonomy (80%) and skill variety (89%)[1]. In total, the results indicate that employees' work design profile fits well with that of knowledge workers (Benson & Brown, 2007).

In terms of HR practices, 42% of respondents reported the presence of selection and socialisation practices placing emphasis on skills and competencies, cultural fit, and

[1] Job autonomy and skill variety were excluded from further analysis due to lack of discriminant validity (see chapter 6, p. xx).

social activities. The same percentage of respondents stated that their organisations provide employees with adequate and well-organised training and development practices. In addition, 43% of respondents stated that training and development practices include cross-functional training, mentoring, and teambuilding. Less than 20% of respondents stated that rewards are closely tied to individual performance, team performance or knowledge sharing. A closer look at the composition of reward practices indicates that 54% and 53% of employees reported moderate to high levels of individual-based and team-based rewards respectively. In contrast, less than one third of employees (29%) reported that rewards were contingent upon knowledge sharing. In terms of rewards' external competitiveness, almost three quarters of employees reported low to moderate levels (74%), whereas 70% of employees reported moderate to high levels of rewards' internal equity.

Table 9.1 **HR and Associated Variables**

| **Variables** | **Response Mode** | | |
|---|---|---|---|
| ***Work Design*** | Low (%) | Medium (%) | High (%) |
| Task Interdependence | 1 | 3 | 96 |
| Feedback from Others | 18 | 28 | 54 |
| ***HR Practices*** | | | |
| Selection and Socialisation | 19 | 39 | 42 |
| Quantity of Training and Development | 37 | 21 | 42 |
| Type of Training and Development | 21 | 35 | 44 |
| Rewards Mix | 53 | 29 | 18 |
| Rewards' External Competitiveness | 47 | 27 | 26 |
| Rewards' Internal Equity | 30 | 30 | 40 |
| ***KM Practices*** | | | |
| Manager's Support for Knowledge Sharing | 34 | 35 | 31 |
| ***Outcome Variables*** | | | |
| Teamwork and Cooperation Climate | 19 | 17 | 64 |
| HR Department's Effectiveness | 46 | 24 | 30 |
| N=135 | | | |

Experiences of management support for knowledge sharing were found to be relatively equally distributed between low support (34%), moderate support (35%) and high support (31%). Employees' perceptions of the value of teamwork and cooperation climate in their organisations were found to be generally high (64%). Finally, the

majority of employees expressed low to moderate levels of satisfaction with HR department's effectiveness (70%).

## ANOVA Differences across Organisations and Employee Groups

One-way between groups analyses of variance (ANOVA) were conducted to test whether significant differences occurred in the HR and associated variables across the three organisations. As shown in table 9.2, significant differences between the three organisations were found in regard to the following variables: selection and socialisation, quantity and type of training and development, rewards mix, and HR department's effectiveness. The effect sizes of these differences were found to be at least medium (Cohen, 1988).

Table 9.2 **ANOVA: HR Variables across Organisations**

| | N | Mean | SD | F | Effect Size |
|---|---|---|---|---|---|
| ***Selection and Socialisation*** | | | | 19.14*** | Large ($\eta^2$=.22) |
| TeleCo | 57 | 3.89 | .87 | | |
| ConsultCo | 42 | 5.42 | 1.08 | | |
| StateCo | 36 | 4.40 | .76 | | |
| *Total* | *135* | *4.46* | *1.17* | | |
| ***Quantity of Training and Development*** | | | | 21.28*** | Large ($\eta^2$=.24) |
| TeleCo | 57 | 3.21 | 1.44 | | |
| ConsultCo | 42 | 3.81 | 1.55 | | |
| StateCo | 36 | 5.13 | 1.04 | | |
| *Total* | *135* | *3.91* | *1.58* | | |
| ***Type of Training and Development*** | | | | 4.04* | Medium ($\eta^2$=.06) |
| TeleCo | 57 | 3.87 | 1.20 | | |
| ConsultCo | 42 | 4.46 | .85 | | |
| StateCo | 36 | 4.22 | .93 | | |
| *Total* | *135* | *4.15* | *1.05* | | |
| ***Rewards Mix*** | | | | 12.27*** | Large ($\eta^2$=.16) |
| TeleCo | 57 | 3.22 | 1.36 | | |
| ConsultCo | 42 | 4.03 | 1.09 | | |
| StateCo | 36 | 2.68 | 1.13 | | |
| *Total* | *135* | *3.33* | *1.32* | | |
| ***HR Department's Effectiveness*** | | | | 5.52** | Medium ($\eta^2$=.08) |
| TeleCo | 57 | 3.30 | 1.41 | | |
| ConsultCo | 42 | 4.12 | 1.45 | | |
| StateCo | 36 | 4.07 | 1.21 | | |
| *Total* | *135* | 3.74 | 1.44 | | |

***p<.001; **p<.01; *p<.05

By conducting post-hoc comparisons using the HSD Tukey test it was able to identify where the differences between the organisations occurred. The results are shown in Table 9.3.

Table 9.3 **ANOVA: Post-hoc Comparisons of HR Variables between Organisations**

| HR Variables | Comparisons between Organisations | | Mean Difference | SD |
|---|---|---|---|---|
| Selection and Socialisation | ConsultCo | TeleCo | 1.14*** | .19 |
| | | StateCo | .85*** | .21 |
| Quantity of Training and Development | StateCo | TeleCo | 1.92*** | .29 |
| | | ConsultCo | 1.32*** | .31 |
| Type of Training and Development | ConsultCo | TeleCo | .59* | .21 |
| | | StateCo | .85*** | .21 |
| Rewards Mix | ConsultCo | TeleCo | .81** | .25 |
| | | StateCo | 1.36*** | .28 |
| HR Department's Effectiveness | TeleCo | ConsultCo | -.82* | .28 |
| | | StateCo | -.77* | .29 |

***p<.001; **p<.01; *p<.05

ConsultCo's employees responded to their organisation significantly higher than TeleCo's and StateCo's employees on selection and socialisation, type of training and development, and rewards mix. In regard to quantity of training and development, StateCo's employees responded to their organisation significantly higher than ConsultCo's and TeleCo's employees. Finally, TeleCo's employees responded to their organisation significantly lower than ConsultCo's and StateCo's employees on HR department's effectiveness. Independent samples t-tests and one-way between groups analyses of variance (ANOVA) were also conducted to test for significant differences in the HR and associated variables across employees grouped according to age, gender, educational level, job status and job type. There were no significant differences found in any of the variables examined.

## II. ANALYSING AND PREDICTING RELATIONSHIPS

In this section, the inferential analyses are conducted. All the relationships between all variables were estimated using Pearson's correlation coefficient. Regression analyses, standard and hierarchical, were then conducted.

### Analysing Relationships

Table 9.4 presents descriptive and skewness statistics, internal reliabilities, and inter-correlations among all variables. All skewness statistics were found to be less than 1.0, which suggests that the variables were relatively normally distributed (Miles & Shelvin, 2001).

Table 9.4 **HR and Associated Variables: Means, Standard Deviations, Skewness, Correlations, and Internal Reliabilities**

| Variables | Mean (SD) | Skew | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Task Interdependence** | 6.01 (.81) | .95 | (.82) | | | | | | | | | | |
| **2. Job Feedback** | 4.56 (1.30) | -.45 | .12 | (.81) | | | | | | | | | |
| **3. Selection and Socialisation** | 4.46 (1.17) | .34 | .21* | .37** | (.70) | | | | | | | | |
| **4. Quantity of Training and Development** | 3.91 (1.58) | .06 | .08 | .22* | .20* | (.84) | | | | | | | |
| **5. Type of Training and Development** | 4.15 (1.05) | -.33 | .24** | 36** | .40* | .43** | (.68) | | | | | | |
| **6. Rewards Mix** | 3.33 (1.32) | .01 | -.05 | 50** | .38** | .25** | .40** | (.82) | | | | | |
| **7. Rewards Competitiveness** | 3.48 (1.31) | .10 | -.06 | .08 | .32** | .27** | .28** | .35** | (.89) | | | | |
| **8. Rewards Equity** | 4.01 (1.49) | .03 | -.05 | -.04 | -.06 | -.11 | .09 | .04 | .12 | (.81) | | | |
| **9. Support for Knowledge Sharing** | 4.23 (1.09) | -.13 | .19* | .40** | .33** | .22** | .48** | .25** | .13 | -.02 | (.75) | | |
| **10. Teamwork and Cooperation Climate** | 4.64 (1.25) | -.55 | .27** | .41** | .46** | .25** | .39** | .30** | .19* | -.12 | .48** | (.82) | |
| **11. HR Department's Effectiveness** | 3.74 (1.44) | .02 | .12 | .29** | .40** | .40** | .33** | .34** | .37** | -.09 | .20** | .35** | (.86) |

N=270; Two-tailed tests; **p<.01; *p<.05; Internal reliabilities are shown along the diagonal in parentheses.

**Work Design**

The relationship between task interdependence and job feedback was found to be positive but not significant (r=.12, p=.18). Task interdependence was found to be positively and significantly related to selection and socialisation (r=.21, p<.05), type of training and development (r=.24, p<.01), manager's support for knowledge sharing (r=.19, p<.05), and teamwork and cooperation climate (r=.27, p<.01). Job feedback was found to be positively and significantly related to selection and socialisation (r=.37, p<.01), quantity of training and development (r=.22, p<.05), type of training and development (r=.36, p<.01), rewards mix (r=.50, p<.01), manager's support for knowledge sharing (r=.40, p<.01), teamwork and cooperation climate (r=.29, p<.01), and HR department's effectiveness (r=.41, p<.01).

**HR Practices**

With the exception of rewards' equity, there were significant correlations found among the HR practices variables. In particular, selection and socialisation was positively related to both quantity (r=.20, p<.05) and type of training and development (r=.40, p<.01) as well as to both rewards mix (r=.38, p<01) and rewards' competitiveness (r=.32, p<.01). Similarly, both quantity and type of training and development were positively related to rewards mix (r=.25, p<.01; r=.40, p<.01) and rewards' competitiveness (r=.27, p<.01; r=.28, p<.01).

With the exception of rewards' competitiveness and equity, all HR practices variables were found to be positively and significantly related to managers' support for knowledge sharing, with type of training and development having the strongest relationship (r=.48, p<.01).

With the exception of rewards' equity, all HR practices variables were found to be positively and significantly related to employees' perceptions of teamwork and cooperation climate, with selection and socialisation having the strongest relationship (r=.46, p<.01) followed by type of training and development (r=.39, p<.01), and rewards mix (r=.30, p<01). Similarly, with the exception of rewards' equity, all HR practices variables were significantly and positively related to employees' perceptions of HR department's effectiveness, with selection and socialisation and quantity of training and development having the equally strongest relationships (r=.40, p<.01), followed by rewards' competitiveness (r=.37, p<01), and rewards mix (r=.34, p<.01). Finally, a significant and positive relationship was found between employees' perceptions of teamwork and cooperation climate and HR department's effectiveness (r=.35, p<.01).

**Correlation Analysis: Summary of Relationships**

Table 9.5 provides a summary of the results of correlation analysis in regard to the relationships between the independent variables (i.e., work design, HR practices, and KM practices) and each of the outcome variables (i.e., teamwork and cooperative climate, HR department's effectiveness).

Table 9.5 **Correlation Analysis: Summary of Relationships**

| **Independent Variables** | **Outcome Variables** | |
|---|---|---|
| *Work Design* | *Teamwork & Cooperation Climate* | *HR Department's Effectiveness* |
| Task Interdependence | 0.27** | 0.12 |
| Feedback from Others | 0.41** | 0.29** |
| *HR Practices* | | |
| Selection and Socialisation | 0.46** | 0.40** |
| Quantity of Training and Development | 0.25** | 0.40** |
| Type of Training and Development | 0.39** | 0.33** |
| Rewards Mix | 0.30** | 0.34** |
| Rewards' External Competitiveness | 0.19* | 0.37** |
| Rewards' Internal Equity | -0.12 | -0.09 |
| *KM Practices* | | |
| Manager's Support for Knowledge Sharing | 0.48** | 0.20** |

Note: Pearson correlation coefficients shown; N=135; **p<.01; *p<.05

As shown in table 9.6, employees' perceptions of teamwork and cooperative climate and HR department's effectiveness are related to the same variables except reciprocal task interdependence, which is strongly related only to teamwork and cooperation climate. The same table indicates that the relationship of managers' support for knowledge sharing is substantially stronger with teamwork and cooperation climate than with HR department's effectiveness. Employees' perceptions of teamwork and cooperation climate are significantly and positively related to their perceptions of HR department's effectiveness (r=.35, p<.01).

In summary, the results of correlation analysis provide alternative responses to the following questions identified in chapter four: (i) are employees' perceptions of a cooperative social climate and of the effectiveness of the HR function related to the same HR practices? (ii) Are employees' perceptions of the effectiveness of the HR function related to their perceptions of a cooperative social climate? (iii) Are employees' perceptions of manager's support for knowledge sharing related to their perceptions of

the effectiveness of the HR function? Although the pairwise correlations between independent and outcome variables were found positive and significant, it is necessary to explore further the combined effect of work design, HR practices, and manager's support for knowledge sharing on teamwork and cooperation climate, and HR department's effectiveness respectively.

## Predicting Relationships

In chapter four, three further questions were asked: (i) what are the individual and combined effects of employees' experiences of HR practices on their perceptions of a cooperative social climate conducive to knowledge sharing? (ii) Are these effects mediated by employees' perceptions of management support for knowledge sharing? (iii) Are employees' perceptions of a cooperative social climate and of the effectiveness of the HR function predicted by the same or different HR practices? To answer these questions, a series of regression analyses were conducted. The analyses included a set of variables controlling for organisational membership as well as for demographic characteristics of respondents including age, gender, education, job type and tenure.

### The Impact of Work Design and HR Practices on Perceptions of Teamwork and Cooperation Climate: Individual and Multiplicative Effects

Table 9.6 presents the results of regression analyses testing for the individual and combined effects of work design and HR practices on employees' perceptions of teamwork and cooperation climate. The first two regression equations estimate the extent to which teamwork and cooperation is affected by work design and HR practices respectively while equation 3 estimates the overall effects.

Both control and work design variables included in equation 1 explain 26% of the variance in the outcome variable. Task interdependence (B=.34, p<.01) and feedback from others (B=.35, p<.001) are found to be positive and significant predictors of teamwork and cooperation climate. The sole effect of control variables on teamwork and cooperation was found to be negligible ($R^2_{adj}$=-.006, F=.54, p=.52), which means that task interdependence and feedback from others added 17% to the explanatory power of equation 1.

Equation 2 estimates the effect of HR practices on teamwork and cooperation climate while holding for the effect of control variables only. Selection and socialisation exerts the strongest positive effect (B=.47, p<.001) on teamwork and cooperation climate,

followed by the type of training and development (B=.22, p<.05). In total, the HR variables added 23% to the explanatory power of equation 2.

Table 9.6 **Hierarchical Regression of Teamwork and Cooperation Climate on Work Design and HR Practices: Individual and Combined Effects**

| | ***Teamwork & Cooperation Climate*** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Equation 1 | | Equation 2 | | Equation 3 | | Equation 4 | |
| **Independent Variables** | B | SE | B | SE | B | SE | B | SE |
| (Constant) | 1.93 | 1.34 | 2.84** | 1.07 | 1.38 | 1.32 | 1.07 | 1.33 |
| ***Control Variables*** | | | | | | | | |
| TeleCo (Dummy) | -.25 | .26 | .18 | .33 | .07 | .32 | .05 | .26 |
| ConsultCo (Dummy) | .16 | .30 | -.25 | .37 | -.18 | .36 | .10 | .29 |
| Age | -.01 | .02 | -.01 | .02 | -.01 | .02 | -.01 | .02 |
| Gender (Female) | -.02 | .23 | .04 | .23 | .03 | .23 | .07 | .23 |
| Education 1 (Higher Diploma) | -.24 | .64 | -.49 | .60 | -.22 | .60 | -.25 | .61 |
| Education 2 (Primary Degree) | -.38 | .56 | -.54 | .55 | -.36 | .55 | -.37 | .56 |
| Education 3 (Postgraduate) | -.65 | .57 | -.80 | .55 | -.60 | .54 | -.48 | .55 |
| Position1 (Support/Administration) | -.39 | .43 | -.45 | .41 | -.45 | .41 | -.41 | .41 |
| Position 2 (Junior Management) | .08 | .32 | .10 | .32 | .05 | .31 | .04 | .31 |
| Position 3 (Middle Management) | -.29 | .28 | -.26 | .27 | -.34 | .27 | -.28 | .27 |
| Position 4 (Senior Management) | -.23 | .39 | .11 | .36 | -.14 | .37 | -.21 | .37 |
| Position 5 (Technical) | -.43 | .40 | -.30 | .38 | -.37 | .38 | -.37 | .38 |
| Tenure [b] | .15 | .33 | .16 | .32 | .23 | .32 | .12 | .32 |
| ***Work Design*** | | | | | | | | |
| Task Interdependence | .34** | .13 | | | .19 | .13 | .31* | .12 |
| Feedback | .35*** | .08 | | | .20* | .09 | .22** | .09 |
| ***HR Practices*** | | | | | | | | |
| Selection & Socialisation | | | .47*** | .12 | .37** | .12 | | |
| Training and Development (Quantity) | | | .05 | .09 | .03 | .09 | | |
| Training and Development (Types) | | | .22* | .12 | .15 | .12 | | |
| Rewards Mix | | | .06 | .10 | .01 | .10 | | |
| Rewards' Competitiveness | | | -.04 | .08 | .03 | .08 | | |
| Rewards' Equity | | | -.10 | .07 | -.10 | .07 | -.10 | .07 |
| HR Factor | | | | | | | .46** | .13 |
| $R^2$ | .26 | | .34 | | .38 | | .34 | |
| $R^2_{adj}$ | .17 | | .23 | | .26 | | .24 | |
| F | 2.80** | | 3.10*** | | 3.24*** | | 3.49*** | |
| $\Delta R^2$ | | | | | .04 | | | |
| $\Delta F$ | | | | | 3.38* | | | |

B=Unstandardised beta weight; SE=standard error; ***p<.001; **p<.01; *p<.05

Equation 3 estimates the combined effects of work design and HR practices on teamwork and cooperation climate. Both sets of variables explain 38% of the variance in teamwork and cooperation climate. As shown in the same equation, only selection and socialisation (B=.37, p<.01), and feedback from others (B=.20, p<.05) exert a

significant and positive influence on the outcome variable, whereas task interdependence and type of training and development are not significant predictors.

The results of regression analysis presented in table 9.6 indicate that the simultaneous effect of HR practices and work design variables outweighs individual component effects, which suggests that some complementarity effects may be present (Whittington *et al.*, 1999). Theoretical expectations regarding complementarity are that the systemic effect of HR practices on teamwork and cooperation climate may be stronger than of the single practice (Minbaeva, 2005). To test the possibility for complementarity effects of HR practices on teamwork and cooperation, a regression analysis including interaction terms between HR practices was performed. However, none of the interaction terms emerged as statistically significant, indicating the absence of multiplicative effects of HR practices on teamwork and cooperation climate,

Complementarity can also be tested by employing an additive approach. This approach first entails a factor analysis of the HR practices to test whether they compose a single factor or not (e.g., Minbaeva, 2005; Collins & Smith, 2006). Following Huselid (1995), the HR practices were factor-analysed using principal component analysis. Factor loadings for each factor, eigen values and percentage of variance explained by each factor are presented in table 9.7.

Table 9.7 **Factor Loadings for HR Practices**

| | Factor 1 | Factor 2 |
|---|---|---|
| Selection and Socialisation | **.676** | -.092 |
| Quantity of Training and Development | **.606** | -.227 |
| Type of Training and Development | **.756** | .007 |
| Rewards Mix | **.712** | .085 |
| Rewards' Competitiveness | **.644** | .244 |
| Rewards' Equity | .056 | **.938** |
| Eigenvalue | 2.322 | 1.083 |
| Percentage of Variance | 38.696 | 18.054 |

Two factors with eigenvalue greater than one emerged from the principal component analysis. The first factor includes five HR practices, whereas the second factor includes only rewards' equity. The internal reliability of the first HR factor is acceptable (α=.70).

The second step entails testing the impact of the HR factor on teamwork and cooperation climate while controlling for task interdependence and feedback from others. Equation 4 in table 9.6 shows that the systemic effect of HR practices on teamwork and cooperation is positive and significant (B=.46, p<.01). In addition, task interdependence (B=.31, p<.05) and feedback from others (B=.22, p<.01) are also found to exert a significant and positive influence on teamwork and cooperation climate.

In summary, the results suggest the following: (i) employees whose work is characterised by high levels of reciprocal task interdependence perceive the social climate of the firm to be characterised by teamwork and cooperation; (ii) employees who receive constant feedback from managers and colleagues regarding their job performance perceive the social climate of the firm to be characterised by teamwork and cooperation; (iii) employees who have experienced selection and socialisation practices that place emphasis on cultural fit and social activities perceive the social climate of the firm to be characterised by teamwork and cooperation; (iv) employees whose training and development includes cross-functional training, mentoring, and teambuilding perceive the social climate of the firm to be characterised by teamwork and cooperation. An important finding that emerged from the regression analyses is that while HR practices had no interactive effects on teamwork and cooperation climate, the additive effect of HR practices, as expressed in the HR factor, was found to be positive and significant. However, testing for the simultaneous effect of the individual HR practices composing the HR factor (equation 2) indicates that only selection and socialisation, and relational-oriented training and development, impact positively upon employees' perceptions of the importance of teamwork and cooperation climate.

**The Impact of Management Support for Knowledge Sharing on Perceptions of Teamwork and Cooperation Climate**

Table 9.8 presents the results of regression analysis of teamwork and cooperation climate on employees' perceptions of management support for knowledge sharing. As shown in equation 1, the individual effect of management support for knowledge sharing on teamwork and cooperation climate is significant and positive (B=.58, p<.001). In fact, management support for knowledge sharing explains 21% of the variance in the outcome variable above and beyond the effect of the control variables. This is higher than the effect of both work design variables, which is 17% (see equation 1 in table 9.6).

Table 9.8 **Regression of Teamwork and Cooperation Climate on Management Support for Knowledge Sharing**

| | ***Teamwork & Cooperation Climate*** | | | |
|---|---|---|---|---|
| | Equation 1 | | Equation 2 | |
| **Independent Variables** | B | SE | B | SE |
| (Constant) | 2.79** | 1.07 | .48 | 1.32 |
| ***Control Variables*** | | | | |
| TeleCo (Dummy) | -.13 | .26 | .04 | .31 |
| ConsultCo (Dummy) | .36 | .30 | -.02 | .36 |
| Age | -.01 | .02 | -.01 | .02 |
| Gender (Female) | .11 | .23 | .10 | .22 |
| Education 1 (Higher Diploma) | -.07 | .62 | .13 | .60 |
| Education 2 (Primary Degree) | -.42 | .56 | -.22 | .54 |
| Education 3 (Postgraduate) | -.52 | .56 | -.34 | .54 |
| Position1 (Support/Administration) | -.13 | .41 | -.31 | .40 |
| Position 2 (Junior Management) | .12 | .31 | .09 | .31 |
| Position 3 (Middle Management) | -.09 | .27 | -.29 | .26 |
| Position 4 (Senior Management) | .12 | .37 | -.18 | .36 |
| Position 5 (Technical) | .21 | .40 | -.05 | .38 |
| Tenure [b] | -.05 | .31 | .14 | .31 |
| ***Work Design*** | | | | |
| Task Interdependence | | | .21 | .13 |
| Feedback | | | .14 | .09 |
| ***HR Practices*** | | | | |
| Selection & Socialisation | | | .29* | .12 |
| Training and Development (Quantity) | | | .04 | .08 |
| Training and Development (Types) | | | .03 | .12 |
| Rewards Mix | | | .03 | .10 |
| Rewards' Competitiveness | | | .04 | .08 |
| Rewards' Equity | | | -.09 | .07 |
| ***KM Practices*** | | | | |
| Support for Knowledge Sharing | .58*** | .10 | .33** | .11 |
| $R^2$ | .29 | | .42 | |
| $R^2_{adj}$ | .21 | | .30 | |
| F | 3.52*** | | 3.66 | |
| $\Delta R^2$ | | | .13 | |
| $\Delta F$ | | | 3.06** | |

The inclusion of work design and HR practice variables in equation 2 results in a significant increase ($\Delta R^2$=.13, $\Delta F$=3.06, p<.01) in the explanatory power of the model. Interestingly, in equation 2 management support for knowledge sharing remains a positive and significant predictor (B=.33, p<.01) of teamwork and cooperation climate. The only additional significant predictor is selection and socialisation (B=.29, p<.05). By looking at equation 3 in table 9.7 and equation 2 in table 9.9, it is observed that

management support for knowledge sharing washes out the positive impact of feedback from others on teamwork and cooperation climate.

In summary, the results of regression analyses presented in table 9.8 indicate that employees' perceptions of management support for knowledge sharing are strongly related to their views of the importance of teamwork and cooperation climate. In addition, these perceptions are somewhat independent of their experiences of HR practices and work design. Yet, the results suggest that there may be a substitute effect between management support for knowledge sharing and feedback from others.

**The Impact of Work Design and HR Practices on Perceptions of the HR Department's Effectiveness**

Table 9.9 presents the results of regression analyses testing for the individual and combined effects of work design and HR practices on employees' perceptions of HR department's effectiveness. The analytical steps followed to examine these effects are the same with the ones shown in table 9.7. The first two regression equations estimate the extent to which perceptions of HR department's effectiveness are affected by work design and HR practices respectively, while equation 3 estimates the overall effects. Finally, equation 4 examines the systemic effect of HR practices as expressed in the HR factor.

The overall effect of control variables on the outcome variable is found to be significant ($R^2$=.18, F=2.06, p<.05). Employees' perceptions of HR department's effectiveness are negatively affected by organisational membership (i.e., TeleCo) and educational level (i.e., postgraduate degree). The inclusion of the work design variables in equation 1 results in a significant increase in $R^2$ by almost 7% ($\Delta$F=5.24, p<.01). As shown in table 9.10, only feedback from others exerts a significantly positive influence on the outcome variable (B=.29, p<.01). Equation 2 estimates the effect of HR practices on the outcome variable while holding for the effect of control variables only. The results first indicate that employees' educational level affects negatively perceptions of HR department's effectiveness. In terms of HR practices, selection and socialisation (B=.23, p<.05), quantity of training and development (B=.17, p<.05), rewards mix (B=.21, p<.05), and rewards' competitiveness (B=.20, p<.05) are found to be significantly positive predictors of HR department's effectiveness. Equation 3 estimates the combined effect of work design and HR practice variables on the outcome variable. The results indicate that, apart from the effect of education, only rewards' external competitiveness exert a significant influence on perceptions of HR department's

effectiveness (B=.23, p<.05). This suggests that some complementarity effects may be present. To test for the possibility for complementarity effects of HR practices on perceptions of HR department's effectiveness, a regression analysis including interaction terms between HR practices, between work design variables, and between HR practices and work design variables was performed. However, none of the interaction terms emerged as statistically significant, indicating the absence of multiplicative effects of HR practices on perceptions of HR department's effectiveness.

Table 9.9 **Hierarchical Regression of HR Department's Effectiveness on Work Design and HR Practices: Individual and Combined Effects**

| | ***HR Department's Effectiveness*** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Equation 1 | | Equation 2 | | Equation 3 | | Equation 4 | |
| **Independent Variables** | B | SE | B | SE | B | SE | B | SE |
| (Constant) | 2.38 | 1.54 | 1.31 | 1.17 | .57 | 1.47 | .69 | 1.44 |
| ***Control Variables*** | | | | | | | | |
| TeleCo (Dummy) | -.76* | .31 | -.30 | .35 | -.35 | .36 | -.26 | .29 |
| ConsultCo (Dummy) | .19 | .35 | -.04 | .40 | .00 | .40 | .05 | .45 |
| Age | .02 | .02 | .02 | .02 | .02 | .02 | .02 | .02 |
| Gender (Female) | .41 | .27 | .48 | .25 | .47 | .25 | .51* | .25 |
| Education 1 (Higher Diploma) | -1.43 | .74 | -.1.53* | .65 | -1.39* | .67 | -1.44* | .66 |
| Education 2 (Primary Degree) | -1.19 | .67 | -1.27* | .60 | -1.17* | .61 | -1.21* | .60 |
| Education 3 (Postgraduate) | -1.33* | .66 | -1.17* | .59 | -1.10* | .60 | -1.07* | .59 |
| Position1 (Support/Administration) | -.04 | .49 | -.19 | .45 | -.19 | .45 | -.14 | .44 |
| Position 2 (Junior Management) | .42 | .37 | .40 | .35 | .38 | .35 | .37 | .34 |
| Position 3 (Middle Management) | .03 | .32 | .04 | .29 | -.00 | .30 | .04 | 029 |
| Position 4 (Senior Management) | .00 | .45 | .03 | .39 | -.10 | .41 | .01 | .40 |
| Position 5 (Technical) | .57 | .46 | .69 | .41 | .66 | .42 | .68 | .41 |
| Tenure [b] | .17 | .39 | .11 | .34 | .15 | .35 | .11 | .35 |
| ***Work Design*** | | | | | | | | |
| Task Interdependence | .10 | .15 | | | .09 | .15 | .04 | .14 |
| Feedback | .29** | .10 | | | .11 | .10 | .08 | .09 |
| ***HR Practices*** | | | | | | | | |
| Selection & Socialisation | | | .23* | .12 | .18 | .13 | | |
| Training and Development (Quantity) | | | .17* | .09 | .15 | .09 | | |
| Training and Development (Types) | | | .05 | .13 | .01 | .13 | | |
| Rewards Mix | | | .21* | .11 | .18 | .12 | | |
| Rewards' Competitiveness | | | .20* | .09 | .23* | .09 | | |
| Rewards' Equity | | | -.12 | .07 | -.11 | .08 | -.12 | .07 |
| HR Factor | | | | | | | .80*** | .15 |
| $R^2$ | .25 | | .41 | | .42 | | .41 | |
| $R^2_{adj}$ | .15 | | .31 | | .30 | | .32 | |
| F | 2.62** | | 4.19*** | | 3.84*** | | 4.43*** | |
| $\Delta R^2$ | | | | | .01 | | | |
| $\Delta F$ | | | | | .74 | | | |

B=Unstandardised beta weight; SE=standard error; ***p<.001; **p<.01; *p<.05

Equation 4 estimates the additive effects of HR practices on the outcome variable, while controlling for task interdependence, feedback from others, and rewards' external equity. The results indicate that the systemic effects of HR practices, as expressed in the HR factor, on the outcome variable are strongly positive (B=.80, p<.001). In addition, the results show that female employees' views of the effectiveness of the HR department emerge as significant and positive. The adjusted $R^2$ in equation 4 is found to be .32, which is higher than that of equation 3. Although the difference is small, it is still an indication that when HR practices are applied as a system may have a stronger effect on employees' perceptions of their satisfaction with the role of the HR function. Finally, the results in equations 2, 3 and 4 indicate that employees' perceptions of rewards' internal equity are negatively related to their views of the effectiveness of the HR department. To note that in equation 4 the negative effect of rewards' equity reached marginal statistical significance (B=-.12, p=.103).

**The Impact of Perceptions of Management Support for Knowledge Sharing on the HR Department's Effectiveness**

Table 9.10 presents the results of regression analysis of the HR department's effectiveness on employees' perceptions of management support for knowledge sharing.

Equation 1 shows that the individual effect of perceptions of management support for knowledge sharing on HR department's effectiveness is positive and significant (B=.27, p<.05). In fact, perceptions of management support for knowledge sharing explains approximately 3.5% of the variance in the outcome variable above and beyond the effect of the control variables (ΔF=5.26, p<.05), which is substantially lower than the 21% in regard to teamwork and cooperation climate (see equation 1, table 9.9). The inclusion of work design and HR practice variables in equation 2 results in a significant increase ($\Delta R^2$=.20, ΔF=4.82, p<.0o1) in the explanatory power of the model. Interestingly, in equation 2 the effect of management support for knowledge sharing on the outcome variable is close to zero (B=.01, p=.96). The only significant predictor of perceptions of HR department's effectiveness in equation 4 is found to be rewards' external competitiveness (B=.23, p<.05).

In summary, the results of regression analyses presented in table 9.10 indicate that the individual effect of employees' perceptions of management support for knowledge sharing on perceptions of HR department's effectiveness is positive yet substantially

lower than that on teamwork and cooperation climate. In addition, this effect is washed out when controlling for the effect of work design and HR practices.

Table 9.10 **Regressions of HR Department's Effectiveness on Management Support for Knowledge Sharing**

| | ***HR Department's Effectiveness*** | | | |
|---|---|---|---|---|
| | Equation 1 | | Equation 2 | |
| **Independent Variables** | B | SE | B | SE |
| (Constant) | 2.97* | 1.28 | .55 | 1.52 |
| ***Control Variables*** | | | | |
| TeleCo (Dummy) | -.69* | .31 | -.35 | .36 |
| ConsultCo (Dummy) | .33 | .36 | .00 | .41 |
| Age | .02 | .02 | .02 | .02 |
| Gender (Female) | .47 | .27 | .48* | .25 |
| Education 1 (Higher Diploma) | -1.41* | .75 | -1.39* | .69 |
| Education 2 (Primary Degree) | -1.23* | .68 | -1.17* | .62 |
| Education 3 (Postgraduate) | -1.34* | .67 | -1.06* | .61 |
| Position1 (Support/Administration) | .06 | .51 | -.19 | .46 |
| Position 2 (Junior Management) | .42 | .38 | .38 | .35 |
| Position 3 (Middle Management) | .14 | .33 | .00 | .29 |
| Position 4 (Senior Management) | .22 | .44 | -.10 | .42 |
| Position 5 (Technical) | .41 | .48 | .34 | .44 |
| Tenure [b] | -.06 | .38 | .15 | .36 |
| ***Work Design*** | | | | |
| Task Interdependence | | | .10 | .15 |
| Feedback | | | .10 | .11 |
| ***HR Practices*** | | | | |
| Selection & Socialisation | | | .17 | .14 |
| Training and Development (Quantity) | | | .15 | .09 |
| Training and Development (Types) | | | .01 | .14 |
| Rewards Mix | | | .18 | .12 |
| Rewards' Competitiveness | | | .23* | .10 |
| Rewards' Equity | | | -.11 | .08 |
| ***KM Practices*** | | | | |
| Support for Knowledge Sharing | .27* | .12 | .01 | .13 |
| $R^2$ | .22 | | .42 | |
| $R^2_{adj}$ | .12 | | .30 | |
| F | 2.36** | | 3.64*** | |
| $\Delta R^2$ | | | .20 | |
| $\Delta F$ | | | 4.82*** | |

## III. HUMAN RESOURCE MANAGEMENT IN A KNOWLEDGE CONTEXT

This section presents the results of qualitative data based on semi-structured interviews with HR managers and knowledge managers of the three organisations.

## Knowledge Workers

Both HR and knowledge managers were provided with a list of five definitions of a knowledge worker (Horwitz *et al.,* 2003). Noting those definitions, they were asked to indicate the two key factors that, in their opinion, differentiate their employees as knowledge workers. They were then asked to indicate the proportion of employees who could be described as knowledge workers according to their chosen definitions. A summary of responses is provided in table 9.11.

Table 9.11 **Definition of a Knowledge Worker**

| | **TeleCo** | | **ConsultCo** | | **StateCo** | |
|---|---|---|---|---|---|---|
| ***Definition of a Knowledge Worker*** | *HRM View* | *KM View* | *HRM View* | *KM View* | *HRM View* | *KM View* |
| Contributes to the knowledge creation process as a defining competitive strategy/business capability of the organisation. | ✓ | | | | | ✓ |
| Has high level skills/education, technological literacy, high cognitive power and abstract reasoning; ability to observe, synthesise and interpret data, as well as communicate new perspectives & insights. | ✓ | | ✓ | | ✓ | |
| Understands the key requirement for new process design, and/or new product development to gain competitive/strategic advantage. | | ✓ | | | | |
| Willing to share information and knowledge; team collaboration in co-creating new perspectives which lead to more effective actions and solutions. | | ✓ | ✓ | ✓ | | ✓ |
| Able to use both conventional scientific methods, but also possesses intuitiveness, new mind sets and imagination. | | | | ✓ | ✓ | |
| Percentage of employees described as knowledge workers in the organisation | ≈50% | ≈20% | >60% | ≈20% | ≈50% | ≈30% |

As shown in table 9.13, there was little agreement between the HR and knowledge managers in each of the three organizations on the definition of a knowledge worker and/or the proportion of employees who could be described as such. On the one hand, all three knowledge managers placed equal emphasis on knowledge sharing willingness and collaborative spirit as defining characteristics of a knowledge worker, whereas all three HR managers stressed the importance of high skills/education and cognitive abilities as distinct characteristics of knowledge workers. Notably, all knowledge managers appeared more conservative than HR managers in their estimations of the percentage of employees fitting the title of a knowledge worker.

Consistent with employees' perceptions of work design, the HR and knowledge managers agreed that, in general, knowledge work tasks are characterised by high levels of autonomy and task interdependence. In relation to job autonomy the managers commented the following:

> The majority of our consultants would say that they have a lot of autonomy within their role. They are professionals and they have obviously learned to self-manage their work. Of course, in project teams like in audit and tax and consulting, there would be a senior manager or partner involved, who would make sure that the team works well, that the project has been completed within budget and time. So in that respect, a junior trainee may have to be managed a little bit more than a senior manager or assistant manager (HR Manager, ConsultCo).

> Autonomy exists in terms of the way that each project team manages its available resources, time and budget. Every project would have a partner at the top. There is a lot of autonomy between the partner and the person who manages the project on a day-to-day basis. The project manager decides mainly on who is going to do what in the project team. He or she does the full work breakdown. The project managers would also give people who work below them the autonomy to do things. Project managers don't like going and checking because they trust the people they work with (KM Manager, ConsultCo).

> In general employees at all levels enjoy high autonomy. However, you would expect more autonomy for managers and a more hierarchical and structured design for operational staff (HR Manager, TeleCo).

> Autonomy depends on the job. Some jobs involve risk for the organisation and require close adherence to process and supervision. Others require individuals to be free to operate closely with clients in an almost 'freelance' mode (HR Manager, StateCo).

In regard to task interdependence, the managers stated:

> What you tend to have in engineering is that you have loads of paper work involved, ordering equipment etc. All these are short-term, every day tasks. And then again you have medium level tasks, which is how to design systems and platforms. And then you have high-level tasks that involve planning, architecture, things that you really have to think about and that require very high-level skills. The thing with the networks is that everything is connected, so if you change something here affects many other things somewhere else in the network. So, I would say in the medium and high-level areas most tasks are closely connected (KM Manager, Telecom).
> Everybody's performance here would be dependent on other teams' results. Although there are different service lines and different things that we do, we actually do crossover quite a lot because we need to share information particularly when we are writing proposals and requirement documents (KM Manager, Consultancy).

The HR managers stressed that the majority of work tasks are structured in a project-oriented way:

> Typically a project team consists of a partner, who is the leader and responsible for the project, senior manager or manager, assistant manager, senior accountant, junior consultant, and the trainee consultant. The number of people working in a project really depends on the client's size and requirements. The most fixed member of the project team would be the partner because they have a certain number of clients. The rest of the

> structure would tend to change on a regular basis within the industry group (HR manager, ConsultCo).

> Our work arises in the colloquial sense of the term 'project work'. All of our knowledge workers work in small teams on projects mostly of short or medium term duration. The nature of projects is assignments for the organisation itself or for its clients (HR manager, StateCo).

### Integrating HRM and KM

A set of HR practices were identified as integral to the effective implementation of KM initiatives within the participant organisations. These practices span several HR flows including work design, training and development, performance management, rewards and internal communication.

Following the introduction of the Knowledge Repository System, the next step in TeleCo's KM strategy entailed the implementation of people strategies. People strategies were devised in order to facilitate the creation of a learning organisation characterised by knowledge creation, re-use, and sharing, which in turn would contribute to the unit's problem solving and innovation capability. The first strategy concerns the re-design of work activities through the deployment of a staff mobility programme and a cross-functional working initiative. The aim of the staff mobility programme was to develop a multi-skilled engineering base. The NEU implements a large number of separate programs annually which correspond to the various network platforms comprising the entire network. Accordingly, the unit allocates its design engineer resource based on the loading from previous programmes and also on initial estimates of future demands within each programme. Staff mobility was therefore viewed to improve program flexibility by allowing the parallel design of complex projects where required. The target of the mobility program was set to be the random rotation of one quarter of staff each year. This means that every employee would move to a different part of the unit once in four years. In relation to the results of the mobility programme, the KM commented:

> The mobility programme is running for the second consecutive year. What we've learned so far from this is that, in general, it's a good idea to move people around so that they can have a different view of the organisation. This is vital so that people can get a better understanding of how the wider network works. What we've also learned though is that sometimes it's an equally good idea to keep people in certain areas because they either like it or they are really good at that area or that we need a very high level of expertise in that particular area (KM Manager, TeleCo).

Parallel to the staff mobility programme, a cross-functional project work initiative was also introduced to the unit with the aim to broaden knowledge levels as well as to bring

the right level of knowledge to project issues. The initiative stipulated guidelines to ensure that project-related knowledge could be disseminated and re-used in current and future project scenarios respectively. The initiative also stipulated that one quarter of staff should take part in cross-functional projects over any one year period. Cross-functional working was deemed by the KM manager as instrumental in extending employees knowledge and problem solving capabilities.

> Again, because traditionally projects were carrying out in a line organisation you would get only one view of the problem. So we deliberately formed cross-functional projects so that people could expand their knowledge of the wider network (KM Manager, TeleCo).

The KM manager also stressed that although both initiatives described above were embraced by employees, particular attention was paid to the mobility initiative due to its unintended implications for staff morale.

> People were very positive to it in general because traditionally people didn't move. But what we figured out recently is that you need to be a bit careful in this area. There is an important thing about engineering people: part of how they feel about the company is their expertise. So, if you have someone in a job and this person is an expert and you decide to move him [sic] to another job where he is no longer an expert, his morale will probably drop because his prestige is coming from his expertise (KM Manager, TeleCo).

The third aspect of people strategies refers to the incorporation of KM objectives into staff performance management reviews. Employees were expected to contribute to knowledge capture and dissemination activities. In particular, personal performance targets included the estimation of the frequency with which employees would upload documents to the KM Knowledge Repository System. However, given that this target was set at management level, it was interpreted by many employees as a 'push-down' policy and thus unreflective of meaningful knowledge sharing behaviour at the bottom line. Thus, it was soon realised by the KM team that knowledge sharing behaviour could not be elicited based on a simple performance measurement model.

> We set some personal targets around knowledge sharing behaviour based on how many documents people were posting to the KM system. The problem with this is that if you have performance targets that are measured like that, people don't see it as a very sensible, meaningful target because uploading two or three documents per month doesn't mean knowledge sharing necessarily. A simple push down model with the performance targets is too simplistic to get people on your side (KM Manager, TeleCo).

Therefore, it was deemed appropriate by the KM team to develop further this area by finding ways to motivate employees to contribute and share their knowledge. This was viewed possible under the promotion of a rewards and recognition system which would be characterised by fairness.

> The issue we see is that we need to reward people to work in a knowledge-based way. So we need to make it in someway attractive for employees to make the extra care for knowledge sharing, so we need to have a reward and recognition system. We haven't devised it yet but we plan to do so. The main idea is that the system should recognise the efforts of people who go the extra mile to share their knowledge. We have to be very careful with that though because if it is designed wrongly it can be counterproductive. If it is seen as unfair it will be negative; we need to be very cautious so that we won't come up with something that will backfire on us (KM Manager, TeleCo).

The KM manager underlined that cultural change was contingent upon the extent to which the KM project would be integrated into the wider HRM policy applied to the entire organisation.

> It really makes sense to integrate knowledge management with the HR policy. I think we have a little disadvantage here because the knowledge management project is not related to the HR policy directly and is also applied to only one part of the company, it is only engineering. The strength of this project is that is local, it is closer to the people. So you need a combination of local projects that are closer to the people and a kind of a broad HR policy that supports the local initiatives. So you need a bit of both and we are missing that, the wider part. Plus, we've made a tactical error; we shouldn't have really named it a project; I think it should have been something like an HR policy (KM Manager, TeleCo).

This has important implications for interpersonal knowledge sharing particularly with employees out of the engineering function. According to the KM manager, HRM has an extra role to play in this regard as it can provide engineers with the soft skills required to elicit behaviours conducive to knowledge sharing. In turn, soft skills (e.g., communication, negotiation, teamwork, influencing etc) were viewed to be developed best not in a vacuum but rather as part of specific initiatives including project review meetings and communities of practice in the form of virtual team sites and also special interest groups. The aim of these initiatives is to foster a social climate rich in collaboration, sharing of knowledge, and willingness to learn from each other's experience. It is noteworthy that these initiatives were at the planning phase during the time of the interview.

> Again you look at me, I am an engineer. Maybe I need more soft skills. What I feel from my own project's point of view is that part of weakness for me is that I am not coming with the soft skills, I'm looking things from an engineer's point of view, you know, inputs and outputs. So I think that maybe more soft skills will be more powerful for a project like this, because it's ultimately about people. And all these factors are HR factors really (KM Manager, TeleCo).

According to the ConsultCo's KM manager, the perceived role of the HRM in inducing a KM-centred culture along the lines of the global KM strategy was of minimum importance. Despite the inclusion of the knowledge sharing criterion in the performance

management system under the 'self development' competence, the KM manager mentioned the following:

> There is no HR policy to say that we should share information. There is nothing as part of people's career planning or rewards or anything like that. I don't think HR would be thought associated to do knowledge management, to change the culture for knowledge management. We have a HR person who makes sure that our appraisals are done in a timely manner, all the administrative things, that bonuses are paid, that salaries are increased, all that kind of stuff. From a strategic HR point of view, we are in the top fifty for the last four, five years. So that kind of thing, to make sure that ConsultCo is seen externally and now more and more internally as a good place to work (KM Manager, ConsultCo).

Paradoxically, the KM manager, while attributing a minimum KM role to the HR function, highlighted the positive impact of certain HR practices and processes on knowledge transfer and sharing. Interestingly, their impact was found to be mediated by their effect on social relations among employees. The KM manager provided an illustrative account of how training activities can have an effect on social relations and consequently on knowledge sharing as follows:

> Most of our training courses for my grade and lower levels would be all done across the firm. And through that you get to know people. And through that you get to know a little bit that they are not all just people who add up figures and we are not all just people who do service things in firms.
>
> Besides cross-firm training, one of the courses junior people do is called consulting excellence. This is about how to write reports, presentation giving, how to interview people; there are three, four courses, quite intensive providing skills not only for consultants; these are skills for everybody else. Through that, they all get to know each other.
>
> Our analysts all came in together; they were 10 or 12 of them. We sent them over in the UK and they did three weeks intensive training. They really bounded very tightly even with the people in the UK. So now they keep in touch with each other, and there is a big group of a hundred people there. Because we invested this time, they created a bond between them…They actually do share a lot of information, and keep an eye for each other. And this is positive because at some stage you are going to have some of the people being promoted quicker and so forth just because having that ability. But I think from a knowledge management point of view that if they end up in two different areas, they will still talk to each other, they will still have a very good friendship, they can pick up the phone and say 'look, how do you do this or how do you do that' (KM Manager, ConsultCo).

### Knowledge Sharing Culture

The major challenge for the successful implementation of KM was identified by the KM manager to be that of changing the culture within the unit and the wider organisation so that all employees acknowledge the benefits of sharing knowledge. However, this was unattainable unless KM was expanded to other parts of the company.

> I think that key issue is how to change the culture of the organisation. This is possible only when the project is company wide and not just applied to a part of the company because these people [note: engineers in NEU] deal with other parts of the company, so you know it has to be the same culture across the company and not just in this part (KM Manager, TeleCo).

The KM manager underlined that cultural change was contingent upon the extent to which the KM project would be integrated into the wider HRM policy applied to the entire organisation.

> It really makes sense to integrate knowledge management with the HR policy. I think we have a little disadvantage here because the knowledge management project is not related to the HR policy directly and is also applied to only one part of the company, it is only engineering. The strength of this project is that is local, it is closer to the people. So you need a combination of local projects that are closer to the people and a kind of a broad HR policy that supports the local initiatives. So you need a bit of both and we are missing that, the wider part. Plus, we've made a tactical error; we shouldn't have really named it a project; I think it should have been something like an HR policy (KM Manager, TeleCo).

Finally, the KM manager highlighted the importance engineers ascribed to knowledge acquisition as a defining feature of their professional identity. Thus, knowledge was viewed by engineers as a 'personal thing they keep very close'. In particular, the KM manager commented:

> Their knowledge is very central to them, it's what they are, and it is a personal thing. So it is hard to talk about it. It is their own personal view of the world, so it is something they keep very close, and so it is hard to communicate with people about it because it is core to them. So, it goes back to the cultural issue, how to get them to think that this will benefit them, to make it obvious how this will make things better for them. And there's a kind of a critical mass there, you have to get a critical mass and then things start to walk. I think that in other areas it can be less difficult, for example in marketing where people would identify themselves in a different way with knowledge, you know they would possibly think 'can I use it, can I get it because I want to make a product?' which is a different thing, whereas engineers define themselves as experts, so it's a very strong emotion in it and it is very difficult to manage that (KM Manager, TeleCo).

Similar to TeleCo KM manager's view, the main challenge for implementing successfully the KM objectives of knowledge contribution and sharing was identified by ConsultCo's KM manager to be that of engraining a culture compatible with those objectives. The approach to cultural change was nevertheless closely related to what the KM manager named as a 'sales culture'.

> I think that knowledge management, yes, it's all about sharing information. But at the end of the day, for what we try to do, it's all about sales. If we got a part of a sales culture, that we have all this information freely available at the website but it doesn't cost us anything; that this is superb reference material and we can actually speak out that we already have all this particular piece of work that people internally and externally are looking for. But I also think…if we go out and sell it, and actually say 'yes, this is it, I can contribute to the sales'; if people turn it a bit and say 'look, if I submit

> documents, I am really selling, because I am actually selling the work that we've done internally in Ireland globally' (KM Manager, ConsultCo).

The KM manager pointed out that, while knowledge is being shared informally within the local firm, the aim of the global KM strategy focuses on the utilisation of formal knowledge sharing channels such as the global KM repository.

> We've got three enormous projects right now soaking all our resources and people don't really have time to share knowledge among them formally. However, we do it informally through conferences calls every week; because two of the projects are throughout Ireland, so we have a national team, and we've got multiple regional teams, so every week at a minimum, everybody gets into a call and says 'this is what's going on in my part of the wall'. Different people meet at different times but at least once a month, and then we meet once a quarter as a whole team maybe 200 people. So, I wouldn't say that knowledge isn't being shared among those projects but it's not been done in a formal sense through the tools that we have. So, in a very informal way we do share knowledge. My colleague, who is responsible for the knowledge management metrics, might say it's not formal enough and what happens is when statistics are begging to be produced about how much people contribute, how many times you log on to the system, Ireland is quite low. (KM Manager, ConsultCo).

According to the KM manager, cultural change should be reflected to a shared notion of knowledge as being essentially a public good freely available to all employees.

> I tried to change the tack about knowledge management, I said 'look guys, instead of starting from scratch all the time, somebody is out there who's done this stuff before. There are some very senior and some very talented people throughout the world in this organisation who already thought of these things and worked in various industries. Why don't we tap into their documentation and their production, it is all our stuff too'. We try to get people to understand that it's all ours to share. And that's essentially a cultural thing (KM Manager, ConsultCo).

Knowledge hoarding, although not viewed as a major concern, was attributed to the classic premise of 'knowledge is power'.

> I would be lying to say that this doesn't happen. There's always this thing that knowledge is power. Yeah, to be honest, every day in life, you see in every project where people hold back stuff, they keep stuff in their hard drives as opposed to the shared drive, all that kind of stuff; you see that in clients sites, you see it here, you see it everywhere. I think it's part of the individual. As far as possible, I keep nothing in my hard drive; I put it all in the network so people can look at my stuff. I'd say most people do the same. We have a good culture here. (KM Manager, ConsultCo).

### The Social Side of HRM

While all HR managers acknowledged the importance of social events for their contributing potential to an organisational climate conducive to open communication and knowledge sharing, differences were found in regard to the purpose and types of those events. In turn, those differences, which are described below, reflect the relative

involvement of both the HR Department and line management in the initiation of both formal and informal socialisation among employees.

The organisational climate in TeleCo was seriously affected by the downsizing which was implemented few years ago as part of the rationalisation programme. Subsequently, most of the social life in the organisation was taking mainly the form of parties for those leaving the organisation. In its attempt to contribute to the creation of a more positive climate between management and employees, the HR department had recently implemented a set of initiatives. These were centred on team meetings organised twice a month in which employees were provided with updates on the business strategy of the organisation. In addition, employees' views are frequently sought through attitude surveys conducted by the HR department. It is important to note though that the majority of employees did however participate in decision making mainly through their trade unions. There are six trade unions represented within TeleCo. The organisation has adopted a partnership model according to which HR management and trade unions work closely together towards reaching consensus on employee related issues. The HR department is also involved in providing assistance to problem solving groups. These are organised on ad hoc basis depending on departmental and/or interdepartmental needs.

In terms of formal socialisation, the organisation has a sports and social club which operates under the umbrella of the HR function. The activities of the club are communicated to staff via the corporate newsletter. The HR manager mentioned that although many employees participate in the activities organised by the sports and social club, there is still potential for further employee involvement in it. This was attributed to the fact that the HR department had been to a large extent considered by employees as 'reactive'. The HR manager commented:

> All we are thought of to talk in the management meetings is "reduce the numbers, reduce the headcount". So that's definitely the perception many employees have about HR…taking costs out. That's really changing at the moment because I think we've started to invest in people (HR Manager, TeleCo).

Finally, in terms of more informal social events, the HR manager stated that these take typically the form of a dinner after the end of a project in a specific business area. While the HR department encourages those events, the frequency in which they take lies on the discretion of project managers.

Socialisation in the ConsultCo appeared to be closely tied to its communication policy, which the HR manager characterised as 'bottom-up' and 'open-door'. The HR department is heavily involved in the promotion of internal communication through a set of initiatives including: biannual staff briefings, monthly departmental communication meetings, social events (e.g., social weekends, teambuilding days, and conferences), and finally e-newsletters in which the activities of the sports and social committee are communicated. A recent addition to those practices is an employee survey, which is conducted externally by an independent research organisation. This survey offers a detailed comparative overview of workplace culture by focusing on the relationships between employees and their jobs, employees and management, and employees and their colleagues. Accordingly, it highlights areas of improvement including employee trust towards peers and management, internal communication and knowledge sharing. The HR manager mentioned the benefits of participating in this survey as follows:

> The survey is another means to encourage communication because it's external, independent and therefore honest…The results of the survey are really beneficial…In the last three years we've been using those results to introduce new initiatives and programs in order to improve certain areas…We are proud of the fact that we have been named for a third year in a row among the top fifty companies to work for in Ireland (HR Manager, ConsultCo).

When was asked how these benefits are reflected in the social life of the organisation, the HR manager highlighted the importance of upward communication channels through the establishment of open-door policies, and activities both internal and external to the firm that promote open communication and collaboration among employees. The HR manager also mentioned the role of workplace design as integral to an open-door culture and collaboration.

In regard to the actual social activities within the Consulting Unit, reference was made to the 'Friday meetings', which are held every third Friday of the month. While their agenda includes mainly the provision of training in the form of morning lectures given by partners and senior managers, issues that are important to the whole group are also discussed during work lunches. In addition, as the HR manager stated, the Friday lunches provide consultants from all levels with the opportunity to exchange insights, information and advice with their colleagues.

Social events also take place outside the workplace. These can be in the form of either formal, company-wide social gatherings, an example of which was provided by the HR manager as follows:

> We used to have an old form Christmas party, which was very strange. People wouldn't go because they would probably mix the ball tables. Invariably what happens is that people sit with their own team, that's just natural. People were just finishing their meal and after a while would start mixing with people from their own teams. Last summer we took a risk to organise something different, a companywide barbeque. We decided to put a bit of more effort around this. So, we chose to make it on a Friday and we arranged with the partners that everybody could take a half-day off. Then, we thought it would be a good idea to include some games in the afternoon so that people from different areas could mix. So, we were all split up in teams and there was a random selection, so let's say, I was team leader on a team of consultants whom I wouldn't necessarily meet on a daily basis…Everyone said the games was great fun and the quality of the whole event was superb, and it was really nice to get know other people from those various areas. So, we are going to do it again this year and I'd say there will be more people out there than last year (HR Manager, ConsultCo).

Social events of smaller scale are also encouraged by the HR department through supporting line managers to initiate them as part of a wider reward and recognition policy:

> To give you an example of ad hoc social event that took place last week: Performance was very good in a consulting team, and particularly because it's a busy season there at the moment, as a kind of reward for hard work and late hours, everyone was brought out. That happens regularly. That's not necessarily driven by HR, that particular event was driven from the department head, so it's quite in the mind of everyone that it's important to give a sort of a social reward for exceptional team results. This would be a social drink or a dinner (HR Manager, ConsultCo).

The KM manager also underlined the role of social events in promoting a climate of collaboration and eventually of knowledge sharing within the firm. In particular, it was stated:

> Events like the barbeque party make people to start realising that 'these people are still human beings, it doesn't matter what department they are working in'…and what happens is that people walk along the corridor and say hello to somebody they met in the party, and there is 'what you up to now?', 'are you working on that client?' or 'I used to work at that client too, maybe we should share something because I think there might be an opportunity for you and you might think there is an opportunity for me' (KM Manager, ConsultCo).

The social climate in the StateCo was characterised by the HR manager as friendly, open and inclusive. The HR manager mentioned that an integral aspect of that climate is the way in which communication is managed in the organisation. When was asked whether employees' views are sought on important issues, the HR manager said that 'more often than not the answer is yes' and mentioned that in a recent strategy development initiative over 400 people contributed to the development of a new corporate strategy.

Similar to the TeleCo, the StateCo has a sports and social club, the activities of which are supported by the HR department. There is also a monthly newsletter

communicating the activities of the club to employees via the corporate website. In terms of more informal social events and activities, the HR manager mentioned that individual and team achievements are celebrated, rewarded and communicated throughout the organisation. In addition, the organisation has recently placed emphasis on the office design by creating open spaces to facilitate communication and social interaction among employees.

### Management Support for Knowledge Sharing

Management support was also found to play a significant role in the effective deployment of the KM project. The KM manager highlighted the supportiveness provided by the director of the unit as follows:

> Unless you have support from the top I can't see the project working really. Our director is an exceptional person and particularly supportive, and I think that if we have a switch in managers, we might have an issue, because I don't know if management at the next level see it as a same priority (KM Manager, TeleCo).

Furthermore, the role of middle management was viewed as critical to supporting the KM project and particularly the knowledge sharing aspect of it. According to the KM manager, three interrelated factors stand out in explaining how middle management can impede the effective implementation of KM: top management support, anticipation of the value inherent in KM, and interpersonal trust. In particular, the KM manager stated:

> As I read in the literature, the big enemy of knowledge management is not the top guy or the bottom guy but the middle guy. Obviously we presented the project to the senior management team and, you know, what you get about it is that the senior team wouldn't say no, they would say ok. So what happens is that you get an official ok but you know it is not really an ok. So the middle guys won't really push it. But there is another factor here that is a miscommunication issue, because people don't understand it, they don't understand what is about really. I think that if you communicate to management why knowledge management is valuable, you can convince them without having to push so that they won't push either. Another issue for the middle guy is that sometimes when you save your knowledge for another person without this necessarily benefiting your immediate targets. This means that what you are doing benefits not you but another guy. It is like when you are driving in the road and you are in a queue and see a guy trying to get into the queue and you let the guy because you could be in his position. And it is the same with knowledge sharing, you have to be 'I will go the extra mile but I will only go the extra mile if you show me that you will go the extra mile'. And to get that thinking is a hard thing (KM Manager, TeleCo).

The extent to which KM was acknowledged by ConsultCo's top management as a strategic priority was found to be imperative to the creation of a knowledge sharing culture within the firm. Specifically, the KM commented that since its initial formation, the importance ascribed to the role of KM team by senior management has been

reduced. This is reflected in the fact that KM represents a part-time role for a senior and a junior employee. Accordingly, the KM manager mentioned that, contrary to other offices, KM in the Irish office could be better understood as an expression of impression management. In particular, the KM manager commented:

> A couple of years ago, we started the knowledge management team and we had all the partners on the team so that it would be feasibility and a little bit of sponsorship behind us. That team disintegrated for a number of reasons. About a year and a half ago, a partner came down to me and said 'you are now the new knowledge manager for Ireland' and I said 'fine' [laughing]. So what would have happened is that the EMEA knowledge manager would have noticed that there was no knowledge management for Ireland and for a number of other countries, so he [sic] would have been in touch with the local partners and asked them 'get yourselves a knowledge manager' and I would have been notified through that way. Other countries would have seen it as a full-time role, and some countries do actually have it as full-time role, and they would see it as part of the culture of the organisation, whereas we see it as an overhead, I think we see it as something that we need to do. My role is at best part-time; I would say a day a month. We generally have two people, somebody senior, who is me, and somebody more junior. The junior is one of the personal assistants doing the more administrative work, whereas I get involved in phone calls with everyone in Europe, we go through slides packs, we share ideas and so forth. No country wants to be seen non too participative, so that's where our managing partner is quite senior within the EMEA, so he would want to make sure that Ireland is doing well. To cut a long story short, If somebody asked him 'do you have a knowledge manager' he would say 'yes', but if the question was 'do u have a knowledge management culture in the organisation?' he would have to say 'no, formally no'. Knowledge management is not at the top of the agenda (KM Manager, ConsultCo).

The lack of full-time roles devoted to the KM function was found to be associated with inadequate induction training in utilising efficiently the global knowledge repository.

> Normally, if I were around I would have taken them for a half day and showing them around the website, showing what's good and bad about it. But I wasn't available because I was working out of town for few months. Other countries would do it as part of their induction; they would probably say 'here is the day, this is how we do, let me show you how to move and to manoeuvre around this website, you must contribute, it's part of your day-to-day work'. We don't have that culture here unfortunately but we're trying our best given our resources (KM Manager, ConsultCo).

Therefore, a sanction-based approach was employed as an alternative in order to enforce contribution of codified knowledge to the global KM system. However, the KM manager questioned the sustainability of this approach and its potential for making people understand the benefits of knowledge contribution.

> For a while we were the country with the most log-ons to the intranet. This happened because we forced people; we put people's names on the board and said 'you didn't log on this month, why not'. I never suggested to force people to do it; we were just told by senior management to do it two or three times. And there was of course some joking around the whole thing among consultants saying 'you never logged on' (KM Manager, ConsultCo).

## The Organisational Context of Knowledge Management: The Case of TeleCo

TeleCo represents a special case as it has recently undergone a major organisational transformation. The company, previously being a state monopoly, was privatised in 1999 in the wider context of the liberalisation of the EU telecommunications market. As a result, the organisation shifted its strategic priorities towards maximising business efficiency. This was reflected in the design of a rationalisation programme, which was enacted soon after TeleCo's privatisation. Integral to this, among other strategic decisions, was a downsizing scheme. This was implemented mainly on a voluntary basis through the introduction of voluntary exit packages to staff. Following this, the organisation's core workforce was significantly reduced from 13,000 to 7,400 employees within a six years period, which represents a substantial decline of approximately 43 per cent. At its time, TeleCo's privatisation caused a lot of controversy in the Irish society and was faced with the opposition of trade unions, which viewed government's decision on ownership change as a triumph of popular capitalism (Sweeney, 2004).

The privatisation and consequent downsizing of TeleCo affected its remaining employees in various ways. As the HR manager commented, 'there is definitely a sense of loss for the people who remained, particularly in business areas where a lot of people left'. The reduction in headcount affected every part of the organisation but mostly the field technicians and engineers working in the Network Engineering Unit (NEU). With the introduction of new technologies in the wider organisation many positions, especially technical posts, became obsolete. In parallel, the downsizing resulted in excessive workload for the 'survivor employees' (Farrell, 1983). In relation to this the HR manager stated,

> There is a lot more work for people who didn't leave. So, in some parts of the company I would say we've probably got too thin, people are feeling it as the working hours are longer that they used to be. The majority of people who have left would have come from that area [Network Management unit] (HR Manager, TeleCo).

The downsizing also influenced employees' perceptions of the HR function. According to its HR manager, the HR department was associated strongly with 'reducing the headcount and taking costs out'. The dissatisfaction of TeleCo's employees is evident in their significantly lower ratings of HR department's effectiveness compared to the rest of the sample used in the study. Employees' negative perceptions of the HR department's role can be better understood when viewed from a wider perspective which takes into consideration TeleCo's rapid shift of strategic direction towards

efficiency maximisation. This was, however, communicated to staff in a top-down fashion. Therefore, limited attempts were made by senior management to induce consultation, direct involvement and participation of staff in this process. Accordingly, as the HR manager commented, many employees translated the word 'efficiency' simply as 'cost cutting'.

Employees' perceptions of top management's strategic objectives were also influenced by the views of their trade unions representatives. The HR manager mentioned that employee participation in decision making takes place through trade unions, six of which are represented in the organisation. The HR manager commented that 'every major change has to go through a partnership model, which would be the managers and trade unions working together'. Given the opposition of trade unions to TeleCo's privatisation and downsizing, the HR manager stressed the difficulties that the organisation has experienced in the past in infusing a 'real partnership air in management-trade union relationships'.

Being one of the most affected parts within the wider organisation, TeleCo's senior management identified a number of KM and learning-related issues that emerged from external and internal sources of change. The former includes the increased competition the organisation was soon faced with within a hitherto monopolised industry and its associated pressures on the parallel improvement and expansion of TeleCo's network services. This, in turn, made vital the advancement of the unit's problem solving, innovation and learning capabilities. The core internal source refers to the change of the employment relationship from an old 'life-time employment model' to a performance-related-pay (PRP) contractual system. However, as a result of negotiations between top management and the trade unions, 60 per cent of employees, most of which field technicians, were still covered by civil service permanent contracts. Interestingly, this group of employees was viewed by the HR manager as an obstacle to the organisation's progression to achieve efficiency and productivity. When was asked about the impact of downsizing on employees' perceptions of employment security, the HR manager commented,

> Because of the civil service contracts, they feel very safe. They would be among the safest employees in the whole country. And that can work against you as a company, because people say 'I can't be sucked, so I can do what I want, I can take a sick day every week and nothing will happen to me'. I would say there is a huge sense of security, huge; but not for the people with personal terms contracts. (HR manager, TeleCo)

Parallel to this, employee mobility within the industry was intensified, which in combination with the continuing downsizing resulted in a steady increase of employee turnover. The side effect of this was that along with less strategically important staff, core employees with substantial experience in network engineering started leaving the organisation (Lepak & Snell, 1999). This was identified by senior management as a major 'knowledge leaking' problem that, unless solved, would put the unit at risk of failing to meet its strategic objectives of maximising operational and financial efficiency. The same view was shared by the HR manager who commented that,

> We are after losing quite a lot of tacit knowledge. I think people realise that. And what we also realise is that we have single points of failure, so we have one person but a lot of knowledge, so when this person goes or something happens to him or her we are going to be very stuck.

The design and implementation of a KM project was therefore viewed by senior management as pertinent to tackle this problem. Therefore, three years ago, the project was launched in a small part of the NEU and within the following nine months it was expanded gradually in all other areas. The envisaged aim of the KM project was to foster innovation within the unit by improving the problem-solving capability of its staff. Central to this aim was to promote knowledge transfer and sharing among employees. The financial and operational benefits associated with access to and sharing of knowledge were described by the KM manager as follows:

> Engineers need to know how to expand the network. In other words, they need to figure out how much network to build. The network building costs €200 million a year. So if you can be two percent more efficient, that's a lot of money. We know cases that we have made the wrong technical decisions in the past. If people were more knowledgeable they wouldn't have made those decisions and the organisation would have probably saved a few millions in network development (KM Manager, TeleCo).

> In a network you get a lot of old equipment as it takes twenty years to retire it. The problem starts when the people who put that equipment on are gone and then the people who maintain it don't know everything about it and therefore can't fix it. So you solve a problem here and then down there other people don't know how to solve the same problem…Knowledge sharing is a real factor in making the unit work better (KM Manager, TeleCo).

Despite the fact that some of its people management related initiatives were somewhat welcomed in the unit, the KM project was generally viewed by staff with certain scepticism. This was due to their suspicion about the underlying intentions of management, which was, in turn, reflected in negative predisposition towards the anticipated value of the specific project. According to the KM manager, this could be better viewed in the wider context of an 'us-against-them' stance of staff triggered by their perceptions of 'psychological contract breach', which consequently affected their

willingness to place trust in management-led initiatives (Robinson, 1997). In particular, the KM manager commented that,

> The time we launched the project the company was undergoing a big headcount reduction. We are talking about a good few thousands. So it wasn't a good timing to launch the project. Plus we've made a tactical error. We shouldn't have really named it a project because projects at that time were associated with getting headcount, making the company more efficient. So it was seen in the light of this big program of restructuring. So people were saying 'ok, they want me to share everything I know and then goodbye' (KM Manager, TeleCo).

In addition, the core strategic goal of TeleCo's restructuring programme, namely maximising efficiency was found to be incongruent with the longer-term orientation of the KM project, namely innovation, problem-solving, and learning. This was seen by the KM manager as essentially a value conflict between the unit's KM project team and the wider organisation's top management team. Notably, the implications of this conflict were evident in the bottom-line.

> The organisation was cutting so they wanted to be efficient, and they wanted us to be efficient now. KM is a kind of long term objective whereas efficiency is short or at best a mid-term objective. KM doesn't give results next week, you know it doesn't work that way, you need sustained effort to get the benefit out of it. But the company has short-term objectives about efficiency. That works against KM and the staff sees that it's coming higher from the company…you know rationalisation, efficiency… So there's a conflict here and that's one of the two biggest problems for us (KM Manager, TeleCo).

Interestingly, many line managers did also express scepticism about the value of the KM project. This was found to be the second impediment to the effective implementation of the project. As a result of top management's call for maximising operational efficiency, line managers were seemingly immersed in realising the immediate targets specified for their sub-areas upon which personal pay and bonus levels would be decided. A nice metaphor employed by the KM manager illustrates the trust implications of this clash of interest between line managers and the KM project team:

> An important issue for the middle guy is that sometimes when you save your knowledge for another person without this necessarily benefiting your immediate targets. This means that what you are doing benefits not you but another manager. It is like when you are driving in the road and you are in a queue and see a guy trying to get into the queue and you let the guy because you could be in his position. And it's the same with knowledge sharing, you have to be 'I will go the extra mile but I will only go the extra mile if you show me that you will go the extra mile'. And to get that thinking is a hard thing (KM Manager, TeleCo).

Accordingly, the KM project team suggested the incorporation of KM objectives into staff performance appraisal reviews in order to encourage management support for the project. In particular, performance targets included the estimation of the frequency with

which employees would upload documents to the KM Repository System. However, targets were set at management level. This was interpreted by many employees as a 'push-down' approach and thus unreflective of meaningful knowledge sharing behaviour at the bottom line. It was soon realised by the KM team that knowledge sharing behaviour could not be elicited based solely on a top-down performance measurement model.

> If you have performance targets that are measured like that, people don't see it as a very sensible, meaningful target because uploading two or three documents per month doesn't mean knowledge sharing necessarily. A simple push down model with the performance targets is too simplistic to get people on your side (KM Manager, TeleCo).

It is noteworthy that employees' reluctance to embrace the KM initiative has also a historical dimension. The NEU is one of the oldest parts of the wider organisation. Access to and retrieval of advice, information and insights was to a large extent dependent upon engineers' personal social networks. These had been developed in a rather informal manner over an extensive period of time and therefore were deeply embedded in NEU's culture. The management of this essentially informal social network was deemed necessary as part of the organisation's business process management initiatives. Within this framework, NEU's management recently decided to introduce a set of changes the aim of which was to establish clear processes and standards in the design, maintenance and development of platforms and network systems. The route to standardisation was viewed by NEU's top management as compatible with the aims of the KM project for improving the overall efficiency of the unit. It was therefore decided to incorporate those objectives to the KM project. As the KM manager mentioned, 'we do need to get some level of standardisation in the way the organisation works so that we can make it more efficient'. The main obstacle to the efficient implementation of those changes though was associated with engineers' heavy reliance on their informal network. This, in turn, was out of management's control since the KM team soon realised that the informal network was difficult to be influenced or manipulated.

> Because people use [the network] and rely on it so much, they look at knowledge management and say 'why do we need this? Why do we need management getting involved in this?' They see it [note: the network] as the way they work, so people are like 'don't touch it because it's already working'. However, this informal network, because it is not managed, just breaks down in places. That's why we have to get involved in. But one of the things about the informal network is that it is hard to influence it in any way. It's just very difficult to manage it (KM Manager, TeleCo).

The KM team gradually acknowledged the value of the informal network for providing engineers with opportunities to access and share technical advice and know-how.

Therefore, it was deemed appropriate to adopt a different approach which was described by the KM manager as a 'behavioural pull strategy' opposed to a 'push-down model'. This approach was based on KM team's realisation that changes can be successfully implemented only if individuals realise their advantages.

> What I think is important is that people need to understand the value of knowledge management. The main challenge is how to get people to see the advantages of the knowledge management project, to support and get involved in the project, to be able to see how to fit the project to their everyday work so that it makes sense to them, to see that 'oh yes, if I do this now, it will make sense for me because I will gain from this'. To get the minds switched is the main challenge. The technicalities we have to solve are very small in the scale of this challenge (KM Manager, TeleCo).

## IV. CONCLUSION

Table 9.12 provides a summary of the results of regression analyses in regard to the individual and overall effects of work design, HR practices, and management support for knowledge sharing on employees' perceptions of teamwork and cooperation climate, and HR department's effectiveness respectively.

Table 9.12 **HRM Context: Summary of Regression Analyses**

| ***Variables*** | ***Teamwork & Cooperation Climate*** | | | | ***HR Department's Effectiveness*** | | | |
|---|---|---|---|---|---|---|---|---|
| | B[a] | B[b] | R[c] | R[d] | B[a] | B[b] | R[c] | R[d] |
| | | | | .30*** | | | | .30*** |
| ***Work Design*** | | | 17** | | | | .15** | |
| Task Interdependence | .34** | .21 | | | .10 | .10 | | |
| Feedback from Others | .35*** | .14 | | | .29** | .10 | | |
| ***HR Practices*** | | | .23*** | | | | .31*** | |
| Selection & Socialisation | .47*** | .29* | | | .23* | .17 | | |
| Training and Development (Quantity) | .05 | .04 | | | .17* | .15 | | |
| Training and Development (Types) | .22* | .03 | | | .05 | .01 | | |
| Rewards Mix | .06 | .03 | | | .21* | .18 | | |
| Rewards' Competitiveness | -.04 | .04 | | | .20* | .23* | | |
| Rewards' Equity | -.10 | -.09 | | | -.12 | .10 | | |
| ***KM Practices*** | | | .21*** | | | | .12** | |
| Support for Knowledge Sharing | .58*** | .33** | | | .27* | .01 | | |

Notes:
[a] Unstandardised beta weights controlling for demographic variables and/or other variables within the same set.
[b] Unstandardised beta weights controlling for demographic variables and all other variables.
[c] Adjusted R square for all variables within a set controlling for demographic variables.
[d] Adjusted R square for all variables within a set controlling for demographic variables and all other sets.
***p<.001; **p<.01; *p<.05.

As shown in table 9.12, all independent variables, including demographic variables, explain the same percentage of variance (i.e., 30%) in each of the two outcome variables. There are, though, some notable differences in the relative importance of

independent variables for predicting teamwork and cooperation and HR department's effectiveness respectively. First, in regard to teamwork and cooperation, reciprocal task interdependence, feedback from others, selection and socialisation, relational-oriented training and development, and management support for knowledge sharing yielded a positive significant relationship with teamwork and cooperation climate. However, when the rest of independent variables were controlled for, only selection and socialisation, and management support for knowledge sharing remained significant. In regard to the second outcome variable, feedback from managers and co-workers, selection and socialisation, adequate and well-organised training and development, rewards focusing on both individual and group performance, and rewards' external competitiveness yielded a positive significant relationship with HR department's effectiveness. However, when controlling for the simultaneous effect of all independent variables, only rewards' external competitiveness remained significant. Overall, the findings of regression analyses indicate that line managers' commitment to knowledge sharing might be equally important to HR practices in influencing employees' perceptions of a social climate that fosters teamwork and cooperation. The findings also suggest that employees' satisfaction with the HR function's role is influenced primarily by the extent to which employees perceive their contribution to the firm to be acknowledged and rewarded accordingly.

The qualitative results first indicate that the HR managers and knowledge managers across the three organisations differ in their views with regard to the defining characteristics of knowledge workers. While HR managers placed emphasis on the importance of employees' knowledge, skills and abilities, knowledge managers stressed the importance of individuals' willingness to share knowledge and to engage in collaboration. Despite this difference, both HR and knowledge managers agreed that the majority of employees' work is characterised by high autonomy and interdependence. Second, the results describe a number of HR practices that aimed at supporting KM objectives. Among those practices, job rotation, project-based work structures and cross-functional training appeared to be relatively successfully implemented. Third, the results highlight the importance of a knowledge-sharing culture and the ways in which HR practices may contribute to creating. Socialisation initiatives, including both formal and more informal social events, appeared to have a positive role in creating such a culture. Finally, based on the case of TeleCo, the results describe the role of the wider organisational context in supporting (or failing to support) KM objectives. In the following chapter, the results are discussed in the light of previous theoretical and empirical studies.

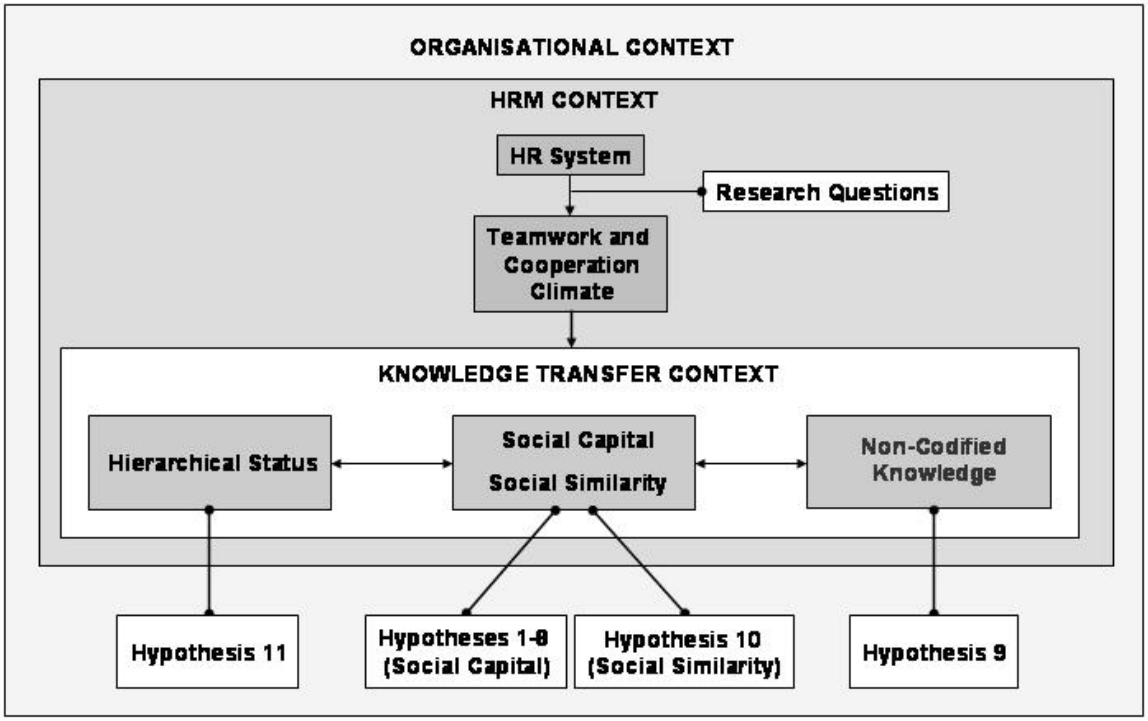
# CHAPTER TEN

# Discussion

## INTRODUCTION

In this thesis, a conceptual framework was developed with two research aims: first, to examine the socio-relational context and processes of interpersonal knowledge transfer and, second, to explore the role of HR practices in influencing employee perceptions of an organisational social climate of teamwork and cooperation which is conducive to knowledge transfer and sharing. The framework is illustrated in figure 10.1.

Figure 10.1 **Conceptual Framework of the Present Study**




Argote *et al's* (2003b) integrative theoretical framework for organising research on KM provided the basis for developing a model distinguishing between three core pillars of the knowledge transfer context: (i) properties of individuals (i.e., hierarchical status), (ii) properties of relations between individuals (i.e., social capital, social similarity), and (iii) properties of knowledge transferred between individuals (i.e., codified/non-codified knowledge). Particular emphasis in the model was placed on the properties of relations between individuals and, specifically, on the role of social capital, which has emerged in the literature as critically important for knowledge transfer (e.g., Nahapiet & Ghoshal, 1998; Adler & Kwon, 2002; Levin & Cross, 2004; Moran, 2005). The second aspect of the properties of relations examined in the model was social similarity between

knowledge seekers and knowledge providers and its relationship to the cognitive dimension of social capital in affecting knowledge transfer. In regard to the properties of knowledge transferred, the model considered the effect of the relational dimension of social capital on the receipt of non-codified knowledge. In regard to the properties of individuals, the model placed emphasis on the hierarchical status of knowledge seekers and how this is associated with the structural and relational dimensions of social capital utilised for knowledge transfer purposes. Eleven hypotheses were proposed with respect to the three pillars comprising the socio-relational context of knowledge transfer, most of which were supported empirically (see table 10.1).

Table 10.1 **Knowledge Transfer Context: Hypotheses**

| | **Hypotheses** | **Results** |
|---|---|---|
| H1 | Strong ties have a positive effect on the transfer of knowledge | *Supported* |
| H2 | The positive effect of strong ties on the transfer of knowledge is mediated by reliance trust and disclosure trust | *Supported* |
| H3 | The higher the level of reliance trust, the stronger is the positive effect of disclosure trust on the transfer of knowledge | *Supported* |
| H4 | Shared values and goals have a positive effect on reliance trust and disclosure trust | *Supported* |
| H5 | Shared language has a positive effect on reliance trust and disclosure trust | *Supported* |
| H6 | Strong ties have a positive effect on shared values and goals | *Supported* |
| H7 | Strong ties have a positive effect on shared language | *Supported* |
| H8a | The positive effect of strong ties on disclosure trust is not mediated by shared values and goals and shared language | *Supported* |
| H8b | The positive effect of strong ties on reliance trust is mediated by shared values and goals and shared language | *Supported* |
| H9a | Reliance trust is particularly important to the transfer of knowledge when the knowledge is non-codified | *Not Supported* |
| H9b | Disclosure trust is particularly important to the transfer of knowledge when the knowledge is non-codified | *Supported* |
| H10 | The effect of shared values and goals and shared language on the transfer of knowledge differs for socially similar and socially dissimilar knowledge transfer dyads | *Not Supported* |
| H11a | Weak ties are particularly important to the transfer of knowledge from hierarchically lower knowledge providers | *Supported* |
| H11b | Reliance trust is particularly important to the transfer of knowledge from hierarchically lower knowledge providers | *Supported* |
| H11c | Disclosure trust is particularly important to the transfer of knowledge from hierarchically equal knowledge providers | *Not Supported* |

The model also aimed at exploring the “black box” through which people management practices may contribute to intra-organisational knowledge transfer and sharing. Based on a review of theoretical and empirical studies examining the linkages of HRM and KM (e.g., Collins & Smith, 2006; Kang *et al.,* 2007), the social climate of the firm was identified as a key mediating factor in the relationship between HR practices and employee knowledge sharing attitudes and behaviour. Five research questions were formulated and examined empirically, addressing the relative importance of HR practices (including work design) and management support for knowledge sharing in

influencing employee perceptions of teamwork and cooperative social climate as well as employee perceptions of the effectiveness of the HR function (see table 10.2).

Table 10.2 **HRM Context: Research Questions**

| Research Questions |
|---|
| 1. What are the individual and multiplicative effects of employees' experiences of HR practices on their perceptions of a cooperative social climate conducive to knowledge sharing? |
| 2. Are these effects mediated by employees' perceptions of management support for knowledge sharing? |
| 3. Are employees' perceptions of management support for knowledge sharing related to their perceptions of the effectiveness of the HR function? |
| 4. Are employees' perceptions of the effectiveness of the HR function related to their perceptions of a cooperative social climate? |
| 5. Are employees' perceptions of a cooperative social climate and of the effectiveness of the HR function related to and/or predicted by the same or different HR practices? |

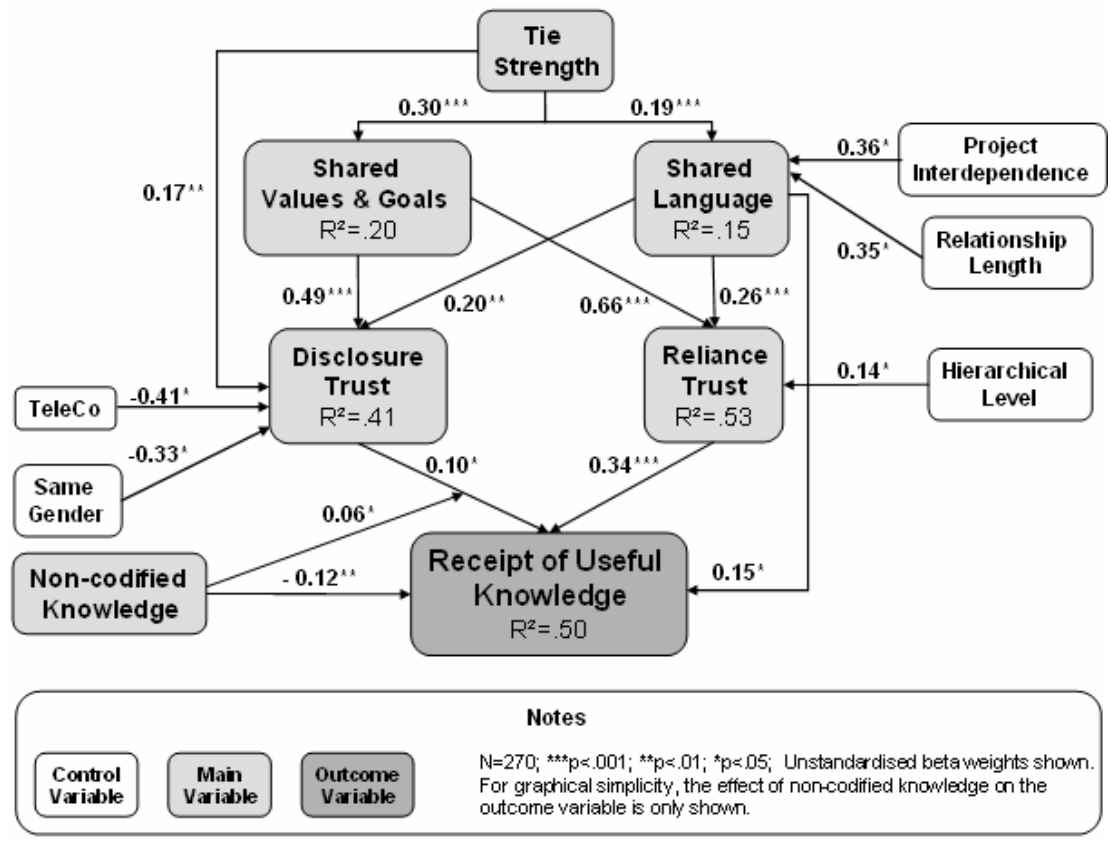
The purpose of this chapter is to discuss the findings presented in chapters eight and nine. The first section focuses on the knowledge transfer context, while the second section shifts attention to the HRM context. The chapter then concludes with a summary of the key findings.

## I. THE KNOWLEDGE TRANSFER CONTEXT

While the performance benefits of intra-organisational knowledge transfer are well documented in the KM literature, there is little understanding of the factors that enable individuals to transfer knowledge effectively and, subsequently, learn from the experience of their colleagues. As discussed in chapter two, what is missing in the literature is a coherent understanding of the anatomy of the knowledge transfer process; that is, an understanding of the micro-mechanisms for transforming individual action and interaction into purposeful learning activity that benefits both the individual employee and the organisation. In addition, there is limited understanding of the ways in which contextual properties affect KM outcomes. Divided into different strands, each with its own concerns and perspectives, the KM field is currently missing empirical studies that examine in a more holistic fashion how properties of individuals, properties of relations between individuals, and properties of knowledge transferred between individuals interact with each other in affecting KM outcomes (Argote *et al.,* 2003b).

In an effort to fill this gap, an integrated micro-level model of knowledge transfer was proposed for empirical testing. The results of this model are presented in figure 10.2. In the remainder of this section, the results and their associated hypotheses are discussed in the light of previous studies.

Figure 10.2 **Knowledge Transfer Context: Results of Empirical Analysis**




## Social Capital as the Enabling Condition of Knowledge Transfer

Nahapiet & Ghoshal's (1998) three-dimensional typology and Adler & Kwon's (2002) AMO model provided the theoretical basis for developing an analytical framework depicting the ways through which dyadic social capital can be translated into effective knowledge transfer between individuals (chapter three). In this framework, structural opportunity, cognitive ability, and relational motivation were identified as three distinct yet interrelated conditions that enable individuals to access, internalise, and decide to utilise knowledge received from their collegial network. Addressing the calls in the literature for more attention to the qualitative characteristics of social relations (Friedland & Alford, 1991; Moran, 2005; Levin, Walter & Appleyard, 2007), the cognitive and relational dimensions of social capital were treated in this framework as multidimensional constructs. By doing so it was possible to provide a more nuanced understanding of the interplay between the structure and quality of interpersonal relations as conduits for the transfer of knowledge. Cognitive social capital was

operationalised as consisting of shared values and goals, and shared language. Relational social capital was operationalised as consisting of reliance trust and disclosure trust, and tie strength reflected the structural dimension of social capital. Hypotheses H1-H8, shown in table 10.1, were then developed with the objective of teasing out the effects of the three dimensions of social capital on interpersonal knowledge transfer as these have often been confounded in the literature. A number of important findings emerged from the analysis. These are discussed below.

**Structural and Relational Social Capital**

In line with prior research on the role of social networks in knowledge transfer (Burt, 1992; Tsai & Ghoshal, 1998; Hansen, 1999), the results demonstrate that strong interpersonal ties constitute channels for information and knowledge flows (*Hypothesis 1*). This finding provides support for the view that effective knowledge transfer is fundamentally a social process embedded in informal, on-going relations among actors (Allen & Cohen, 1969; Granovetter, 1973). Furthermore, consistent with Levin & Cross' (2004) recent study, the results indicate that the positive effect of strong interpersonal ties on the receipt of useful knowledge is mediated fully by the relational dimension of social capital, namely reliance trust and disclosure trust (*Hypothesis 2*). This finding suggests that the existence of a connection between two individuals is not necessarily translated into a conduit for the transfer of knowledge unless that connection is characterised by high levels of trust, both professional (i.e., reliance) and personal (i.e., disclosure). Indeed, both types of trust explained around 30 per cent of the variance in the receipt of useful knowledge above and beyond the effect of tie strength. This echoes Granovetter's (1985) relational embeddedness argument, according to which the distinctive quality of concrete personal relations is that these have greater motivation to be helpful because they are trusting.

As predicted by *Hypothesis 3*, personal trust was found particularly important for receiving useful knowledge in those relationships characterised by high levels of professional trust. This is a key finding that extends and refines previous research on the multifaceted role of trust in knowledge exchange (e.g., Zand, 1972; Mayer *et al.,* 1995; Käser & Miles, 2002; Levin & Cross, 2004; Chowdhury, 2005) as it suggests that in the context of information and/or advice seeking, knowledge receivers' personal trust in knowledge providers seems to be built, among other factors, upon their professional trust in knowledge providers. It thus provides empirical support to Gillespie's (2003) theoretical proposition that the two types of trust can operate in a multiplicative manner akin to relational trust (Rousseau *et al.,* 1998). It also echoes McAllister's (1995) conclusion that, while cognition-based and affect-based trust are and should be treated

as distinct concepts, cognition-based trust acts as the platform on which affect-based trust may be developed. It, however, contrasts with the finding reported in Chowdhury's (2005) study showing that the effects of cognition-based and affect-based trust on knowledge sharing are independent of each other. A possible explanation as to why this difference occurred may be related to the fact that the sample used in this study is more representative of knowledge workers engaged in highly interdependent and problem-solving oriented tasks compared to the sample of MBA students used in Chowdhury's (2005) study. In addition, based on the assumption that MBA students' perceptions of the culture of their schools reflect an ethic of maximising self-interest (Walker, 1992), there is a possibility that students may have developed a predisposition to create interpersonal ties serving either instrumental or expressive needs.

The multiplicative effect of professional and personal trust on the receipt of useful knowledge found in this study highlights the fact that effective knowledge transfer is reinforced by both types of trust. In addition, it also signifies that the cognitive and emotional bases of trust may be inextricably linked to each other through an intersubjective process in which individuals learn to develop interpersonal bonds that may also serve instrumental, task-oriented needs. It should be noted, though, that the interpersonal relations characterised by high levels of both types of trust were found in 41 per cent of dyads, 82 per cent of which included individuals working on the same project. This suggests that relational trust is more likely to develop in work relationships characterised by high levels of task interdependence. It also echoes Lewicki & Bunker's (1996) claim that relational trust is characteristic of only a small part of an employee's portfolio of connections in the workplace. This, in turn, may be because employees have neither time nor energy to invest in relationships that extend beyond professional trust or, in some cases, they may refrain from disclosing personal information of a sensitive nature to others for reasons unrelated to the actual relationship, for example their own personality.

**Cognitive and Relational Social Capital**

In accordance with prior theoretical and empirical studies examining the antecedents of trust (e.g., Sitkin & Roth, 1993; Jones & George, 1998; Gillespie & Mann, 2004; Levin *et al.,* 2006), the results showed that shared values and goals constitute the building blocks of individuals' willingness to trust others professionally and personally (*Hypothesis 4*). The results also demonstrated that both types of trust were positively influenced by the extent to which employees were sharing a common language for communication (*Hypothesis 5*).This finding confirms Levin *et al's* (2006) recent research on the antecedents of relational-based trust by suggesting that the decision to

trust is influenced by the extent to which individuals develop a common ground (Clark, 1996) which, in turn, provides them with the cognitive ability to process, interpret, and comprehend specific intentions and behaviours.

**Structural and Cognitive Social Capital**

In contrast to the outcome reported in Tsai & Ghoshal's (1998) study, the results demonstrated that strong ties are associated with the development of a shared language as well as of shared values and goals between knowledge seekers and knowledge providers (*Hypotheses 6* and *7*). There are two possible reasons why this difference occurred. First, in Tsai & Ghoshal's (1998) study, knowledge transfer and social capital were examined at the business unit level of analysis, whereas in this study focus was placed on person-to-person relations. Accordingly, it can be suggested that in the context of interpersonal relations, strong interactions may be essential for the development of a shared perspective which, in turn, facilitates the transmission and absorption of knowledge between individuals (Joshi *et al.,* 2007). The second reason may be purely methodological. In Tsai & Ghoshal's (1998) study, cognitive social capital was operationalised as 'shared vision', a construct which included only two items thereby failing to capture fully the notion of shared cognition (Nahapiet & Ghoshal, 1998).

**Structural, Cognitive, and Relational Social Capital**

A key finding that emerged from the analysis concerns the mediating role of cognitive social capital in the link between structural and relational social capital. In the context of interpersonal knowledge transfer, this is probably the first empirical study that has been able to illuminate what Levin & Cross (2004) left as a hitherto untested possibility, that is, that strong ties have direct as well as indirect effects on interpersonal trust. As predicted by *Hypothesis 8a,* personal trust is influenced directly by strong ties while controlling for the effect of shared values and goals, and shared language. In contrast, as predicted by *Hypothesis 8b*, the link between strong ties and professional trust is mediated fully by the two sub-facets of cognitive social capital. Taken together, the two findings contribute significantly to the social capital literature, for they uncover the distinctive quality of weak and strong ties in terms of their trust content. In particular, they refine Levin & Cross' (2004) findings by showing that the relational fabric of 'trusted weak ties' is related primarily to professional trust. They also complement Krackhardt's (1992) notion of 'philos relationships' by highlighting that the quality of trusted strong ties is linked predominantly to personal rather than professional trust.

The findings signify that in the context of dyadic social capital, trusted strong ties are characterised by personal closeness which is manifested in mutual disclosure of sensitive information, and expressions of care and concern. These characteristics however, may not be necessary for the development of trusted weak ties. Thus, they clarify not only that trust and tie strength are conceptually distinct (Levin & Cross, 2004), but also that the relational advantage of weak ties is translated mainly into professional trust, whereas the relational advantage of strong ties is attributed to their more personal trust fabric. It is important to note that, consistent with Hansen (1999) and Levin & Cross (2004), the closeness element of tie strength was operationalised in this study as work-related. Accordingly, the findings are among the first to provide support for the theoretical claim that personal relations are important for shaping employee accessibility and motivation to engage in knowledge sharing (Nahapiet *et al.,* 2005).

### Knowledge Characteristics

An important finding that emerged from the analysis concerns the role of relational social capital in the transfer of non-codified (or tacit) knowledge. As predicted by *Hypothesis 9b*, personal trust is especially important for non-codified knowledge exchange. However, *Hypothesis 9a* did not receive support since the impact of professional trust on the receipt of useful knowledge is not contingent upon the explicit or tacit type of knowledge. The findings contrast somewhat to those reported in the Levin & Cross' (2004) and Holste & Field's (2005) research as they support the view that personal trust rather than professional trust is the key relational factor that enables the effective transfer of tacit knowledge among individuals.

The findings suggest that theoretical explanations for the (tacit) knowledge transfer advantage of disclosure trust need to be directed to the personal quality of work relations, a quality that brings to the fore the notion of 'optimal' trust (Wicks *et al.*, 1999) at a macro-level, or the notion of 'consideration' at a more micro-level of analysis (Nugent & Abolafia, 2006). Inherent in the behavioural expression of disclosure trust is 'communicating one's views openly and honestly', and 'admitting mistakes and lack of knowledge' (Gillespie, 2003: 25-26). In addition, disclosure trust behaviour entails 'sharing of problems and personal beliefs' (ibid.). Given the centrality of embedded experience in the conceptualisation of tacit knowledge (Polanyi, 1966), it is likely that enduring interpersonal relationships rich in mutual disclosure of problems and feelings (both personal and work-related), and sensitive information sharing lubricate the transmission of tacit knowledge between individuals.

The distinct role of personal trust in the sharing of tacit knowledge can also be explained by looking at the average responses to the two dimensions of trust. The relatively higher average score in professional trust (M=4.74) compared to that in personal trust (M=3.54) is attributed to the fact that professionalism, technical expertise and, more generally, advanced skills and abilities featured as minimum expected employee qualities across all three organisations. For example, the knowledge manager in TeleCo made explicit reference to the importance of expertise for engineers' identity, morale and public image. However, the qualitative data shows that personal trust was harder to be established.

The findings hold significance for the further understanding of how the content of the relation, in terms of its trust fabric, may determine the primary resource exchanged (Ibarra, 1993). In Hansen's (1999) study, strong inter-unit ties were more important than weak ties for the transfer of tacit knowledge. In the present study, there was no interaction effect found between tie strength and non-codified knowledge. This difference can be attributed to the interpersonal level at which the knowledge transfer benefits of structural social capital were examined in this study. In the context of dyadic knowledge exchange relationships, the findings are, therefore, among the first to underline the relative advantage of 'trusted strong ties' over 'trusted weak ties' for the transfer of tacit knowledge. While trusted strong ties reflect the socio-emotional side of social capital (van Emmerik, 2006), the findings provide concrete support for the claim that they can also be utilised for more instrumental purposes such as the sharing of work-related advice. In this regard, the findings refine the role of relational embeddedness in effective task performance (Moran, 2005) by highlighting the finding that conveying tacit knowledge is distinctively linked to the personal more so than the professional sphere of work relations.

### Social Similarity

Although the homophily principle stresses that individuals tend to interact more with others with similar demographic and background characteristics (McPherson *et al.,* 2001), little research has examined the ways in which social similarity affects the qualitative characteristics of knowledge transfer relationships. Building on social cognition theory (Festinger, 1954; Cicourel, 1973), it was hypothesised that demographic similarity, in terms of age and gender, would affect the relative importance of cognitive social capital for transferring knowledge (*Hypothesis 10*). The results did not reveal any statistically significant differences in the knowledge transfer effects of shared values and goals and shared language between socially similar and

dissimilar dyads, thereby failing to provide support for this hypothesis. It was, however, found that strong ties between knowledge seekers and providers of the same age (plus/minus five years) are important for knowledge transfer even while controlling for both sub-facets of cognitive social capital.

A closer look at the overall results indicates that some aspects of social similarity impact upon the relational dimension of social capital. While in Levin & Cross' (2004) study it is found that age dissimilarity is positively related to competence-based trust, the present study shows that gender dissimilarity is a positive predictor of disclosure trust. In addition, gender dissimilarity is positively related to non-codified knowledge. Male knowledge seekers, who represented approximately 50 per cent of the sample, appeared to be more effective in creating relationships characterised by disclosure trust with female rather than male knowledge providers. On the other hand, in the case of female knowledge seekers, disclosure trust is directly influenced by strong ties rather than age or any other attribute of social similarity with knowledge providers.

These findings contribute to social capital literature by shedding some valuable light on the effect of gender congruence on personal trust, an aspect of social capital with a key role in the effective transfer of tacit knowledge. A plausible explanation for the findings can be found in Hofstede's (1991) account of gender-based personality traits. In his view, some of the key feminine traits are based on the assumption that people and warm relationships are important, and that both men and women are allowed to be tender and to be concerned with relationships. This may explain the gender-balanced nature of female knowledge seekers' information and advice network as well as their proclivity to develop affective bonds based on strong interaction ties. Similarly, Holfstede (1991) suggests that a key male trait is based on the assumption that women are supposed to be tender and to take care of relationships. This, in turn, may explain why men showed a relative preference for trusting on a more personal basis their female than male knowledge providers. Social role theory (Eagly, 1987) can offer an additional explanation for why male knowledge seekers tend to place more disclosure trust on female than male knowledge providers. According to social role theory, boys are typically socialised to be competitive, assertive, and aggressive. In contrast, girls are expected to refrain from expressing assertiveness and aggression and to behave in a more communal fashion (ibid.). Although this can be viewed as a redundant stereotypical account of social roles, recent evidence suggests that general perceptions of men and their roles have to a large extent remained unchanged (Diekman & Eagly, 2000). It is, therefore, likely that male knowledge seekers refrain from disclosing personal feelings and beliefs to their male colleagues as this could be

perceived as incongruent with the expected social role that stresses independence, self-control, competitiveness and individualism (Eagly & Steffen, 1984; Eagly, 1987; Miller & Karakowsky, 2005). Gender is a pre-eminent factor that affects the composition of individuals' social networks (McGuire, 2000).

### Hierarchical Status

Addressing the calls in the literature for a closer examination of how formal organisational structure influences informal social relations (Adler & Kwon, 2002), the findings contribute to a deeper understanding of the effects of the structural and relational dimensions of social capital on knowledge transfer by considering the relative positioning of knowledge seekers in the organisational hierarchy. In particular, they enrich Levin & Cross' (2004) findings by showing that the knowledge transfer benefit of trusted weak ties applies only to dyads in which a knowledge seeker higher in the organisational hierarchy is connected to a knowledge provider lower in the same hierarchy (*Hypotheses 11a* and *11b*). However, *Hypothesis 11c* did not receive support as the effect of disclosure trust on the receipt of useful knowledge in hierarchically equal dyads was positive but statistically only marginally significant. Interestingly, though, the role of strong ties emerged as positive and significant in hierarchically equal dyads. Taken together, the findings provide some tentative support for the moderating role of hierarchical status in altering knowledge seekers' social capital portfolio from 'trusted weak ties' to 'trusted strong ties' utilised for knowledge exchange purposes. They, therefore, add to a more nuanced understanding of hierarchical relations in the workplace by demonstrating that the social capital inherent in vertical knowledge transfer exchanges is more likely to have bridging than bonding qualities, whereas the reverse tends to be characteristic to horizontal knowledge transfer exchanges.

### Non-hypothesised Findings

A number of non-hypothesised findings emerged from the analyses. These findings deserve to be discussed as they enrich understanding of the role of contextual properties of knowledge transfer processes in organisations.

In contrast to the results reported in Tsai & Ghoshal's (1998) study, this study demonstrates that cognitive social capital impacts on knowledge transfer both directly and indirectly. In particular, shared language was found to have a direct as well as an indirect effect on knowledge transfer, whereas shared values and goals operated only indirectly through trust. These findings are among the first to provide empirical support

for Nahapiet & Ghoshal's (1998) conceptual framework by highlighting, at the interpersonal level of analysis, the parallel importance of shared language and shared values and goals for knowledge transfer. By treating cognitive social capital as a multidimensional construct, it was, therefore, possible to identify that, on the one hand, shared language provides actors with the cognitive ability to internalise knowledge and, on the other hand, shared values and goals provide actors with the relational motivation to engage in knowledge exchange by fostering professional and personal trust. The strong direct knowledge transfer effect of shared language is consistent with recent theoretical work by Evermann (2005) who suggests that problem-solving capability is likely to be enhanced when there is a cognitive fit between individuals' external and internal forms of knowledge representation. This study provides empirical support for Evermann's (2005) suggestion by showing that effective assimilation and application of knowledge received from external personal sources is dependent upon the extent to which knowledge receivers share a common lexicon for communication with knowledge providers.

The results also indicate that shared language is affected positively by task interdependence and by the longevity of the relation between knowledge receivers and providers. In terms of the role of task interdependence, the findings are consistent with prior research showing that cognitive-based problem-solving capability is a key psychosocial trait of successful project work (Cohen & Bailey, 1997). Individuals involved in jointly implemented projects may have strong incentives for overcoming communication deficiencies derived from cognitive dissonance which, in turn, can impede the coordination of project processes. In addition, high task interdependence can also produce communication density which, in turn, can accelerate the degree to which project members become familiar with others' language idiosyncrasies (ibid.). To note that, similar to Levin & Cross' (2004) study, the majority of knowledge seekers (i.e., 72 per cent) sought information and advice from knowledge providers working on the same project with them. In terms of the role relationship length, the findings are consistent with prior research on the role of relational demography in group performance, which suggests that the interpersonal familiarity developed in the course of jointly implemented projects serves as the means for developing shared understandings and interpretations (Zenger & Lawrence, 1989). The findings also concur with more recent research by Levin *et al.* (2006) which shows that shared language plays an especially important role as an antecedent of relational trust in enduring, more so than newly formed, interpersonal relations.

## II. THE HUMAN RESOURCE MANAGEMENT CONTEXT

Despite the important role that social relations play in developing a firm's dynamic capabilities through their impact on knowledge transfer and sharing processes, little research has hitherto examined the role of HRM systems in facilitating these processes. Specifically, as identified in chapter three, although a number of theoretical studies suggest that HRM and KM outcomes are linked via social relations (e.g., Wright *et al.,* 2001; Kang *et al.,* 2007), there is little empirical evidence as to the mediating mechanisms through which HR practices affect employees' willingness to engage in knowledge-sharing activities. This is because most research on HRM is predicated on the assumption that maximising human capital is the primary aim of people management practices, thereby saying little about how HR practices support the social connections conducive to knowledge exchange.

Underpinned by a 'relational' approach to the HRM-KM linkages (e.g., Wright *et al.,* 2001; Evans & Davis, 2005; Kang *et al.,* 2007), a core aim of this study is to understand the effects of HR practices on employee perceptions of organisational social climate of teamwork and cooperation, which has been identified in the literature as a key factor in shaping knowledge sharing attitudes and behaviour (e.g., Connelly & Kelloway, 2003; Zárraga & Bonache, 2005). While recent empirical studies suggest that commitment-based HRM systems have a positive impact on teamwork and cooperation climate (Collins & Smith, 2006), the possibility that each of the HR practices that composes the HRM system may exert differential weight on that climate remains largely unexplored. Furthermore, despite theoretical and empirical support for the catalytic role that line managers play in the successful delivery of HR practices (Arthur & Boyles, 2007; Purcell & Hutchinson, 2007), very few studies have previously examined the possibility that the effect of managers' support for knowledge sharing on employees' perceptions of a social climate of teamwork and cooperation may be similar to or even more important than the effect of HR practices (e.g., Cabrera *et al.,* 2006). In addition, despite calls for more attention to the HRM system's strength (Bowen & Ostroff, 2004), the issue of conflicting messages that HR practices may send to knowledge workers with respect to which behaviours are valued and desired in the workplace remains unresolved (Lepak & Snell, 2002; Kang *et al.,* 2007).

A number of relational-oriented HR practices were, therefore, developed by the researcher based on previous theoretical and empirical work on the relationships between HRM, social relations, and KM outcomes (e.g., Youndt & Snell, 2004; Zárraga & Bonache, 2005; Collins & Smith, 2006; Kang *et al.,* 2007). The HR practices

(including work design) were designed with the aim of capturing the three dimensions of ability, motivation, and opportunity to form knowledge exchange relationships (Kang *et al.,* 2007). Selection and socialisation, and training and development reflect the ability dimension. This conditions employees' cognitive ability to understand and absorb new knowledge. Rewards capture the motivation dimension as they constitute mechanisms to influence employees' motivation to search for and transfer knowledge. Reciprocal task interdependence and job feedback comprise the opportunity dimension which conditions employees' structural opportunity to form interaction ties with others. Furthermore, managers' support for knowledge sharing was employed in the analysis to capture the potentially mediating role of line management in influencing employees' perceptions of the value of teamwork and cooperation climate. In addition, both HR practices and managers' support for knowledge sharing were tested for their relative importance for employees' levels of satisfaction with the HR function. By doing so, it was possible to provide an understanding of the various and perhaps conflicting messages that may be inherent in the HR system. The results of the quantitative analysis, summarised in table 10.3, coupled with qualitative evidence, provide some answers to the above issues. These are discussed in the remainder of this section.

Table 10.3 **HRM Context: Results of Empirical Analysis**

| ***Variables*** | ***Teamwork & Cooperation Climate*** | | | | ***HR Department's Effectiveness*** | | | |
|---|---|---|---|---|---|---|---|---|
| | B[a] | B[b] | R[c] | R[d] | B[a] | B[b] | R[c] | R[d] |
| | | | | .30*** | | | | .30*** |
| ***Work Design*** | | | 17** | | | | .15** | |
| Task Interdependence | .34** | .21 | | | .10 | .10 | | |
| Feedback from Others | .35*** | .14 | | | .29** | .10 | | |
| ***HR Practices*** | | | .23*** | | | | .31*** | |
| Selection & Socialisation | .47*** | .29* | | | .23* | .17 | | |
| Training and Development (Quantity) | .05 | .04 | | | .17* | .15 | | |
| Training and Development (Types) | .22* | .03 | | | .05 | .01 | | |
| Rewards Mix | .06 | .03 | | | .21* | .18 | | |
| Rewards' Competitiveness | -.04 | .04 | | | .20* | .23* | | |
| Rewards' Equity | -.10 | -.09 | | | -.12 | -.11 | | |
| ***KM Practices*** | | | .21*** | | | | .12** | |
| Support for Knowledge Sharing | .58*** | .33** | | | .27* | .01 | | |

Notes:
[a] Unstandardised beta weights controlling for demographic variables and/or other variables within the same set.
[b] Unstandardised beta weights controlling for demographic variables and all other variables.
[c] Adjusted R square for all variables within a set controlling for demographic variables.
[d] Adjusted R square for all variables within a set controlling for demographic variables and all other sets.
***p<.001; **p<.01; *p<.05.

## Individual and Multiplicative Effects of HR Practices on Perceptions of Teamwork and Cooperation Climate (Research Question 1)

In general, the findings are consistent with social context theory (Ferris *et al.,* 1998) as they provide support for the claim that employees' experiences of HR practices (including work design) influence their perceptions of the firm's social climate. More specifically, they corroborate findings reported in Collins & Smith's (2006) research by indicating a positive additive effect of HR practices on a social climate of teamwork and cooperation. Yet the findings go a step further from those of Collins & Smith (2006) in that they highlight the relative importance of each of the HR practices that comprise the HR factor. The results of hierarchical regression analysis indicate, first, that work design (i.e., reciprocal task interdependence, job feedback), selection and socialisation, and relational-oriented training and development emerge as the most important factors exerting strong individual effects on employees' perceptions of the value of a teamwork and cooperation climate. However, when both the work design and the HR practice variables applied simultaneously, only selection and socialisation, and job feedback remained significant predictors of employees' perceptions of teamwork and cooperation climate. The individual and multiplicative effects of HR practices (including work design) are discussed below in the light of previous theoretical and empirical work.

### Individual Effects

Both work design variables were found to be positive predictors of employee perceptions of teamwork and cooperation climate. In regard to the positive role of reciprocal task interdependence, the findings concur with previous empirical work which shows that engagement in highly interdependent work tasks elicits high levels of cooperation between co-workers (Wageman & Baker, 1997) as well as team loyalty and pro-social behaviour (Ramamoorthy & Flood, 2004). The finding concerning the positive role of job feedback employees receive from their supervisors and/or co-workers echoes Hackman's (1987) model of team work design, in which multirater feedback systems are proposed to affect foremost the amount of effort expended by members to group tasks. Accordingly, when job feedback systems are in place, they can improve team member effort by increasing employees' motivation to engage in less social loafing and free-riding (ibid.), and also by strengthening the sense of contextual performance and collective achievement (Conway, 1999). In this regard, multirater job feedback is compatible with the cooperative archetype which stresses generalised trust, associability and norms of cooperation (Leana & Van Buren, 1999; Kang *et al.,* 2007).

The findings also suggest that selection practices are particularly important for shaping employee perceptions of teamwork and cooperation. As indicated by the qualitative data, employee selection in all three organisations was found to be based on cultural fit, which is viewed in the literature as advantageous for inculcating common organisational values (Hargadon & Sutton, 1997). Teamwork and cooperation featured among the core values in TeleCo's 'competency framework', in ConsultCo's 'solutions competency macro model', and in StateCo's organisational mission statement. In addition, as shown in the cases of ConsultCo and StateCo, employee referrals and the 'interview lunch' emerged as distinct, more informally-based methods for achieving cultural fit.

Relational-oriented training and development, such as mentoring, on-the-job training, cross-functional training and team building, also emerged as positively linked to employees' perceptions of teamwork and cooperative climate. This finding, which is consistent with the results reported in Collins & Smith's (2006) study, provides support for the claim that relational-oriented training and development practices can act as mechanisms to build strong social connections among employees as well as to help employees from different functions to internalise common organisational values and goals (Nonaka & Takeuchi, 1995). The qualitative data indicates that the three organisations had in place specific training and development practices, such as the 'buddy system', coaching, cross-firm training, employee transfer, and promotion from within. For example, as shown in the case of ConsultCo, such training activities can affect employees' opportunity to meet and create relationships with people from other functional and geographical areas.

Although rewards emphasising team/organisational performance and knowledge sharing were positively and significantly correlated with employee perceptions of teamwork and cooperation climate, the results of regression analysis indicated that their effect on that climate is negligible. A possible explanation why rewards did not emerge as important factors of perceptions of teamwork and cooperation is found in the qualitative data which indicates that, in essence, incentives for knowledge sharing were not included directly in reward management in any of the three organisations. This is an interesting finding in light of the emphasis placed in the literature on rewards as the basis for team atmosphere (e.g., Freeman & Weitzman, 1987), generalised trust and mutual contribution to team outcomes (Vroom, 1964). However, similar to recent empirical work on the role of rewards in employees' knowledge sharing behaviour (Cabrera *et al.,* 2006) and employees' perceptions of a collaborative atmosphere (Zárraga & Bonache, 2005), the findings suggest that, although rewards, per se, exert

a moderate effect on perceptions of teamwork and cooperation, their relative weight on these perceptions is likely to diminish when other relational-oriented HR practices are also in place.

**Multiplicative Effects**

An important finding that emerged from the empirical analysis concerns the multiplicative effects of HR practices on employee perceptions of teamwork and cooperation. Consistent with the configuration approach that HR practices that reinforce and complement each other as a coherent set will improve organisational outcomes, the additive effect of HR practices, expressed in the HR factor, was found to be a strong factor shaping employee perceptions of teamwork and cooperation (Collins & Smith, 2006). However, when individual HR practices were tested for possible interaction effects, there were no significant results. This may be attributed to the small sample size and the insufficient number of the degrees of freedom required for testing for all possible combinations of interaction effects (e.g., Minbaeva, 2005).

## The Impact of Management Support for Knowledge Sharing on Perceptions of Teamwork and Cooperation Climate (Research Question 2)

In line with previous empirical work, the findings provide support for the claim that managers' support for knowledge sharing is an important predictor of employees' perceptions of a social climate favourable to teamwork and cooperation and, consequently to knowledge sharing behaviours (Connelly & Kelloway, 2003; Zárraga & Bonache, 2005; Cabrera *et al.,* 2006). In fact, compared to the two work design variables, managers' support for knowledge sharing explained a larger amount of the variance in teamwork and cooperation approximating to the amount of variance explained by all the HR practices.

The findings, therefore, suggest that positive perceptions of management's support for knowledge sharing may be vital for the creation and maintenance of a social interaction culture that promotes a collaborative spirit among employees. The qualitative data confirms the above suggestion. As exemplified in the case of TeleCo, the role of both top and middle management appeared to be critical to the creation of a knowledge sharing culture. In addition, as the case of ConsultCo indicated, when management's role is reduced to enforce knowledge-sharing behaviours through the employment of a top-down approach, such as measuring contribution of documents to the electronic KM repository, it may have the opposite effect than that which was intended. Taken together, the two cases highlighted that employees are sensitive to managers' actual

collaborative behaviour, which is a strong indication of their commitment to promoting knowledge sharing (Connelly & Kelloway, 2003).

The results of correlation analysis indicated that employees' perceptions of managers' support for knowledge sharing were positively related with their experiences of all work design and HR practice variables excluding rewards' external competitiveness and internal equity. However, the results of regression analysis showed that the effect of employee perceptions of managers' support for knowledge sharing on teamwork and cooperation climate surpassed the previously positive effect of job feedback and relational-oriented training and development. Yet selection and socialisation remained a significant predictor of employee perceptions of teamwork and cooperation climate. Taken together, the results complement and expand upon prior research (Zárraga & Bonache, 2005; Cabrera *et al.,* 2006) by showing that, first, employees' perceived support from line managers is tied closely to their perceptions of the social climate of the firm; and second, employees' perceived support from line managers is likely to be a viable alternative to social relationships training and job feedback for enhancing a cooperative spirit among employees.

### The Effects of HR Practices and Management Support for Knowledge Sharing on Perceptions of HR Department's Effectiveness (Research Questions 3, 4 and 5)

In an effort to understand the extent to which HR practices that comprise the HRM system may send unambiguous messages to employees that result in a shared construction of KM attitudes and behaviours, the impact of HR practices on levels of employee satisfaction with the role and responsibilities of the HR function was assessed. The aim here was to identify whether HR practices (including work design) and managers' support for knowledge sharing may be differentially important for employee perceptions of the effectiveness of the HR department compared to their perceptions of teamwork and cooperation climate. Several interesting findings emerged from the analysis.

The results of correlation analysis indicated that, with the exception of reciprocal task interdependence, all HR variables were positively associated with perceptions of HR department's effectiveness as well as perceptions of teamwork and cooperation climate. In addition, employees' perceptions of HR department's effectiveness were positively related to their perceptions of teamwork and cooperation climate. However, the results of regression analysis revealed that the perceived effectiveness of the HR

department was predicted primarily by employees' experiences of rewards, particularly rewards' external competitiveness, followed by provision of adequate training and development opportunities, selection and socialisation, and job feedback. Applied simultaneously, the work design and HR practice variables explained a larger amount of the variance in HR department's effectiveness than that in teamwork and cooperation. Conversely, employee perceptions of managers' support for knowledge sharing explained around the half of the variance in HR department's effectiveness compared to that in teamwork and cooperation. The results also indicate that managers' support for knowledge sharing was found to have a positive individual effect on HR department's effectiveness. However, this effect diminished when the work design and HR variables were included in the regression analysis. Finally, the results demonstrate that, while the additive effect of HR practices on HR department's effectiveness was found to be positive, only rewards' external competitiveness emerged as a significantly positive predictor when HR practices were tested for their simultaneous effect on HR department's effectiveness.

Taken together, the findings suggest that employees' satisfaction with the role of the HR function is likely to be based on their perceptions of the value of their human capital, as ascribed by the organisation. The findings, therefore, complement Lepak & Snell's (2002) empirical test of the HR architecture by showing that, from an employee perspective, knowledge-based employment reflects an employment mode that places emphasis on 'internal development' which, in turn, is translated into HR practices focusing on selective staffing based on 'aptitude rather than achievement' (Lepak & Snell, 2002: 522), enhancement of skills through provision of adequate and well-organised training and development activities, constant performance feedback (Snell & Dean, 1992), and rewards favouring individual as well as team/organisational performance (Kang *et al.,* 2007). However, the prevalence of rewards' external competitiveness as the most important criterion informing employees' perceptions of HR department's effectiveness reflects a 'productivity-based' HR approach which, in turn, is indicative of the tension that is inherent in balancing efficiency with flexibility regarding the management of knowledge workers (Rousseau & Arthur, 1999).

Based on the above, it was thus possible to discern the following trends. First, knowledge workers tended to ascribe particular importance to competitive pay as an attraction and retention mechanism. This finding is consistent with Horwitz *et al's* 2003) research on the effectiveness of HR practices in managing South African knowledge workers. Second, selective staffing based on cultural fit as well as socialisation initiatives affected positively employee perceptions of both teamwork and cooperation

climate and HR department's effectiveness. This finding provides empirical support to Kang *et al's* (2007) theoretical suggestion that selecting individuals based on organisational fit and emphasising socialisation programs are among the key HR practices comprising the cooperative HR archetype. Third, knowledge workers' perceptions of managers' support for knowledge sharing emerged as the strongest predictor of their perceptions of the importance of a social climate of teamwork and cooperation. This finding adds to prior research on the role of leadership in employees' knowledge-sharing attitudes and behaviours (Kelloway & Barling, 2000; Connelly & Kelloway, 2003; Zárraga & Bonache, 2005; Cabrera *et al.,* 2006) by suggesting that gaining line managers' commitment to KM objectives is a key factor in the effect of leadership on employees' willingness to work together and share knowledge. Finally, knowledge workers' perceptions of line managers' support for knowledge sharing did not have a strong effect on their levels of satisfaction with the HR function's role and responsibilities. This finding expands upon recent research by Purcell & Hutchinson (2007) on the role of front-line managers in the HRM-performance chain by suggesting that line managers may also play an important agentic role in the HRM-KM relationship through influencing employees' perceptions of a social climate conducive to knowledge sharing.

## III. CONCLUSION

KM and organisational learning scholars note that knowledge transfer and sharing are critical for the success of individuals, teams, and organisations (e.g., Argote, 1999). The findings of this study suggest that the effective transfer of knowledge across the firm is embedded in the web of social relations individuals develop with each other, a view that is widely acknowledged in the literature (e.g., Nahapiet & Ghoshal, 1998; Argote *et al.,* 2003a; Borgatti & Foster, 2003; Cross & Sproull, 2004).

Besides corroborating prior theoretical and empirical work (e.g., Granovetter, 1973; Krackhardt, 1992; Uzzi & Lancaster, 2003; Levin & Cross, 2004), the present study offers a multi-dimensional understanding of the anatomy of the knowledge transfer process by deconstructing the notion of interpersonal ties as conduits of knowledge flows. More specifically, the findings contribute to a more nuanced understanding of the role of trusted ties in the knowledge transfer process by distinguishing between trusted weak and trusted strong ties. The key differentiator here is that the former type of ties tends to be characterised by professional trust, whereas the latter type is based more on the development of personal trust. In particular, the findings suggest that trusted strong ties, compared to trusted weak ties, are particularly advantageous for the

transfer of personal, non-codified knowledge (cf. Levin & Cross, 2004). The knowledge transfer advantage of trusted weak ties appears to be contingent upon the relative positioning of employees in the formal organisational hierarchy and that advantage is more likely to be a property of higher-ups. Gender similarity also emerges as an additional contingent factor of knowledge transfer such that male knowledge seekers are more likely to trust personally female rather than male knowledge providers. Finally, the findings highlight the significant role that shared language plays in the effective transfer of knowledge.

The study also extends current understanding of the role of HRM in supporting a social climate conducive to knowledge transfer and sharing not only by highlighting the relative importance of HR practices that compose a relational-oriented HR system, but also by pointing to the catalytic role of line managers in shaping employees perceptions of the social climate of the firm.

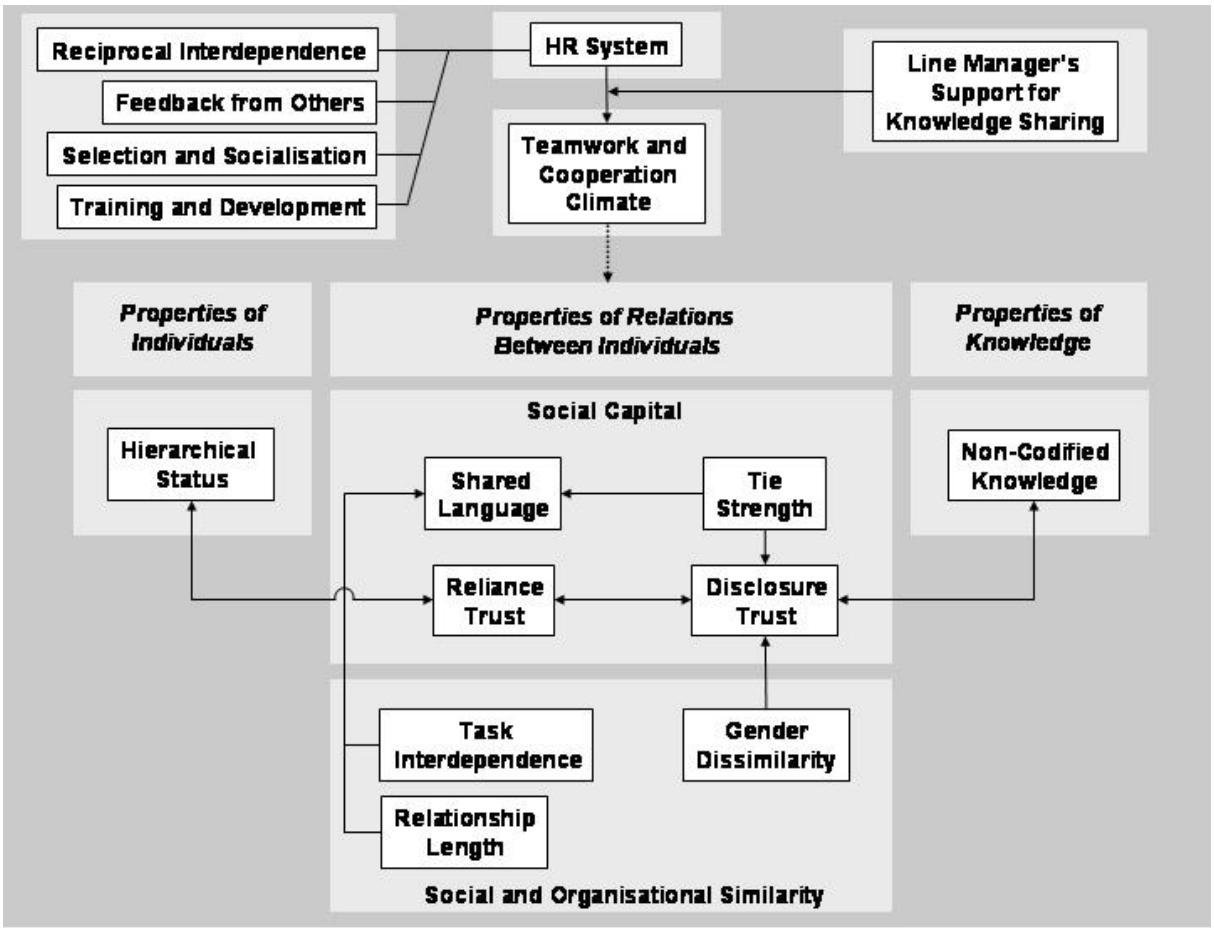
The findings suggest that employee perceptions of the social climate of the firm are shaped at the early stages of the HRM chain (i.e., selection and socialisation) and reinforced in later stages (i.e., training and development). Interestingly, though, rewards appear to play a negligible role in sustaining or reinforcing these perceptions (Zárraga & Bonache, 2005). Instead, line managers emerge as playing a key role in this direction. Importantly, the present study shows that ensuring that employees who are encouraged by their line managers to get involved in knowledge sharing can be a viable alternative for promoting a cooperative social climate to investing time and resources in relational-oriented training and development activities. In addition, as the qualitative data showed, both formal (i.e., parties and dinners organised by the company) and more informal (i.e., a dinner at the end of a successfully implemented project) social events can be effective initiatives for supporting a collaborative spirit among employees.

# CHAPTER ELEVEN

# Conclusion

Consistent with a pragmatist perspective, the present study is underpinned by three assumptions with respect to the nature of knowledge, the nature of human beings, and the nature of organisations. First, knowledge is viewed as an intersubjective process through which people gain understanding to deal effectively with problems 'as they arise' (Dewey, 1929: 17). Second, human nature is conceived as a 'dialogical structure, itself thoroughly relational' (Emirbayer & Mische, 1998: 974). And third, organisations are understood through the lens of the 'interdependent social self' (Mead, 1918; Adler & Heckscher, 2006). In line with these assumptions, the overarching objective of the research presented in this thesis was the development and empirical testing of an integrated conceptual model of knowledge transfer and sharing within work organisations. The findings, which are presented in figure 11.1, yielded a number of important insights, thereby helping advance theory and inform practice on the process, context, and management of knowledge flows in contemporary work organisations.

Figure 11.1 **An Integrated Model of Knowledge Transfer**



Following the premise that no single business administrative field or theoretical perspective can provide a complete explanation of the knowledge transfer and sharing process, the present study is a first step toward integrating three sub-fields of the wider knowledge movement, namely HRM, social relations, and KM, which have been, to a large extent, dealt with separately up to date. Positioned in the sociorganisational thrust of KM, the study is distinct in its contribution to a more nuanced understanding of: (1) the ways through which HRM practices support the development and sustenance of the firm's social climate conducive to knowledge transfer and sharing; and (2) the mechanisms responsible for the transformation of social relations into purposeful learning activity. In this concluding chapter the theoretical implications of the study are presented. This is followed by discussing a number of limitations and recommendations for future research.

## I. THEORETICAL IMPLICATIONS

Recent theoretical developments in the HRM field suggest an alternative approach to the role of HR systems in a knowledge-intensive organisational context; a role that acknowledges not only the value of individual employees' knowledge, skills and abilities, but also the value of knowledge resources inherent in the social relations which employees develop with each other (e.g., Wright *et al.,* 2001; Kang *et al.,* 2007). These developments speak to the need for understanding the paths through which HR practices enable employees to exchange and combine knowledge, thereby contributing to the firm's intellectual capital advantage. While some initial empirical research suggests that social relations affect employee knowledge-sharing attitudes and behaviour, there is little known about the exact role of HR practices in this relationship.

Consistent with a relational approach to managing people for knowledge-based competition, this study enriches understanding on the relationship between employees' experiences of HR practices and their perceptions of a social climate of teamwork and cooperation, which is seen in the literature as a strong situation that evokes motivation to engage in knowledge sharing. To that end, a set of relational-oriented HR practices was developed in terms of work design, selection and socialisation, training and development, and rewards. These practices were loosely clustered around ability, motivation, and opportunity to form knowledge exchange relations (Kang *et al.,* 2007). The study extends research on the breadth and strength of the HR system in a knowledge-intensive context by identifying, on the one hand, the role of line managers as key HR and KM partners and, on the other hand, the extent to which the HR practices that comprise a HR system communicate conflicting messages to employees

regarding the shared beliefs, norms, and values that govern cooperative social relations conducive to knowledge sharing.

The results reveal that not all HR practices that comprise the relational HR system were equally important in terms of their effects on employees' perceptions of teamwork and cooperative climate. In addition, it is demonstrated that the HR practices had additive, but not interactive, effects, suggesting the possibility of both synergistic and substitution relationships between HR practices. The results indicate that, on the one hand, selective hiring and intensive socialisation, and relational-oriented training and development send strong signals to employees regarding the importance of teamwork and cooperative spirit for governing work interactions. However, on the other hand, the relative weight of these practices on employees' perceptions of teamwork and cooperation weakened, and in the case of training and development disappeared, in the presence of high reciprocal task interdependence and of an effective multirater job feedback system. Taken together, the findings suggest that, in essence, group design structures can be seen as alternative methods for evoking prosocial behaviours, such as knowledge-sharing, through producing strong perceptions of a social climate that values and encourages teamwork and cooperative spirit among employees. In this sense, the findings echo the suggestion that the best means to support knowledge sharing in organisations is to 'hire smart people and let them talk to another' (Davenport & Prusak, 1998: 88).

The present study goes a step further and adds to the above suggestion by concluding that line managers play a key role in encouraging employees to "talk to another". The results indicate that employees' perceptions of teamwork and cooperation climate are influenced by line managers' support for knowledge sharing to almost the same extent as by the work design and HR practice variables combined. In particular, the effect was found to be so strong as to substitute the previously positive effect of job feedback. The findings, therefore, confirm the importance of extending the notion of the HR system to include the catalytic role of line managers in 'influencing perceptions not only of HR practices but of work climate' (Purcell & Hutchinson, 2007: 5). This research is one of the few efforts to add to this extra dimension to HRM studies examining the role that HR systems play in KM outcomes, thereby providing substantive support for the broader theoretical claim that 'people management is the combination of leadership behaviour, HR practices and organisational climate' (ibid: 17).

Consistent with a view of knowledge work as discretionary behaviour (Kelloway & Barling, 2000) and of knowledge workers as the core employee group in the HR architecture (Lepak & Snell, 2002; Kang *et al.,* 2007), the study examined whether and the extent to which knowledge workers' perceptions of a cooperative social climate and of the effectiveness of the HR function would be predicted by the same or different HR practices. The results discerned some synergies as well as some notable differences in this regard. On the one hand, selective hiring, intensive socialisation, and multirater job feedback were linked both to perceptions of teamwork and cooperation and of HR department's effectiveness. On the other hand, the provision of adequate training and development opportunities and rewards were uniquely related to perceptions of HR department's effectiveness. The key difference was, however, related to the distinct role of line managers' support for knowledge sharing and externally competitive rewards in employees' perceptions of teamwork and cooperation and HR department's effectiveness, respectively. The findings suggest that knowledge workers are acutely aware of the value and uniqueness of their knowledge, skills and abilities, for which they expect to be compensated. But such knowledge, skills and abilities will not necessarily be translated into social knowledge unless knowledge workers decide to share them with their colleagues in the course of interdependent work tasks. Importantly, the findings further suggest that hard incentives, such as monetary rewards, may represent an inadequate mechanism for motivating employees to share knowledge. In contrast, softer incentives, such as line managers' support for knowledge sharing, may be instrumental in influencing employees' knowledge sharing attitudes and behaviours by affecting positively their perceptions of teamwork and cooperative climate.

In summary, the study advances understanding on the breadth, scope, and depth of the HR system in a knowledge-intensive organisational context. In terms of breadth, the study suggests that the role of line managers lies in the heart of the HR-KM relationship since it is mainly line managers' behaviour that serves as the basis by which employees develop shared understandings of a relationship-oriented culture where teamwork and cooperative behaviours are desired and valued by the organisation. In terms of scope, the study suggests that HR systems can be characterised by complementarities as well potential conflicts with respect to the management of human and social capital. Finally, in terms of depth, the study suggests that the effective management of social capital requires a process-based HR approach that places emphasis on the core structural aspects of knowledge work as well as on

the importance of softer incentives for supporting prosocial behaviours and positive work relations.

In regard to the micro-social context of knowledge transfer, the study represents one of the first efforts to integrate structural, cognitive, relational, and knowledge-related research on the process of interpersonal knowledge transfer as well as on key aspects of the socio-organisational context within which this process is embedded, namely the formal organisational structure and the sociodemographic space. By adopting an integrated approach, the study responds to recent calls in KM and OL research for studies that examine not only the main but also the interactive effects of the three pillars which compose the knowledge transfer context (Argote *et al.,* 2003b). In doing so, it advances understanding on the important issue of fit between properties of individuals, properties of relations between individuals, and properties of knowledge.

At a broader theoretical level, a key contribution of the study is in integrating the social capital/social networks and KM/OL literatures to develop new insights into the role of social capital as the enabling condition for employees' opportunity, ability, and motivation to access, internalise, and evaluate the knowledge of their colleagues, respectively. In addition, this is one of the few studies that have examined how social capital interacts with properties of individuals, properties of knowledge, and socio-organisational similarity. More specifically, the study refines and extends prior research on knowledge transfer by: (1) disentangling the relational fabric of ties from their structural characteristics; (2) revealing the distinct advantage of trusted strong ties over that of trusted weak ties for transferring tacit knowledge; (3) uncovering how the knowledge advantages of trusted strong and trusted weak ties are conditioned by the formal organisational structure (i.e., hierarchical status); and (4) demonstrating how the relational and cognitive facets of ties are influenced by the sociodemographic space in which they are localised.

The first contribution lies in refining strong assumptions, which are made in the areas of social capital, social embeddedness, and social networks, about the importance of trusting organisational relationships. This is probably the first study that has demonstrated empirically at the interpersonal level of analysis the distinct importance of reliance (i.e., professional) and disclosure (i.e., personal) trust for the existence and maintenance of weak and strong ties, respectively. The findings indicate that around 20 per cent of all ties were trusted weak ties (i.e., below average in tie strength and above average in professional trust), whereas 35 per cent of all ties were trusted strong ties

(i.e., above average both in tie strength and personal trust). Interestingly, 84 per cent of trusted strong ties were also characterised by high levels of professional trust, whereas less than half of trusted weak ties (i.e., 47 per cent) were characterised by high levels of personal trust. This shows that the knowledge transfer benefit of personal trust is more likely to be stronger when accompanied by high levels of professional trust rather than the other way around. Echoing the notion of 'optimal trust' (Wicks *et al.,* 1999), this finding suggests that professional trust acts as a safeguard mechanism preventing individuals from trusting blindly based on solely affective criteria. However, this is not to suggest that 'organisations are barren soil for the cultivation of personal ties' (Nugent & Abolafia, 2006: 647). On the contrary, personal ties – particularly trusted strong ties – signify the importance of collaborative relations for successful knowledge exchange by pointing to the emergent role of a distinct type of trust as a knowledge transfer coordination mechanism, a trust fuelled more by mutual contribution and concern for the joint outcome, rather than solely by honour, duty or competence (Adler & Heckscher, 2006).

The study also makes a significant contribution to the KM and OL literatures by identifying the distinct advantage of personal trust over that of professional trust in facilitating the transfer of tacit knowledge. Although prior research has shown that the willingness of employees to use tacit knowledge relies on trusting the competence, skills and abilities of knowledge sources (Levin & Cross, 2004), the results presented in this thesis make a strong case for paying equal attention to the importance of more emotional attributes of work relations. This study thus provides a better understanding of the multiplexity of trusting relations reflected in the coexistence of instrumental and expressive goals within the same tie. The findings suggest that to the extent that disclosure trust, manifested in interpersonal attachment and expressions of care and concern, helps channel individuals' tacit knowledge resources into actionable knowledge, the effectiveness of knowledge integration efforts in organisations could be limited without explicit attention to the emotional fabric of instrumental work ties. This has pervasive theoretical implications for the study of knowledge transfer and organisational learning as it shifts attention from the prominent role of 'cool cognition' to the equally important role of 'warmer and more social (Schwartz, 1998) forms of cognition' (Adler & Obstfeld, 2007: 20) in knowledge exchange.

The third contribution comes in the form of demonstrating how informal social relations are influenced by the formal organisational structure, which is manifested in hierarchical differences between knowledge seekers and knowledge providers. The

findings of this study inform social capital discourse on the notion of bonding and bridging ties (Adler & Kwon, 2002), which are central to Granovetter's (1973) theory of the strength of weak ties and Krackhardt's (1992) account of the strength of strong ties. In particular, the results refine recent research on the knowledge transfer benefits of trusted weak ties (Levin & Cross, 2004) by indicating that these benefits are confined to 'top-down' relations. In addition, the results provide a more nuanced understanding of bonding ties by showing that trusted strong ties are more likely to be applicable to horizontal than vertical relations. Taken together, the findings invite us to think critically about the relative knowledge advantage of bonding and bridging social capital with respect to the issue of distribution of power, influence and control and its implications for horizontal and vertical collaboration within the firm.

The fourth contribution involves a more contextualised understanding of the knowledge transfer process by identifying the role of the sociodemographic space within which social relations are embedded. More specifically, the findings underscore the role of gender congruence in influencing the trust fabric of interpersonal ties. On the other hand, more cognitive characteristics of ties, such as shared language, are likely to be influenced by the longevity of the relationship between knowledge seekers and providers as well as task interdependence. Taken together, these findings enrich understanding of the contingent and dynamic character of knowledge transfer relations and help inform research on the design of group and inter-group work structures.

Overall, the present study contributes to a better understanding of the social, contextual, and organisational richness of the knowledge transfer and sharing process. First, the findings make a strong case that the effective transfer of knowledge, particularly the transfer of tacit knowledge, takes place within personal relations governed by both cognitive and affective processes. This view is consistent with the philosophical position of pragmatism under which creative action and interaction is the outcome of a constant dialogue between thinking and feeling (Dewey, 1922[2002]). Second, the findings suggest that individuals 'pragmatically adapt their processing strategies to the requirements of the situation at hand in an effort to get things done' (Schwartz, 1998: 258). This is reflected in the relative importance of trusted weak and trusted strong ties for receiving useful knowledge from individuals at different levels in the formal organisational structure, and with different sociodemographic characteristics. Finally, the study provides some preliminary evidence regarding the importance of 'interdependent process management' as a distinct way of organising 'how people

relate to each other' through the management of cooperation (Adler & Heckscher, 2006: 43-44).

## II. LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study has several limitations that must be acknowledged. A significant one is related to the level of analysis at which social relations and knowledge transfer were examined. The study placed explicit emphasis on dyadic ties, the building blocks of network structures. However, much of the research on social networks extends beyond the dyad to include the study of triads, groups, and more complicated network structures. In this sense, the study does have the limitation that it measures structural opportunity in terms of direct ties rather than in terms of structural holes or some other measure that takes into account the indirect ties surrounding the focal tie. Thus, the findings should be interpreted with this limitation in mind. A second limitation, which is related again to the level of analysis, involves the measurement of the variables that comprise the knowledge transfer context and the HRM context. Social relations and knowledge transfer were measured at the dyadic level, whereas HR practices and employees' perceptions of the social climate were measured at the individual level. The use of ordinary least squares regression is limited in that it is not suited for nested data. Future research is therefore encouraged to utilise more sophisticated statistical analysis techniques, such as hierarchical linear modelling, in order to provide a multi-level understanding of the links between HR practices, social relations and knowledge transfer. A third limitation concerns the measurement of interpersonal knowledge transfer. Consistent with a behavioural approach, knowledge transfer was measured as a learning activity manifested in improved project outcomes as a result of knowledge received. Future studies may wish to utilise objective measures of project success, effectiveness, and performance. A fourth limitation is related to the fact that the sample is restricted to one country and three companies and, consequently it does limit the generalisability of the findings. Future research conducted with larger samples and in other national environments can provide complementary findings. A fifth limitation is related to common method bias due to the use of self-report measures of both independent and dependent variables obtained from the same respondent. Although the results of Hartman's one-factor test indicated the absence of a single factor, common method bias may not have been completely removed in the study.

This thesis is a first step toward an integrated approach to the study of the links between HRM, social relations, and KM. To examine these links further would require studies that shift attention toward multilevel research designs and analyses. For

example, given the prominence of team-based work structures in organisations, such as project groups, social capital can be examined at the group level by acknowledging that the group itself has a social structure and must be considered both as a whole as well as an aggregate of its members (e.g., Oh *et al.*, 2004). By doing so, it is feasible to examine in greater depth how the group members' relations across multiple types of boundaries may affect the transfer of knowledge and, consequently group effectiveness and performance. Furthermore, group-level research designs can help advance understanding of the distinct role that entrepreneurial-based and cooperative-based HR practices play in shaping group members' bridging and bonding social capital respectively. Of particular interest here is the management of boundary spanners, such as team leaders, who are simultaneously involved in both internal and external relations. Furthermore, it would be interesting to investigate whether and which dimensions of group social capital are related to group climate of teamwork and cooperation as well as to examine the role that team leaders play in shaping team members' perceptions of that climate. An additional line of inquiry would involve the extension of the KM context to consider – next to knowledge transfer – knowledge creation and retention as key KM outcomes. This would provide a more holistic understanding of the role of the firm socio-relational architecture in managing knowledge. In addition, it would also shed light on the ways in which HR systems affect KM outcomes. For example, future work could examine the role that HR practices in influencing employee attraction, motivation, and retention, and how these practices can, in turn, affect knowledge creation, transfer, and retention.

## III. CONCLUDING REMARKS

The corporate world is experiencing a transformation toward more collaborative types of social organising that rely on trust as the dominant coordination mechanism, on social capital as the key resource, and on knowledge transfer and sharing as the core basis for competitive advantage. Collaborative communities are characterised by a distinct ethic of interdependent contribution to a shared purpose and the success of others. A view of the firm through the lens of the interdependent social self points to the emergence of a distinct type of social relations, which are fuelled more by mutual contribution and concern, honesty and collegiality rather than honour, duty or competence. In essence, this view acknowledges that 'the most distinctive and praiseworthy human capacity is our ability to trust and cooperate with other people, and in particular to work together so as to improve the future' (Rorty, 1999: xiii). It is hoped that the research presented in this thesis contributes to a better understanding of some of the social, contextual, and organisational parameters of that capacity.

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# APPENDIX A: Questionnaire Survey



# Sharing Knowledge:

# An Analysis on the Impact of Employment Practices on Knowledge Sharing within Organisations

**Angelos Alexopoulos**
Centre for Research in Management Learning & Development
Dublin City University Business School

## Introduction to the Survey

I am a doctoral candidate engaged in research at the Centre for Research in Management Learning and Development at Dublin City University Business School. My study is examining:

- How employees use knowledge in their work
- Whether employment practices have an impact on knowledge sharing

The following survey will take approximately 15 minutes to complete. It is divided into three sections asking you questions on:

- **Section 1:** Your interactions and relationships with colleagues prior to and during project work
- **Section 2:** Your experiences of employment practices in your company
- **Section 3:** Your background details

The survey is **completely anonymous**. All individual data will be kept **strictly confidential** and will not be reported back to your company. Questionnaires will only be seen by myself, the survey co-ordinator. If you have any queries, please don't hesitate to contact me (tel: 01 700 5573, e-mail: angelos.alexopoulos2@mail.dcu.ie).

The survey is also available online at **www.redbrick.dcu.ie/~angelos** if you prefer to complete it electronically.

A good response rate is critical to the success of the doctoral thesis, so your time and effort are highly appreciated. Thank you for your help.

**Angelos Alexopoulos, M.Sc.**
Centre for Research in Management Learning and Development
Dublin City University Business School

## SECTION 1: Relationships with colleagues prior to and during project work

**This section asks you about the way you undertake a project**

**STEP A: Think of a project you are currently involved in or that ended recently (in the past three months) that you consider significant for you and/or your company. Please answer the following questions by either ticking (✓) or writing in the appropriate box that most accurately corresponds to your answer.**

**1. Type of project:**

- New product/service development ☐
- Launch of new information system ☐
- New marketing campaign ☐
- Consultation project ☐
- Other (please specify) ☐

**2. Number of people working on the project:** ☐

**3. Time span of the project:** ☐ Years ☐ Months ☐ Weeks

**4. Length of your involvement in the project:** ☐ Years ☐ Months ☐ Weeks

**5. What is the project's current status?**

- On-going ☐
- Completed ☐

**STEP B: In undertaking this project, please <u>think of all the people in your company</u> you asked for information/advice in getting the project completed. Of these people, please identify the person who was the most helpful and the person who was the least helpful. The next set of questions asks you about your interactions with these two people.**

**Please answer each of the following questions to the best of your recollection by either ticking (✓) or writing in the appropriate box that most accurately corresponds to your answer.**

| Most Helpful Person | | Least Helpful Person |
|---|---|---|
| Yes ☐ No ☐ | Does (or did) this person work on the same project? | Yes ☐ No ☐ |
| Yes ☐ No ☐ | Does (or did) this person have managerial responsibilities? | Yes ☐ No ☐ |
| Yes ☐ No ☐ | Is this person the same gender as you? | Yes ☐ No ☐ |
| Yes ☐ No ☐ | Is this person the same age as you (plus or minus five years)? | Yes ☐ No ☐ |
| Yes ☐ No ☐ | Is this person the same nationality as you? | Yes ☐ No ☐ |
| Years ☐ Months ☐ | On average, how long have you been working with this person? | Years ☐ Months ☐ |
| Two or more levels below mine ☐<br>One level below mine ☐<br>Equal to mine ☐<br>One level above mine ☐<br>Two or more levels above mine ☐ | Please indicate each person's hierarchical level relative to your own at the time of the project | Two or more levels below mine ☐<br>One level below mine ☐<br>Equal to mine ☐<br>One level above mine ☐<br>Two or more levels above mine ☐ |

| Most Helpful Person | | | | | | | Prior to seeking information/advice on this project, please indicate how willing you were to engage in each of the following behaviours with each person, by circling a number from 1 to 7 | Least Helpful Person | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Not at all Willing | Unwilling | Somewhat Unwilling | Neither Willing nor Unwilling | Somewhat Willing | Willing | Completely Willing | | Not at all Willing | Unwilling | Somewhat Unwilling | Neither Willing nor Unwilling | Somewhat Willing | Willing | Completely Willing |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Rely on this person's work-related judgements | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Rely on this person's task-related skills and abilities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Depend on this person to handle an important issue on your behalf | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Rely on this person to represent your work accurately to others | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Rely on this person to back you up in difficult situations | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Share your personal feelings with this person | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Confide in this person about personal issues that are affecting your work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Discuss how you honestly feel about your work, even negative feelings and frustration | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Discuss work-related problems or difficulties with this person that could potentially be used to disadvantage you | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Share your personal beliefs with this person | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Most Helpful Person | | | | | | | Prior to seeking information/advice on this project, please indicate the extent to which you were doing each of the following, by circling a number from 1 to 7 | Least Helpful Person | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| To no extent at all | To almost no extent | To a little extent | To some extent | To a good extent | To a great extent | To a very great extent | | To no extent at all | To almost no extent | To a little extent | To some extent | To a good extent | To a great extent | To a very great extent |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | I was sharing common values with this person | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | I identified with this person’s values | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | This person’s goals were compatible with mine | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | This person and I were pursuing different goals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | | | | | | | | | |
| Strongly Disagree | Moderately Disagree | Slightly Disagree | Neither Agree nor Disagree | Slightly Agree | Moderately Agree | Strongly Agree | Prior to seeking information/advice on this project, please indicate your level of agreement or disagreement with each of the following statements, by circling a number from 1 to 7 | Strongly Disagree | Moderately Disagree | Slightly Disagree | Neither Agree nor Disagree | Slightly Agree | Moderately Agree | Strongly Agree |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | I was familiar with the jargon/terminology that this person used | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | I could understand completely what this person meant when he or she was talking | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | It felt like we could communicate on the same “wavelength” | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Most Helpful Person | | | | | | | Prior to seeking information/advice on this project, please answer each of the following questions, by circling a number from 1 to 7 | Least Helpful Person | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Distant | | | Somewhat Close | | | Very Close | | Distant | | | Somewhat Close | | | Very Close |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | How close was your working relationship with this person? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Once Every 3 Months or less | Once Every 2nd month | Once a month | Twice a Month | Once a Week | Twice a Week | Daily | | Once Every 3 Months or less | Once Every 2nd month | Once a month | Twice a Month | Once a Week | Twice a Week | Daily |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | How often did you communicate with this person? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| To no Extent At all | To Almost No Extent | To a Little Extent | To Some Extent | To a Good Extent | To a Great Extent | To a Very Great Extent | | To no Extent At all | To Almost No Extent | To a Little Extent | To Some Extent | To a Good Extent | To a Great Extent | To a Very Great Extent |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | To what extent did you typically interact with this person? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Most Helpful Person | | | | | | | Please consider the type of information/advice you received from each person <u>at the time of the project</u>, and answer the following questions by circling a number from 1 to 7 | Least Helpful Person | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All of it | | | Half of it | | | None of it | | All of it | | | Half of it | | | None of it |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Was all this information/advice sufficiently explained to you in writing (in written reports, manuals, e-mails, faxes, etc.)? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Very Well Documented | | | Somewhat Well Documented | | | Not Well Documented | | Very Well Documented | | | Somewhat Well Documented | | | Not Well Documented |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | How well documented was the information/advice that you received from this person? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Most Helpful Person | | | | | | | Continued | Least Helpful Person | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mainly reports, manuals, documents, self-explanatory software | | | Half know-how, half reports/ documents | | | Mainly personal know-how, tricks of the trade | | Mainly reports, manuals, documents, self-explanatory software | | | Half know-how, half reports/ documents | | | Mainly personal know-how, tricks of the trade |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | What type of information/advice came from this person? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Contributed Very Negatively | Contributed Negatively | Contributed Somewhat Negatively | Contributed Neither Positively Nor Negatively | Contributed Somewhat Positively | Contributed Positively | Contributed Very Positively | **The information/advice I received from each person made (or is likely to make) the following contribution to:** | Contributed Very Negatively | Contributed Negatively | Contributed Somewhat Negatively | Contributed Neither Positively Nor Negatively | Contributed Somewhat Positively | Contributed Positively | Contributed Very Positively |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Client’s satisfaction with this project | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | The overall performance of the project team | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | The value of the project to my company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | The quality of the project | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | This project coming in on budget or closer to coming in on budget | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | The reduction in the project’s costs | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | My being able to spend less time on the project | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Shortening the time this project took | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## SECTION 2: Employment Practices

**This section is structured in two parts: Part A asks you to describe certain aspects of your job, whereas Part B asks you to indicate the extent to which you experience various employment practices that may or may not take place in your company.**

### Part A: Describing your Job

**The following questions ask you to describe your job as objectively as possible regardless of whether you like or dislike your job.**

**Please circle a number from 1 to 7 that most accurately describes your job**

| | |
|---|---|
| How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents? | **1----------2----------3----------4----------5----------6----------7**<br>Very little: The job requires me to do the same routine things over and over again<br>Moderate variety<br>Very much: The job requires me to do many different things, using a number of different skills and talents |
| How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work? | **1----------2----------3----------4----------5----------6----------7**<br>Very little: The job gives me no personal "say" about how and when the work is done<br>Moderate autonomy: Many things are standardized and not under my control, but I make some decisions about mv work<br>Very much: The job gives me almost complete responsibility for deciding how and when the work is done |
| To what extent do managers or co-workers let you know how well you are doing on your job? | **1----------2----------3----------4----------5----------6----------7**<br>Very little: People almost never let me know how well I am doing<br>Moderately: Sometimes people may give me "feedback", other times they may<br>Very much: Managers or co-workers provide me with almost constant "feedback" about how well I am doing |

**Please indicate whether each of the following statement is an accurate or inaccurate description of your job. Try to be as objective as you can in deciding how accurately each statement describes your job regardless of whether you like or dislike your job.**

| Please circle a number from 1 to 7 that most accurately describes your job | Very Inaccurate | Mostly Inaccurate | Slightly Inaccurate | Uncertain | Slightly Accurate | Mostly Accurate | Very Accurate |
|---|---|---|---|---|---|---|---|
| The job requires me to use a number of complex or high-level skills | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The job gives me considerable opportunity for independence and freedom in how I do the work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Managers or co-workers often let me know how well they think I am performing the job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The job requires me to use a variety of different skills | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The job gives me a chance to use my personal initiative or judgement in carrying out the work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Managers and co-workers on this job almost always give me “feedback” about how well I am doing in my work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Please indicate whether you agree or disagree with each statement by circling a number from 1 to 7 | Strongly Disagree | Moderately Disagree | Slightly Disagree | Neither Agree nor Disagree | Slightly Agree | Moderately Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| I work closely with others in doing my work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I frequently must coordinate my efforts with others | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My own performance is dependent on receiving accurate information from others | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The way I perform my job has a significant impact on others | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My work requires me to consult with others fairly frequently | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Part B: Experiencing Employment Practices

**Listed below are sets of statements that describe various employment practices.**

| **Please indicate the extent to which you experience each of the following, by circling a number from 1 to 7** | **To no Extent At all** | **To Almost No Extent** | **To a Little Extent** | **To Some Extent** | **To a Good Extent** | **To a Great Extent** | **To a Very Great Extent** |
|---|---|---|---|---|---|---|---|
| My company selects highly skilled and competent individuals to new posts | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| New employees are typically hired based on their fit with the company's culture | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| New employees are encouraged to take part in company-sponsored social activities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Mentoring is an important development tool in my company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My company provides me with a well organised training and development programme | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My company allocates a generous amount of time and resources for my training and development needs | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Much of my training and development is on the job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My training involves cross-functional group training and team building | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My training involves developing work-related personal relationships with other employees across different areas of my company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My work performance targets are jointly determined by my manager and my team/work unit members | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My work performance is evaluated based on the results of my team/work unit | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| **Continued** | To no Extent At all | To Almost No Extent | To a Little Extent | To Some Extent | To a Good Extent | To a Great Extent | To a Very Great Extent |
|---|---|---|---|---|---|---|---|
| There are small pay differences among the people in my work unit | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| There are small pay differences across the various work units of my company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The pay levels in my work unit are relatively high compared to other firms in the industry | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The pay levels in my company are relatively high compared to other firms in the industry | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Rewards are closely tied to individual performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Rewards are closely linked to team and/or organisational performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My company rewards and compensates employees who freely share information and advice with others | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I feel the HR department in my company is performing its job the way I would like to be performed | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The HR department in my company has met my expectations in its HRM roles and responsibilities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| If I had my way, I would change the manner in which the HR department is doing its job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Please indicate the extent to which you agree or disagree with each of the following, by circling a number from 1 to 7** | Strongly Disagree | Moderately Disagree | Slightly Disagree | Neither Agree nor Disagree | Slightly Agree | Moderately Agree | Strongly Agree |
| I have a high degree of influence on company decisions | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I often participate in decisions regarding my job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| **Continued** | Strongly Disagree | Moderately Disagree | Slightly Disagree | Neither Agree nor Disagree | Slightly Agree | Moderately Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| I have a high degree of influence on the decisions affecting me | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I can participate in setting new company policies | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My views have a real influence on company decisions | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| There is a spirit of teamwork and cooperation across all departments at my company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| There is a spirit of teamwork and cooperation in my department | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| The team orientation is valued at my company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I am rewarded by my manager for sharing information and advice with people in the company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My manager would like me to share more information and advice with other people in the company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My manager has told me to share more information and advice with other people in the company | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My manager doesn’t really care if I share information and advice or not | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Management seems to be serious about getting employees to share information and advice with each other | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| My company has a special knowledge-sharing initiative underway | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## SECTION 3: Background Details

**In this section you will be asked questions about yourself. Please answer each of the following questions by ticking (✓) or writing in the boxes provided.**

**1. What is your age?** ☐ Years

**2. What is your gender?**

Male ☐

Female ☐

**3. What is your nationality**? ☐

**4. What is your highest academic qualification to date?**

No formal qualification ☐

Junior Certificate (or equivalent) ☐

Leaving Certificate (or equivalent) ☐

Third-level Certificate ☐

Third-level Diploma ☐

Primary Degree ☐

Postgraduate Degree ☐

Other Academic Qualification (please specify) ☐

**5. Which category best describes your job?**

Senior Management ☐ Professional ☐

Middle Management ☐ Technical ☐

Junior Management ☐ Administrative ☐

Other (please specify) ☐

**6. What is your employment status?**

Full-time Permanent ☐ Full-time Contract ☐

Part-time Permanent ☐ Part-time Contract ☐

Other (please specify) ☐

**7. How long have you been working with your company?**

☐ Years ☐ Months

**8. How long have you been working in your current position?**

☐ Years ☐ Months

**9. Number of years of full-time work experience**: ☐ Years

**END OF SURVEY**

**Thank you very much for participating in this survey!**

# APPENDIX B: Knowledge Manager Interview Schedule

# APPENDIX C: Human Resource Manager Interview Schedule

**HR MANAGER INTERVIEW SCHEDULE**

## Part I: Company Information

1. The organisation is…(please tick the appropriate box):

| | | |
|---|---|---|
| a | 100% foreign owned | ❑ |
| b | 50% - 99% foreign owned | ❑ |
| c | Less than 50% foreign owned | ❑ |
| d | 100% Irish owned | ❑ |
| e | Other (please specify): | |

2. Please indicate the total number of employees in the organisation.

| | | |
|---|---|---|
| a | Total number of employees (Core/salaried & Non-core) | |
| b | Full-time salaried (core) | |
| c | Non-core (Alternative flexible work contracts) | |

## Part II: Knowledge Management Issues

1. What % of your employees would you describe as 'knowledge workers'? (Please see definitions of knowledge worker on page 2). Please tick the appropriate box.

| | | |
|---|---|---|
| a | Less than 10% | ❑ |
| b | 11 - 20% | ❑ |
| c | 21 – 30% | ❑ |
| d | 31 – 40% | ❑ |
| e | 41 – 50% | ❑ |
| f | 51 – 60% | ❑ |
| g | More than 60% | ❑ |
| h | 100% | ❑ |

2. Noting the definitions below, please tick the two key factors that, in your opinion, differentiate them as 'knowledge workers'.

*Definition of a Knowledge Worker*

| | | |
|---|---|---|
| a | Contributes to the knowledge creation process as a defining competitive strategy/business capability of the organisation. | ❑ |
| b | Has high level skills/education, technological literacy, high cognitive power and abstract reasoning; ability to observe, synthesise and interpret data, as well as communicate new perspectives & insights. These lead to more effective decisions, processes and solutions for the organisation. | ❑ |
| c | Understands the key requirement for new process design, and/or new product development to gain competitive/strategic advantage. | ❑ |
| d | Willing to share information and knowledge; team collaboration in co-creating new perspectives which lead to more effective actions and solutions. | ❑ |
| e | Able to use both conventional scientific methods, but also possesses intuitiveness, new mind sets and imagination. | ❑ |

3. Noting the definition above, which of the following knowledge worker categories do you employ, and in what types of employment? Please tick one or more boxes (if applicable)

| | **Knowledge worker categories** | **Types of employment** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Full-time salaried | Sub-contractor, consultant | Part-time | Fixed-term contract | Casual ad hoc/ temporary | Home workers | Others (please specify) _____ |
| a | Asset managers, Economists, Financial analysts, Accountants | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| b | Human resources | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| c | Information technology | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| d | Logistics | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| e | Management, Organisation & IT consultants | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| f | Media & Telecommunications | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| g | Scientists & Researchers | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| h | Other(s) | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |

4. What % of employees work mainly in project type of work?

| | | |
|---|---|---|
| a | Less than 10% | ❑ |
| b | 11 - 20% | ❑ |
| c | 21 – 30% | ❑ |
| d | 31 – 40% | ❑ |
| e | 41 – 50% | ❑ |
| f | 51 – 60% | ❑ |
| g | More than 60% | ❑ |
| h | 100% | ❑ |

5. What are the main types of projects in which employees or teams of employees are typically involved?

6. Is there a specific knowledge management/organisational learning initiative in the organisation?
-If yes, can you describe it in more detail?
-If no, do you plan to introduce a knowledge management or organisational learning program in the near future? What would be the main reasons for introducing such a programme?

7. How do you deal with the issues of creating, sharing and integrating the specialised knowledge of employees?

8. Is there any IT infrastructure (e.g., Corporate Intranet, Shared Database etc) that supports the extraction, sharing and integration of information/knowledge across the organisation?

9. Do you feel that there is a role for the HR Department in regard to support and enhance knowledge management and learning outcomes (e.g., knowledge sharing) within the organisation? In your opinion, what steps have been or should be taken towards this direction?

## Part III: Human Resource Practices

Please indicate whether you use each of the following HR practices and also the % and the level of employees to which each practice is applied

| HR Practices | Yes/No | Proportion of Workforce (%) | If not 100% of workforce, please indicate the level(s) to which HR practice is applied (e.g. management levels only) |
|---|---|---|---|
| **Job Design**<br>Formal Work Teams<br>Self-Managed Teams<br>Teamwork Predominant<br>Job Rotation<br>Flexible Working<br>Flexible Job Descriptions | | | |
| **Recruitment & Selection**<br>Use of Employment Agencies<br>Employment Testing<br>Assessment Centre<br>Selection decision based on applicant's competencies<br>Selection decision based on applicant's fit with company's culture | | | |

| HR Practices | Yes/No | Proportion of Workforce (%) | If not 100% of workforce, please indicate the level(s) to which HR practice is applied (e.g. management levels only) |
|---|---|---|---|
| **Socialisation**<br>Use of Formal Socialisation/Induction Programme<br>Use of Mentoring Programme | | | |
| **Training**<br>Formal Induction Training<br>On-the-job Training<br>Training Courses:<br>-Internal to the organisation<br>-External to the organisation | | | |
| **Career Development**<br>Promotion from within<br>Promotion based on Merit<br>Promotion based on Seniority<br>Promotion based on Merit & Seniority<br>Internal Employee Transfers | | | |
| **Performance Management**<br>Formal Appraisals (annual, biannual)<br>Individual Results-Based Appraisals<br>Team/Organisational Results-Based Appraisals<br>Individual & Team/Organisational Results-Based Appraisals | | | |
| **Reward Management**<br>Salaried<br>Individual Incentive Pay/Bonuses<br>Group Incentive Pay/Bonuses<br>Rewards based on Individual Performance Appraisal<br>Rewards based on Group Performance Appraisal<br>Rewards linked to Knowledge Sharing<br>Profit Sharing<br>Stock Purchase Plans<br>Benefits:<br>-Health Insurance<br>-Pension Scheme<br>-Flexible Benefits<br>-Child Care<br>-Leisure Facilities<br>-Vouchers | | | |
| **Employment Security**<br>Permanent Employment Policy<br>Use of temporary staff | | | |
| **Communication**<br>Regular Employees Attitude | | | |

| | | | |
|---|---|---|---|
| Surveys<br>Newsletter:<br>-Corporate<br>-Departmental<br>Team Briefings<br>E-mails<br>Notice boards | | | |
| **Employee Participation**<br>Formal Suggestion Schemes<br>Problem Solving Groups<br>Employee-Management Committees | | | |
| **Facility Design**<br>-Open Offices<br>-'Water cooler' Strategies<br>-Canteens<br>-Rest Areas | | | |

## HR Questions

1. What is your perception of the work environment / climate in the organisation?

2. Describe the way in which communication is managed in the organisation. Are employees' views sought on important issues? If so, how?

3. How does the organisation typically recruit and select new employees? Have you experienced difficulties in attracting the right job candidates? What specific steps have been taken to solve recruitment and selection problems in recent years?

4. What steps are usually taken to ensure that new employees become socially integrated when they first join the organisation?

5. In your opinion, do you feel that the training provided to employees is adequate? Why? Has financial investment in training increased in recent years? Has time investment (e.g., managers' time) in training increased in recent years?

6. In your opinion, how is career development perceived from employee's perspective? Do you think that existing career opportunities are adequate for retaining employees?

7. How is staff performance managed within the organisation? Do you regard existing performance management practices as effective?

8. Do you think that the organisation offers employment security to its employees compare to other firms in the industry?

9. Can you describe the elements that comprise a typical incentive/benefits package for a new employee? To what extent is seniority/tenure rewarded? Do you think that your reward package is perceived by employees as internally equitable? In your opinion, is it externally competitive?

10. What levels of employee autonomy are employees afforded? Are there flexible working practices available to all employees? Would you say that the organisation exercises a high or low degree of control over employees' work? Do you think that there are variations in autonomy according to the level or position in the organisation?

11. In your opinion, what HR practices are most important to people early in the careers in the organisation?

12. In your opinion, what HR practices are most important to people later in their careers in the organisation?

13. What is your current voluntary turnover percentage in the organisation? How you could characterise the level of turnover? (Acceptable-Unacceptable). Please tick the appropriate boxes.

| **% Turnover** | | | | **Acceptable** | **Unacceptable** |
|---|---|---|---|---|---|
| Less than 5% | 6-10% | 11-15% | Greater than 15% | | |
| ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |

-If unacceptable, what measures have you taken to address this problem?

13.1

---

14. Is staff turnover higher among younger or older staff? Why?

15. Is staff turnover higher among employees with shorter or longer service? Why do you think this is so?

16. Can you identify a trend in turnover regarding position occupied within the organisation? For example, does the organisation lose more from one functional area or employee level than from others? Why do you think these employees leave?

17. Do you think that the organisation delivers upon employees' expectations regarding (a) promotion opportunities? (b) pay? (c) the demands of the job (d) satisfaction with the job?

18. In your opinion, what are the main challenges that the organisation will possibly face in the future? How can the HR Department support the KM and wider business strategy of the organisation?

**Thank you very much for your time!**

**Angelos Alexopoulos, M.Sc**.
*Centre for Research in Management Learning and Development*
*Dublin City University Business School*

e-mail: angelos.alexopoulos2@mail.dcu.ie