Employees' perceptions of human resource management practices and knowledge sharing behaviour

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Abstract

The information age heralds the idea that the most important source of competitive advantage is knowledge. Therefore, organisations need to understand the value of knowledge; especially the knowledge that resides in the human brain (tacit knowledge) as an intangible asset along with other traditional tangible assets. The capability of an organisation is linked to the knowledge of its employees. Therefore, improving organisational and employees' capability are important goals for organisations. However, little progress has been made with many researchers primarily focusing on human capital development rather than on relationship capital using human resource management (HRM) practices in workplaces. Most of the knowledge management (KM) literature has discussed the antecedents of employees' knowledge-sharing. Future research is required to explore how these employees' knowledge sharing activities provide benefits to organisations and employees in terms of improved capability.

To address this research gap in the literature, this thesis examines: first, the causative relationships between specific HRM practices and employee' knowledge sharing and second, the outcomes of knowledge sharing in terms of individual capability in workplaces. Based on previous research, a conceptual model is developed for the study and hypotheses are formulated. A total of 600 questionnaires were distributed to the employees of 19 organisations. Of these, 390 were useable questionnaires; thus resulting in 65% valid response rate. A final model is designed and this thesis used Confirmatory Factor Analysis to examine the causative relationships among the latent constructs of the final model.

This thesis finds that collaborative HRM practices have a direct positive effect on employees' knowledge sharing behaviour. Surprisingly, this thesis finds that employees' knowledge sharing behaviour is independent of monetary rewards. The results of this suggest that collaborative practices and trust can help employees' knowledge sharing behaviour to improve the capability of individuals in their organisations. These empirical results are entirely based on employees' perceptions rather than from a top management perspective. So it makes a valuable contribution, given the lack of empirical studies focusing on the South East Asian region. The findings of this thesis are beneficial for researchers, practitioners, and those interested in organisational structure in the knowledge context.

List of Publications from this Thesis

Peer reviewed publications:

- Iqbal, S., Toulson, P., & Tweed, D. (2010). *Tacit Knowledge sharing practices and organisational effectiveness: A review of literature.* Paper presented at the International Conference on Innovation, Management and Service, Singapore, 26-28, February, 2010. ISBN# 978-1-84626-027-8

- Iqbal, S., Toulson, P., & Tweed, D. (2010). The Impact of HRM Practices on Organisational Capability Mediated by Knowledge Sharing: A Conceptual Model. [Article]. *Proceedings of the 7th International Conference on Intellectual Capital, Knowledge Management & Organizational Learning*, 575-583.
  ISBN# 978-1-906638-84-9
- Iqbal, S., Toulson, P., & Tweed, D. (2011**).** HRM Practices and Individual Knowledge-Sharing: An Empirical Study of Higher Education Institutions in Pakistan, *Proceedings of the International Conference on Intellectual Capital, Knowledge Management & Organizational Learning*: Academic Conferences, Ltd.
  ISBN# 978-1-908272-21-8 (*pp. 699-708).*
- Iqbal, S., Abdul jalal, H., Toulson, P., & Tweed, D. (2012). Knowledge Management (Knowledge friendly culture for successful knowledge sharing) In Brüggemann, S., & d'Amato, C., Collaboration and the Semantic Web: Social Networks, Knowledge Networks, and Knowledge Resources (pp. 64-81).
  Doi: 10.4018/978-1-4666-0894-8
- Iqbal, S., Toulson, P., & Tweed, D. (2012**).** The role of HRM practices as benchmarks in knowledge management: An empirical study. Proceedings of World Business Capability Congress, Auckland, New Zealand.

Magazine Articles

- Iqbal, S., Toulson, P., & Tweed, D. (2012). "Employees knowledge sharing and hiding: role of HRM in organisations". Human Resources magazine, Volume 17(1), p 22-23., HRINZ, New Zealand

Journal Articles

- Iqbal, S., Toulson, P., & Tweed, D., Employees as performers through collaborative practices in KIFs: Role of knowledge sharing, is accepted, in *International journal of Manpower*, Emerald publishing, ISSN: 0143-7720

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Salman

To my beloved wife Saira

Glossary of the terms used in this thesis

Abbreviation	Full term
AGFI	Adjusted Goodness of Fit Index
AMOS	Analysis of moment Structures
CFA	Confirmatory factor analysis
CFI	Comparative Fit Index
EFA	Exploratory factor analysis
GFI	Goodness of Fit Index
HRM	Human resource management
IT	Information technology
KBV	Knowledge based view of the firm
KC	Knowledge capability
KIFs	Knowledge intensive firms
KM	Knowledge management
LC	Latent constructs
NFI	Normed Fit Index
PAF	Principal axis factoring
PASW	Predictive analytic software
PCA	Principal component analysis
RBV	Resource based view of the firm
RMSEA	Root Mean Square Error of approximation
SEM	Structural equation modeling
SRMR	Standard root mean square residual

Table of contents

List of Tables

List of Figures

Prologue: My motivation

I am a lecturer in the Department of Management Sciences at the COMSATS institute of Information Technology, Lahore, Pakistan. I graduated with MBA from the University of Wollongong in 2005 after previously completing a B.Eng. from University of the Punjab Lahore, Pakistan.

After my engineering degree, I worked in a textile company in Pakistan, where several engineers and supervisors were trained by foreign engineers in different sections of the plant. During the first week of my job, as a shift in charge, one section of the plant was put out of action due to some incorrect computer commands. I was surprised; no one had the expertise in my shift to handle this situation except for one supervisor, who was on sick leave at that day. I called him and asked him to come and fix the problem. Initially, he was reluctant to comeback but later, on my request, he came and fixed the error at the end of the eight hours shift. The plant remains at hold during that period and because of the shortage of trained persons.

As a consequence of this incident, the plant manager appointed a team of senior staff members and engineers to work with him (as the skilled supervisor) to learn the tools and techniques required to monitor and operate that section of the plant. The supervisor, who initially was reluctant to return to fix the problem, was also reluctant to share his knowledge and expertise with his colleagues. He said to me that if he shares his expertise, the company may replace him as this knowledge is his source of power and continued employability. While this is an example from an emerging economy, this experience is not atypical of what happens in developed economies.

Two important lessons were learnt from that experience which was used later in my doctoral study: 1) if knowledge is not shared it will be lost and useless for organisations; and 2) knowledge sharing is achieved by removing the barriers through providing a collaborative environment and building trust between employees and managers. In fact, the sharing of knowledge and skills by employees provides both employees and their organisations a competitive advantage in terms of improved knowledge capability. The focus of HRM is to manage employees along with their knowledge in the workplaces.

CHAPTER ONE: INTRODUCTION

1.1 Background

Knowledge, as a resource, is beginning to replace physical assets for value creation in the marketplace. The ability to share, apply and create new knowledge becomes the basis by which to obtain competitive advantage in organisations (Kogut & Zander, 1992; Nonaka & Takeuchi, 1995). Whilst the origins of knowledge go back to the earliest civilisations, it is only three decades ago that managers and administrators in organisations began to realise its increasing importance due to emerging competitive markets (Wiig, 1997). The reasons for this could be due to globalisation, rapid market growth and the knowledge economy. Knowledge, as a resource, has a pivotal role where work is mostly intellectual in organisations that are known as knowledge intensive firms (KIFs).

Due to competitive pressures, organisations are now focusing on how to manage their employees' knowledge, just as they do the other resources that are used to produce their products and services. Consequently, knowledge management (KM) has gained attention, and, therefore, organisations are beginning to invest in KM initiatives to improve organisational capability. This idea has been supported by several research scholars (for instance, Nonaka & Takeuchi, 1995).

Knowledge is often thought to be the property of an individual employee. However, a great deal of knowledge is created and held collectively when knowledge sharing takes place between members of an organisation. Collective knowledge is known as organisational knowledge. This type of knowledge relies on the contribution of an organisation's members. Organisations invest in creating organisational knowledge, focusing on their employees, to obtain competitive advantage. The emphasis on creating organisational knowledge is through the sharing of tacit knowledge, which is hard to codify and resides in the human

brain. Consequently, the term KM is mostly considered in the context of managing the knowledge of employees within organisations. KM can build an organisational knowledge base that can help to improve decision-making, innovation, and productivity (Bollinger & Smith, 2001; Edvardsson, 2006; Nahapiet & Ghoshal, 1998). The extent of the success of organisations, particularly, knowledge-intensive firms (KIFs) depend on how KM initiatives are embedded in organisational practices and policies (Prusak, 2001).

There are various types of firms, for instance, knowledge intensive firms (KIFs), capital intensive firms and labour intensive firms. As evidenced by their labels, knowledge is more important in KIFs, capital is more important in capital intensive firms, and labour is more important in labour intensive firms. KIFs have employees who have knowledge, skills and experience. However, it has been argued that these "knowledge workers" will not make an organisation productive until their knowledge is utilised and shared within the workplace (Starbuck, 1992). Moreover, people (knowledge workers), together with information, are the primary medium of the workplace production (Frenkel, Korczynski, Donoghue, & Shire, 1995).

Initially, most empirical research in the field of KM was based on information and communication technology, and on improving knowledge sharing practices in workplaces (Huysman & de Wit, 2004). More recently, KM academics and practitioners have come to realise that technology may only support KM initiatives and does not act as a substitute for human beings in workplaces. Hence, the latest KM research in the knowledge sharing context is linked to employees' knowledge (Hislop, 2003; Holste & Fields, 2010; Hsu, Lin, Lawler & Wu, 2010). Employees' knowledge is gained through their life and work experiences (Kikoski & Kikoski, 2004; Seidler-de Alwis & Hartmann, 2008). Employees' knowledge gained through experience is mostly unspoken and hard to codify (Sveiby, 1997).

Employees' knowledge can provide a competitive advantage to organisations. Competitive advantage enables organisations to compete against and beat their competitors in the market (Barney, 1991). Drucker (1993) proposes that employees' knowledge gained through experience may be more important in the future than that of physical capital in order to gain competitive advantage. This idea is also supported by many pioneering researchers of KM, for instance by Nonaka and Takeuchi (1995), Sveiby (1997) and Stewart (1997). Employees' knowledge, being a critical resource, developed through experience and intelligence of an individual, provides a competitive advantage to organisations (Holste & Fields, 2010).

Information has now become a primary resource, and an individual's knowledge has become an important means of production (Fitz-enz, 2000). The terms 'knowledge' and 'information' are used interchangeably in this thesis, and considers 'knowledge' and 'information' as synonymous. In a knowledge economy, one of the prime concerns in organisations is the regeneration and development of scarce resources to improve capability. An individual's knowledge has become one of the most valuable resources of wealth creation, prosperity and business success (Barnard, 2005; Riege, 2007; Stewart, 1997).

In workplaces, employees have a wealth of knowledge, gained through their experiences over their lifetimes. Organisations that recognise the capability of their employees, through the effective use of their HRM practices, can utilise their employees' potential (Argote & Ingram, 2000). However, the potential of employees' knowledge to solve particular problems in workplaces is limited due to constraints imposed by human resource functions such as job descriptions and job evaluation. Such HRM functions may restrict employees to their designated workplace roles, being unable to see the potential in thinking beyond specific job descriptions (Iqbal, Toulson & Tweed, 2012). To extrapolate employees' knowledge in workplaces, specific HRM practices that act as antecedents of KM may be used to link HRM and KM (Minbaeva, Foss & Snell, 2009). HRM practices

such as recruitment and selection, training and development, and reward systems may be important for managing employees' knowledge within organisations. The proper management of this inimitable resource (employees' knowledge) can provide organisations with a competitive edge over their competitors in terms of better learning capability (Foss, Brewer & Brewer, 2010; Hislop, 2003; Teece, 1998).

Two decades ago, Kogut and Zander (1992) suggested that most of the research regarding improving organisational knowledge was related to technology and ignored individual knowledge and its motivation. Organisations can use HRM practices to motivate and manage employees' interactions that will eventually improve the organisational knowledge base. Thite (2004, p. 41) suggests…

> "Thanks to the knowledge economy, today HRM is seen to be a key competitive advantage by the senior management and taken seriously in strategic decision making. In fact, it is difficult to practice customer-centric strategic management without first achieving employee satisfaction."

HRM can influence knowledge creation, acquisition, and transfer by highlighting the relationship between HRM and KM as a new field of research (Jerez-Gamez, Caspedes-Lorente, & Valle-Cabrera, 2005). Similarly, HRM practices can improve the search and exploration for knowledge previously unavailable within the organisation, as well as the knowledge base (Iqbal, Toulson, & Tweed, 2011). HRM practices assist employees' motivation and commitment, and improve employees' performance to the extent that they develop invaluable skills that are difficult to replace (Huselid, 1995). Specific HRM practices, through knowledge sharing activities, engage employees in day-to-day and long-term decision-making through the building of an environment based on collaboration.

The concept of employees' knowledge-sharing is a topic of discussion in management research. Through knowledge sharing, employees transfer their knowledge from an

individual level to an organisational level, thus adding value (Nonaka & Takeuchi, 1995). Employees benefit through knowledge-sharing in terms of their own improved knowledge and learning capability (Reychav & Weisberg, 2009). However, few researchers have empirically tested the effect of HRM practices on employees' knowledge sharing behaviour in the workplace (Kang, Morris, & Snell, 2007; Oltra, 2005), and little empirical research has been conducted to explore employee collaboration, which is the primary source of knowledge transfer (Argote & Ingram, 2000; Bock & Kim, 2002), and knowledge sharing outcomes (Foss, Husted, & Michailova, 2010).

Research in the area of knowledge sharing and HRM conducted from 1999-2008 suggests that more quantitative research is required in order to understand the antecedents of knowledge sharing in the HRM context (Wang & Noe, 2010). In addition, most HRM research was previously based on the perception and opinions of top-tier management (Perez, Sanchez, & de Luis Carnicer, 2002; Riege, 2005), and there is a lack of research on employees' perspective in the HRM context. These research gaps, in the context of HRM and knowledge sharing, are discussed in next chapter, Chapter 2, which is based on existing literature reviews.

To address the research gaps, namely the effect of HRM practices on knowledge sharing and knowledge sharing outcomes, this thesis empirically investigates the effect of HRM practices on employees' knowledge sharing behaviour and knowledge sharing outcomes. The data for this thesis was collected from Pakistan, and samples were obtained from populations in the educational and telecommunication sectors.

There were several reasons for choosing Pakistan for this thesis. Firstly, the concept of knowledge management is in its infancy in the Pakistani business environment, and there is insufficient organisational and management support for employees' knowledge sharing.

There is also a lack of fairness in the distribution of incentives which support knowledge sharing behaviour which in turn may lead to a poor knowledge sharing environment. This phenomenon is also reflected in the prologue of this thesis.

Secondly, in the Pakistani business sector, several empirical studies have examined the antecedents of knowledge sharing, but there is little research which focuses on the outcomes of employees' knowledge sharing (Malik & Malik, 2008; Tariq, et al., 2012). There is also little empirical research to link both HRM and KM fields of study with which to test employees' perceptions of HRM practices and their knowledge sharing behaviour in Pakistan. Thus, this thesis adds value to the literature regarding the impact of HRM practices on knowledge sharing, and the outcomes of knowledge sharing in Pakistani KIFs.

Thirdly, the Pakistani government recently made it its policy to send skilled individuals abroad for professional training and learning. These skilled individuals are from different professions and student bodies, for example, university teachers, IT workers, engineers, doctors and high-flying high school students (Dawn, 2013; HEC, 2012). These secondments range from short-term courses (e.g. conferences) to longer-term periods (Masters and PhD studies). The main purpose of these secondments is to improve the learning and knowledge capability of individuals from Pakistan through sharing knowledge, skills and experiences with overseas agencies and individuals. The government of Pakistan fully sponsors all of these initiatives in order to improve the knowledge of Pakistani nationals.

One of the objectives of this thesis is to test these knowledge sharing outcomes, and the result may be significant in supporting the policies of the Pakistani government. In Chapter Six, this thesis provides suggestions for Pakistani policy makers to improve the capability of Pakistanis through collaborative practices in the knowledge sharing context.

The dataset in this thesis is analysed using the exploratory factor analysis which represents how items clump together in different latent constructs. The items retained in the exploratory factor analysis (principal component analysis) are used in the confirmatory factor analysis to examine the model fit using AMOS version 19 (statistical software). On achieving good model fit results, structural models are designed as suggested by, for instance, Bryne (2010) and Kline (2010). Structural models show the causative relationships between latent constructs of this thesis.

For many years now, KM has been the subject of seminars, presentations, articles and organisational intervention strategies. Managing employees' knowledge makes organisations more effective and attractive. This thesis provides an academic viewpoint based on recent research that shows how HRM practices influence knowledge sharing behaviour to improve the capability of employees and organisations. Managers may find it useful in developing their KM practices in their organisations, particularly those that are global in nature.

The results of this thesis are based on employees' perceptions regarding the impact of HRM practices and their knowledge sharing behaviour. Employees' perceptions are their own opinions, based on their experiences within the organisational environment. Although employees' perceptions are subjective, they influence their behaviours (Erisman, Daniels, Wong, & Franz, 2004). In workplaces, the importance of employees' perceptions cannot be ignored. Employees' perceptions influence employees' behaviour which ultimately may affect their actions (Hoe, 2008).

1.2 Research Positioning

This thesis contributes to the academic literature by describing causative links based on

employees' perceptions regarding HRM practices and employees' knowledge sharing within organisations. It provides an understanding of the mechanisms by which HRM practices influence the knowledge capability (KC) of individuals and of the organisation itself. This study interlinks three theoretical fields: HRM, knowledge management and knowledge capability as shown in Figure 1.

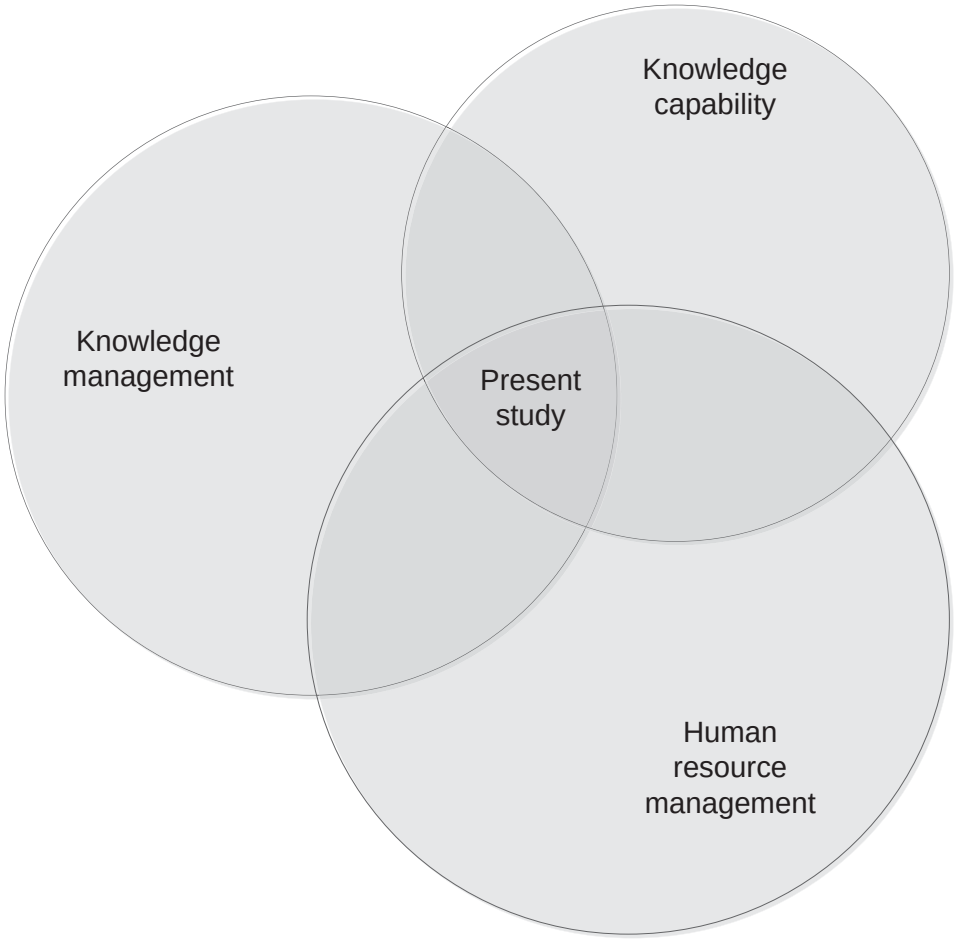

Figure 1: Positioning of this study

At an organisational level, knowledge capability manages employees' knowledge through their collaboration and knowledge sharing (Smith, Collins & Clark, 2005). Knowledge capability at an organisational level is also linked to employees' prior knowledge and experience (Cohen & Levinthal, 1990). This thesis discusses how HRM practices can influence employees' knowledge sharing as a KM initiative in order to improve both

organisational (knowledge) capability and individual capability in workplaces.

1.3 Problem Statement

Despite the fact that researchers in the field of both HRM and KM are becoming more aware of the link between KM initiatives and people-related issues, there are considerable research gaps in understanding and identifying the linkages between HRM practices and KM initiatives (Oltra, 2005), and, in particular, the method by which HR practices influence employees' behaviour to actively participate in knowledge sharing activities in workplaces. This thesis addresses these research gaps by empirically testing the effect of HR practices on knowledge sharing behaviour.

Further research is required in the field of HRM in order to better support KM initiatives (Lado & Wilson, 1994). Although, most of the KM literature discusses the antecedents of employees' knowledge-sharing, empirical research is required to explore how these employees' knowledge sharing activities provide benefits to employees in terms of their learning capability (Minbaeva, Makela, & Rabbiosi, 2012; Oltra, 2005; Swift, Balkin, & Matusik, 2010). Although several researchers suggest that HRM and KM have a positive relationship, little research has explored individual related issues (Jimenez-Jimenez & Sanz-Valle, 2012; Oltra, 2005) and merits further investigation (Minbaeva et al., 2009).

In addition, several knowledge management (KM) initiatives, such as managing employees' knowledge in a collaborative environment, continue to be marginalised, while technological and software related issues dominate the organisational agenda. Even though organisations encourage employees to share their knowledge with other colleagues, some employees are reluctant to share their experiences and personal knowledge. Lack of interpersonal trust among employees is an important antecedent of poor knowledge-sharing (Connelly, Zweig, Webster, & Trougakos, 2012). There is also little empirical research to test the

circumstances of employees' collaboration especially in terms of affecting their knowledge sharing behaviour (Marrone, 2010).

1.4 Definitions of Key Concepts of Present Research

1.4.1 Employees' Knowledge

People gain knowledge through personal experience, and some of that knowledge is tacit which cannot be easily expressed or documented. Polanyi (1958) defines tacit knowledge as a type of knowledge that cannot easily be codified. Baumard (1999) complements Polanyi's ideology and suggests that tacit knowledge exists only in people's minds, and this is far greater than any information that is passed on to others.

Due to globalisation and the knowledge economy, knowledge resources are gaining acceptance as an asset together with other physical resources. Knowledge resources have a pivotal role where the work of organisations is mostly intellectual, and these are known as knowledge intensive firms (KIFs). Due to competitive pressures, organisations are focusing on managing their knowledge resources. Employees' knowledge can make an organisation different from its competitors by sharing, transferring and then utilising and implementing knowledge. For example, employees of higher education institutes, information technology (IT) industries and other KIFs have a pool of skilled knowledge workers who can perform better through their knowledge sharing in open discussions, forums, seminars or colloquiums. Employees' knowledge, as a critical resource, can provide competitive advantage to the organisation (Aulawi, Sudirman, Suryadi, & Govindaraju, 2008). In this thesis the term 'tacit knowledge' refers to employees' knowledge.

1.4.2 Knowledge Sharing

Knowledge sharing refers to knowledge sharing behaviours by employees. Knowledge sharing depends on employees having knowledge (source of knowledge) and employees

receiving that knowledge. Knowledge sharing is the basic way through which employees can contribute to knowledge application (Van den Hooff, & De Ridder, 2004).

Employees' knowledge that exists and remains with an individual is unproductive if it is not utilised or shared (Nonaka & Takeuchi, 1995). Employees' knowledge sharing activities transfer knowledge from individuals to group level and embed it within the organisational knowledge base (Haldin-Herrgard, 2000). This organisational knowledge base enables an organisation to improve its learning capability (Earl, 2001; Nonaka, 1994; Sveiby, 1997; Swart & Kinnie, 2009; Tuomi, 2003). Employees' knowledge sharing is influenced by interpersonal trust and management support that helps to build an environment of knowledge sharing, and enhances knowledge creativity (Amin & Roberts, 2008).

1.4.3 HRM Practices

Employees share their knowledge during everyday assignments in the workplace, particularly in knowledge organisations, through formal meetings and informal chats. A set of HRM practices can support KM initiatives such as employee knowledge sharing. A group of specific HRM practices can foster employees' interactions with other employees to utilise employees' skills and knowledge (Cabrera & Cabrera, 2005; Minbaeva 2003). This thesis focuses on how specific HRM practices (recruitment and selection, rewards and recognition, and employees' collaboration in terms of their participation) influence employees' knowledge sharing behaviour to best use the employees' knowledge. HRM practices can affect an employee's motivation and commitment through the development of unique characteristics that can help to improve organisational capability (Ahmad & Schroeder, 2003; Huselid, 1995). HRM practices have been defined in a number of ways such as best HRM practices (Pfeffer, 1996) and high-involvement practices (Lawler 1986). HRM practices influence employees' collaboration, and their interpersonal trust to utilise employees' knowledge (Balkin, & Matusik, 2010; Levin & Cross, 2004; Swift,). This thesis explores the notion that

specific HRM practices, through knowledge sharing, have an effect on individual and organisational capability.

HRM practices used in this thesis are monetary rewards and recognition. Monetary rewards refer to the employee's belief that he or she is going to be financially compensated for knowledge sharing. The concept of recognition is used in terms of having one's reputation enhanced and is the extent to which the employee values the status of an expert through sharing knowledge. Employees may share knowledge to help others or to improve their own reputation (Kankanhalli, Tan, & Wei, 2005),

1.4.3.1 Employees' Collaboration

The term 'employees' collaboration', used in this thesis, refers to employees' engagement and participation within an organisation. The word 'collaboration' is derived from co-labour where participants have shared goals. This thesis uses the term 'employee collaboration' as an HRM practice when employees engage in face-to-face interactions and work together informally and formally in their organisations.

This thesis uses the term "collaborative practices" in the final model figure 11. Collaborative practices are the employees' beliefs relating to knowledge sharing norms within their organisations and relate to knowledge sharing behaviours by others at their organisations. Collaborative practices are more effective in an informal set-up (Ipe, 2003). Collaborative practices for an employee may be high even if the employee is not involved in knowledge sharing.

1.4.3.2 Trust

The term 'trust' used in this thesis refers to employees' interpersonal trust and trust in the management of their organisations, and Sveiby (1997) suggests that trust is the bandwidth

of communication. This thesis discusses trust as an antecedent of employees' knowledge sharing. The concept of trust in this thesis is based on an employee's trust in his or her colleagues and in management. Trust describes the extent to which an employee is prepared to put himself or herself in a vulnerable position with respect to his or her colleagues, and in respect to management.

1.4.4 Organisational Capability

In this thesis, the term 'organisational capability' is defined in terms of organisational innovation capability and organisational knowledge capability. Innovation capability refers to how organisations can provide new products/services to satisfy their customers (Shu-hsien, Wu-Chen, & Chih-Chiang, 2007), whereas organisational knowledge capability refers to the organisational tools, systems and operating philosophies that can store employees' knowledge and enhance the flow of knowledge within an organisation from one level to another (Youndt, 2004). More recently, Grant (2013) argued that the concept of organisational capability is related to organisational knowledge. The concept of organisational capability helps to understand organisational knowledge in terms of the products and process activities to measure productive capability. In this thesis, the term 'organisational capability' was removed in the final model (see Figure 11).

1.4.5 Individuals' Capability

Individual capability refers to the employee's on-going contribution to his or her organisation's sustained competitive advantage. The term 'individual capability' in this thesis is used in terms of employees' personal development. Employees improve their learning and develop skills by sharing knowledge with other colleagues. Knowledge sharing in organisations also helps to improve employees' personal development by validating their knowledge. Validation of knowledge occurs when colleagues who receive the knowledge utilise it and provide feedback to the knowledge source.

1.4.5.1 Linkages Between Organisational and Individuals' Capability

Organisational capability is linked to the employees' capability to work together and learn from each other. Employee collaboration can develop organisational capability (innovation capability) through knowledge sharing. When employees collaborate in collecting and sharing knowledge, they learn from other colleagues and eventually knowledge creation takes place (Borjesson, 2011). Organisations trust their employees to collaborate with each other in order to share their knowledge. A collaborative culture in an organisation is a win-win situation, both at individual and organisational levels. At an individual level, it acts as a learning tool through which employees can enhance their skills. At organisational level, a collaborative culture influences employees' learning through sharing and creating new skills, and eventually it can improve the organisation's innovation capability. Individuals' learning may have a positive effect on employees' intentions to remain in their workplace, ultimately improving the organisation's knowledge capability by maintaining its human capital pool (Egan, Yang & Bartlett, 2004).

1.5 Proposed Model and Research Objectives

The proposed model of this thesis is designed using existing literature. The literature is reviewed from the field of HRM practices, employees' knowledge sharing and KC at both individual and organisational level. The rationale of the proposed model is provided in Chapter 2 of this thesis where theoretical and empirical literature has been reviewed. The proposed model is presented in Figure 2. All the latent constructs in this research are based on employees' perceptions within organisations.

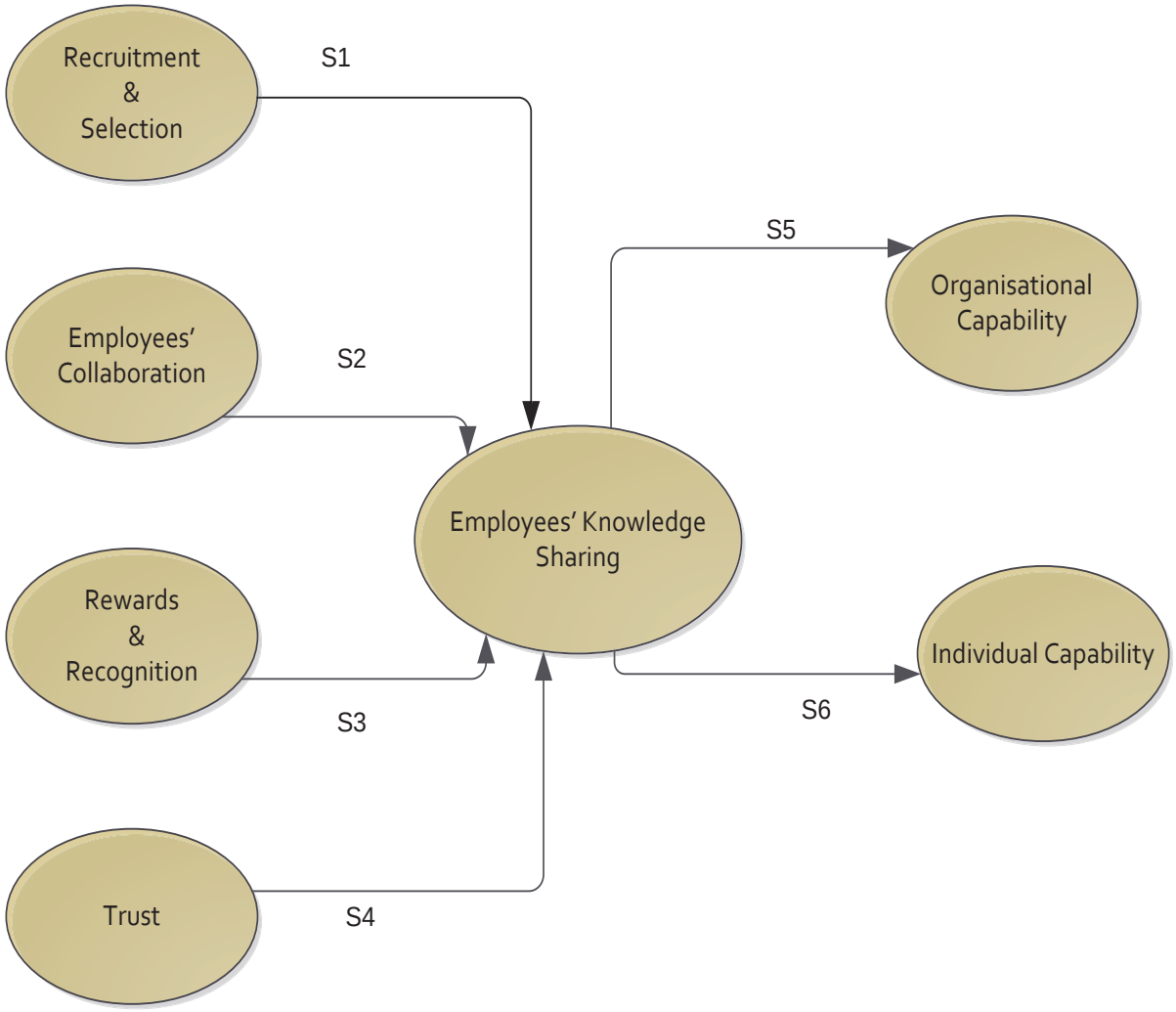

Figure 2: Proposed model

One of the objectives of this thesis is to understand and identify employees' perceptions about the impact of HRM practices and knowledge sharing antecedents on employees' knowledge sharing behaviour (Trust is a knowledge management enabler in Figure 2). To achieve this objective, this thesis proposes three research questions and formulates-related hypotheses. The detail regarding the formulation of these hypotheses is in Chapter 3 of this thesis.

Research Question 1

Is there a causative relationship between specific HRM practices and employees' knowledge sharing within organisations?

S1: *Employees' recruitment and selection have a positive effect on employees' knowledge sharing behaviour.*

S2: *Rewards and recognition have a positive effect on employees' knowledge sharing behaviour.*

S3*:* *Employees' collaboration in terms of their participation has a positive effect on employees' knowledge sharing behaviour.*

Research Question 2

Is there a causative relationship between trust and employees' knowledge sharing practices? To answer the research question, this thesis has formulated the following hypothesis to test any causative relationship:

S4: Trust has a positive effect on employees' knowledge sharing behaviour.

The second objective of this thesis is to understand the outcomes of knowledge sharing in terms of organisational and individual capability. To achieve this, the following research question has been formulated:

Research Question 3

Is there a causative relationship between employees' knowledge sharing and organisational and individual capability? To answer the research question, this thesis has formulated the following hypotheses to test any causative relationships:

***S5**: Employees' knowledge sharing has a positive effect on organisational capability.*

S6: *Employees' knowledge sharing has a positive effect on individual capability.*

1.5.1 Research Approach

To address the research questions of this thesis, a survey questionnaire was designed for the purpose of data collection from Pakistani organisations. The survey comprised demographical questions, and questions regarding employees' perceptions about HRM practices, trust, employees' knowledge sharing, organisational capability and individual capability. Respondents were asked to answer the questions on the five point Likert scale, ranging from '1 = Strongly Disagree' to '5 = Strongly Agree', which was designed to measure the constructs of this thesis. Questionnaire design and administration is discussed in Chapter 4.

1.6 Research Contribution

As discussed earlier, the initial focus of KM research was on technology. However, a decade ago, the importance of employees who own the knowledge in an organisation was recognised. This thesis contributes to the research field of HRM in relation to KM in a number of ways.

The first contribution links specific HRM practices that facilitate the causative relationship between employees' collaboration and knowledge transfer. Whilst previous research has taken a broad perspective on the role of employees' collaboration (Tsai & Ghoshal, 1998), this thesis demonstrates that both HRM and KM are interlinked and support each other, but both are emerging research concepts (Edvardsson, 2008; Jimenez-Jimenez & Sanz-Valle, 2012; Lam, Tan, Fong, & Ng, 2011). Researchers in the field of business and management suggest that most knowledge resides in an individual's brain. Therefore,

knowledge sharing should be people-driven rather than driven by technology (Cross & Baird, 2000).

This thesis focuses on the employees of 19 KIFs from two Pakistani business sectors. The employees are knowledge workers who are the owners of their knowledge. The concept of knowledge ownership and who owns the knowledge, particularly, employees' knowledge that resides in individuals' heads, in organisations is debatable. Jordan, and Jones (1997) suggest that some individuals believe that their knowledge is as personal as their own identity and need to be willing to pass it on to other members, whereas others consider their knowledge has no strong personal connotations and may, in fact, be improved by sharing it within the organisation. Organisations can influence employees' behaviour regarding their knowledge sharing through different means; for instance, through inter-departmental collaborations, teamwork, building trust and incentives. Such methods can improve the employees' knowledge sharing culture, and eventually both employees and the organisation will benefit.

Recently, an online poll asked about employees' knowledge ownership in organisations. The result shows employees mostly own their knowledge. However, knowledge is created communally within organisations through employees' knowledge sharing. For instance, knowledge sharing in teams and through other informal interactions becomes organisational knowledge and cannot be separated. Employees learn through different knowledge sharing activities, on-the-job training and learning by doing, which require a willingness of the part of the employees to share knowledge with other colleagues (Milton, 2007). The term 'knowledge owner' in this thesis focuses on employees' knowledge, and the term 'organisational knowledge' is used when knowledge is shared and transferred from one level to other.

Previously, several researchers investigated the employees' knowledge sharing behaviour, based on the perceptions of CEOs and top management. The perceptions of top management can lead to knowledge sharing through authority and control of management. However, this study focuses on employees' perceptions about HRM and KM relationships. This thesis is based entirely on employees' perceptions, and not on those of managers and CEOs (informants). The results should be viewed through the lens of employee perceptions in knowledge intensive organisations. The thesis' findings are helpful in understanding the links between HRM and KM from the employee perspective.

This thesis empirically tests the proposed model by examining the impact of HRM practices on knowledge sharing behaviour and knowledge sharing outcomes. This research measures the HRM practices based on knowledge sharing activities by combining the study of HRM with KM in a knowledge-intensive context. The inclusion of individual capability allows for testing the possibility that knowledge sharing plays a vital role in influencing employees' perceptions of their own professional and personal development through HRM practices (Kang, et al., 2007).

As discussed earlier, in Section 1.1, most of the research in Pakistani KIFs focuses on KM and its antecedents only. There is little research in the field of HRM and KM in Pakistani knowledge organisations. This thesis examines the effects of HRM practices on employees' knowledge sharing behaviour and tests the knowledge sharing outcomes in terms of organisational and individual capability.

1.7 Limitations of this Thesis

Every research investigation has its limitations, this thesis' research limitations are discussed in detail in Section 6.5; few limitations are highlighted in this section. The concepts of KM, HRM and KM in organisations are relatively new in the Pakistani environment. Most

employees were not aware of a KM philosophy due to the lack of previous research in the field of HRM related to KM in the Pakistani context. Another factor that may have caused the low response rate is the length of the questionnaire. One of the major limitations during data collection was poor access to organisations due to the catastrophic flooding in Pakistan in 2010 when the primary focus of several firms was charity - rehabilitating their employees to meet their targets due to delays caused by the flooding.

In addition, advanced statistical applications, for instance, structural equation modelling (SEM), has facilitated researchers to unravel more complex relationships than was previously possible. Although the results are persuasive, there are some limitations due to the small sample size of the data set, and thus they should be interpreted with some caution. This thesis revised the proposed model based on exploratory factor analysis results and designed a structural model, and also finally designed an alternative model for better model fit. The alternative should be considered as tentative until cross-validated, using a different set of data.

1.8 Overview of Thesis Structure

This thesis is organised into seven chapters, followed by references and appendices. This chapter provides a brief background of knowledge, knowledge management and HRM concepts, and discusses briefly the positioning of this research thesis. This is followed by the rationale of the research. This chapter presents a proposed model and research objectives, followed by research contribution and research limitations. Finally, this chapter presents an overview of the thesis structure followed by a chapter summary.

Chapter 2 reviews the literature relevant to HRM, KM and KC to formulate research hypotheses and to develop a clear direction for the empirical work. This chapter provides

an overview of the conceptualisation of knowledge, the types of knowledge, and the knowledge-based view of the firms (KBV). Chapter 2 then moves on to discuss conceptualising HRM in organisations and the resource-based view of the firms (RBV). Chapter 2 then compares both KBV and RBV theories in the context of knowledge sharing in the organisations. This chapter reviews the literature regarding seven latent constructs (LCs) of the thesis, and identifies several research gaps that provide the basis for the development of a proposed model of this thesis. Finally, Chapter 2 provides discussion and conclusion of the literature reviewed.

Chapter 3 discusses the main research questions and the need for hypotheses that are linked to the theoretical and empirical literature reviewed in Chapter 2. This chapter focuses on the philosophy of the research framework and presents the operationalisation of seven LCs present in the proposed model. The operationalisation of LCs provides a platform to select a suitable research methodology for data collection and data analysis.

Chapter 4 presents an appropriate research methodology, data collection and data analysis strategy that are based on the literature reviewed in Chapter 2 and the research framework discussed in Chapter 3. Two business sectors, higher education institutes and telecommunication, were chosen due to their knowledge capability and growth in Pakistan. Chapter 4 discusses different paradigms and related research methods. The data analysis strategy includes a descriptive analysis, and a multivariate analysis. The descriptive analysis provides the demography of the respondents whereas the multivariate analysis shows exploratory factor analysis, confirmatory factor analysis and structural model results.

Chapter 5 provides an overview of the statistical techniques used in this thesis, and reports the results. Before analysing the multivariate data analysis, the demographical data analysis

is discussed. Initially, an exploratory factor analysis (EFA) is performed and factors are extracted based on examination of a graphical scree-plot and parallel analysis. A measurement model using confirmatory factor analysis (CFA) was designed and tested for model fit using statistical software - Amos version 19. On the basis of the measurement model results, a full mediated structural model is tested followed by an alternative model and model comparison. Finally the chapter concludes with a summary of the results of this thesis.

Based on Chapter 5's results, Chapter 6 discusses the findings. This chapter investigates three sets of causative relationships of the model. The three sets are, firstly, the effect of specific HRM practices on employees' knowledge sharing behaviour; secondly, the effect of interpersonal trust on employees' knowledge sharing behaviour; and, thirdly, the effect of employees' knowledge sharing on individual and organisational capability. These results are based on employees' perceptions about HRM/KM relationships. This chapter discusses the contribution to theory and research limitations. This thesis suggests implications for managers and professionals through the lens of research limitations. Finally, opportunities arising for future research are discussed.

Finally, Chapter 7 presents the summary of this thesis. This chapter highlights the key findings and the contribution of this thesis, discussed through the relationships of HRM with KM and capability constructs. The main objectives of the thesis are reviewed. This chapter discusses the implications of this study in the field of HRM in relation to two business sectors of Pakistan.

This thesis' findings are beneficial to researchers, practitioners, scholars, organisational leaders and employees. The findings are also helpful for those interested in organisational structure and relationships across organisations in the context of knowledge. These thesis

findings can be helpful for developing economies because employees' perceptions about HRM and KRM are not typical of what happens in developed economies. These thesis results may help Pakistani policy makers in the development of individual capability.

1.9 Chapter Summary

This chapter provides a brief background of the research topic, including the concept of KM and HRM, and how HRM and KM are linked in the current business environment. The chapter provides research contributions and the rationale of this research. Important concepts used in this thesis are briefly defined. Finally, this chapter provides an overview of the structure of this thesis. The following chapter reviews the existing literature regarding latent constructs of this thesis, and provides a base for the development of the hypotheses.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides a critical review of literature regarding the role of HRM practices with regard to employees' knowledge sharing behaviour within organisations. The purpose of this chapter is to explore how specific HRM practices can contribute to employees' knowledge sharing behaviour and thereby add value to organisations through improved individual and organisational capability. All of the sources cited in this chapter either reported original empirical research relevant to the issue that warranted their inclusion or involved a substantial literature review and discussion of the issue.

This chapter discusses the conceptualisation of knowledge and employees' knowledge, known as tacit knowledge. The relationships between tacit and explicit knowledge are highlighted in organisations following the knowledge based view of the firm (KBV). The discussion then moves on to the conceptualising HRM practices followed by the resource based view of the firm (RBV). These two theoretical views are compared and discussed in the context of knowledge sharing which is the central part of the thesis. Next, the latent construct of the thesis is reviewed followed by the rationale of the research. Finally a discussion and conclusion of the literature review are presented.

2.2 Conceptualising Knowledge in Organisations

2.2.1 Knowledge

In recent years, organisational dependency on bureaucratic control over resources to obtain superior performance has shifted from physical resources to knowledge and skills (Nag & Gioia, 2012; Thite, 2004). The reasons for that shifts is due to recognising the knowledge as

not only information but a resource with asset value which can help organisations to function more effectively (Davenport & Prusak, 1998; Sveiby, 1997). Sveiby (1997), Davenport and Prusak (1998) are pioneer researchers in the field of KM, who highlighted the values of knowledge, particularly individuals' (employees') knowledge in organisations.

For instance, in law firms, knowledge regarding the needs and interests of the clients is in the form of an asset that resides in the mind of employees, and which provides competitive advantage to these organisations. Employees gained their knowledge through their experiences, intelligence, and from codified (documents) knowledge. One of the ways to make employees knowledge more effective is when it is shared with other members in organisations. Hansen, Nohria, and Tierney (2000) contributed to KM research by suggesting that employees' knowledge sharing is one of the key initiatives to managing employees' knowledge in work places. Through the employee's lens, for instance in the telecommunication sector, employees perceive that their knowledge has an asset value in emerging technologies, and their knowledge sharing related to technical skills can help both themselves and their organisations to survive in this dynamic business environment (Wei, Choy & Yeow, 2006). More recently, Shamsie and Mannor (2013) conducted an empirical research and suggest that knowledge, as a resource, is one of the drivers of innovation. In the current knowledge economy, the need to obtain competitive advantage, together with other resources, employees' knowledge is considered to be a critical resource that can help organisations. Therefore, in order to compete on the global business stage, a review article suggests that knowledge management initiatives, for instance, knowledge sharing, should focus more on people and use information technology (IT) as a supportive tool (Kankanhalli, Tanudidjaja, Sutanto, & Tan, 2003).

2.2.2 Properties of Knowledge

The nature of knowledge in organisations has been divided into types and levels of knowledge. There are two main types of knowledge; it is either explicit or tacit in nature (Nonaka & Takeuchi, 1995). The focus of this thesis is on employees' knowledge, and the next section discusses the employees' knowledge that resides in the human brain, followed by a brief comparison of tacit and explicit knowledge in the workplace.

2.2.3 Employees' Knowledge (Tacit Knowledge): A Philosophical View

As discussed in Section 1.1, tacit knowledge is hard to codify, for instance, how can someone be explicit about how to ride a bike, teaching piano, or coaching sports skills? This thesis focuses on integrating employees' tacit knowledge to improve the employees and organisational capability within organisation. Employees knowledge (tacit knowledge) being a critical resource can also improve organisational knowledge and innovation capability through knowledge sharing initiative (Aulawi, et al., 2008; Cavusgil, Calantone, & Zhao, 2003; Goffin & Koners, 2011; Shamsie & Mannor, 2013). As explained in Section 1.1, competitive advantage refers to the edge an organisation has that it uses to beat its competitors in the market. In the current knowledge economy, organisations, particularly KIFs, that have skilled and experienced employees, cannot obtain competitive advantage until organisations utilise their employees' knowledge.

Soliman and Spooner (2000), in their review article, highlight the importance of managing employees' knowledge in organisations:

> "The successful implementation of new technologies is dependent on many factors including the efficient management of human resources. Furthermore, recent research indicates that intellectual assets and resources can be utilised much more efficiently

> and effectively if organisations apply knowledge management techniques for leveraging their human resources and enhancing their personnel management." (p 337)

Moreover, Soliman and Spooner (2000) critically highlight the limitation of a complete reliance on technology, and the utilisation in knowledge management initiatives. They suggest that technology can add information. However, occasionally, lack of skills and naivety in respect of the latest technological tools can create conflicts and problems before providing solutions in organisations.

Technology can support the knowledge exchange process but cannot be used as a supplement of human applications in KM due to its limitations (Toffler, 1990). However, these research scholars suggest the limitations of two decades ago were when the technology was mostly related to machinery and offices. The current technological revolution, including online social platforms, online tools and tutoring, is more reliable, effective and fast, and has changed the process of knowledge sharing. Technology can support knowledge-sharing activities in various ways such as finding knowledge sources through online directories, databases and video conferencing. More recently, Holste and Fields (2010) tested the sample of managers and professionals and suggest that current technological tools cannot capture tacit knowledge because it depends on individuals' willingness to share and use their tacit knowledge in organisations. This thesis focuses on face-to-face, informal interactions where employees share their tacit knowledge due to trust in other colleagues, without the influence of management. This thesis acknowledges that technology acts as a supplement to, not a substitute for, individuals' tacit knowledge to improve knowledge sharing behaviour.

Organisations may lose employees' knowledge, if they fail to recognise it. Martins and Meyer (2012) find in their empirical study that when employees leave their workplace (for good)

they carry their skills and knowledge with them; consequently, their knowledge may be ineffective for organisation, if it is not shared and utilised. Therefore, it could be argued that the strategic value of employees' knowledge can be improved by providing a knowledge sharing culture in the workplace.

Most employees have a wealth of knowledge in the workplace. When employees' knowledge is not being shared and utilised in organisations, organisations cannot recognise the value of their employees' knowledge. When employees' knowledge is not recognised in organisations, managers may seek external expertise through the use of outsourcing to solve problems, which is an increased labour cost to organisations (Iqbal, Toulson, Tweed, 2012). Strategically wise organisations recognise the value of employees' knowledge to cut costs and obtain competitive advantage in the market. This cost-cutting strategy, through recognising and facilitation of employees' knowledge sharing, can benefit organisations in general. It also provides benefits to employees who own the tacit knowledge. At the employees' level, by sharing their knowledge, employees may get valuable feedback from other colleagues and managers. Positive feedback from colleagues and managers may validate their tacit knowledge and boost the confidence of individuals who own the tacit knowledge in organisations (Davenport & Volpel, 2001). This idea can help to resolve the misconception that knowledge is power and that sharing knowledge can lead to losing power and authority in organisations. Similarly, at a strategic level, the validity of employees' knowledge that is recognised by organisations not only boosts their confidence but may also be helpful in strengthening an employee's employability due to their knowledge in any organisation. Hence, at a strategic level, knowledge sharing helps to improve employees' personal development through knowledge validity and feedback. One of the objectives of this thesis is to investigate and understand the impact of knowledge sharing on individual capability (in terms of personal development).

2.2.3.1 Tacit Knowledge in Relation to Explicit Knowledge

As shown in Table 1 explicit knowledge is a codified knowledge that can be easily shared and transferred in the workplace. Tacit knowledge, however, is hard to codify (Cavusgil, et al., 2003; Kikoski & Kikoski, 2004). Tacit knowledge is subjective in nature, gained from experience and practices, whereas explicit knowledge is objective and based on theories that can be documented (Nonaka & Takeuchi, 1995).

Table 1: Types of Knowledge

Tacit knowledge	Explicit knowledge
• Subjective • Based on experience • Practice	• Objective • Based on information • Theory

Source: (Nonaka & Takeuchi, 1995)

The influence of the distinction between explicit and tacit knowledge on knowledge management (KM) studies has been extensive. Explaining Polanyi's (1983) philosophical description of knowledge, Nonaka and Takeuchi (1995, p.59) differentiated 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 and systematic language". The thesis acknowledges that employees' tacit knowledge is built up on explicit knowledge; the scope of this thesis is to investigate and understand employees' tacit knowledge sharing.

2.2.4 The Knowledge-Based View of the Firm

The knowledge based view of the firm (KBV) recognises knowledge as a strategically significant resource of an organisation. Two decades ago, Spender (1992) highlights the importance of knowledge and suggests that knowledge is one of the factors of production and main source of productivity. The economic value is related to knowledge integration, generation and application to the product and services. Later, Grant (1996) argues that knowledge, in terms of employees' tacit knowledge, is considered precious in achieving competitive advantage in the market (Grant, 1996). Together with employees' knowledge as a resource in KBV, knowledge also resides in organisational structures, policies and culture (Grant, 1996; Meso, & Smith, 2000). In the field of innovation, in terms of new products and services, depends on individuals' prior knowledge, although most of the previous research has ignored the tacit aspect of knowledge (Goffin & Koners, 2011). More recently, Grant (2013) reviews and suggests that the knowledge-based view of the firm had been proposed almost two decades ago, but this concept has only gained acceptance recently. The reasons for this may be that organisations focus on their resources, both tangible and intangible, and little attention has been given to the integration of tangible and intangible resources. The role of organisation in KBV acts as a facilitator to integrate its resources effectively. Moreover, Grant highlights the decision-making issues in KIFs. In traditional organisations, the decision-making process is based on a hierarchy, where routine matters are delegated to a lower level and decision rights remain with upper level management. On the other hand, in KIFs, employees' knowledge has a resource value and provides opportunities to employees to utilise and share their knowledge by taking part in the organisational process and decision-making (through decentralization, where more knowledge inputs at different levels) that can improve organisational knowledge capability.

2.2.5 Knowledge at Individual and Group Levels

Knowledge resides both at an employee level and an organisational level (De Long & Fahey, 2000). In an empirical study, Han, Chiang, and Chang (2010) suggest that although employees represent the primary level in terms of where knowledge exists in an organisation, the sharing of knowledge between employees is essential for the transfer, distribution and further creation of knowledge. Employees' knowledge plays an important role in organisational performance because the knowledge embedded in employees (tacit knowledge) acts as a lever to improve organisational capability. This can be done when individuals' knowledge is exploited or shared and is combined with the explicit knowledge of organisations. All the physical assets within an organisation require human application in terms of individual knowledge and skills to generate value. Hence, employees sharing their knowledge with other colleagues can enhance organisational capability, thus being more competitive in the current dynamic business environment (Fitz-enz, 2000).

Employees' knowledge sharing can be effective through formal or informal collaboration (Han, et al., 2010; Sitlington & Marshall, 2011). Employees' collaboration through informal interactions includes face-to-face meetings where employees can interact and discuss with colleagues (Holste & Fields, 2010). The advantage of informal face-to-face interactions is that it can foster collaborative culture and knowledge sharing can take place

While the importance of knowledge sharing between employees has been highlighted, organisations still overlook employees' knowledge and its sharing. Kogut and Zander, (1992) suggests that organisations place little importance on employees' knowledge, particularly employees' knowledge sharing as a mean to enhance organisational knowledge and productivity. A review by Felin and Hesterly (2007) suggests that in management research, little attention has been paid to the locus of knowledge (where actually knowledge resides),

as most managers perceive that knowledge creation and sharing is a collective experience and ignores knowledge at the individual level. More recently, He and Wei (2009) state that organisations may overlook the locus of knowledge due to the primary focus on organisational productivity, profitability and to gain maximum market share.

Some research scholars suggest that locus of knowledge in organisations resides in collective activities, and knowledge is a collective resource for creating new knowledge (Kogut & Zander, 1992; Nahapiet & Ghoshal, 1998; Teece et al., 1997). However, these scholars ignored the primary source of knowledge which is through individual employees, being the tacit knowledge that resides in their minds. Simon (1991), and later Grant (1996), highlighted that employees are the primary locus of knowledge in organisations because the employees are actors who create new knowledge by utilising and sharing their tacit knowledge with other organisational members.

Simon (1991) critically reviews organisational and human learning and suggests that..."all organisational learning takes place inside human heads; an organisation learns in only two ways: (a) by the learning of its members, or (b) by ingesting new members who have knowledge the organisation didn't previously have" (p.125). Hence, knowledge is a resource, and sharing employees' knowledge plays a key role in knowledge sharing and creating new knowledge in organisations.

In summary, this section discusses the conceptualising of knowledge in organisations, and the question arises why knowledge is gaining acceptance as a resource that has an asset value? To answer this, knowledge is always important for organisational success, Kogut and Zander (1996) define the firm as…"a social community specializing in the speed and transfer of knowledge" (p. 503). Due to globalisation, emerging technologies and rapid progress, the value of knowledge has gained a significant role in the last three decades as a

resource in organisations (Prusak, 2001). Another reason for considering knowledge as a resource is the competitive pressure on organisations to drive them to manage the knowledge resource efficiently to ensure the flow of knowledge in organisations (Spender & Scherer, 2007).

KM scholars argue that there is a need to develop a mechanism for effective KM initiatives, particularly employees' knowledge sharing in organisations. KM is taxonomy of management that needs suitably motivated employees to share their knowledge in the organisation. In the context of knowledge sharing, technology plays a vital role, because transferring, moving knowledge (data) among employees is not possible without the aid of technology (Spender & Scherer, 2007). This argument may be valid for information and data sharing. However, the term 'knowledge' used in this thesis refers to employees' knowledge that can be shared effectively through the communication of motivated employees in organisations.

To share tacit knowledge, organisations can motivate and influence their employees by different means, for instance, providing a collaborative environment, team assignments and informal interactions. These knowledge sharing strategies may also help in cutting costs when using knowledge as a strategic asset. Organisations can cut costs by recognising their human capital pool and tapping the knowledge from this pool to fix those problems that match their employees' experiences. The identification of the human capital pool within organisations may also help organisations to rely on their employees rather than seeking help through outsourcing. Organisations can manage knowledge to develop their human capital pool through employees' collaboration, where employees can work together to learn from one another and to achieve shared goals set by management.

Knowledge can be managed in organisations. However, managing knowledge is different from traditional management techniques. Managing employees' knowledge may be effective

by managing their behaviour in the workplace, whereas their knowledge is a result of everyday behaviour. The thesis focuses on managing knowledge through management support where managers facilitate employees' knowledge sharing behaviour.

The term 'knowledge' is a justified belief, which is a traditional Western epistemological definition, based on managers' perceptions to manage knowledge in organisations (Gourlay, 2006). In a critical commentary, Goulary (2006) explains that managers' beliefs about knowledge are that knowledge is only created when managers choose which knowledge is useful and which represents organisational objectives and goals. Managers select or evaluate knowledge based on its relevance, suitability and attractiveness to organisational goals. Hence, the term 'tacit knowledge' is the interpretations of managers in organisations. However, knowledge is defined, shared and created against the interpretations of the managers. Continuing with this argument, Goulary (2006) complements Lado and Wilson (1994) by concluding that managers may not decide how to manage tacit knowledge in organisations.

Recently, Von Krogh, Nonaka, and Rechsteiner (2012) in their review suggest that the actions and decisions made by management are according to the objectives, policies and vision of their organisations and may have a negative impact on employees' behaviour. Gourlay (2006) proposes that tacit knowledge in organisations can be managed by leaving the knowledge with employees in the organisations (for instance, employees' collaboration). One way of employees' collaboration in organisations is through team assignments, where employees interact, learn and utilise the learned skills in workplaces to achieve set targets by managements.

Employee collaboration acts as a driver of KM in organisations and the need for collaboration in the current knowledge economy is to socially engage individuals. Previously

employees' interactions and engagement were not important because they used to work in isolation to perform labour-intensive jobs (Spender & Scherer, 2007). One of the objectives of this thesis is to test the impact of employee collaboration on employees' knowledge sharing, which will be discussed in Section 2.5.3.

The role of technology is vital in the context of employees' collaboration for tacit knowledge sharing. Polanyi (1983) suggests that we may know more than we write or speak because some of our knowledge remains unexplained, and this needs to be explored in the workplace, particularly in the KIFs. This tacit knowledge has an asset value in organisations along with other physical assets. To explore this asset, several research scholars focus on the use of technology, but technology has its own limitations and may create conflicts before providing solutions if used as a substitute for human resources.

This thesis acknowledges that technology has its importance in the current business environment. However, it should be considered as a supplement to and a facilitator of employees' knowledge (tacit knowledge) and not as a substitute for employees in organisations. This thesis focuses on the sharing of employees' knowledge through face-to-face interactions without the aid of technology. Sharing employees' knowledge requires employee motivation through the use of good HRM practices. HRM practices can influence and motivate employees to share and utilise their knowledge within organisations.

2.3 Conceptualising Human Resource Management

Almost three decades ago, several organisations changed their management practices, due to inefficiencies in traditional management administrative practices, in order to meet business demand. Traditional management practices relied on methods that lacked objectivity, technical sophistication and scientific rigor (Vaughan & Mclean, 1989).

Management practices were switched to people management practices that encapsulated the principle that employer and employees share a common interest in the workplace, with the definition of success being the satisfaction of both the organisation's customers and shareholders. The role of HRM is critical and serves as a tool that can help to integrate knowledge in the workplace to obtain competitive advantage (Edvardsson, 2008).

In the field of HRM, there are two basic philosophies: the unitarist and the pluralist approaches to HRM. The unitarist approach is related to industrial organisation and considers one source of authority and interest in organisations. The pluralist approach, on the other hand, considers that there are multiple interests and goals of different stakeholders in organisations (Fox, 1966). The HRM pluralist view was defined by Guest (1987) to describe the mixture of a high HRM priority and a high industrial relations priority in organisations. Later, Kochan (1998) argued that the industrial relations theory is built on an assumption that conflicts of interest and common goals exist between managers and workers. For example, an organisation's survival, profit and growth are common objectives. However, other objectives may be in conflict (for instance, salaries, job security and working conditions).

Kochan (1998) found through a case study that these two models of HRM are based on a view of human behaviour and management control strategies. Kochan (1998) suggests that the hard HRM model considers strict management control to manage the workforce in organisations. The hard model considers human resources only in terms of headcount and focus in this version is on the economic growth of organisation. On the other hand, the soft HRM model is associated with the human relations and the utilisation of individual talents to improve human commitment without external (management) pressure (Truss, Gratton, Hope-Hailey, McGovern, & Stiles, 1997). The soft HRM approach, which considers employees as a resource and winning employees' hearts, may lead to organisational

success. Employees' knowledge sharing is related to the employees' behaviour and their professional relationships with other members in organisation, therefore, soft version of HRM is more suitable in knowledge sharing context.

Guest (1999) surveyed workers' reactions to HRM in the organisations and found that employees are satisfied with the HRM practices (particularly with the soft version) and perceive that HRM can influence their motivation and productivity. One could criticise Guest's survey because it reports employees' reactions to HRM practices and considers employees as little more than physical resources (for instance, machinery and equipment) that can be replaced when required. This thesis focuses on employees as a resource, and their knowledge sharing may contribute to improve organisational capability. Hence, Guest's survey has overlooked employees' knowledge as a resource in the context of HRM.

More recently, Thunnissen, Boselie and Fruytier (2013) propose the HRM pluralist view in the context of employees' knowledge and suggest that to completely understand employees' knowledge, one should consider the whole organisation, because considering one aspect of organisation (for instance, the view of management only) may not provide an understanding of the value of knowledge from both the employee and organisational perspective. For example, Thunnissen, Boselie and Fruytier (2013) propose that talent in management could be viewed through the lens of individual employees as well as that at an organisational level. At the individual level, apart from financial rewards, individuals may efficiently participate in organisational activities for their personal development. However, at an organisational level, economic value and non-economic value (legitimacy) of employees' knowledge may be one priority. Although this review has postulated some good propositions, it merits further empirical investigation. This thesis empirically tests the relationship between employees' knowledge sharing and their personal development.

The pluralistic approach has been challenged by several scholars. For instance, Kaufman (2004) provides a comparison between the HRM and the industrial relations approaches. Kaufman suggests that HRM is a strategy that deals with employee governance through employee-employer relations led by management. An industrial relations approach emphasises employment relationships, pay and working conditions through collective bargaining and joint governance. Kaufman (2004) argues that the basic theme of HRM is to deal with employees and managers and to consider that there is some alignment between the parties, and if there is any conflict then management may lead and resolve the differences in the organisation.

More recently, Geare, Edgar and McAndrew (2006) conducted a survey among managers to investigate their view of HRM. They found that in employment relationships almost two-thirds of their managerial respondents considered employment relationships in their organisations to be unitarist. Therefore, they suggest that the unitarist approach is aligned with the HRM philosophy of holding HR managers accountable for the implementation of HRM practices in organisations. Nevertheless, their study does provide a view of HRM through the lens of managers only. Managers' perceptions are different from employees' perceptions because managers' perceptions (particularly line managers) are based on employees' actions related to results in organisations. As discussed earlier, Kochan (1998) suggests that perhaps there is an alignment between managers' and employees' perspectives regarding organisations' growth and productivity. However, other employees' objectives may be in conflict with managers. For instance, employees prefer their own personal development and learning whilst managers prefer to achieve desired results in organisations.

The HRM pluralist approach identifies the significant power imbalance between employees, managers and other stakeholders. Bingham and Duran-Palma (2014) review employment relations in the higher education sector and suggest that the pluralist approach may not

necessarily create a power imbalance in organisations, but there may be contrasting priorities that can cause conflicts between managers and employees. Organisations can mediate and improve the relationships between both parties to reduce their conflicts. The literature in the field of KM adopts a unitarist approach. Thunnissen, Boselie and Fruytier (2013, p.328) suggest that…"in the KM literature, the firm is presented as a unified actor, in which all actors systematically and unanimously work together to reach organisational goals, such as organisational flexibility and profitability". On the other hand, some scholars find a conflict of interest between an organisation and its employees, where organisations avoid employees' needs, and their goals and focus are on profitability (Martin & Schmidt, 2010). Hence, both views are discussed in the KM literature. However, most of the debate and discussion is at a conceptual level that requires empirical testing.

In essence, in the context of HRM, several scholars claim that employees and their organisations have common objectives and share goals; therefore, if this is true, the objectives of HRM practices are to win the employees' commitment to improve organisational productivity (Macky & Johnson, 2000; Whitener ,2001). Rudman (2002) suggests that…"In recent times, the unitarist frame of reference is a key assumption behind the theory and practice of HRM" (p.7). Although this thesis acknowledges the HRM pluralist approach, it actually focuses on a unitarist version of HRM in organisations. The influence of HRM practices is to be considered as an outcome for organisations, shareholders and for employees themselves (Greenwood, 2002). The propositions presented here in the KM context merit empirical verification. This thesis focuses on HRM and KM through the lens of organisations, and considers organisations as unified actors.

2.3.1 HRM Practices

As discussed in the previous section, HRM is a tool with which to integrate knowledge in organisations. A set of HRM practices can support KM initiatives such as employee knowledge sharing. A group of HRM practices can foster employees' interactions with other employees to utilise employees' skills and knowledge (Cabrera & Cabrera, 2005; Minbaeva 2003). Such Interactions in the workplace can help employees to improve their skills, knowledge and capability (Jerez-Gomez, Cespedes-Lorente, & Valle-Cabrera, 2005). The thesis focuses on how specific HRM practices (Recruitment and Selection, Rewards and Recognition, and Employees' collaboration in terms of their participation) influence employees' knowledge sharing to best use the employees' knowledge.

2.3.2 HRM in the Knowledge Context

The importance of HRM in the KM context has been emphasised in the previous sections of this thesis. Organisations should not focus solely on developing KM practices, but should also consider HRM as a tool along with KM to improve organisational capability (Edvardsson, 2008). Employees perceive that HRM practices in organisations are one of the major antecedents of knowledge creativity through the knowledge sharing process. Knowledge sharing benefits both individuals and organisations through improved knowledge capability (Ipe, 2003; Liao, Fei, & Chen, 2007; Lin, 2007).

Apart from HRM and KM linkages, HRM practices can restrict knowledge sharing process in the workplace, for example, job descriptions that only permit employees to perform a specific job irrespective of their potential (Iqbal, Toulson, & Tweed, 2011). Further, the lack of transparent rewards and recognition can also hamper the knowledge sharing processes in the workplace (Currie & Kerrin, 2003; Riege, 2007). There are significant gaps in the recognition of linkages between HRM practices and KM activities (Oltra, 2005). However,

these findings cannot be generalised because Oltra's study is a qualitative study in a case study setting in Spanish companies. Spanish culture may affect the results of this study. More recently, Jimenez-Jimenez, and Sanz-Valle (2012) in their empirical study, argue that future research is required to understand the employees' behaviour in the KM context because employees' behaviour is likely to structure the relationship between HRM practices and KM. Before discussing how this thesis addresses research gaps using LCs, the next section discusses the resource-based view of firms (RBV) and its linkages with KBV, followed by knowledge sharing in organisations, which is a central LC of this thesis.

2.3.3 Resource-Based View of the Firm

A firm can obtain competitive advantage by using a set of unique resources. The RBV suggests that resources and products are interlinked because the preparation of products requires the utilisation of different resources. Organisational resources can be tangible and intangible, for instance, brand name, skilled employees, machinery and efficient procedures (Wernerfelt, 1984). Wernerfelt, (1984) is a pioneer researcher who conceptualised the importance of resources as antecedents of firm performance and firm productivity, whereas Barney (1991) contributed to the subsequent development of the RBV approach and suggested that competitive advantage is dependent upon the utilisation of organisational resources that are valuable (company branding such as Apple), rare (Google's policy of social and professional development for its employees), inimitable (cannot be copied by other competing firms such as Apple's IOS software in Apple products) and non-substitutable (patents). Such resources can lead to optimal products in the market. Barney (1991) cited in Priem & Butler, 2001, defines resources in an organisation as rare (not easily available), valuable (in terms of contributing organisational performance), inimitable (cannot easily be replicated) and not substitutable (not moveable and cannot be acquired).

Both Wernerfelt (1984) and Barney (1991) have made influential contributions in the theoretical development of RBV. Priem and Butler (2001) evaluate both pioneer research works and suggest that Wernerfelt highlights the importance of resources along with diversification, whereas Barney presents a formal representation of the business-level, resource-based perspective through managing resources, including people.

RBV is a logical approach that focuses on a bundle of organisational capabilities. Based on its capabilities, an organisation can perform differently, using its precious and unique resources that are difficult to copy or be substituted by its competitors (Barney, 1991). Later, Lawson and Samson (2001) highlighted that organisations cannot compete in the market solely due to their new products, but through developing capability using precious resources to generate new products. Hence, the RBV approach puts the emphasis on people (employees) as a resource for the success of an organisation because employees have a significant role in the long term success of an organisation. Nevertheless, one of the limitations of RBV is that it considers knowledge as a generic term and overlooks the tacit part of employees' knowledge that can influence on organisation capability to develop new products and services.

The role of HRM is vital when the focus is on people, people skills and knowledge. The HRM literature mostly discusses HRM practices that can influence, motivate and retain employees through changing their behaviour in organisations (Schuler & MacMillan, 1984). In the context of RBV, Wright et al. (1994) argue that HRM practices used over time in a particular organisation may be inimitable to develop the human capital pool. For instance, they suggest that employees' engagement, interactions and their knowledge can help in building human capital pool. On the other hand, Lado and Wilson (1994) suggest that HRM practices may help to provide a competitive advantage but it is actually the HRM system that is different from individual practices and can be inimitable, unique and provide a sustainable competitive

advantage to organisations. In essence, Wright et al. (1994) suggest that in the context of RBV, HRM practices are unique in organisations and cannot be copied by competitors, whereas Lado and Wilson (1994) suggest it is actually the overall HRM system that is unique for organisations.

Later, Boxall (1998) has highlighted the advantages of both HRM practices and HRM system and has suggested that individual HRM practices may play a key role in developing talented and motivated employees in organisations; alternatively, the HRM system plays a key role in developing organisational capability. Lepak and Snell (1999) contributed to the research of HRM and RBV by proposing a theory that is related to strategic HRM based on RBV. They suggest that both inimitability and the value of skills are important in organisations. They suggest that HRM practices may be helpful for both employees and their organisations through developing a human capital pool based on individuals' skills and knowledge, and that human capital pool may also provide a competitive advantage to organisations.

Hoskisson, Hitt, Wan and Yiu (1999) contributed to strategic human resource management (SHRM) and proposed that initially the field of HRM and strategic human resource management (SHRM) were not initially developed for RBV. However, the RBV approach has been instrumental in the development of HRM and SHRM concepts. One of the reasons for this is the shifting of resources in the strategic literature from external factors (market position) to internal factors (people) in order to obtain competitive advantage. Hence, the importance of internal factors to obtain competitive advantage provides authenticity to HRM's claim that people are strategically important in organisational success (in terms of improving organisational performance and organisational capability). Hence, the conceptual development of SHRM and HRM is influenced by the RBV approach to motivate employees and to develop a human capital pool based on employees' skills and knowledge. The link between HRM practices, employees' knowledge and skills are highlighted. This thesis

focuses on employees' knowledge, particularly knowledge sharing as a KM initiative to bridge HRM practices and employees' knowledge.

Together with the importance of RBV, Priem and Butler (2001) in their review highlight some limitations of the RBV approach. One of the limitations of the RBV approach may be that it is too narrow and ignores the integration and co-ordination of key resources in an organisation (Spender, 1994). This limitation of RBV is further explained by Priem and Butler (2001) that the resource based view of the firm considers all resources in broad terms without focusing on how resources can be obtained how they interact with each other to improve the firm's competitive advantage. Another limitation of RBV is that knowledge is considered a generic source and overlooks the value of knowledge as an asset to be utilised and shared within an organisation (De Saa-Perez & Garcia-Falcon, 2002; Priem & Butler, 2001; Wright, Dunford, & Snell, 2001). The RBV approach focuses on unique and exclusive resources to obtain competitive advantage in the market; this thesis extends the RBV approach and focuses on employees' knowledge to improve both organisational and individual level capability.

2.3.4 KBV and RBV Linkages

The KBV approach in organisations is a subsequent development of the RBV approach and highlights the importance of unique resources. The KBV approach focuses on knowledge as a key resource and highlights the switch from manpower to brainpower (Grant, 1996). As discussed in Section 2.3.3, the RBV approach overlooks integration and co-ordination of resources in an organisation. This limitation is covered by KBV where knowledge is considered as the most important resource in an organisation, and the co-ordination and integration of knowledge is a key feature of KBV (Grant, 2002). Integrating, co-ordinating and sharing employees' knowledge are the key methods by which knowledge is created and disseminated between individuals, groups, and organisations (Baruch, 1999; Eisenhardt & Santos, 2002; Grant, 2002). Treating employees' knowledge as a resource in organisations

is a major key in gaining competitive advantage in the current knowledge economy (Lockett, Thompson, & Morgenstern, 2009; Nonaka, 1994). The knowledge-based theory has been built upon the resource-based approach, and which considers knowledge and skills as the most important asset within an organisation. The KBV of the firm is the development of the RBV of the firm, and both are linked. However, KBV argues that knowledge is a unique resource and organisations can integrate this rare resource through knowledge sharing activities to obtain a competitive advantage in the market.

2.4 Knowledge Sharing in Organisations

Both RBV and KBV highlight the value of employees as a resource, where KBV more specifically considers employees' knowledge as a unique resource. To integrate and co-ordinate employees' knowledge, sharing knowledge among employees may be one of the main strategies of knowledge transfer and knowledge creativity within organisations. Sharing knowledge requires frequent interaction, interpersonal trust and employees' collaboration (Aulawi, et al., 2008; Cabrera, 2006; Currie & Kerrin, 2003). Interpersonal trust is based on personal similarities between different individuals (Kristiina, Hanna, & Rebecca, 2007).

In KIFs, employees have unique knowledge (tacit knowledge) gained through their experiences and resides in their head. This knowledge can help other employees to work effectively through knowledge sharing activities. Knowledge sharing activities also help to transfer tacit knowledge between employees. Tacit knowledge is hard to codify and share as suggested by Haldin-Herrgard (2000):

> "Tacit knowledge cannot be given in lectures and it cannot be found in databases, textbooks, manuals or internal newsletters for diffusion. It has to be internalized in the human body and soul. Different methods like apprenticeship, direct interaction, networking and action learning that include face-to-face social interaction and

> practical experiences are more suitable for supporting the sharing of tacit knowledge" (p 359).

Another method of knowledge sharing among employees is through working in cross-functional teams. In cross-functional teams, employees of different departments work together on a project to achieve a specific goal. In such projects, employees share their experiences with other team members in order to complete the required tasks and the overall project (Aguinis & Kraiger, 2009; Noorderhaven & Harzing, 2009).

In some cases, knowledge sharing barriers exist where employees are reluctant to share their experiences and knowledge with other employees, keeping their knowledge to themselves. Knowledge sharing barriers may negatively affect the organisation (in terms of organisational knowledge capability) as well as the individual (due to expiry of their knowledge, if not updated by utilisation) (Riege, 2005). Due to lack of knowledge sharing support, organisations may well have a human capital pool (i.e. a talented workforce) but this pool is ineffective and may not support the organisation's continued growth in the market (Riege, 2005). To support knowledge sharing, managers may promote formal and informal social interactions such as cross-functional team activities, informal collaboration, and communities of practice that help in creating organisational knowledge (Noorderhaven & Harzing, 2009; Sitlington & Marshall, 2011).

The importance of employees' knowledge in organisations is vital. It is one of the most critical resources in improving organisational learning. However, as a scarce resource, it demands effective management through effective sharing among employees in the workplace. Employees' tacit knowledge sharing helps to build organisational knowledge that can lead to improved organisational learning capability (Aulawi, et al., 2008; Lopez-Cabrales,

Real, & Valle, 2011; Sveiby, 1997). Employees' knowledge cannot be effective for an organisation until it is shared and utilised.

Knowledge sharing is a process in which acquired skills and expertise are transferred between individuals (Davenport, 1997). Specific HRM practices support knowledge sharing that encourages other employees to attain knowledge, share it with other colleagues, and enhance the possibilities of creativity (Chieh Hsu, 2008; Ipe, 2003). Sharing diverse knowledge can enhance organisational capability through extended in-depth interactions, leading to a sharing of similar experiences between employees (Cohen & Levinthal, 1990). Knowledge sharing activities may include formal social interactions, such as team activities and opportunities for informal interactions that can provide support in developing human capital pools for ongoing learning within an organisation.

A human capital pool consists of skilled and experienced employees. A human capital pool can help organisations solve problems without seeking outside help. Such strategies can also help in building organisational knowledge, where employees' knowledge can be stored and documented within an organisation for effective utilisation as and when required (Sitlington & Marshall, 2011). Collaborative learning can take place, when employees are encouraged to openly discuss their experiences with their colleagues (Soliman & Spooner, 2000).

In the current business environment, due to the demand for a skilled workforce, employee turnover is comparatively high and gaps may appear in the organisational human capital pool that are difficult to fill or, perhaps inimitable. One method to avoid the human capital gap is by facilitating employees' collaboration that may be helpful in collaborative learning and reducing employees' turnover. One of the benefits collaborative learning is that skilled

employees may be more willing to improve their learning in the workplace (Clarke, Holifield, & Chisholm, 2004).

As discussed earlier in Section 2.2.3, ignoring the knowledge and skills of employees leads to ignoring the human capital pool of the organisation. The importance of employees' knowledge and knowledge sharing is highlighted in this section. Organisations can improve their knowledge capability by facilitating knowledge sharing between employees. Knowledge sharing can foster collaborative learning in organisations. HRM practices can enable employees' interactions to achieve competitive advantage.

It is important to select a certain group of HRM practices that enhance knowledge sharing among employees. The HRM practices that can be effective in supporting knowledge sharing behaviour include recruitment and selection, rewards and recognition (Cabrera & Cabrera, 2005). Similarly, subjective evidence along with a few empirical studies, suggest that trust and collaboration are vital elements to ensure employee willingness to share knowledge, information and ideas (Sveiby & Simons, 2002).

In summary, Section 2.4 focuses on knowledge sharing in organisations. Most of the literature supports the view that sharing employees' knowledge in organisations helps to improve individuals' knowledge (knowledge receiver) and organisational knowledge. Knowledge sharing, particularly in the informal set-up, may help individuals share and learn from other colleagues. Sharing knowledge may help to develop a human capital pool in the organisation. However, the question is how informal collaboration between employees' influences employees' knowledge sharing and what the benefits are to an individual (knowledge source)? Cabrera and Cabrera (2002) review knowledge sharing dilemmas and suggest that employees prefer to share knowledge in small groups. They suggest that employees perceive that sharing knowledge informally in smaller groups may be more

valuable and useable. One reason could be that on large formal platforms, there may be more voices and inputs, consequently, employees' perceive that their knowledge inputs may be lost. This thesis focuses on knowledge sharing in an informal set-up through face-to-face interactions that can increase knowledge efficacy.

There is also a dark side to knowledge management, in which employees consider their knowledge as power, and the basis for authority and employability in their organisation. Such negative thinking discourages employees from sharing knowledge because sharing knowledge means sharing power and losing authority. Haldin-Herrgard (2000) suggests that the perception of knowledge as power is due to the fact that knowledge is a valuable asset in the labour market. Employees may perceive that this power is not collective but relates to the individual through hoarding knowledge. In this case, there is conflict between organisations and employees over knowledge sharing. Moreover, some employees perceive they may gain more knowledge by hoarding what they know.

In fact, knowledge only has value and validity when it is applied and utilised. The value of knowledge is in its convenience and utilisation rather than ownership and control (Glazer, 1998). Knowledge sharing leads to individuals' learning, and learning may be a driver for knowledge sharing, particularly in KIFs. Individuals, as humans, are not perfect and most of the knowledge (that an individual need) may be with other individuals. Hence through knowledge sharing, one learns from other individuals' perspective, thus improving tacit knowledge. At an organisational level, it is vital to reduce knowledge hoarding behaviour. One way to reduce knowledge hoarding behaviour is facilitation of knowledge sharing through employees' collaboration, where employees' knowledge is shared, utilised and eventually it can improve employees' learning.

In practice, some organisations do not recognise and grasp the tacit knowledge within their

organisations because tacit knowledge resides in the human brain and is difficult to codify and access. Haldin-Herrgard (2000) suggests that to recognise tacit knowledge, organisations can develop a KM strategy to effectively utlise employees' knowledge through informal interactions, team work and action learning. Recently, Jayasingam, Ansari, and Jantan (2010) suggest that organisations, particularly managers (leaders) in KIFs, need to understand the value of knowledge and act as a facilitator to positively influence employees' knowledge sharing activities. Similarly, this study finds that knowledge sharing is based on employees' perceptions and behaviour. Hence, force and threats from managers cannot effectively help knowledge sharing in organisations. Organisations may facilitate knowledge sharing and reduce knowledge hoarding behaviour through the application of the KM strategy. Managers may change their authoritative style to that of facilitator and coach in organisations, particularly in KIFs. One could argue that the reason for the managerial focus as a coach is not that managers know more than their employees but managers can quickly communicate and implement KM initiatives for their employees.

Knowledge sharing within organisations has benefits for both organisations and employees. At an organisational level, employees do not usually work for life in the same business environment. Hence, employee turnover is obvious and may result in knowledge loss if this is not shared. Knowledge sharing is a tool by which employees can learn and validate their knowledge in organisations. One could argue about the benefits to a knowledge sharer (knowledge source) because he or she owns that knowledge before sharing it with colleagues. This thesis will test the link between knowledge sharing and individual capability through colleagues' feedback and individuals' learning capability.

2.5 Latent Constructs of the Thesis

This thesis has presents seven latent constructs (LCs), and a model is proposed to investigate the causative relationships between them. In the social sciences, study constructs that cannot be measured directly are known as LC (Bollen, 2002; Byrne, 2010; MacCallum & Austin, 2000). LCs are translated into measurable variables in survey research known as questionnaire items (Malhotra & Grover, 1998). To measure LCs, this thesis captures questionnaire items that represent underlying constructs. In this thesis, the LCs related to HRM practices including recruitment and selection, rewards and recognition, and employees' collaboration. Other LCs are employees' knowledge sharing, trust, individual capability, and organisational capability.

2.5.1 Employees' Recruitment and Selection

Recruitment and selection starts from the position of understanding the job vacancy, employment laws, minimum qualifications and the job description before advertising the job in the labour market, followed by application and (initial/final) screening (Pearlman, 1980). Some research scholars suggest that the recruitment and selection cycle starts with advertising in order to attract potential candidates, which creates a pool of applicants (Bartram, 2000). In both cases, short-listed candidates are interviewed, followed by a qualifications check and reference check to make a final decision about selection. Most organisations provide job orientation and a conditional probationary period before final confirmation. All these selection steps are designed to recruit and select a candidate based on the candidate's experience, skills and knowledge. Due to globalisation and competitive market pressures, the importance of hiring the right people should not be underestimated because poor recruitment and selection may cost an employer in terms of recruitment, training and loss of productivity (Bach, 2009).

This thesis acknowledges traditional recruitment and selection. However, Currie and Kerrin, (2003) suggest that as managing knowledge is different to managing other resources in organisations, traditional recruitment and selection practices need to be revised to match the organisation's goals and objectives. Traditional recruitment and selection practices may act as a barrier to knowledge sharing between colleagues in workplaces. Recruitment and selection practices may highlight the fit between candidates and an organisation's knowledge sharing culture. Recently, Jimenez-Jimenez and Sanz-Valle (2012) found that HRM can enhance KM in different ways, and recruitment and selection are key practices to improving knowledge sharing and acquisition in organisations.

One strategy is to recruit people who match the job criteria. This method helps to attract, gather and select potential candidates on the basis of their experiences, skills and qualifications (Chatman, 1991). More recently, due to the development of the dynamic business environment, another strategy focuses on selecting those candidates whose potential matche organisational objectives, rather than matching a particular role within an organisation (Carless, 2005; Kuldeep, 2004; Sekiguchi, 2007). The former strategy is known as person fit for job (P-J), while the later strategy is known as person fit for organisation (P-O).

A P-O is a selection strategy that selects candidates on the basis of who they are in terms of attitude and values, not just for what they can do based on their experiences and knowledge Further, the notion P-O means a candidate who can closely relate to the work environment of an organisation, whereas a P-J focuses on particular role and job (Cennamo & Gardner, 2008). Lauver and Kristof-Brown (2001) test the association between P-J and P-O, based on employees' perceptions of their job satisfaction in a survey based study. They found that P-J and P-O approaches are different from each other and cannot combine as a strategy. They

argue that the P-O fit has more influence on job satisfaction and the performance of additional roles beyond the job description. In essence, the P-O fit is the compatibility between a person and the organisation, and both share some similar basic characteristics, whereas the P-J fit is related to an individual's compatibility with a particular job (position advertised in the selection context).

P-J is a conventional approach of recruitment and selection which is based on the view that organisations should clearly describe the job and select the candidate whose knowledge, skills and abilities best match the advertised job. P-J is criticised in that there is no guarantee that the people who have the skills and knowledge will be willing to share their knowledge with other colleagues. However, the P-O approach argues that people's behaviour and actions can be influenced by the organisational environment. The P-O approach suggests that people should be assessed based on how well they performed in previous jobs under different conditions and working environments. Knowledge sharing is related to employees' behaviour. Hence, P-O is more suitable for selecting people according to their organisational environment (Carless, 2005; Cabrera & Cabrera, 2005). One could argue that the Cabrera and Cabrera study is theoretical in nature. However, Carless conducted a longitudinal study and generalisation of the results is its limitation, because respondents' perceptions of PO fit measured in this study is based on a single organisation.

Together with the P-O selection method, there is an emerging selection practice known as learning by hiring. By this method, HR managers hire individuals who have the skills and experience which an organisation lacks in order to meet the demands of the market. As discussed in Section 1.4.1, tacit knowledge is hard to codify, resides in human head. Organisations hire those individuals whose tacit knowledge can be assessed in job interviews, and which reflects his/her education. Managers can acquire this tacit knowledge

by engaging him/her in teamwork and encouraging face-to-face interactions with other employees (Dokko, Wilk, & Rothbard, 2009; Palomeras & Melero, 2010; Song, Almedia, & Wu, 2003). The contribution of Parrotta and Pozzoli (2012) in the subsequent development of the concept of innovation in the workplace, suggests that innovation depends on utilising available knowledge rather than creating new knowledge. Classical research on innovation explains that original sources of most inventions within firms come from outside the organisation. However, this phenomenon is not true for all organisations; it depends upon the nature of the organisation and its capabilities (Cohen and Levinthal 1990).

One method to select candidates who match organisational objectives is by using employee referrals. Employee referral is a process by which employees of an organisation provide references for individuals from their social networks, professional networks and family members (Breaugh, 2008). Organisations that understand employee knowledge, implement selection practices such as the employee referral system to identify potential employees who understand the organisational culture, structure, and environment prior to joining the organisation (Lawler, 2009). Candidates selected on the basis of employee referral adapt better to the organisational environment and can improve organisational social capital due to their networks with existing employees (Cabrera & Cabrera, 2005).

Employee referral can also increase the human capital value of organisations by selecting candidates with matching knowledge and skills to those of existing employees (Lepak & Snell, 2002; Robertson & Hammersley, 2000). There is empirical evidence that candidates selected through the employee referral method stay longer in organisations as compared to those who are selected by other selection methods (Breaugh, 2008). The reason for this is proposed by Ipe (2003) that candidates selected on the basis of the employee referral method closely match with organisational objectives, and such candidates are known as a person fit for an organisation (P-O)

Hence, the role of HR managers is vital. HR managers can use different selection methods to select the candidates who best match organisational objectives and values. The selected skilled employees can be motivated by providing monetary and non-monetary incentives to share their tacit knowledge with other colleagues. There is a point of enquiry that the recruitment and selection practices presented in this section are mostly perceptions of the managers and thus may be different from employees' perceptions in KIFs. To answer this query, this thesis tests the influence of employees' perceptions of recruitment and selection on their knowledge sharing behaviour in their organisations. This thesis acknowledges P-O as a selection method and briefly discussed in the literature review. However, question items were not included in the thesis' survey because this concept is not clear in the developing nation of Pakistan and may be misunderstood by respondents. Moreover, a longitudinal study may produce better results before and after candidates' selection and performance in an organisation, but this is beyond the scope of this thesis.

2.5.2 Rewards and Recognition

A rewards system is one of the main components of HRM practices that can enhance employees' motivation to share knowledge. To achieve this it is argued that rewards, promotions, and recognition may be given to those employees who spend their time facilitating and working with other employees, especially in collaboration (Song, 2009; Sweeney & McFarlin, 2005). Employees' knowledge sharing may be supported by intangible rewards (such as promotion), recognition of employees' skills (in informal and formal setups) and enhancing employees' expertise (through training and development programmes, for example, short courses and conferences) (Ipe, 2003). Organisations may make knowledge sharing a criterion for performance evaluation. Performance evaluation can be monitored by encouraging skilled employees to be visible and involved in knowledge sharing activities (De Long & Fahey, 2000; Michailova & Husted, 2003).

One of the tools for knowledge sharing is collaboration that can engage skilled employees for the purpose of knowledge sharing and knowledge acquisition (Riege, 2007). Another approach is to formally recognise and implement employees' innovative and quality input in the workplace. The implementation of quality input presented by employees is a tool of knowledge acquisition (Scarbrough, 2003). Employees perceive that rewards and recognition is linked to transparency and fairness in the workplace. Employees perceive that individuals who utilise his/her skills, experiences and abilities to add value to an organisation (for instance, sharing their experiences informally, helping other employees through sharing knowledge in teams, and providing innovative input to management, based on his/her experiences for the sake of improved productivity) may be highlighted and rewarded (Cabrera, et al., 2005; Riege, Bartol & Srivastava, 2002; Wah, 1999).

Organisations can facilitate knowledge sharing activities through group-based reward systems. Group based rewards are given to a whole group based on its achievements (Bartol & Srivastava, 2002). However, group based rewards may encourage 'freeloaders' that may lead to employee frustration. The 'freeloader' is an employee perception whereby employees can be rewarded in a group irrespective of whether they share or hoard their knowledge. To avoid such behaviour, organisations can support individuals through rewards on the basis of individual performance. Rewards to individuals can create a sense of legal obligation to share their personal knowledge with other members (Song, 2009). Organisational support, in terms of rewards, can improve employees' knowledge sharing behaviour. HR managers can reduce an individual employee's frustration and fear through public reward, recognition and facilitation. It could be argued that sharing tacit knowledge is behavioural; rewards should be given to change the behaviour of an individual. Knowledge based recognition positively impacts on an employee's loyalty and keep employees as part of the organisation (Davenport & Prusak, 1998).

Rewarding employees as an incentive scheme acts as a motivational technique that drives employees' knowledge sharing behaviour within organisations. However, on the other hand, one could argue that routine rewards and group based reward systems may encourage opportunistic behaviour and freeloading on the contributions of others. Organisations can discourage opportunistic behaviour by designing their incentives to those employees who participate in knowledge sharing and creation activities. Moreover, there is also the possibility that employees' knowledge sharing behaviour is independent of organisational rewards and recognition, particularly when employees are motivated by other factors, for instance, their own learning and development. Therefore, one of the objectives of this thesis is to investigate the impact of rewards and recognition on employees' knowledge sharing behaviour in a developing country where knowledge creation, sharing and management are in their infancy.

2.5.3 Employees' Collaboration

Individual experience plays a vital part in building organisational knowledge. However, it requires a social collaborative approach to utilise it fully (Jirotka, et al., 2005). As discussed in section 1.4.3.1, the word collaboration is derived from 'co-labour', meaning a joint effort, for example, when employees of different backgrounds generate something through shared effort, decision making, and shared personal experience (Teece, Pisano, & Shuen, 1997). Collaboration is a mechanism by which employees act systematically and think broadly (Noorderhaven & Harzing, 2009).

Employees' collaboration when goal is knowledge sharing can help to build knowledge communities within organisations (Adler & Heckscher, 2006). One of the goals of employees' involvement in teams is to minimise knowledge loss in organisations caused by a shortage of a skilled workforce. This knowledge loss can be occurring due to skilled employees'

turnover and the fact that the departing employees take their knowledge with them which they then apply in their new roles. In such cases, sharing and transferring knowledge goal through employee collaboration can transfer individual knowledge to organisational knowledge (Norman, 2004). Employee collaboration in the context of knowledge sharing can be in the form of informal interactions within organisations (Ipe, 2003). Employee collaboration for informal knowledge sharing occurs when individuals in the same professional field meet informally and share their experiences. Noorderhavenand and Harzing (2009) suggest that sharing knowledge with colleagues in a teamwork environment can improve organisational knowledge capability.

Employee collaboration in teams at an organisational level can be enhanced by setting different achievable targets through the use of multi-disciplinary teams. For example, employees working in multi-disciplinary teams share their tacit knowledge with colleagues in order to achieve specific goals and targets. Working in team environments can enhance an individual's professional development through achieving targets (Du Plessis, 2007; Jost & Karakel, 2008). Hence, employee collaboration can improve organisational performance by engaging employees to use their personal knowledge to achieve specific targets.

Multi-disciplinary team assignments facilitate employees' know how that can help to understand how and when an individual can complete a task (Lind & Seigerroth, 2003). Organisations can ensure employees communicate across departments to solve their problems, rather than leaving their job-related problems to senior management (Daghfous, 2004). Multidisciplinary teams can help cross-functional employees' learning and can convert employees' knowledge to organisational knowledge in terms of organisational routine operations (Bate & Robert, 2002; Lesser & Everest, 2001). Hence, communities based on knowledge sharing practices and collaboration can help acquire, transfer, and utilise employee knowledge (Alder & Heckscher, 2006).

In summary, this section reports how employee collaboration through involvement in formal teams and informal interactions help to achieve knowledge sharing. However, most organisations are in the dark as to how to manage collaboration and ignore employees' collective activities. At an organisational level, employee collaboration, such as employees' involvement and participation in the organisation, can foster employees' knowledge sharing behaviour. As discussed in Section 2.2.3, technology plays a vital role in knowledge sharing. However, technology should be considered a supplement to, rather than a human substitute for, employee collaboration and in the knowledge sharing context. Most organisations invest in technology for effective collaboration. Consequently, it can result in information overload and reduces effective collaboration in organisations

Ignoring the importance of individual employees in collaboration may lead to knowledge hoarding behaviour. One of the reasons for knowledge hoarding behaviour may be to gain long-term employability as well as authority in organisations. Another reason for knowledge hoarding, suggested by Martensson (2000), is that employees themselves do not recognise the value of their tacit knowledge. Hence, employees are reluctant to share intellectual inputs based on their experiences.

Employee collaboration is a key instrumental tool in removing such knowledge sharing barriers and helps employees to share what they know and utilises their knowledge in organisations. Riege (2005) reviews knowledge sharing barriers and suggests that organisations should recognise teamwork, informal interactions among employees, and cross-functional employee collaboration to reduce knowledge sharing barriers in organisations.

Collaboration benefits employees in learning from other colleagues and improves their productivity through improving their skills, and also provides opportunities to share ideas. It

is also helpful for organisations in terms of improved organisational productivity to use its human capital pool. However, lack of collaboration may be due to lack of management interest and extra pressure on productivity and financial gains. Lack of employee collaboration may lead to increasing conflicts in the workplace. Consequently, management may need to spend its time and money in solving conflicts. As knowledge management is in its infancy in developing countries, including Pakistan, employee collaboration can provide opportunities to share their ideas and knowledge with other colleagues rather than working in isolation. This thesis focuses on collaboration among employees of KIFs in a developing country (Pakistan) to test how employee collaboration influences knowledge sharing behaviour.

2.5.3.1 Communities of Practice

Collaboration through communities of practice (CoPs) can be defined as informal structures or arrangements within organisations to bind employees together to share experiences, and knowledge (Wang, Yang & Chou, 2008). A physical space is provided by the organisation in which employees can interact face-to-face formally in working hours, or informally during meals and recreational breaks. McDermott (2000) suggests that employees prefer to obtain information and knowledge from other employees through face-to-face interaction for the sake of clarity and understanding, rather than relying on technology and machines. One benefit of face-to-face interaction is that it can build interpersonal trust among employees for effective transfer of knowledge (Gray, 2001). The knowledge received from others in an organisation encourages a reciprocal flow of information and expertise in the direction of the knowledge source. Indeed, interpersonal and competence-based trust is one of the main motivators of knowledge sharing in communities of practice. Interpersonal trust is based on personal similarities, whereas competence-based trust is developed on the basis of skills and experiences, irrespective of similarities (Bartol, Liu, Zeng, & Wu, 2009).

In some workplaces, some employees fear the exploitation of their knowledge during interactions with other employees which can damage the knowledge sharing process (Empson, 2001). This fear can be reduced in face-to-face interactions which are more effective than virtual networks and provide better understanding of other employees and their knowledge (Alavi, Kayworth, & Leidner, 2006). Further, limitations of virtual networks, different work environments and contexts may lead to misinterpretation of given knowledge due to employees' lack of technological aptitude (Ardichvili, Page, & Wentling, 2003). Organisations spend a substantial part of their investment on KM activities through technologies such as intranets, databases, internet architectures, artificial intelligence, and decision support techniques (Mitri, 2003). However, employees' knowledge can easily be facilitated through people rather than relying on technical support alone. The utilisation of technology alone in the knowledge sharing context can be ineffective due to unrealistic expectations and unwillingness to share knowledge (Riege, 2005).

CoPs help to transfer knowledge and exchange as a social phenomenon, with knowledge related results. CoPs are the social actor for the transfer and sharing of tacit knowledge, enabling employees to share explicit and tacit knowledge (Brown & Duguid, 2001). However, a significant drawback of the CoPs approach is that it ignores how well employees' knowledge can be blended together with organisational knowledge. The CoPs approach is more effective if employees transfer their knowledge across the organisation rather than isolate themselves within a particular unit or section (Tywoniak, 2007).

Employees' collaboration can improve organisational capability and may also achieve organisational core competence. The core competence of an organisation is defined as specific factors that are important for an organisation's success in the achievement of its objectives. The core competence of an organisation is not easy for its competitors to copy, and can improve organisational capability in terms of improved products and services.

Employees' knowledge and ability (human capital), and their professional relations (social capital), are two important factors in achieving core competence in an organisation (Wright, Dunford, et al., 2001). In the context of collaboration, most research scholars focus on virtual communities of practice, where people interact through online social and professional platforms. However, face-to-face physical interactions play a vital role for effective outcomes in the knowledge sharing context. This thesis acknowledges virtual knowledge sharing as a key tool for knowledge sharing and creation, but focuses primarily on employees' face-to-face interactions.

2.6 Antecedents of Knowledge Sharing

2.6.1 The Role of Trust

Trust can be built up by similarities due to repeated interactions among individuals, interests, and norms that can lead to self-belief. Employees' interpersonal trust improves through personal similarities (Adler & Heckscher, 2006; Kristiina, Hanna, & Rebecca, 2007). Similarly, top-down interpersonal trust between managers (line and senior managers) and employees can be developed by openness through discovering similarities and reducing fear (Renzl, 2008). Interpersonal trust can be built on in work places when employees and managers mingle in a work environment that is less bureaucratically administered. There are several methods in building interpersonal trust among employees. One method can be to facilitate interpersonal trust by engaging employees in collaborative practices, for example, a team environment that can boost employees' knowledge sharing behaviour (Ipe, 2003).

Once employee interpersonal trust is built, it can promote effective knowledge creation and sharing in organisations that may lead to collaborative learning within organisations (Holste & Fields, 2010; Tsai & Ghoshal, 1998). Interpersonal trust can remove employees' knowledge sharing barriers and ensure that knowledge is well understood, absorbed, and can be used effectively (Cross, Rice, & Parker, 2001). Employees perceive that

interpersonal trust can improve their trust in management and thus organisations can improve their organisational capability (Bordia, Irmer, & Abusah, 2006).

On the other hand, employees perceive that a lack of interpersonal trust between employees and managers can lead to poor knowledge integration and imperfect information sharing (Theriou & Chatzoglou, 2008). To achieve their business objectives, managers play an important role in building trust (Ribiere & Sitar, 2003). Interpersonal trust among employees cannot be built instantaneously as it takes time to develop confidence (Wang, Shieh, & Wang, 2008). New employees initially lose job performance confidence due to a lack of practical knowledge. However, with the passage of time, the organisational culture and environment can improve their trust in other employees, and the organisation can help them in sharing their personal experiences (Abrams, Cross, Lesser, & Levin, 2003).

Employees rely on trusted and capable colleagues for information sharing. Sharing experiences and knowledge with other members in the workplace can create an obligation on employees to support those employees who have shared their experiences (Lesser & Everest, 2001). Interpersonal trust enables members of communities of practice and multidisciplinary teams (knowledge sources) to effectively deliver their knowledge to knowledge seekers (Kanter, 1999). However, there is little empirical research on how interpersonal trust and the engaging of employees through collaboration harnesses employees' knowledge sharing activities to improve individual and organisational capability (Cabrera & Cabrera, 2002; Currie & Kerrin, 2003).

This thesis focuses on trust as an antecedent of knowledge sharing behaviour. However, this thesis also acknowledges that, together with trust, other factors such as psychological contracts, reciprocity and transactional sharing may influence knowledge sharing behaviour within organisations. The latter two concepts are more important in virtual settings and

among inter-organisational networks. Employees' knowledge sharing within their organisations, through physical and face-to-face knowledge sharing, requires mutual interpersonal trust, trust in management and in the organisation.

Trust is a key component of the psychological contract. Several research scholars have discussed psychological contracts in the knowledge sharing context, for instance, the theoretical model (O'Neill & Adya, 2007) and qualitative study (O'Donohue, Sheehan, Hecker, & Holland, 2007), and in virtual settings (Chiu, Wang, Shih, & Fan, 2011). Hislop (2003) provides an extensive review of articles, discussing HRM and KM in the context of the psychological contract. Hislop suggests that employees' commitment to their organisations is a behavioural result of their psychological contract, with positive psychological contract providing better organisational commitment, However, when employees' perceive that the psychological contract has been violated, it may decrease loyalty, motivation, and their intention to share knowledge, and increase their intention to quit. Later, Flood, Turner, Ramamoorthy, and Pearson (2001) conducted a survey among knowledge workers and found that in order to improve the level of organisational commitment based on psychological contracts, management should make sure that incentives are fair and on merit. The authors argue that these findings are similar to the findings in relation to trust and the intention to stay in the organisation. Moreover, employees are willing to stay with employers who provide procedural justice in reward systems and learning opportunities. Organisational commitment, trust and citizenship are essential components of the psychological contract (Rousseau 1997).

This thesis acknowledges the concept of psychological contracts in the knowledge sharing context. However, instead of psychological contracts, the role of trust has been tested in employees' knowledge sharing behaviour. One of the reasons for this is that social

interaction and reciprocity, where individuals are psychologically bound to share their inputs, may result in an increase in the quantity of knowledge and reduce quality knowledge (Wasko & Faraj, 2005).

2.6.2 Management Support

Typically, senior management focuses on planning, organising, and co-ordinating employees. However, the role of managers (senior managers and line managers in KIFs) has now changed from command and control to coach and facilitator. For instance, Davenport and Prusak (2000) suggest that the role of managers in knowledge sharing activities cannot be ignored, especially when managers perceive knowledge related activities (e.g. knowledge accessibility and knowledge sharing) as important resources. Management support positively influences overall organisational performance. Support from top management attracts participation from employees in initiation and dissemination of important knowledge to other employees in the organisation (Darroch, 2003; O'Dell & Grayson, 1998). Managers' support can help to transform employees' tacit knowledge into usable information which can act to stimulate innovation capability (Stoddard & Jarvenpaa, 1995).

In contrast, employees perceive that not all managers support knowledge management activities due to managers' own skills deficits, lack of expertise, and fear of loss of power and position in an organisation (Grover & Davenport, 2001). When managers are not trained and skilled to handle complex situations in the workplace, they can unwittingly destroy organisational knowledge. For instance, Michailova and Husted (2003) note that some employees do not share knowledge due to time constraints imposed by a managerial focus on timely results. However, in workplaces, employees' knowledge sharing activities demand time and a collaborative environment. Senior managers can facilitate knowledge sharing

among individuals by creating an environment where individuals can apply their experiences in problem solving (MacNeil, 2003).

Management support acts to moderate the knowledge sharing process and can create an environment to support employees' tendency to work individually and to take ownership of what knowledge they have so as to be rewarded and promoted (Brashear, Manolis, & Brooks, 2005). Managers, when acting as coaches and facilitators, can enhance the employee knowledge sharing processes that can lead to innovation and organisational performance (Gilley, Dixon, & Gilley, 2008). The role of managers has been highlighted in this section. In KIFs, managers need to be competent and open to facilitate employees' knowledge flow. The role of managers should be changed from that of traditional administrator to coach in KIFs.

2.7 HRM, Knowledge Sharing and Capability

Employees' knowledge sharing is linked to organisational capability because both organisational knowledge and learning capability are rooted in the employee interactions (Kogut & Zander, 1992). HRM practices can shape employee skills and attitudes to improve, not only their own capability, but also the overall organisational capability through employees' knowledge sharing (Currie & Kerrin, 2003; Delaney & Huselid, 1996). Sharing personal knowledge influences employees' learning, which can improve organisational learning capability. Organisational learning capability has been used to analyse organisational learning and the creation of sustainable competitive advantage through exploiting employees' prior knowledge (Cohen & Levinthal, 1990; Zahra & George, 2002).

Employees' knowledge sharing is a collaborative process that primarily depends on receiver capability to understand complex and non-codified information for further use (Sveiby, 1997).

As mentioned in Section 1.1, the terms 'knowledge' and 'information' are used interchangeably in this thesis and considers 'knowledge' and 'information' to be synonymous. However, the thesis acknowledges that some research scholars consider both ‘knowledge’ and ‘information’ in a different context. For instance, Russell Ackoff (2010) suggests that information consists of data that provides answers to "who", "what", "where", and "when" questions while knowledge is the utilisation and application of the information to answer "how" questions.

It is hard to understand non-codified (tacit) knowledge when employees’ educational backgrounds are different (Liao, 2006). Vinding (2006) suggests that HR managers can improve organisational capability by recruiting qualified, skilled employees that can help in building the knowledge community. Sharing of employees’ knowledge can be facilitated by building internal cross-functional teams (e.g. marketing, manufacturing, sales and R&D), where employees understand non-codified knowledge by working together to achieve set targets. It can be argued that employees’ knowledge sharing can be counter-productive if receivers are unable to handle the complex information. Organisations can hire employees with high levels of education to facilitate a better flow of knowledge and increased overall knowledge capability in a collaborative environment.

2.7.1 Organisational Capability

As described in Section 1.4.4., the term 'organisational capability' is used in terms of organisational innovation capability and organisational knowledge capability. The thesis is about employees’ perceptions; therefore, the term organisational capability in the thesis is viewed through the lens of employees’ perceptions. The need to acquire innovative capability at organisational level may play an important role in gaining competitive advantage and innovation capability is essential for the survival of KIFs in the market. Organisations'

innovative capability is linked to its resources, especially knowledge resources, and human capital and managing employees' knowledge is linked to organisational innovation capability (Harrison & Samaon, 2002; Subramaniam, & Youndt, 2005). More explicitly, knowledge sharing, as a KM initiative, is closely linked to innovation capability, and this idea has been supported by various research scholars (Aulawi, et al., 2008; Birchall & Tovstiga, 2006; Ellonen, Blomqvist, & Puumalainen, 2008).

A case study research suggests that knowledge sharing as a part of KM initiatives is an initiative to improve organisational capability (AlNawakda, Fathi, Ribire, & Mohammed, 2008). Managing employees' knowledge through knowledge sharing is one of the main reasons for continued successful innovation in several multinational firms including the US firm, 3M (Brand, 1998) and the Japanese company Hitachi (Lincoln, Ahmadjian, & Mason, 1998). In several multinational companies, managers have acknowledged the pivotal role of employees' knowledge and that transferring it to organisational level can help to improve organisational knowledge and leaning capability (Howells, 1996).

Most research scholars suggest that employees' knowledge sharing contributes to improving organisational knowledge (knowledge capability). However, their research does not highlight which types of activities or tools can best ensure effective knowledge sharing between knowledge sources and knowledge receivers. This thesis acknowledges that knowledge sharing leads to knowledge creation and application (utilisation) of the knowledge for the purposes of verification and validity. As discussed in Section 2.5.3, employees' collaboration can facilitate knowledge creation and utilisation. However, Lin (2007) found that, together with collaboration and management support, use of technology can also facilitate knowledge sharing in order to obtain an organisation's innovative capability.

More recently, Skerlavaj, Song, and Lee (2010) in their empirical study criticised a total reliance on technology, and suggested that although technology plays a key role in shaping an organisation's innovative capability (for instance, technical innovation). If this fails the managers or employees are blamed for misuse of technology. Hence, more focus should be placed on people, particularly on employees, in the context of innovation. Through the lens of employees, organisational innovation capability is linked to innovative environments within organisations. Employees perceive that an innovative environment allows employees to share new ideas and make approaches without fear of being punished or blamed (West & Richter, 2008). This thesis supports informal knowledge sharing without authority and the influence of managers, but through management support. This thesis also focuses on sharing successes and new ideas which may help to improve organisational innovative capability and improve learning at an individual level.

2.7.1.1 Organisational Knowledge

The second aspect of organisational capability is organisation knowledge. The notion of organisational knowledge used here refers to organisational knowledge storage, and explains that knowledge is embedded in the organisation's structure and policies, and requires resources for effective utilisation (Tsoukas & Vladimirou, 2001). Organisational knowledge is linked to its employees' knowledge (Castaneda & Rios, 2007). Organisations acquire employees' knowledge through collaborative activities and store it in explicit form to retrieve it when needed (Saffady, 2000). One reason for storing employees' knowledge (by converting it from individual level to organisational level through knowledge sharing) is to minimise the risk of knowledge loss due to employee turnover (Cross & Baird, 2000). As established earlier in Section 2.2, due to employee turnover, employees take their knowledge acquired through organisational participation with them, which can result in a shortage in the human capital pool (Yang & Wanb, 2004).

Employees' tacit knowledge can be codified into explicit knowledge using technology. However, using technology for knowledge transfer may also depend on employees' willingness to share and store knowledge (Cavusgil, et al., 2003; Olivera, 2000). Due to emerging technologies and the dynamic business environment, one of the main objectives of KIFs is to retain their human capital (skilled employees) to better compete in the market (Galunic & Anderson, 2000).

Sometimes orientation, induction, and training programs are ineffective in retaining skilled employees and negatively affect organisational knowledge storage (Cross & Baird, 2000). Sanders and Frenkel (2011) suggest in their review of HRM and employees' relations that several factors (for instance, good relationships among employees and line managers, and employees' job satisfaction) may positively influence employee turnover rates in organisations. However apart from employees' professional relationships, in knowledge intensive firms, employees' personal development and learning may be instrumental in their staying with their organisation. Thus, employees' instrumentalism may help to improve their organisational knowledge capability by reducing employee turnover rates. Through the lens of employees, apart from incentives, organisations can positively influence the knowledge sharing culture which may help to improve employees' learning and personal development. One could argue that employees remain with their organisation because they perceive that frequent job switching (from one organisation to other) may negatively affect their professional image and eventually may hinder their knowledge and learning journey. In the context of organisation knowledge, through the lens of the organisation, employees' unique personal knowledge can increase the organisation's knowledge capability which may help it survive in the current dynamic business environment.

2.7.2 Individual Capability

The next section will discuss how individual employees (as knowledge sources) can also obtain benefits (through their personal development) when they share their valuable knowledge with colleagues within an organisation. This thesis examines the linkages between an employee's tacit knowledge-sharing and individual capability.

Sharing knowledge with other colleagues can improve employees' personal development through validity and utilisation of shared knowledge in work places. Employees' personal development can be a motivator to share tacit knowledge with others. This motivation can be affected by environment, management support and organisational support (in terms of incentives and collaboration activities (Liao, 2006; Minbaeva, Pedersen, Bjorkman, Fey, & Park, 2003).

Sharing knowledge leads with other colleagues at an organisational level is linked to improve employee's learning ability (Castaneda & Rios, 2007). Organisational capability depends heavily on an employee's ability to learn fast from others and apply learned knowledge to achieve the desired results (Collison & Smith, 2006). Reychav and Weisberg (2008) observed that employees who share contextual knowledge, innovative ideas, successes and failures with others colleagues have higher-level learning through better job involvement. One reasons for sharing employees' knowledge is for their own professional development, feedback from colleagues and the validity of their knowledge in the organisation (Davenport & Volpel, 2001). Therefore, sharing tacit knowledge can improve the value of an individual's knowledge in terms of validity through feedback. However, future research is still required to understand the value of individuals' knowledge after being shared (Wang & Noe, 2010).

2.7.3 Relationship between Individual and Organisational Capability

Acquiring knowledge through employee collaboration has been shown to be the best tool with which to improve organisational capability in several multinational firms (Adams, Day, & Dougherty, 1998). As discussed in Section 2.7.1, several firms facilitate knowledge sharing to enhance overall organisational capability. Organisational capability associated with knowledge sharing and transfer provides superior effectiveness through creating value to organisations in the current dynamic business environment (Dawson, 2000; Lee, 2001; Nahapiet & Ghoshal, 1998). Individual and organisational capabilities are interrelated and can increase organisational performance (Lam & Lambermont-Ford, 2010). As discussed in Section 2.7.1, organisational knowledge is linked to its employees' knowledge, abilities and skills (human capital). By improving employees' capability through knowledge sharing, organisational knowledge and innovation capability can also be improved.

This section reports on organisation capability in terms of innovation and knowledge storage as opposed to individual capability in terms of employees' personal development. Briefly, this section provides some critical views of scholars regarding innovation capability and its tools, together with a critical commentary in the context of employee turnover through the lens of employees and organisations. Organisational and individual (employee) capability are interlinked by managing human capital organisations in order to improve their innovation and knowledge storage capability. Pickett (2005) proposes a framework to optimise human capital in Australian firms and suggests that an organisation's capability is linked to its employees' capability to obtain higher returns. This thesis focuses on knowledge sharing enablers who can improve individual and organisational capability. HRM practices and trust influence employees to share their knowledge and skills with other colleagues. Consequently, organisational innovation, knowledge storage and individual learning capability may be improved as a result of employees sharing their knowledge.

The link between organisational and individual capability may be not effective because employees may be instrumental in working together with skilled staff members only in order to improve their own personal development and not to create knowledge for their organisation. The literature reports linkages between individuals and organisational capability that may be a unitary approach. The pluralistic approach suggests there are multiple goals of different stockholders in organisations. Future research may empirically verify the pluralist view of knowledge sharing outcomes which is beyond the scope of this thesis.

2.8 Rationale of Research

Several researchers have used student samples to test knowledge sharing constructs. Using student samples is relatively easy to ask the knowledge recipient (students) to test the knowledge sharing. The reason for this may be that students are motivated to share knowledge with other students to improve and validate their knowledge and to get good grades. However, this knowledge is mostly considered to be explicit knowledge that is based on information and documents (Chowdhury, 2005).

Wang and Noe (2010), designed a knowledge sharing framework that identifies the under research constructs in the field of HRM and KM. This framework suggests that future research is required to understand trust, face-to-face interactions and teamwork in the knowledge sharing context. Following this framework, this thesis tests the effect of trust and collaboration (through teamwork and face-to-face interactions) on employees' knowledge sharing behaviour.

Leadership, organisational structure and technology are considered to be central to knowledge sharing in various research studies in the field of HRM and KM (Bircham-Connelly, Corner & Bowden, 2007; Wang & Noe, 2010). Hence, employees' behaviour and

perceptions are under researched although they play an important role in sharing knowledge in work places (Jimenez-Jimenez, & Sanz-Valle, 2012). The data collected for the empirical work of this thesis is from full time employees of Pakistani KIFs. A quantitative methodology is used to better understand the knowledge sharing behaviour based on employees' perceptions.

Knowledge sharing may not affect one level (individuals) alone. It can also have an effect at organisational level. An examination across all levels can capture the result of knowledge sharing behaviour (Klein & Kozlowski, 2000). This thesis investigates knowledge sharing outcomes and tests how employees' knowledge sharing can influence both the individual and the organisational levels of capability.

Little empirical research has explored how building interpersonal trust and engaging employees through collaboration act to harness employees' knowledge sharing activities (Cabrera & Cabrera, 2002; Currie & Kerrin, 2003). To address this research gap, this thesis tests trust and employee collaboration as antecedents of employees' knowledge sharing behaviour.

Most of the research on knowledge management has been conducted on private organisations (Van den Hooff & Van Weenen, 2004; Yang, 2004; Yang, 2007), for example, the behaviour of senior management related to KM (Lin & Lee, 2004), in the hospitality industry in Taiwan (Yang, 2004), and in multinational companies in Asia (Ling, et al., 2009). Similarly, voluminous research has been carried out on student samples (Kwok & Gao, 2005). Although the knowledge-management literature has discussed the antecedents of employees' knowledge-sharing, there is, however, a shortage of research findings on the strength of the relationship between HRM practices and knowledge sharing (Fong, Ooi, Tan, Lee & Chong, 2011; Minbaeva, Makela, & Rabbiosi, 2012; Oltra, 2005; Riege, 2008). In the

Pakistani business context there are empirical studies examining the KM enablers (Jamal & Naser, 2003; Malik & Malik, 2008; Tariq, et al., 2012). However, there is a dearth of research in the field of HRM and KM in Pakistani KIFs.

Individuals participate in knowledge sharing activities for different reasons. For instance, individuals may share knowledge to help others, or to improve their own reputation (Kankanhalli, Tan, & Wei, 2005), and, in some cases, employees perceive their knowledge sharing as a learning process for themselves when employees share tacit knowledge in their work context (McLure Wasko & Faraj, 2000). Little research has explored empirically the linkages of employees' knowledge sharing with their learning capability within organisations (Wang & Noe, 2010). This thesis focuses on knowledge sharing to improve employees' personal development in terms of leaning capability. The purpose of the present research is to address the research gaps, namely the impact of HRM practices on knowledge sharing and knowledge sharing outcomes from the employee perspectives, and in the Pakistani context.

2.9 Discussion of Literature Review and Conclusions

The literature reviewed in this study provides an understanding that challenges some assumptions regarding the role of HRM within a knowledge-intensive organisational context. The resource-based view of firms focuses on resources present in the organisations, including employees, which play a significant role in the utilisation and creation of knowledge. Knowledge that resides in the human brain gained through experiences and hard to codify.

In the workplace, employees' collaboration can maintain the human capital pool (skilled employees). This can be managed through supporting knowledge sharing and exchange

activities between organisational members. In such collaboration, skilled employees wish to stay with the organisation for the sake of their own professional development. The collaborative learning has been identified as a key indicator in the telecommunication and higher education sectors due to rapidly changing technology in these sectors (Suraj & Ajiferuke, 2013). For instance, the telecommunication sector has been switched from traditional voice to data management. The Global System for Mobile Communication (GSM) is switched to 3G and now recently to 4G Universal Mobile Telecommunication System (UMTS). Such rapid changes create tough competition among different firms, and demand skilled individuals in the telecommunication sector (Al-Debei & Avison, 2011). Similarly, most recently, KM is considered to be promising and quickly developing tendencies in the higher education sector due to changes in IT, managerial policies and market competitiveness (Sedziuviene & Vveinhardt, 2009).

Organisations can facilitate employees' collaboration to enhance employees' knowledge and skills. Employees' perceive that informal collaboration is an important antecedent of employees' knowledge sharing to distribute knowledge across organisations (Riege, 2005). It could be argued that employees' learning capability, together with organisational learning capability, is linked to employees' knowledge sharing (Argote, 1999). Knowledge sharing is a tool that can enable employees and organisations to overcome barriers, and improve decision-making to attain objectives and goals successfully (McInerney, 2002).

Interpersonal trust removes knowledge sharing barriers among organisational members within organisations. If individuals do not trust each other, they are far less likely to interact and share their knowledge with each other. In fact, organisational memory is stored in the relationships employees build on the basis of their trust and reciprocity. Individuals cannot know each and every thing of job related knowledge and so they have to rely on their

networks to accomplish tasks (Cross & Baird, 2000). Hence, KM focuses on the human and social interactions of knowledge processes where individual employees and management are key actors in the success of managing knowledge at the organisational level (Davenport & Volpel, 2001).

The evidence from the empirical and theoretical literature has been discussed, and it has been shown that knowledge sharing can be ineffective for individuals if shared knowledge is not utilised (to complete a task or project). Although there have been great advancements in management theory, there is still uncertainty around the relationship between knowledge sharing practices and organisational capabilities. This thesis addresses this research gap and tests the knowledge sharing outcomes in terms of organisational capability.

In the current business environment, the role of the manager should be changed from traditional administrator to coach and facilitator to enhance employees' knowledge sharing and collaboration activities. The literature has provided evidence that management support is a key antecedent of effective knowledge sharing processes. In fact, HR managers can use different HRM practices based on collaboration and trust, rather than interpersonal competition to create a knowledge sharing environment in organisations. The role of HR managers in this environment thus changes from one of management to that of a mentor.

In the current knowledge economy, employees' recruitment and selection are emerging challenges for HR managers because the current dynamic business environment demands rigorous employee selection systems to meet the contingency needs of the market by reducing high employee turnover. In this regard, HR managers hire those candidates who have expertise and skills to meet organisational demand. Later, these hired staff members are engaged in collaborative HRM practices to improve others (members) capabilities.

In the current literature, most of HRM research is based on senior management's perceptions and opinions (Perez, Sanchez, & de Luis Carnicer, 2002; Riege, 2005). Most managers and CEOs perceive that employees are not productive when they are not doing something, and ignore knowledge sharing activities within organisations (Skyrme, 2002). This thesis focuses on individual employees' perceptions about HRM, KM, and the relationship between organisational and individual capability. This thesis can therefore assist in understanding HRM and KM linkages in the context of employees' perspectives.

In essence, KM scholars argue that there is need to develop a mechanism for effective KM initiatives, particularly employees' knowledge sharing in organisations. KM is taxonomy of management that needs suitably motivated employees to share their knowledge in organisations. HRM practices can influence employees' motivation and behaviour in work places. To manage knowledge, employees' knowledge sharing is one of the key initiatives to manage employees' knowledge in work places. To share tacit knowledge, organisations can motivate and influence their employees by different means, for instance, recruiting skilled people, providing a collaborative environment, team assignments, and building trust, that may help in cutting costs through using knowledge as a strategic asset. This thesis acknowledges the role of technology as a supplement to knowledge sharing in organisations. However, it is not substitute for individuals in KIFs. Also, the role of managers is a key part in organisations because managers select or evaluate employees' knowledge based on its relevance, suitability and attractiveness. Knowledge sharing can positively influence both individual and organisational capability. Individuals can improve their personal development and learning, whilst organisations can improve their innovation and knowledge storage capability.

The explanations of the different constructs in this chapter provide a foundation for the study of HRM practices and knowledge sharing in organisations. This has guided the framework of

the present research, showing causative relationships between HRM practices, knowledge sharing and its outcomes, based on employees' perceptions. The following chapter discusses the research framework which consists of the proposed model (from the latent constructs discussed in this chapter), the key research questions that need to be explored, and the overall research framework designed for this thesis.

CHAPTER 3 RESEARCH FRAMEWORK

3.1 Background

The literature reviewed in Chapter 2 suggests that specific HRM practices can influence employees' knowledge sharing behaviour in the workplace (Bollinger & Smith, 2001; Minbaeva, 2005, 2008). Minbaeva (2005) suggests that HRM practices can positively influence knowledge sharing and knowledge sharing outcomes. Minbaeva (2005) empirically tests that HRM practices, including staffing, promotion, training, compensation and appraisal all contribute to higher outcomes through KM initiatives. There is also a strong linkage between HRM and KM initiatives, and the literature review also highlights the role of HRM practices in the provision of a employees' learning based on employee collaboration and trust. The review also highlights that employees' knowledge sharing can influence organisational and individual capability (Donate & Guadamillas, 2011; Edvardsson, 2008).

HRM professionals and academics understand the significance of the linkages between KM and people-related issues, but there are significant research gaps in the recognition of linkages between HRM practices and knowledge sharing activities (Oltra, 2005; Wang & Noe, 2010). The aim of this thesis is to examine the effect of HRM practices on knowledge sharing behaviour and knowledge sharing outcomes. To achieve this aim, a research framework is necessary to evaluate the role of HRM practices on employees' knowledge sharing behaviour and its outcomes.

Chapter 3 provides an overview of the research framework used in this thesis. This chapter begins by briefly outlining the research problem followed by a step-by-step development of the proposed model which is discussed using the LCs of the thesis. This chapter highlights

the research questions and related hypotheses. Finally, the operation of LCs in the proposed model is presented.

3.2 Research Problem

One of the most basic concerns in organisations is the regeneration and development of scarce resources through which organisations can secure competitive advantage. Recent concerns in organisations have been the utilisation of employees' tacit knowledge by sharing it with colleagues to obtain a competitive advantage. As discussed earlier, in Section 2.9, the initial focus of KM research was on technology but, more recently, employees who own their knowledge should be considered as a resource together with technology in knowledge sharing activities. As most of the knowledge resides in an individual's brain, knowledge sharing should be people-driven, rather than technology-driven. One reason for this is that technology is a tool and should not be considered as a substitute of human application, but rather as a supplement and support for individuals in the knowledge sharing context (Cross & Baird, 2000; Riege, 2005). The importance of employees' knowledge has been highlighted in existing literature. Several researchers have collected data based on the perceptions of CEOs and top management. This can lead to KM research solely through the authority and the control of top management rather than from the perspective of the employees.

To utilise employees' knowledge in organisations, HRM and knowledge sharing have been highlighted. Consequently, organisations are investing in knowledge sharing activities in order to transfer and utilise employees' knowledge to further improve organisational capability (Baruch, 1999; Rowley, 2000). In the context of HRM and employees' knowledge sharing, employees' professional relationships and collaboration have been discussed at the micro level, for instance, in intra-unit and inter-sections of organisations. There is a paucity

of research which investigates the effect of social interactions based on common goals within organisations (Tsai & Ghoshal, 1998). The thesis surveyed social interaction, and some of the items describe collaboration and team work, and team knowledge sharing in the questionnaire. One of the key features of collaboration is participation and engagement in teams, however, it merit further investigation in KIFs.

3.3 The Development of a Proposed Model to Address the Research Problems

As discussed in Section 2.5, this thesis has LCs that are reviewed in Chapter 2. LCs are translated into measurable variables in survey research known as questionnaire items (Malhotra & Grover, 1998). This thesis proposes a model based on latent constructs and seven hypotheses. These hypotheses are formulated from the three research questions. In social science research, both hypotheses and research questions are tools to guide the research. The next section briefly describes the research questions and the related hypotheses of the thesis.

3.3.1 Integration of theory and research model

As discussed in Chapter 2, HRM practices have a critical role in KIFs, particularly in relation to employees' knowledge sharing behaviour and organisational capability. For example, the recruitment and selection of candidates are key components of HRM practices in the current dynamic business environment. Traditional recruitment and selection practices may be a barrier to knowledge sharing among colleagues in workplaces. Recruitment and selection practices can highlight the fit between candidates and an organisational knowledge sharing culture (Currie & Kerrin, 2003; Jimenez-Jimenez & Sanz-Valle, 2012). This thesis tests the impact of recruitment and selection practices (for instance, recruitment processes, and selection methods) on knowledge sharing behaviours discussed in Chapter 2 and the

following hypothesis is formulated. However, most information in the existing literature comes from informants, and little is known about employees' perceptions of recruitment and selection practices in KIFs, and thus this merits empirical verification.

S1: Employees' *recruitment and selection have a positive effect on employees' knowledge sharing behaviour.*

Existing literature in Chapter 2 discusses the role of incentives (for instance, reward systems and recognition) as motivational techniques that positively influence employees' knowledge sharing behaviour. Most research has been carried out in developed countries, but this thesis has collected the data from a developing country where knowledge creation, sharing and management are in its infancy. Where KM is in its infancy, little is known about how incentives influence the knowledge sharing behaviour of employees. Consequently, the following hypothesis is formulated:

S2: *Rewards and recognition have a positive effect on employees' knowledge sharing behaviour.*

Employees collaborate in organisations through formal and informal interactions, and teamwork particularly cross-functional teams, can influence employees' knowledge sharing behaviour. Somel scholars suggest that employee collaboration through face-to-face interactions (without the aid of technology) can remove knowledge sharing barriers and improve willingness to share with other colleagues (Martensson, 2000; Riege, 2005; Tywoniak, 2007).

S3*: Employee collaboration in terms of their participation has a positive effect on employees' knowledge sharing behaviour.*

Sveiby (1997) suggests that trust plays a key role in communication. Trust in employees, management and organisation, foster knowledge sharing behaviour in organisations. Trust between employees can reduce knowledge hoarding behaviour and promote sharing and a learning culture, and trust in management and organisations can be built up by means of fair policies for employees. To test the impact of trust on knowledge sharing behaviour, the following hypothesis is proposed.

S4: Trust has a positive effect on employees' knowledge sharing behaviour.

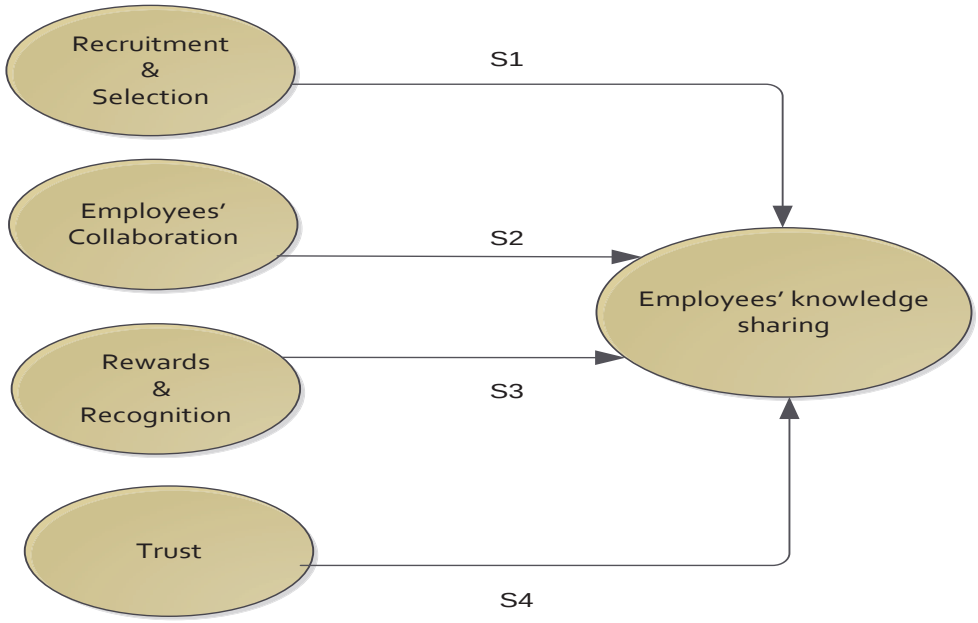

Figure 3: Proposed model part-1

As discussed in Section 2.7.1, organisational capability is linked to employees' knowledge sharing, which can lead to improved creativity and innovation in organisations (Aulawi, et al., 2008; Birchall & Tovstiga, 2006; Ellonen, et al., 2008). Knowledge sharing with colleagues may transfer skills and convert tacit knowledge to explicit knowledge (in the forms of documents and files in the workplaces) that can improve organisational knowledge capability (Kanter, 1999; Tsoukas & Vladimirou, 2001). As discussed in Section 1.4.1, tacit knowledge is complex and hard to codify. Organisations can, to some extent, store employees tacit knowledge by different means including storytelling of experts in the forms of archives, and converting techniques and decisions (made by expert employees in solving complex problems) into organisational routines and policies (Baskerville & Dulipovici, 2006). Employees' knowledge sharing can play an important role in improving organisational knowledge and innovation capability (Adams, et al., 1998). One of the goals of organisations is to acquire innovative capability to gain competitive advantage. Most organisations achieve some level of competency to survive in the market. However, KIFs attempt to be innovative in order to maintain a competitive advantage. Knowledge sharing, as a KM initiative, is closely linked to innovation capability and knowledge capability which has been supported by various research scholars (for instance, Aulawi, et al., 2008; Birchall & Tovstiga, 2006; Ellonen, Blomqvist, & Puumalainen, 2008). To test the linkages of knowledge sharing and organisational capability, this thesis proposes the following hypothesis:

S5: Employees' knowledge sharing has a positive effect on organisational capability.

Sharing knowledge with other colleagues in an organisation can improve employees' individual capability by improving their learning and personal development (Castaneda & Rios, 2007; Lesser & Everest, 2001). Moreover, sharing knowledge can improve the value of an individual's knowledge in terms of validating their knowledge. No one has perfect

knowledge; hence, employees need to update their knowledge. Employees, as individuals, have different sets of knowledge and, by sharing knowledge, employees learn from each other and improve their knowledge and learning capability.

S6: Employees' knowledge sharing has a positive effect on individual capability.

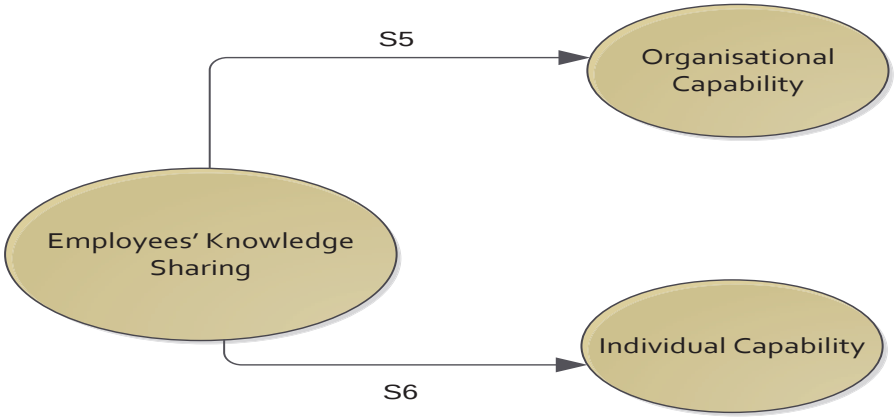

Figure 4: Proposed model Part- 2

Figure 3 and Figure 4 show a split of the proposed model to understand the antecedents and outcome of knowledge sharing. An integrated proposed model was designed by combining both Figure 3 and Figure 4 as depicted in Figure 5.

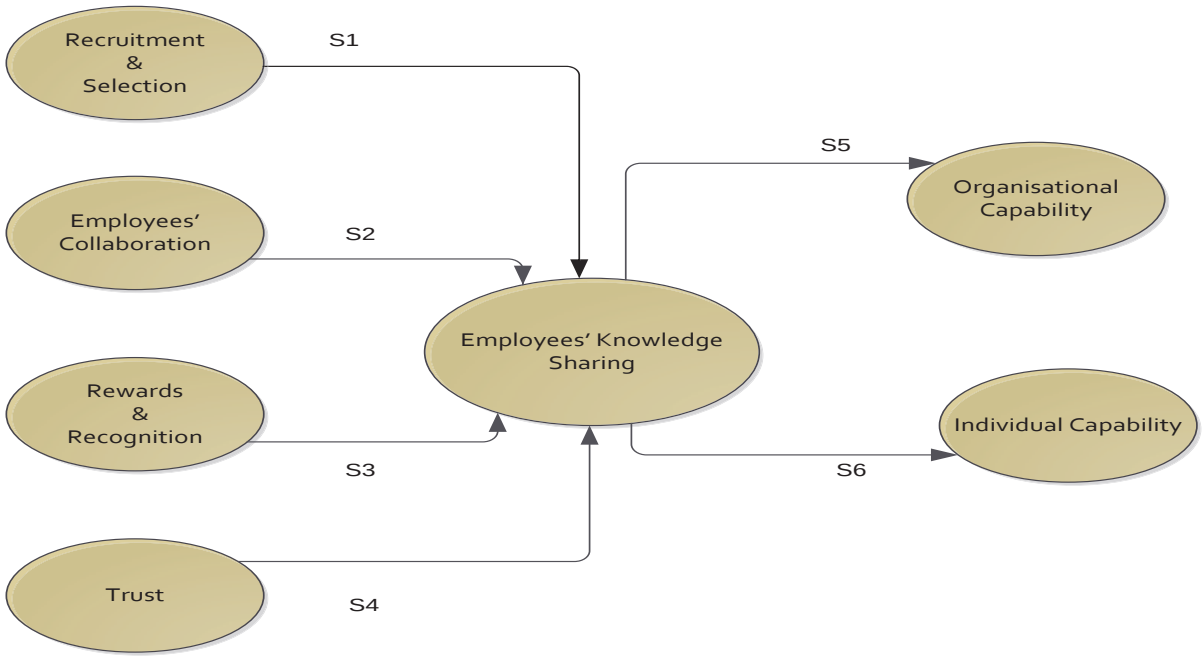

Figure 5: Proposed model (integrated)

These constructs are measured in this study from the attitudes of the employees themselves in response to a questionnaire designed for this purpose. This logic is based on the assumption that perceptions of these constructs by the employees themselves will govern actual employee behaviours to share knowledge. The independent (input) variable in the model are HRM practices and trust, while employees' knowledge sharing plays a mediating role. The dependent (output) variables are organisational capability and individual capability. These hypothesised relationships form a conceptual model as shown in Figure 5. Some concepts are discussed in Chapter 2 but are not integrated in the conceptual model. The detail is as follows:

- The thesis discusses concepts P-J and P-O as part of candidates' selection, particularly in the knowledge sharing context. However, LC regarding P-O and P-J were not included in the research model and survey because this concept is not clear in developing nations such as Pakistan and may be misunderstood by respondents.

Moreover, a longitudinal study may obtain better results before and after candidates' selection, and their performance in an organisation, which is beyond the scope of this thesis.

- The relationship between individuals and organisation capability is discussed in Chapter 2. However, this relationship is not tested in the data analysis of this thesis. This thesis aims to test the outcomes of knowledge sharing at both levels. A linkage between organisational and individual capability may not be effective because employees are motivated to work together with skilled staff members to improve their personal development, and their goal may not be to create knowledge for organisation. The literature reports linkages between individual and organisational capability that may be a unitary approach. Future research may verify the pluralist view of knowledge sharing outcomes.

- Management support is discussed in Chapter 2. However, it is not tested as a latent construct (LC) but as a question item under the latent construct trust in relation to employees' knowledge sharing behaviour. Future research can test management support to employees in their knowledge sharing behaviour, where KM is a relatively new concept in organisations.

3.4 Operationalising of the Latent Constructs

3.4.1 Recruitment and Selection

A precise and sophisticated selection system can help organisations identify suitable candidates with potential to perform (Kuldeep, 2004). A rigorous selection system develops a sense of exclusiveness and highlights the importance of people to the organisation. The mismatch between the candidate and the job can hinder organisational performance (Lado & Wilson, 1994). Different selection methods, such as job interviews, employee referrals and

screening based on relevant experience help to identify the right person fit for the organisation (Edgar & Geare, 2005). More than one selection method can help ensure a better fit between the potential candidates and the organisation's objectives (Lepak & Snell, 2002).

3.4.2 Rewards and Recognition

Various incentives can be used to affect the motivation of employees to share their knowledge. Fair and transparent monetary and non-monetary incentives can be provided to employees who share their knowledge with others (Sweeney & McFarlin, 2005). Monetary compensation has an effect on an individual's performance. Routine incentives, for instance, based on employee seniority, does not usually improve knowledge sharing behaviour (Balkin & Gomez-Mejia, 1990). Recognition from organisations and employees help individuals participate effectively in knowledge sharing activities (Davenport & Prusak, 1998).

3.4.3 Employee Collaboration

Studies have shown that employee participation is positively related to performance, satisfaction, and productivity of employees. Research shows that employee participation in management helps employees understand organisational objectives (Kuldeep, 2004). Employee collaboration through the use of cross-functional teams perpetuates understanding of the potential, skills and knowledge of others. Employees use other colleagues' expertise to achieve targets set by management (Youndt, 2004).

3.4.4 Trust

The role of Trust is a key for effective communication. When employees need professional advice, interpersonal trust is crucial. A sense of confidence is boosted when employees trust their managers (Cook & Wall, 1980). Trust based on colleagues' expertise ensures that the knowledge shared is valid and useful (Mooradian, Renzl, & Matzler, 2006).

3.4.5 Employees' Knowledge Sharing

Employees' knowledge based on their experiences plays a pivotal role in KIFs. Sharing knowledge with other colleagues helps create knowledge communities (Bock, Zmud, Kim, & Lee, 2005). Knowledge communities in an organisation promote a collaborative learning, where employees can share their knowledge when asked to do so by other colleagues (Van den Hooff & Van Weenen, 2004). Knowledge sharing based on collaboration can also help employees to improve their 'know how' or 'know where' to complete a task. Sharing job related knowledge can help employees perform a task more effectively (Reychav & Weisberg, 2009).

3.4.6 Organisational Capability

The organisational capability variable covers such factors such as customer satisfaction through product quality, and new product development. Further, organisational capability variables are the ability to attract and retain employees to better compete in the market (Shu-hsien, Wu-Chen, & Chih-Chiang, 2007; Tsai, Huang, & Kao, 2001). Knowledge sharing creates a knowledge community that helps skilled employees be part of the learning community and stay in the organisation (Youndt, 2004).

3.4.7 Individual Capability

Employees receive feedback of their shared knowledge when shared knowledge is applied in the organisational context. This process also validates the shared knowledge and improves individual capability. Validity of shared knowledge provides a sense of confidence for employees that their knowledge is valuable and that it does not expired with the use of new technology (Pearce, 1993).

The proposed model (Figure 5) suggests that knowledge capability (KC) (both at individual and organisational levels) is the outcome of employees' knowledge sharing. The three constructs of the thesis - HRM, knowledge sharing and KC - are interdependent as shown in Figure 6. The HRM practices drive and influence knowledge sharing, and the supporting literature has been reviewed in Chapter 2. Once the knowledge sharing activities are triggered, knowledge sharing influences the knowledge capability of the organisation. Knowledge capability means to store employees' knowledge and utilise employees' knowledge to improve products and services.

Figure 6: Linkages between constructs used in this thesis

This chapter provides a research framework of this thesis using research questions, related hypotheses and operationalisation of the LCs of the proposed model. The research framework provides a base from which to select an appropriate research methodology of the thesis. The next chapter discusses the research and the research process of this thesis.

CHAPTER 4 Research Methods

4.1 Background of Philosophical Perspectives

Every research process is supported by theoretical suppositions which direct social scientists to use different paradigms, methodologies, and research tools to conduct their investigations. A philosophical perspective on the research process is based on the set of viewpoints, principles, and techniques shared by members of a given community (Burrell & Morgan, 1979). Social scholars and philosophers have been engaged in long-standing epistemological debates about the suitable methods for performing research. Burrell and Morgan (1979) suggest a plan for analysing the philosophical assumptions that can guide researchers in the field of social sciences. This plan includes two theories called the ontological theory (viewpoint regarding the nature of reality) and the epistemological theory (nature of knowledge and possibility and assumptions in relation to human associations between other human beings and their environment).

The critical researcher believes that social reality and dilemmas are historic constructs that can be reproduced by people (Myers, 1997). Figure 7 depicts these three philosophical perspectives. More recently, Neuman (2003) contributed to the subsequent development of social science research, suggesting that there are three fundamentally different and competing research paradigms: positivism, interpretative, and critical social science. The positivist's perspective assumes that reality is objectively given and can be described by measureable properties. This approach tests a theory to predict a fact, whereas the interpretive approach attempts to understand a fact through the meaning/understanding of people. It attempts to understand, without predefining, independent and dependant variables of the research.

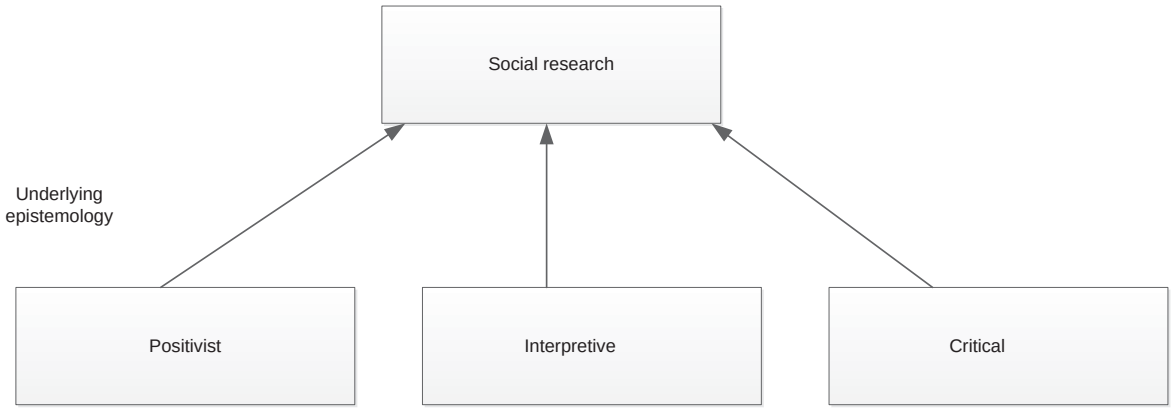

Figure 7: Three philosophical perspectives

Source: (Myers, 1997)

The philosophical perspective of this thesis is positivist and supports the view that truth is measureable. Correspondingly, the nature of the data is real and is based on fact; the epistemology (or method of knowing) is empirical. This perspective helps to understand observable facts because knowledge is based on inference grounded in observable facts (Amaratunga, Baldry, Sarshar, & Newton, 2002).

Research on knowledge management (KM) can be analysed through two main paradigms -: the technological, and the socio-organisational. The technological is in the domain of information systems, and is research based on predefined assumptions, mathematical models, and dealing with hardware and software issues. The socio-organisational paradigm acknowledges the role of technology, but the emphasis is on people and organisational-related issues within the wider KM field (Hazlett, McAdam, & Gallagher, 2005).

The previous chapter reviewed the literature related to the LCs of the proposed model for this thesis. The research paradigm is positivist because it supports the view that truth exists and is measureable (Amaratunga, Baldry, Sarshar, & Newton, 2002), and a quantitative methodology is employed in this thesis. A quantitative methodology is predictive in nature

and is used by researchers to test hypotheses through a deductive approach, whereas a field survey is used to obtain primary data.

This chapter outlines the appropriate research strategy followed by a research methodology that is employed to test and validate the LCs present in the proposed model. It also discusses the pilot study followed by data collection for the thesis. Section 4.6 details the ethical issues regarding data collection during survey administration. Section 4.8 provides a step-by-step data analysis strategy of this thesis, followed by a brief summary of this chapter.

4.2 Determining an Appropriate Research Strategy

Previous researchers have examined the linkages that are present between human resource practices and knowledge sharing, using a variety of methodological approaches and data collection tools. Several researchers have investigated the links between HRM practices, knowledge exchange, and organisational performance using quantitative methodologies through self-report questionnaires to collect data from services and manufacturing organisations (Bui & Baruch, 2010; Collins & Smith, 2006; Olander & Hurmelinna-Laukkanen, 2010).

Social scientists consider both organisational and psychological approaches to explain the regularities and causal relationships present in the social world, including the field of HRM (Legge, 1995). Therefore, mixed methods, the combination of both qualitative and quantitative approaches, is also used to test HRM and knowledge sharing relationships (Amaratunga, Baldry, Sarshar, Newton, 2002; Currie & Kerrin, 2003; Liao, 2006).

Hence, research methods - qualitative, quantitative and mixed methodologies - may be used to investigate research questions. Quantitative methods rely on statistical tests, rating scales, questionnaires, and physiological measures which produce numerical results (Stone-Romero & Rosopa, 2008). Qualitative approaches concentrate on words and observations to express reality and attempt to describe people in natural situations. Whereas, qualitative approach involves the use case studies, personal experience, and relies on narrative descriptions of events and processes (Morrow, 2005).

The choice of research design should be appropriate to the subject being investigated (Patton, 1990). Although both quantitative and qualitative methodologies have advantages and disadvantages, quantitative methods are more suited to organisational research (Bryman, 1984; Dey, 1993; Rossman & Wilson, 1985). Baruch, and Holtom (2008) support survey methodology and suggest that quantitative methodology using survey questionnaires, especially in the form of hard copy, have a higher response rate and provide better insight into the research. Karami, Rowley, and Analoui, (2006) reviewed 120 articles published in 20 leading management journals between 1991 and 2000, and concluded that the survey questionnaire in management studies is a dominant data collection tool that leans toward positivism. The key issue to carry out this type of research is getting access to the sample. Similarly, factors such as physical distance and time constraints limit the choice of methodologies to the use of quantitative methodology through structured questionnaires.

4.2.1 Research Methods

In the previous chapter, two research methodologies of social science research, namely a quantitative methodology and qualitative methodology, were described. The quantitative methodology draws “upon systematic protocol and technique” (Burrell & Morgan, 1979: p6). In contrast, as in Table 2, qualitative methodology is subjective in nature (Morgan, 2007).

Table 2: Comparison of Quantitative and Qualitative Methodology

	Quantitative Methodology	Qualitative methodology
Connection of theory and data	Deduction	Induction
Relationship to research process	Objectivity	Subjectivity
Inference from data	Generality	Context

Source: (Morgan, 2007, p. 71)

The research questions investigated in this thesis consider the relationship between specific HRM practices and employees' knowledge sharing. Consequently, it seeks to assess an employee's perception about the relationship between employees' knowledge sharing and capability, both at organisational and individual levels. HRM practices, knowledge sharing, trust and capability (organisational and individual) are quantified for measurement.

A self-administered survey was employed for data gathering. According to Babbie (2002), surveys, particularly self-administered, are very cost-effective compared to other techniques, including face-to-face and telephone interviews. Well-designed studies and questionnaires survey can increase the response rates. There are several advantages and few limitations associated with the questionnaire survey method. The advantages are its relatively low cost, ample time for respondents to respond, and promotion of anonymity and confidentiality. It can provide access to broadly dispersed respondents and lower interviewer bias. During data analysis, rigorous and sophisticated statistical techniques can be applied, questionnaires can easily be standardised, tested and validated data from sample populations. The results can be generalised, and considered as relatively accurate (Kerlinger, 1986). However, survey limitations include relatively lower response rates, less opportunity to further define responses (Kidder & Fine, 1987), and poor interviewer control (Fowler 1988).

In this survey, the question items are used to operationalise the LCs of the thesis. In the thesis, the pre tested question items were used from the existing literature and. Cross-sectional data was collected to capture participants' perceptions regarding HRM, knowledge sharing and KC at a specific point in time rather than over an extensive timeframe. Consequently, the data that was collected consisted of participants' perceptions of the circumstances in their present organisation, and not their previous organisational knowledge.

In the data collection process, the respondents were asked to fill the questionnaire only and were not interviewed. The research design included the development of a survey instrument drawn from existing literature. However, some items were redesigned in order to better measure the constructs of this research.

4.3 Research Process

4.3.1 Development of the Research Instrument

The questionnaire, designed based on the review of literature in Chapter 2, assesses human resource practices, employees' knowledge-sharing and its relationship with individual and organisational capability according to respondents' perceptions. All constructs in the questionnaire, except for those marked with an asterisk, were measured using existing and tested scales (See Appendix C).

The questionnaire is in two sections. The first section, Section A, requires demographic information about the respondents. This section asks questions such as age, gender, and educational qualifications, length of employment, and the number of employees reporting to them. The second section, Section B, consists of statements to measure the latent constructs of this thesis (shown in the proposed model Figure 2). Section B consists of 77 questions based on a five-point Likert scale where 1 (strongly disagree) to 5 (strongly agree)

are used to measure the latent constructs. To avoid respondents providing answers which they think are the required answers rather than their own perceptions, the same question has been asked more than once with different wording, and negative statements have also been included (Brown & Duguid, 2001).

During questionnaire design, special care is taken to exclude questions that convey two or more ideas - known as double- barrelled items in the social research (DeVellis, 2003). Similarly, question items that can cause ambiguity are not included (Baker, 2003). All measures involved self-reporting opinion, where respondents quantified whether, how often or how intensively they experienced the facts under study in the present research. Some items in the questionnaire were designed by researchers. When designing new items for a particular study, it is important to have a well-articulated conceptual basis and then test the psychometric performance and ease of administration. To improve the wording of items, the researcher of this thesis focused on face validity of the items, which is the degree to which items are perceived by respondents to be sensible and relevant (Lerneret. al,1999).

4.3.2 Information Sheet and Survey Questionnaire

The information sheet attached to the questionnaire was prepared to in order to describe the research topic, the importance of the respondents, the time required to complete the questionnaire and the contact persons. To increase the response rate, Dillman (2007) suggests that researchers should clearly convey the three key elements about the rights of the respondents. The first element is reward or recognition. In this thesis, the respondents' recognition was highlighted. This was reflected in the covering letter as "Your time and co-operation regarding this survey will be greatly appreciated since you are the people who have expertise and practical experience of the business market", (See Appendix B).

The second element is the length of time it will take to complete the survey which should be concise and straightforward (Labaw, 1982). In this thesis, the covering letter clearly states: "The questionnaire will take approximately 25–30 minutes to complete". The third element is confidentiality. The covering letter clearly states: "The survey is completely anonymous. All individual responses to this survey will be kept confidential. Your organisation, colleagues and managers will NOT have access to the information you have provided me." A survey questionnaire map is presented in Table 3, showing the number of question items per latent constructs and the scale of the items.

Table 3: Survey Instrument Map

Section/ Latent constructs	No. of items	Scale
Demographic Information	Total 5 questions	
	Age	Ordinal
	Gender	Nominal
	Qualification	Ordinal
	Work experience	Numeric open ended
	Staff reporting	
Recruitment and selection	15	Interval scale
Rewards and recognition	12	Interval scale
Employees' collaboration	11	Interval scale
Knowledge sharing	15	Interval scale
Trust	10	Interval scale
Organisational capability	7	Interval scale
Individual capability	7	Interval scale

4.3.2.1 Section A: Demographic Relationships

As described in Section 4.3.1, the first section (Section A) of the questionnaire consists of questions relating to demographic details. This section has been revised as a result of

feedback from the pilot study. Questions regarding religion, marital status and kinship with other employees in the organisation were excluded to avoid the disclosure of identifying personal information.

4.3.2.2 ***Section B***

The second section (Section B) of the questionnaire comprises three parts that measures the seven latent constructs of this thesis. In Part 1, respondents were asked to specify their experiences of HR practices, including recruitment and selection, rewards and recognition, and employee collaboration within their organisation. Due to lack of available measures for HR practices of interest to the present study, new items were designed by the researcher. Part II consists of respondents' perceptions about tacit knowledge sharing in the organisation, and levels of trust among organisational members. Part III consists of seven question items related to organisational capability, and Part IV seeks to measure the perceptions of seven respondents with seven brief questions regarding capability at individual level.

The three latent constructs of HRM practices (recruitment and selection, employees' collaboration, and rewards and recognition) are used. As shown in Table 3, the recruitment and selection dimension consists of 15 question items, with items 1 to 14 measuring respondents' perception regarding the recruitment and selection process. Question 15 is designed by researcher of this study to measure person fit in an organisation. Employees' collaboration comprises 11 questions, with 1 to 3 measuring respondents' perceptions of employee participation, while 4 to 8 have been designed by the researcher to enquire into employees' perception regarding teamwork in the organisation. Questions 9 to 11 measure employees' perception of their social capital in the organisation.

The third dimension of HRM practices used in this thesis was rewards and recognition which consisted of 12 questions. Questions 1 to 6 measure respondents' perceptions of fair rewards within their organisations. Further, in the rewards and recognition section, questions 7 to 9 measure the actual process of reward systems, and 10-12 concerned employees' perception of their recognition.

Tacit knowledge sharing and trust

In the questionnaire, tacit knowledge sharing constructs have two dimensions - sharing knowledge and donating knowledge to colleagues. The second dimension relates to collecting knowledge (receiving knowledge from other employees). Sharing knowledge, question numbers 1 to 3 measure employees' experiences and sharing it with other employees, whereas questions 4 to 6 measure employees' perception of information sharing in their organisation. Donating and collecting knowledge consists of eight questions, 7 to 16 in the survey.

The latent construct of trust is measured through interpersonal and competence-based trust. Interpersonal trust consists of eight questions with 1 to 3 being questions about peers, and 4 and 5 concerning employees' perception of management trust. Questions 6 and 8 ask respondents about their perceptions regarding mutual trust between employees. Questions 9 and 10 are designed by the researcher of this thesis and ask respondents about their perceptions of competence based trust.

Organisational capability

Part III of the questionnaire consists of seven questions related to organisational innovation and knowledge storage capability. Questions 1 to 5 ask for employees perceptions about

products and services, while questions 6 and 7 enquire about employees' perceptions regarding employees' knowledge storage capability.

Individual capability

Part IV of the questionnaire consists of seven questions relating to individual capability in terms of innovation and learning. Questions 1 to 5 are designed by the researcher and ask for employees' perceptions of their innovation ability through their peers' feedback. Questions 6 and 7 are about employees' perceptions regarding their own learning. The details of questionnaire items are presented in Table 4.

Table 4: Instrument Measurement

Construct	Dimension	Items description	References
HRM practices	Recruitment & Selection	Item1-4(process) Item 5-8(process) Item 9-14 (process) *Item 15- (p-o)	(Kuldeep, 2004) (Edgar & Geare, 2005) (Lepak & Snell, 2002)
	Employees' Collaboration	Item 1-3 (participation) *Item 4-8 (teamwork) Item 9-11(social-capital)	(Kuldeep, 2004) (Youndt, 2004)
	Rewards & Recognition	Item1-6 (fairness) Items7-9 (process) Item 10-12 (recognition)	(Sweeney & McFarlin, 2005) (Balkin & Gomez-Mejia, 1990) (Davenport & Prusak, 1998)

Knowledge sharing	Sharing	Items 1-3 (experience) item 4-6 (information)	(Bock, Zmud, Kim, & Lee, 2005), (Reychav & Weisberg, 2009)
	Donating and collecting	Item 7-16	(Van den Hooff & Van Weenen, 2004)
Trust	Interpersonal	Item1-3(peers), and Item4-5(management) Item 6-8	(Cook & Wall, 1980) (Mooradian, Renzl, and (Matzler, 2006)
	Competence-based	*Item 9-10	
Individuals' Capability	Innovation	*Item 1-3(innovation) *Item 4-5(feedback)	
	Learning	*Item 6-7 (feedback)	
Organisational capability	Innovation	Items 1-5 (product and services) Item 6-7 (storage)	(Shu-hsien, Wu-Chen, & Chih-Chiang, 2007) and (Youndt, 2004)

*Items designed during the thesis' research.

The psychometric properties of the studies from which questionnaire items have been adopted are shown in Appendix D.

4.4 Pilot Study

Questionnaire pre-testing is an important stage of the survey development process. The use of questionnaires in a pilot study determines how successful the instrument will be in the target population. In this phase, the purpose of the pilot study is that the questionnaire can be refined in order to avoid errors in the final version. Several techniques for a pilot study are recommended in the literature. However, the pilot sample should be similar to the target population (Zaltman & Burger, 1975).

The pilot study was conducted in order to test the survey completion time, content clarity, and layout. The respondents were from the target population but are foreign students working back in Pakistan as university teachers and in the field of telecom and now they are studying in New Zealand for higher academic degrees). According to their feedback regarding the pilot questionnaire, the average completion time was 25 minutes which was broadly in line with the completion time stated on the participant information sheet. This was considered acceptable given the size of the questionnaire. Respondents found some questions in Part A (demographics) were too personal and could lead to bias. However, the layout was found to be satisfactory, and there were no reported difficulties in understanding and answering the questions. The questionnaire was redesigned according to the feedback received.

4.5 Identification of Population

The target population of this study consisted of employees who use their experience and knowledge in knowledge based organisations. The target population consisted of full-time employees working in the telecommunication and higher education sectors of the Punjab province in Pakistan. One of the reasons for choosing these two sectors for this thesis is that both the higher education institutions and telecommunication sectors are rapidly growing in Pakistan. Another reason is that employees' knowledge is a key resource, along with other resources, in both business sectors.

4.5.1 Higher Education Institutions in Pakistan

Pakistan was created in 1947 after the partition from India. At that time, Pakistan had only one higher education institute, the University of the Punjab. However, over the next three decades, several higher education institutions were established to aid the country's socio-economic development (Sedgwick, 2005).

By the mid-1980s, private educational institutions in Pakistan were allowed to operate provided they complied with government-recognised standards (for instance, campus

facilities, faculty and staff, and English as a medium of instruction) (HEC, 2012). There was a rapid growth of higher education institutions both in the private and public sectors. In the late 1990's, three higher education institutions were established, and in early 2000, eleven new higher education institutions were opened. By 2002 a total of 29 higher education institutions had been formed which met the HEC Pakistan (government) standards (Sedgwick, 2005).

The Higher Education commission of Pakistan (HEC) recognises 132 institutions, 72 of which are public universities and 56 are private universities. The HEC is the supervisory body of higher education in Pakistan. It has facilitated the development of Pakistan's higher educational system through faculty development programs and by offering hundreds of doctoral scholarships to faculty members and individuals abroad each year. Its primary objective is "to upgrade Pakistani universities to achieve recognition as world-class centres of education, research and development through the building of knowledge based economy in Pakistan" (HEC, 2012).

4.5.2 Telecommunications Sector

The telecommunications industry was established under Pakistan Telecommunication Ordinance, 1994, which included the establishment of an authority responsible for the operation, maintenance of telecommunication systems, and the provision of telecommunications services. Subsequently, the Telecommunication (Re-Organization) Act - XVII, 1996 enabled planning to begin to reorganise the telecommunications sector in Pakistan. The Pakistan Telecommunication Authority (PTA) was established in January 1997 under the Telecom Reorganization Act 1996, to regulate the establishment, operation and protection of telecommunication systems and the provision of telecom services. The Pakistan Telecommunication Authority has its headquarters in Islamabad and has regional offices located at Karachi, Lahore, Peshawar, Quetta, Rawalpindi and Muzaffarabad. The

total foreign direct investment during 2010 in the telecommunications sector was US$374 million, and revenue of US$ 4362 million was generated during same year (PTA, 2011).

A recent business report shows that the Pakistani telecommunication sector is rapidly growing. The Pakistani telecommunication sector has generated US$4.11 billion in revenue in 2012, i.e. 11 percent more growth than in 2011. The number of users is rapidly increasing, both in broadband and cellular areas. The Pakistan Telecommunication Authority advises that there are over 2.1 million broadband subscribers and more than 120 million mobile phone subscribers (Jabri, 2013).

4.5.3 Access to the Selected Organisations

Initially the selected organisations were contacted by email which briefly stated the research topic, the research questions, and the significance of the research. This email pre-empted a visit to these organisations in Pakistan. When organisations agreed to participate in the research, the researcher visited the selected organisations, with special attention being paid to the contact persons (gatekeepers). Survey packages were delivered, containing a letter from Massey University, an information sheet for participants and a hard copy of the questionnaire. Questionnaires were distributed by the contact persons to the volunteer participants, and completed questionnaires were collected or received by the contact persons at a time convenient to the respondents.

4.6 Ethical Issues

In line with normal procedure for survey research at Massey University, the original questionnaire was screened by the Massey University Human Ethics Committee (MUHEC) to ensure questions were considered appropriate for the process. Ethical approval is attached at Appendix. A

Before distribution of the questionnaire, respondents were informed about the purpose of the research, data and implications of the research. The researcher asked for volunteers to participate in the research, and no-one was coerced, directly or indirectly, to participate in the survey. The survey was not conducted in the presence of or in the offices of senior managers (i.e. directors or heads of department). Special care was taken to ensure anonymity of participants by not asking their personal details, for instance, respondent's names and job titles.

4.7 Data Collection

4.7.1 Sampling Plan

The researcher's intention was to obtain samples from those in the educational and telecommunication sectors. The data could not be collected from the whole population due to the time limitations for a PhD study and access to the organisations. Sekaran and Bougie (2001) suggest that sampling should be used where it is not possible to collect data from the whole population due to lack of time, poor access and financial barriers. The sample frame comprised all full time employees from both the telecommunication and higher education sectors in Pakistan. A simple random sampling technique was applied to the organisations of these two sectors in Pakistan in order to select a suitable number of organisations (Saunders, Lewis, & Thornhill, 2003).

The selected companies were contacted to participate in the research. Thirty companies in the province of Punjab, Pakistan initially agreed to participate in the study. However, due to the severe weather-related events, particularly, flooding, that occurred in Pakistan in 2010, only nineteen organisations made up the final sample. The questionnaire survey was distributed to the employees of the participating organisations between mid-November 2010 and early February 2011. Paper questionnaires were given to the contact persons of the participating companies

The employees working in the selected organisations were knowledge workers. Knowledge workers are defined as employees "critical for creating new knowledge or developing innovations within the organisation" (Collins & Smith, 2006, p. 549). The respondents of the selected organisations were of Pakistani nationality, having been employed by the company full time, and were involved in creating new knowledge or developing innovations. According to guidelines provided by Krejcie and Morgan (1970), the minimum desirable sample size is *n*= 260 to obtain a known precision ±5% and a confidence level of 95%.

4.7.2 Data collection process

The population of interest for this thesis is Pakistani knowledge workers working in Pakistani KIFs. The KIFs refer to those organisations, where most of the work is of an intellectual nature (Alvesson, 2001). Typical examples of KIFs include telecommunications companies, law firms, consultancy companies, research and development units, and higher education institutes. In this thesis, two sectors namely, mobile telecommunications and universities, were chosen for data collection. Initially, a letter of invitation, outlining the PhD topic and research, together with a request to participate was emailed to 50 organisations. A total of 19 companies finally agreed to participate in this research, out of which 13 were universities and six were from the mobile telecommunications sector. Samples were taken from one province - the Punjab of Pakistan. The researcher travelled to Pakistan and met with the contact persons in each of the 19 companies. The purpose of this travel was to explain the ethical aspects of data collection and convey the benefits of this research to respondents through their respective contact person. Special care was taken to avoid interrupting the participants' working hours. The following steps were taken during data collection:

- Regarding the question of circulation, many researchers use gatekeepers (contact persons) to distribute the surveys within their organisations (Pires, Stanton, & Stanton, 2005; Talmon, Smith & Booth, 2011). The gatekeepers maintain a barrier

and privacy between the researchers and the respondents, thus increasing access to individual employees, whilst maintaining the privacy and confidentiality of the responses. To increase the response rate, a better solution would be to enlist the assistance and collaboration of institutional gatekeepers where the questionnaires need to be distributed (Hartford, Carey, & Mendonca, 2007). In the data collection for this thesis, the gatekeepers were not managers, immediate supervisors or directors so as to avoid their influence and control.

- The contact persons were responsible for identifying qualified respondents for this research
- The researcher handed the questionnaires and the information sheets to the contact persons
- Respondents were able to complete their questionnaire at a time that suited them, either during working hours or at home.
- The researcher advised that, for reasons of privacy and confidentiality, respondents should not complete the questionnaire in front of their managers or directors.
- The researcher visited the participating organisation to meet the contact persons in order to increase the response rate. The researcher agreed to extend the questionnaire return time period for another 14 days.

A total of 600 questionnaires were distributed to 19 organisations. Out of that 600, a total of 390 usable questionnaires were received, giving a response rate of 65%. No incentives were given (e.g. a prize draw) to increase the response rate. The response rate was acceptable given that the questionnaire was relatively long. Baruch (1999) suggests that the average response rate is 55.6% in academic studies based on 175 studies reported in journal

publications. In this thesis, the term ‘response rate’ is referred to return/completion of the distributed questionnaire and the formula is

= (number of the survey distributed/ completed survey received) x (100)

Several researcher scholars use contact person(s) for the distribution of their surveys, for instance: Edgar and Geare (2005, p 540) calculate the response rate as follows:

> “The employer participant (contact person) was asked to distribute the surveys to a representative sample of their workforce, in terms of occupational classification, ethnicity and gender. The targeted population of employees consisted of a total of 1,075 full and part-time employees from the 40 participating organisations. A total of 626 employees responded (a response rate of 58 per cent) by completing the survey and returning it in the reply-paid envelope provided”.

However, this thesis acknowledges that the calculation of response rate by this method is not a true response rate because the survey is distributed by the contact persons not by the researcher himself and has no control on recruiting participants. Subsequently, during data collection process:

- Contact persons were instructed that respondents should be knowledge workers (engaged in proposing new ideas and solving problems, using their skills to help their organisation), working full time, and were Pakistani nationals.
- Contact persons were advised that the respondents should be employees and should respond to the survey questionnaire items based on their own perceptions, and that they are not informants.

Due to the nature of the questionnaire, a quantitative methodology was employed to test the causative relationships between LCs of the proposed model. The next section briefly describes the data analysis strategy of the thesis.

4.8 Data Analysis Strategy

A step-by-step brief data analysis strategy of this thesis follows:

4.8.1 STEP 1: Descriptive Analysis and Instrument Reliability

4.8.1.1 Data Screening

Once the data had been entered, it was screened to ensure that no errors in data entry had occurred. This may occur due to errors in data entry or by the respondents themselves that may affect the results. The out of range values were checked with Predictive Analytics Software (PASW) version 19. All negative-worded items in the questionnaire were reverse scored so that higher scores indicated higher levels of agreement (Pallant, 2009).

4.8.1.2 Internal Consistency

In order to ensure the reliability of the survey instrument, internal consistency reliability was computed. Cronbach's alpha is a useful co-efficient for assessing internal consistency (Bland & Altman, 1997; Igbaria, Stephen & Thomas, 1994; Nunnally & Bernstein, 1994). The threshold value of Cronbach's alpha is 0.70 as suggested by researchers (Hair, Anderson, Tatham, & Black, 2010; Pallant, 2009; Santos & Reynaldo, 1999).

4.8.1.3 Descriptive Statistics

The descriptive statistics summarise quantitative data in a manageable and user-friendly way and enable the researcher to obtain a holistic overview of the research data (Kaplan & Saccuzzo, 2001; Saunders, et al., 2003). For the purpose of this research, descriptive statistics were considered for reporting on the profile of the sample.

4.8.2 Step 2: Multivariate Analysis

4.8.2.1 Initial Solution and KMO

The PCA was run with eigenvalues set at ≥1 and a maximum of 25 iterations was set for convergence to view the results of total variance explained. Items with factor loadings greater than ±0.40 are considered significant and therefore only these should be used in defining factors.

The KMO measure for sample adequacy was tested, followed by Bartlett's test of sphericity. Bartlett's test is run to inspect the hypotheses to that each variable only associates with itself and not with the other variables (Tobias & Carlson, 1969).

4.8.2.2 Scree Plot

To decide how many items should be retained a scree plot was inspected which was supported by parallel analysis. Exploratory factor analysis was used in this thesis to explore the dimensions of the concepts that have been operationally defined, as well as to indicate which of the items were most appropriate for each dimension.

4.8.2.3 Factor Rotation

A Varimax rotation was applied to the dataset to increase the interpretability of factor rotation (Hair, et al., 1998). Items with loadings equal to or greater than 0.40 were considered significant and used as the defining factors of the thesis' LCs (Ford, Smith, Weissbein, Gully, & Salas, 1998; Hair, et al., 1998). The sample size used in this analysis is n=390. The cut-off point of factor loadings is chosen equal to or greater than 0.40. The items retained in the exploratory factor analysis (principal component analysis) were submitted to confirmatory factor analysis using AMOS, version 19 (statistical software).

4.8.3 Step 3: CFA and Structural Model

A measurement model was designed using confirmatory factor analysis. A measurement model specifies the relations of the observed measures to their posited underlying constructs (Byrne, 1998; Janderson & Gerbing, 1988).The maximum likelihood (ML) method was chosen to estimate the difference between the observed and estimated co-variance matrices. The reasons for choosing the ML method was, firstly, because it is the most common procedure when sample size is equal to or above 150, and, secondly, it is the most efficient method when the assumption of multivariate normality is met (Anderson & Gerbing, 1988; Hair, et al., 1998).

The measurement model was evaluated by examining the factor loadings/regression weights of each item for statistical significance. The factor loading should be at least 0.50 and above for adequate individual item reliability (Bagozzi & Yi, 1988; Browne & Cudeck, 1993). Thus, in this thesis, the consideration to drop items was made if the factor loading for each item was below the recommended level of 0.50.

4.8.3.1 Fit Indices

The fit indices utilised were Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), the Standardised Root Mean Square Residual (RMSR), the Tucker Lewis Index (TLI), the Comparative Fit Index (CFI), the Normed Fit Index (NFI) and the Root Mean Square Error of Approximation (RMSEA) (Hair, et al., 1998). The recommended value for GFI, and NFI is equal to 0.80 or greater (Ryu, et al., 2003). The recommended value for RMSEA should be no more than 0.10 for reasonable error of approximation (Ryu, et al., 2003). After model fit, a structural or path model was drawn showing cause and effect among latent constructs.

4.9 Chapter Conclusion

This chapter describes the methodology chosen to test the relationships shown in the research framework. The variables depicted in the research framework were measured using a multiple items questionnaire. It also describes the framework for questionnaire design as well as the steps taken to produce item generation, pilot testing and finalising the questionnaire. The sample chosen comprised 600 employees from Pakistani KIFs, and the procedures undertaken for data collection are also described. The chapter then moves to a discussion of the step-by-step data analysis strategy for descriptive and the multivariate techniques. Data analysis strategy includes descriptive analysis, exploratory factor analysis (principal component analysis), confirmatory factor analysis and structural modelling. The next chapter provides the results of the analysis using the statistical techniques described in data analysis strategy of this chapter.

CHAPTER FIVE RESULTS

5.1 Introduction

This chapter follows the data analysis strategy presented in Chapter Four. This chapter presents the sample characteristics and the findings of both univariate and multivariate data analyses. It begins with the respondent sample characteristics followed by an exploratory factor analysis and measurement model fit, using confirmatory factor analysis (CFA). On the basis of measurement model fit, a structural model is tested to determine how well the structural model fits the dataset. Finally, the chapter concludes with a summary of the findings of the thesis. The implications and inferences are fully discussed in Chapter 6.

5.2 Description of Respondent Sample Characteristics

The purpose of this section is to provide an overview of the characteristics of the sample used in this thesis. The 390 useable responses came from knowledge workers within both the higher education and telecommunication sectors, and the response rate was 65%. Table 5 provides a breakdown of the sample by age, gender, highest qualification, and total years of experience. The questionnaire was available to all employees within the organisations accessed.

The sample frame was comprised of full time staff members from both public and private Pakistani organisations, in both the higher education and telecommunication sectors. As discussed in the previous chapter (see Section 4.5), the participants comprising this sample were employees from 19 different organisations in the Punjab Province of Pakistan. A total of 600 questionnaires were distributed to 19 Pakistani KIFs. The demographical characteristics of the respondents are reported in Table 5.

Table 5: Demographic Characteristics of the Respondents

Demographic Variables	Category	Frequency	Percentage (%)
Gender	Male	287	73.60
	Female	103	26.40
	Total	390	-
Respondent Age	21-30 years	192	49.20
	31-40 years	146	37.40
	41-50 years	42	10.80
	51-60 years	7	1.80
	61 years and above	3	0.80
Highest qualification	Bachelors	122	31.30
	Masters	207	53.10
	PhD	37	9.50
	Other	24	6.20
Total experience	Less than a year	7	1.80
	1-5 years	334	85.70
	6-10 years	34	8.70
	11-25 years	14	3.60
	26 years and above	1	0.30
Staff reporting	Nil	235	60.30
	1-10	114	29.30
	11-20	12	3.01
	30 and more	4	1.03

The data collection for the present study in respect gender indicates that there were three times as many male respondents than female respondents. The questionnaire was open to all employees within the organisations approached, and specific genders were not targeted.

The data regarding age indicated that comparatively young people work in knowledge intensive organisations, with almost half the respondents (49.2 percent) falling within the 21-30 year age band. This smallest proportion of the respondents was aged 61 or above, accounting for just 3 percent of the total respondents.

The educational level of the respondents was generally high. The highest qualification indicates that the majority of the participants had been in tertiary education. Master's degree

holders made up over half of the respondents, with one third having a Bachelor's degree. Only 9.5 percent of the respondents had a doctorate.

The work experience of the participants showed that the majority of the participants (85.1 % of total respondents) had work experience of between one and five years. A minority of the respondents had more than 26 years' work experience. Almost two-thirds of the respondents were not working as managers. One third of the respondents worked as junior or middle managers, having fewer than 20 subordinates.

Some of the demographical characteristics in this thesis are similar to those in the research already conducted in two Pakistani sectors (for instance, Kashif, Khan, and Rafi , 2011; Shahzad, Sarmad, Abbas, & Khan ,2011) in the Pakistani telecommunications sector, and in higher education institutes (Shahzad, Bashir, & Ramay, 2008). Table 6 shows the comparisons of the demographical characteristics of Pakistani KIFs. The ratios are described in terms of the total respondents of the thesis.

Table 6: Demographic Consistency

Demographics	Category	This thesis	Kashif et al (2011)	Shahzad et al (2008)	Shahzad et al (2011)
Age	≥ 30 years	Close to half	Over half	Over half	Over half
Gender	Males	Over two thirds	Over two thirds	--	Over two thirds
Education level	Masters degree	Over half	Over half	Over half	Almost half
Work experiences	2-5 years	Over two thirds	Over two thirds	Almost half	Over two thirds

5.3 Internal Consistency Reliability

To ensure the reliability of the survey instrument, internal consistency was computed. Internal consistency is an indicator that explains how well question items measure the LCs. Researchers suggest that a useful co-efficient for assessing internal consistency is Cronbach's Alpha (Bland & Altman, 1997; Igbaria, Stephen & Thomas, 1994; Nunnally & Bernstein, 1994). The recommended threshold value of Cronbach's Alpha is 0.70 or higher (Hair, Anderson, Tatham, & Black, 2010; Pallant, 2009; Santos & Reynaldo, 1999).

Table 7: Internal Consistency of the Instrument

Constructs	No. of Items	Cronbach's Alpha
Recruitment and selection	Item no.1- 15	0.82
Rewards and recognition	Item no.16- 27	0.80
Employee collaboration	Item no.28- 38	0.85
Employees' knowledge sharing	Item no.40- 53	0.93
Trust	Item no.50- 63	0.87
Organisational capability	Item no.64- 70	0.78
Individual capability	Item no.71- 77	0.77

As shown in Table 7, the value of Cronbach's Alpha in this thesis is higher than the recommended 0.70 value. Thus all the scales have satisfactory levels of internal consistency and can be considered for further analysis. No items have been deleted in order to improve Cronbach's Alpha value.

5.4 Kaiser-Meyer-Olkin Measure of Sampling Adequacy

To measure whether the sampling adequacy of the distribution of values is adequate for conducting factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test was used. The Kaiser-Meyer-Olkin (KMO) tests whether the distribution of values is adequate in the dataset for conducting factor analysis. This measure varies between 0 and 1, (0-1) and values closer to 1 and higher than 0.60 are considered to be acceptable (Hair et. al, 1998). However, Field (2009) states that the KMO needs to be equal to or greater than 0.50 for a satisfactory factor analysis to be conducted. Hence, in this analysis, a value of

KMO equal to or greater than 0.50 is acceptable. In this research, the value is 0.915 which is highly acceptable for conducting factor analysis (Pallant, 2009).

In statistics, Bartlett's test of sphericity shows that samples from populations are with equal variance or homogeneous. This test explains that variables are not associated with the other variables (Tobias & Carlson, 1969). The results in Table 8 show that Bartlett's test of sphericity reached statistical significance at 18561, and confirmed the multivariate normality of the data that shows that data is multivariate normally distributed. Statisticians suggest that higher results of Bartlett's test confirm that the assumption of multivariate normality is met (Tobias & Carlson, 1969).

Table 8: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.915**
Bartlett's Test of Sphericity	Approx. Chi-Square	18561.214
	df	2926
	Sig.	**.000**

5.5 Principal Factor Extraction

The principal factor extraction technique was used to identify a set of latent constructs underlying a sequence of measured items. This technique is used for the purpose of data reduction so that a maximum of variance is extracted (Harman, 1976) to determine a suitable number of factors and the pattern of factor loadings, primarily from the data (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Statistically, principal factor extraction procedures (i.e. principal component analysis (PCA) and principal axis factoring (PAF)) were used to explain as much of the variance in the original data set with a simple solution and the fewest factors possible (Gorsuch, 1983; Pallant, 2009). Both PAF and PCA techniques are data reduction techniques. In this thesis, both principal components analysis (PCA) and principal axis factoring (PAF) were used to identify (extract) and compute composite scores for the factors underlying the constructs under study.

5.5.1 Initial Solution

The PCA was run with eigenvalues set at ≥1 and a maximum of 25 iterations was set for convergence. This resulted in the identification of 18 components that accounted for 67.41% of the total variance explained. The statistical significance of the item loadings was assessed using the guidelines recommended by a number of scholars in the field of statistics (Hair, Black, Babin, & Anderson, 2010; Tabachnick & Fidell, 2007). For example, Field (2005) suggests that only items with factor loadings greater than ±0.40 are considered significant and therefore only these should be used in defining factors. The cut-off point in this thesis chosen for item loading is ≥0.40. Any items below this cut-off are not displayed in the results.

The 77 items were then factor analysed with eigenvalues set at >1 and a maximum of 25 iterations. This resulted in the identification 18 components which accounted for 57.31% of the total variance (see Appendix E). Both extraction methods produced almost similar results. However, initial solution of factor analysis based on PAF show less total variance explained (shown in Appendix F) as compared to PCA, which is one of its limitations as discussed in the previous section (see Section 5.5). Another limitation of PAF is the factor indeterminacy that is caused by estimated communalities and factor scores (Schonemann &

Wang, 1972). Therefore, to identify the underlying dimensions of constructs, PCA was used for further data analysis.

5.5.2 Scree Plot

The factor analysis results are based on how many items to retain before choosing a factor rotation (Ford, MacCallum & Tait, 1986; Ledesma & Valero-Mora, 2007). The graphical results of the scree test are better than the rule of eigenvalues greater than 1 (Ford, MacCallum & Tait, 1986). Subsequent research also supports the concept that when the goal is to categorise common factors, it is more rational to examine the scree plots of the eigenvalues (Fabrigar, et al., 1999) by using Catell's scree test (Cattell, 1966; Pallant, 2009). As shown in Figure 8, a scree plot is a graphical representation which involves the visual exploration of a graphical representation of the eigenvalues. In the scree test, the eigenvalues are presented in descending order and linked by a line. A point is determined where a drop or break has taken place (Ledesma & Valero-Mora, 2007).

In this thesis, on inspection of the scree plot, a clear break is revealed in the trend for eigenvalues after the seventh component. As depicted in Figure 10, the graphical line in the scree test drops down until there is break or bump in the curve, and where it begins to straighten out is considered to be an indication of the maximum number of factors where the cut off for eigenvalues is greater than 1.0 (Hair, Anderson, Tatham, & Black, 2010; Malhotra, Peterson, & Kleiser, 1999).

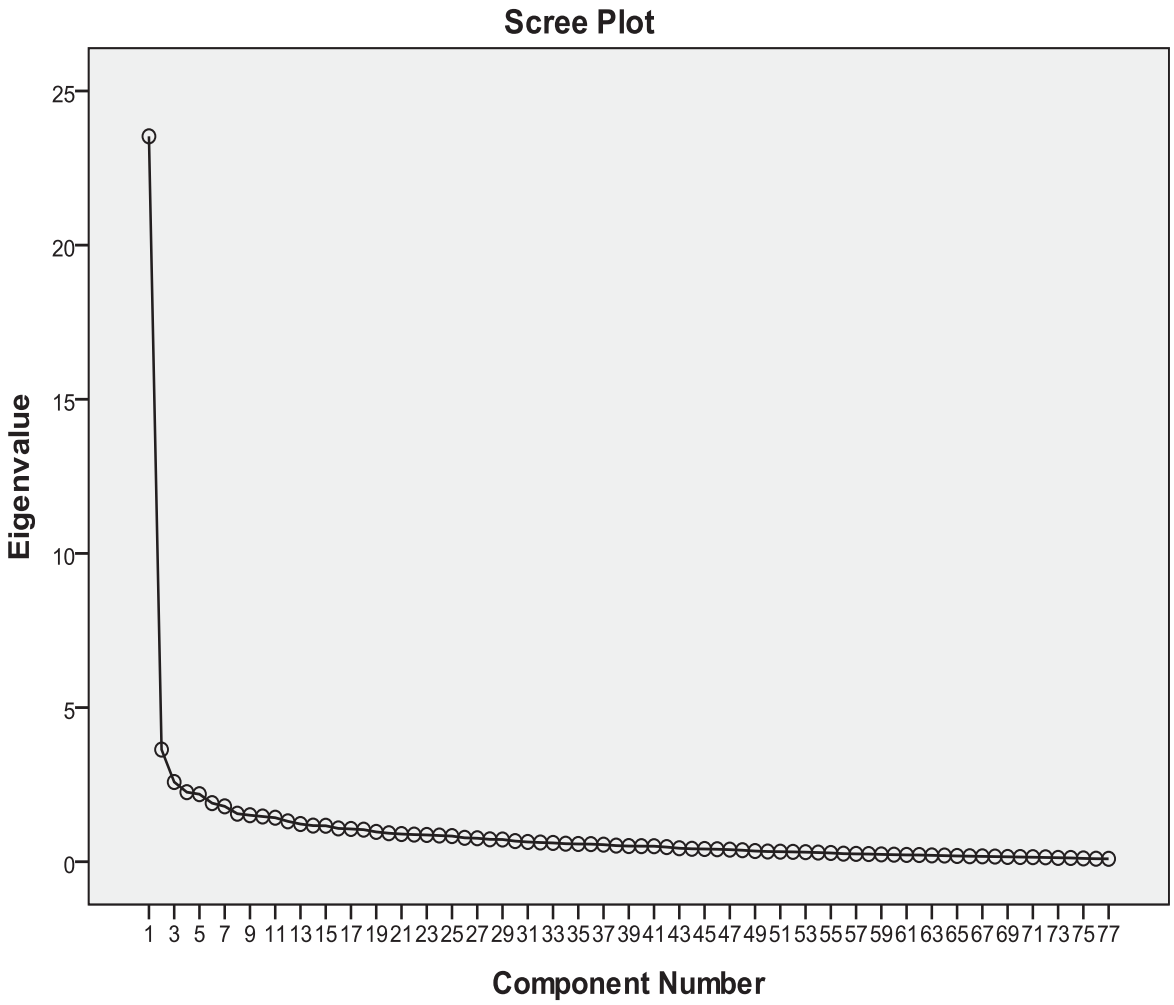

Figure 8: Scree plot

5.5.3 Parallel Analysis

Although the scree test is commonly used to determine how many items to retain in social science research, one of the limitations of this approach is that ..."results may be ambiguous and open to subjective interpretation" (Brown, 2006, p. 27). Therefore, a more accurate methodology to determine the number of items for factor rotation is needed. Statisticians have observed that parallel analysis (PA) is an eigenvalues-based procedure for guiding more accurate factor selection as compared to the scree test, and eigenvalues greater than 1 procedure (Hayton, Allen, & Scarpello, 2004; Horn, 1965; O'connor, 2000).

This approach is based on a scree plot of the eigenvalues obtained from the sample data against eigenvalues that are estimated from a data set of random numbers (i.e., the mean of eigenvalues is produced by multiple sets of completely random data (Brown, 2006). The decision point in PA is that a factor is considered significant if the associated eigenvalues of the random data is greater than the actual value (Ledesma & Valero-Mora, 2007).

Table 9: Parallel Analyses

Root	Raw Data (Actual)	Percentile (Random)
1.000000	23.529387	2.091234
2.000000	3.637296	1.995611
3. 000000	2.584956	1.926089
4.000000	2.255760	1.873782
5. 000000	2.190536	1.824775
6. 000000	1.900234	1.777277
7. 000000	1.796033	1.735713
8. 000000	1.557408	*1.699248

*Higher than raw data

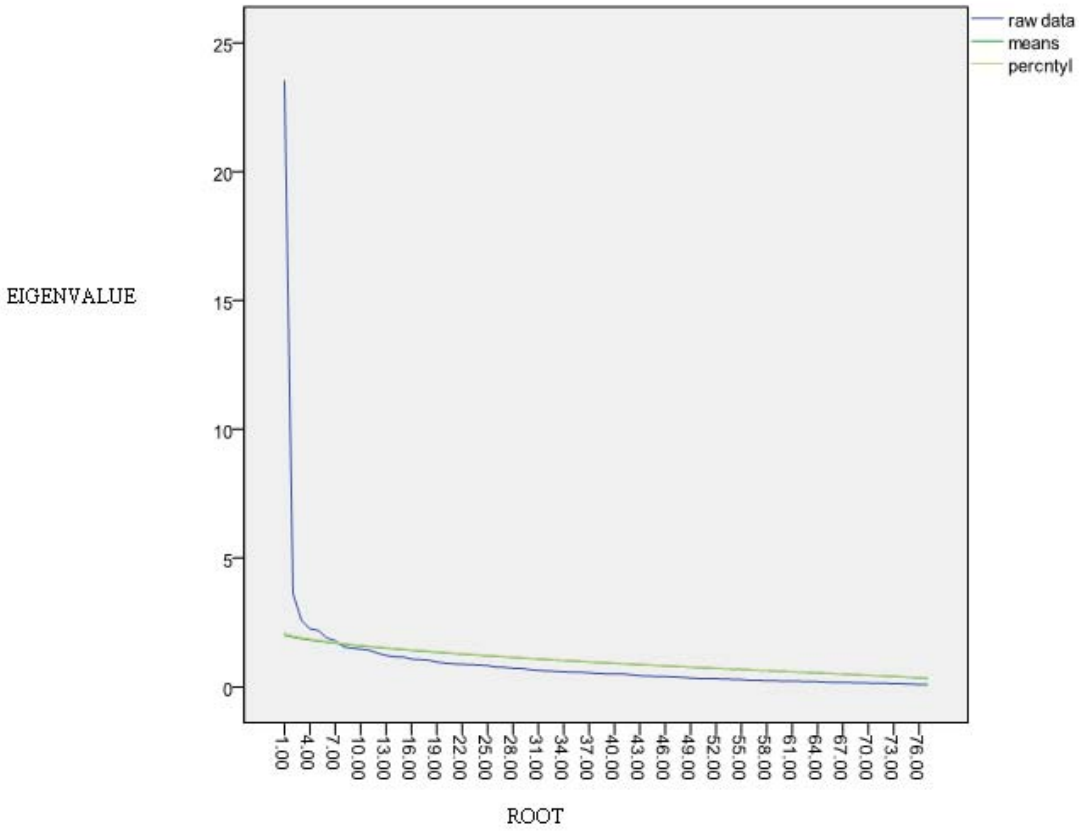

Figure 9: Parallel analysis

5.6 Factor Rotation

The initial solution shows un-rotated factors. A rotation solution is required for psychologically meaningful factor names and reproducibility of factors (Abdi, 2003). The factors are therefore rotated to improve item loadings on the factors and to provide a better interpretation which reveals the presence of a simple structure with all components showing a number of strong loadings and all variables loading substantially on only one component (Hair, Anderson, Tatham, & Black, 1995; Pallant, 2009).

The choice of the factor rotation is the most important decision in exploratory factor analysis (EFA) (Sass & Schmitt, 2010). Statistically, there two main types of factor rotations: orthogonal, when the new axes are orthogonal and are assumed not to be correlated, and oblique rotation that assumes the factors are correlated (Abdi, 2003). Orthogonal rotation assumes the uncorrelated underlying constructs is used for easier solutions interpretation and reporting in the social sciences (Abdi, 2003; Tabachnick & Fidell, 2007).

The most commonly applied method of orthogonal factor rotation in social sciences is Varimax (Malhotra, et al., 1999). Varimax factor rotation results in better cluster configurations that are easier to interpret (Browne, 2001; Sass & Schmitt, 2010; Field, 2005; Hair, Black, et al., 2010) and shows higher loadings on the factors, and the tendency towards having a general factor solution is minimised (Malhotra, et al., 1999). Further, the Varimax factor of orthogonal rotation produces a simple structure as compared to other rotations (Ford, MacCallum & Tait, 1986). In this thesis, the Varimax rotation is applied to increase the dispersion of loadings within factors, thus assisting better interpretation.

As discussed in Section 5.5.1, the selected cut-off value for item loadings is equal or greater than 0.40. Consequently, variables with smaller loadings that create difficulties for interpretation are eliminated (See Appendix E) (Gorsuch, 1983). After factor rotation, new factors were formed and labelled accordingly as shown in the summary - Table 10 (for further details see Appendix G). The new factors were labelled according to the cluster of items for better interpretation (Ford, MacCallum, & Tait, 1986; Pallant, 2009).

The new labels reflected the items in a selected cluster, and items with higher loadings were selected. Component 1 was made up of those items which addressed the perceived value of employees' knowledge sharing, employee collaboration and trust. Component 1 was labelled 'Knowledge Sharing'. It was clear when analysing items comprising Component 2 that this

incorporated most of the questions relating to employees' organisational capability. This item was labelled 'Organisational Capability'. Component 3 incorporated items concerned with employee collaboration for knowledge sharing and was labelled 'Collaborative Practices'. Component 4 was labelled 'Rewards System' which relates to employees' monetary incentives from management for successful knowledge sharing. Component 5 incorporated items that addressed individual capability and was labelled 'Individual Capability'. Component 6 incorporated most of the items relating to interpersonal trust and was labelled 'Trust'. It is clear that Component 7 incorporated items that addressed both individual and organisational level recognition and accordingly was labelled 'Recognition'.

The result of the rotated factor solution shows that some items were clumped together under different factors; Table 10 shows item descriptions, their corresponding LC and factor loadings after factor rotation. Figure 10 shows the revised model based on the factor rotation results.

Table 10: Factor Rotation Summary Table

Latent constructs	items	Factor loadings
Incentives	Item 22. In my company, pay raises are determined mainly by an employees' job performance.	0.656
	Item 20.I am satisfied with the non-monetary rewards that I receive in exchange for the knowledge I give the organisation.	0.618
	Item 21 My feelings about the non-monetary rewards I receive for sharing knowledge are excellent.	0.550
	Item 19.I feel that the non-monetary rewards given by the organisation to employees for sharing knowledge are fair.	0.589
	Item 17.I am satisfied with the monetary rewards that I receive in exchange for the knowledge I give the organisation.	0.409
	Item 23. My company is committed to a merit pay system.	*0.526*
Collaborative practices	Item 34. In my organisation employees' always share their experiences with colleagues from other departments.	0.725
	Item 43. People in my organisation frequently collect knowledge of know-where or know-whom with other organisational members	0.492
	Item 45. I often share with my colleagues the new information I acquire.	0.411
	Item 53Colleagues outside of my department tell me what their skills are, when I ask them about it.	0.605

Table 10 (continued)

Recognition	Item 25. I want to become a person with professional knowledge in the eyes of my colleagues.	0.595
	Item 26. I believe that knowledge sharing among teams can help establish my image as an expert.	0.549
Trust	Item 70.Our organization embeds much of its knowledge and information in structure, systems, and processes.	0.598
	Item 57. Management at my firm is sincere in its attempts to meet the employees' points of view.	0.579
	Item 58. I feel quite confident that the firm will always try to treat me fairly.	0.531
	Item 62. I always trust my colleagues' opinions due to their competence.	*0.570*
	Item 59. I can trust the people I work with to lend me a hand if needed.	*0.549*

Table 10 (continued)

Knowledge sharing	Item 51.Colleagues within my department tell me what their skills are, when I ask them about it.	0.769
	Item 50. I share the information I have with colleagues within my department, when they ask	0.713
	Item 49. Sharing knowledge with my colleagues is regarded as something normal in my company	0.711
	Item 46.I often share with my colleagues the new working skills that I learn.	0.682
	Item 47. My colleagues often share with me the new working skills that they learn.	0.650
	Item 40. I frequently collect knowledge from other organisational members based on their experience.	0.633
	Item 52. I share the information I have with colleagues outside of my department, when they ask	0.624
	Item 41. I frequently share knowledge based on my experience with other organisational members	0.467
	Item 39. People in my organisation frequently share knowledge based on their experience	0.452
	Item 48. My colleagues often share with me the new information they acquire	0.448
	Item 37. Our employees share information and learn from one another.	*0.640*

Table 10 (continued)

Organisational Capability	Item 66.The new products or services developed by our company always arouse imitation from competitors.	0.695
	Item 68. Our company always develops novel skills for transforming old products into new ones for the market	0.652
	Item 69. Our organization uses patents and licenses as a way to store knowledge.	0.531
	Item 64. Our company often develops new products and services well accepted by the market.	*0.551*
	Item 67.Our company can often launch new products or services faster than our competitors.	*0.463*
Individual capability	Item 74. The knowledge I receive from my colleagues helps me at work	0.620
	Item 30. Employees are provided opportunities to suggest improvements in the way things are done here.	0.536
	Item 29. Employees in this organisation are asked by their superiors to participate in operations / production.	0.431
	Item 73.I always develop novel skills for transforming old products into new ones for market.	*0.578*

Based on the factor rotation the research model is revised, as shown in Figure 10.

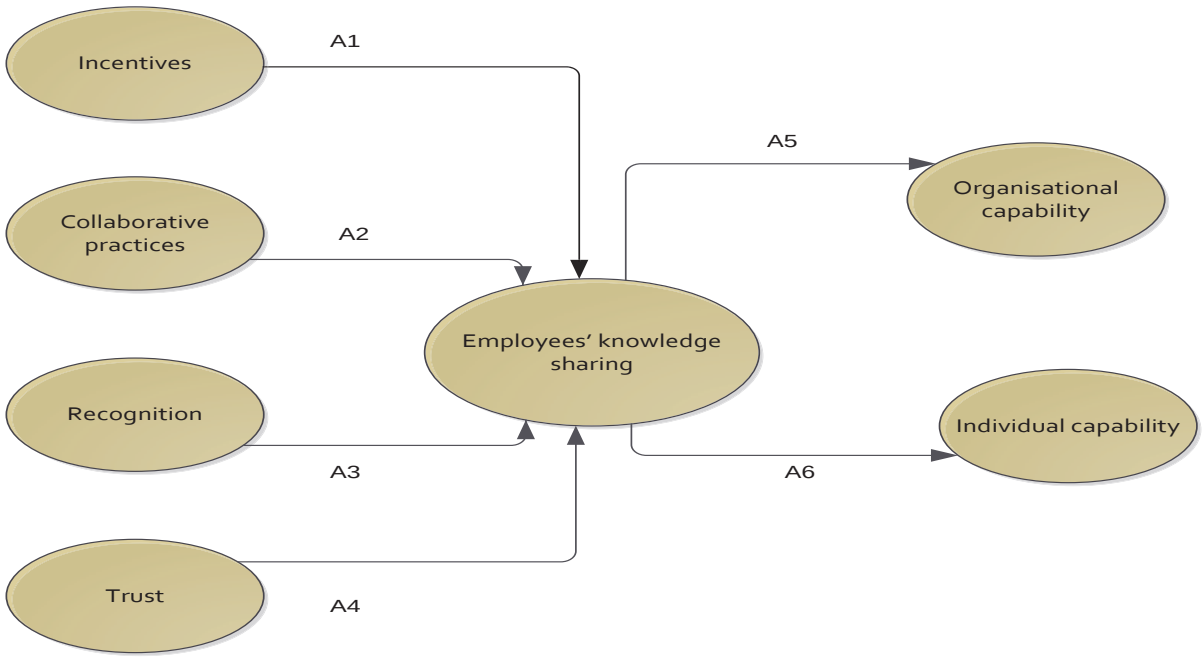

Figure 10: Revised research model

The revised hypotheses are as follows:

A1: Organisational incentives have a positive effect on employees' knowledge sharing behaviour.

A2: Employees' collaborative practices have a positive effect on employees' knowledge sharing behaviour.

A3: Employees' recognition has a positive effect on employees' knowledge sharing behaviour.

A4: Trust has a positive effect on employees' knowledge sharing behaviour.

A5: Employees' knowledge sharing has a positive effect on organisational capability.

A6: Employees' knowledge sharing has a positive effect on individual capability.

5.7 Finalising the research model

In this thesis, for further data analysis, confirmatory factor analysis is used to test the hypotheses. The revised model, as shown in Figure 10, is modified and two of the constructs are removed from the model. This model is labelled as 'Final Model' as shown in Figure 11. The reason for the removal of two constructs from the revised model is as follows.

Initially, the model fit has a poor fit and is below the recommended values when using all items of the model. To improve the model fit, it was noted that the concept Recognition has two items only as shown in Appendix I, and factor loading of one item is less than 0.50. The factor loadings should be at least 0.50 and above for adequate individual item reliability (Bagozzi & Yi, 1988). See Appendix I for details.

This thesis also excluded the concept of organisational capability because it is very difficult to relate it to the employee's knowledge sharing behaviour for as long as the analysis is at the level of an employee. It may be possible to build an argument that knowledge sharing behaviour by an individual employee contributes to the employee's perceptions of organisational capability of his or her organisation (although different employees at the same organisation will have different beliefs about the organisation's capabilities depending on their participation in knowledge sharing). However, it appears to be difficult to interpret the results.

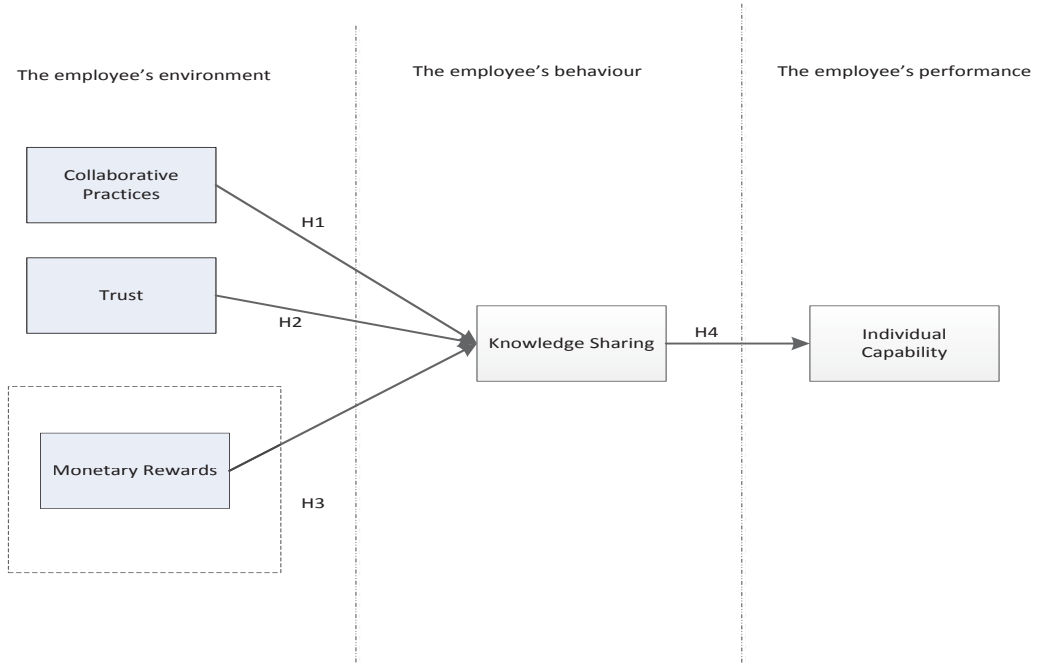

Figure 11: Final model

The above figure shows the final model which is tested and its results are discussed in the next chapter, Chapter 6. The operational definitions of the constructs used in the final model are as follows:

5.7.1 **Collaborative Practices**

Collaborative practices are the employee's beliefs relating to knowledge sharing norms in his or her organisation and relate to knowledge sharing behaviours by others at that organisation. Thus, collaborative practices for an employee may be high even if the employee is not involved in knowledge sharing. Items that measure collaborative practices are shown in Table 11.

Table 11: Operationalisation of Collaborative Practices

EC03	Employees are provided with opportunities to suggest improvements in the way things are done here.
EC07	In my organisation employees always share their experiences with colleagues from other departments.
EC08	My organisation supports cross-functional team work for learning through collaboration.
EC09	Our employees are skilled at collaborating with each other to diagnose and solve problems
EC10	Our employees share information and learn from one another.
EC11	Our employees interact and exchange ideas with people from different areas of the company.
KS01	People in my organisation frequently share knowledge based on their experience.
KS04	People in my organisation frequently collect knowledge from other organisational members.
KS05	People in my organisation frequently collect knowledge of know-where or know-whom from other organisational members.
KS06	People in my organisation frequently share knowledge of know-where or know-whom with other organisational members.
KS11	Sharing knowledge with colleagues is regarded as something normal in my company.

5.7.2 **Trust**

Trust is the employee's trust in his or her colleagues, in the organisation's management, and in the organisation overall. Trust describes the extent to which the employee is prepared to put himself or herself in a vulnerable position with respect to his or her colleagues, the management, or the organisation overall. Sveiby (1997) suggests that trust is a bandwidth of

communication. Trust is a multidimensional construct and this thesis discusses trust as interpersonal trust, trust in management and organisation as shown in Table 12.

Table 12: Operationalisation of Trust

TR01	If I get into difficulties at work I know that my colleagues would try and help me out.
TR02	I can trust the people I work with to lend me a hand if needed.
TR03	Most of my colleagues can be relied upon to do as they say they will do.
TR04	Management at my firm is sincere in its attempts to see the employees' points of view.
TR05	I feel quite confident that the firm will always try to treat me fairly.
TR06	I can trust the people in other departments to lend me a hand if needed.
TR07	At work, I know my colleagues would help me if needed.
TR08	Most of my peers can be relied upon to do as they say they will do.
TR09	I always trust my colleagues' opinions due to their competence.

5.7.3 **Monetary Rewards**

Monetary Rewards refers to the employee's belief that he or she is going to be financially compensated for knowledge sharing. Items are shown in Table 13.

Table 13: Operationalisation of Monetary Rewards

RR01	I feel that the monetary rewards given by the organisation to employees for sharing knowledge are fair.
RR02	I am satisfied with the monetary rewards that I receive in exchange for the knowledge I give the organisation.
RR03	My feelings about the monetary rewards I receive for sharing knowledge are excellent.

5.7.4 Knowledge Sharing

Knowledge sharing refers to knowledge sharing behaviours by the employee. The more the employee participates in various aspects of knowledge sharing (as a source of knowledge or as a receiver of knowledge), the higher is knowledge sharing. Items that measure Knowledge sharing concept are shown in Table14.

Table 14: Operationalisation of Knowledge Sharing

KS02	I frequently gain knowledge from other organisational members based on their experience.
KS03	I frequently share knowledge based on my experience with other organisational members.
KS07	I often share with my colleagues the new information I acquire.
KS08	I often share with my colleagues the new working skills that I learn.
KS09	My colleagues often share with me the new working skills that they learn.
KS10	My colleagues often share with me the new information they acquire.
KS12	I share the information I have with colleagues within my department when they ask me.
KS13	Colleagues within my department tell me what their skills are when I ask them.
KS14	I share the information I have with colleagues outside of my department when they ask me.
KS15	Colleagues outside of my department tell me what their skills are when I ask them.

5.7.5 Individual Capability

Individual Capability refers to the employee's on-going contribution to his or her organisation's sustained competitive advantage.

Table 15: Operationalisation of Knowledge Sharing

IC01	I often develop new products and services that are well received by the market.
IC02	I can often develop new products or services faster than others.
IC03	I often develop novel skills for transforming old products into new ones for the market.

The items are labelled according to their initial designation (for instance, EC for employees' collaboration, RR for rewards and recognition, KS for knowledge sharing, TR for trust, and IC for individual capability).

5.8 Hypotheses Description

A brief description of the hypotheses of the final model is as follows:

H1: Collaborative Practices Affect Knowledge Sharing.

If an employee believes that knowledge sharing is something that is commonly done at his or her organisation, and thus is something expected by his or her colleagues and by the management, he or she is more likely to engage in knowledge sharing. Hence, people management practices, such as collaborative practices positively improve the knowledge flow through employee knowledge sharing in organisations (Cabrera & Cabrera, 2005).

H2: Trust Affects Knowledge Sharing.

Sharing knowledge may make the employee vulnerable. Knowledge shared by the employee may be used against him or her by others (e.g., it may be easier to fire an employee who does not possess unique knowledge). At the same time, using knowledge shared by others may result in negative consequences because the knowledge may be invalid or because it was shared with the aim of manipulating the employee, rather than to help him or her. Thus,

if the employee believes that making himself or herself vulnerable in his or her organisation will not result in negative consequences, he or she is more likely to be involved in knowledge sharing. According to Goh, and Sandhu, (2013),

> "Trust results from confidence and willingness to engage in a strong relationship with another person. If one has confidence and willingness to strengthen the relationship with another person, then he or she is more ready to comply in sharing knowledge with those he or she trusts (p 40).

Hence, trust influences employee knowledge sharing behaviour (Riege, 2005)

H3: Monetary Rewards Affect Knowledge Sharing.

If the employee believes that participating in knowledge sharing is likely to result in monetary rewards by organisation, he or she is more likely to engage in knowledge sharing (Lin, 2007). This is supported by the transactional leadership theory. Transactional leadership theory focuses on exchange of resources by providing something to the employee they want in exchange for something the leader wants (Kuhnert & Lewis, 1987).

H4: Knowledge Sharing Contributes to Individual Capability.

By participating in knowledge sharing activities the employee engages in interactions within communities of practice, resulting in better understanding of how the knowledge that he or she has applies in different contexts and giving him or her access to the knowledge by others. The new knowledge thus socially constructed can take the form of new products and new processes. This is supported by tacit versus explicit knowledge theory (with new products and new processes seen as tacit knowledge captured as explicit knowledge) and by the social constructivism theory.

5.9 The Measurement Model

In the data analysis, the items related to their constructs in the final model were used in the confirmatory factor analysis using the statistical software package AMOS version 21. In a confirmatory factor analysis, the measurement model for each latent construct is created. A measurement model specifies the relations between the observed measures (question items in this thesis' context) to their proposed underlying constructs (Anderson & Gerbing, 1988). The maximum likelihood (ML) method was chosen to estimate the difference between the observed and estimated covariance matrices as it is the most common procedure where a sample size is greater than 150 (Anderson & Gerbing, 1988; Hair, Anderson, et al., 2010).

The measurement model in this data analysis was evaluated by examining the factor loadings/regression weights of each item for statistical significance. As discussed in Section 5.7, the factor loadings should be at least 0.50 and above for adequate individual item reliability (Bagozzi & Yi, 1988). Items were dropped from consideration if their factor loadings were below the recommended level of 0.50. Table 16, shows the items that have been removed due to lower factor loadings.

Table 16: Items Dropped From the Model

Item	Factor loading	Items' description
EC07	0.335	In my organisation employees always share their experiences with colleagues from other departments.
TR05	0.375	I feel quite confident that the firm will always try to treat me fairly.

Item EC07 is about sharing experience from other departments, whereas TR05 is related to trust in management. Both items have factor loadings lower than 0.50. In this thesis, the cut-off values of factor loading in CFA are equal to or greater than 0.50, which can improve the factor validity and the measurement model (Bagozzi & Yi, 1988). Several fit statistics were

employed to variably interpret the data, for details see Appendix H. The next section describes the fit statistics used in this thesis to represent the measurement model.

5.9.1 Parcelling of Items

Initially Kenny (1979) was accredited with an approach in which items are aggregated to provide a single indicator of a latent variable. This approach is known as item parcelling. Baggozzi and Edward (1998) suggest that item parcelling leads to fewer indicators and provides a better measurement model fit.

There are certain benefits and some disadvantages of using the item parcelling technique. The parcels may be more normally distributed as compared to the individual items (Hall, Snell, & Singer Foust, 1999). Further, the item parcelling technique is useful in small samples with comparatively lesser model parameters (Bagozzi & Edwards, 1998). Item parcelling can produce more reliable results and a better model fit (Kishton & Widaman, 1994). If the purpose of the parcelling is to improve model fit, then the research should not parcel it. However, if the concern is to parcel those items, measuring the same construct then the parcelling technique strengthens the results (Little, Cunningham, Shahar, & Widaman, 2002).

There are also some disadvantages of using the item parcelling technique. As item parcelling leads to fewer indicators, the SEM test, based on items parcelling, may not as rigorous a test as compared to the individual items (Bandalos, 2002). Item parcelling may lead to biased estimates of other parameters of the model (Hall, Snell, & Singer Foust, 1999). Two or more items can be parceled to improve the model fit in confirmatory factor analysis (Bandalos, 2002). Different parcelling strategies can be used to improve the model fit in the Structural Equation Modeling technique, including aggregating random or similar items (Hall, Snell, & Foust, 1999).

This thesis has used item parcelling based on aggregating two items in one parcel having similar meanings. EC12 was computed by adding EC8 and EC11; RR13 is computed by adding RR02 and RR03; and KS16 was computed by adding KS05 and KS06. Similarly, TR11 was computed by adding TR02 and TR06, whereas, IC08 was computed by adding IC01 and IC03. Details are shown in Table 17:

Table 17: Item Parcelling

Items and their Descriptions	Parcel	Item Parcel Measure
EC08: My organisation supports cross-functional team work for learning through collaboration. EC11: Our employees interact and exchange ideas with people from different areas of the company.	**EC12**	Learning in collaboration and Cross-functional
RR02: I am satisfied with the monetary rewards that I receive in exchange for the knowledge I give the organisation. RR03: My feelings about the monetary rewards I receive for sharing knowledge are excellent.	**RR13**	Monetary rewards for sharing knowledge are good in my organisation
TR02: I can trust the people I work with to lend me a hand if needed. TR06: I can trust the people in other departments to lend me a hand if needed.	**TR11**	I can trust the people in my organisation to lend me a hand if needed.
KS05: People in my organisation frequently collect knowledge of know-where or know-whom from other organisational members. KS06: People in my organisation frequently share knowledge of know-where or know-whom with other organisational members.	**KS16**	People in my organisation collect and share knowledge of know-where and know-whom from other organisational members
IC01: I often develop new products and services that are well received by the market. IC03: I often develop novel skills for transforming old products into new ones for the market.	**IC08**	I often develop new skills to develop new products for market

5.9.2 Goodness of Fit Indices

This thesis reports a number of goodness of fit indices for testing of measurement model and structural equation models (SEM). The common measures use the ratio of χ2 (statistics to the degree of freedom (DF), comparative fit index (CFI), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI) and root mean square error of approximation (RMSEA) (Hu & Bentler, 1999; Lin & Lee, 2005; Segars & Grover, 1998). In addition to these indicators, the standard root mean square residual (SRMR) is also recommended for assessing the goodness of fit model (Bryne, 2010; Raykov & Marcoulides, 2006).

As shown in Table normed χ2 (the ratio between χ2 and the degrees of freedom), which was used to assess model fit, was 4.00 at $p<0.001$. The recommended value is ≤3 for good model fit and 5.00 for acceptable fit (Ryu, Ho, & Han, 2003). Other fit indices also showed good model fit to the data set including goodness-of-fit index (GFI) and normed fit index (NFI) are both 0.80, and equal to the recommended cut-off level of 0.80. The root mean square error of approximation (RMSEA) was 0.80, which was below the cut-off level of 0.10 (Ryu, et al, 2003). Hence, the model showed an acceptable fit according to the data set, as shown in Table 18. Detailed results are shown in the Appendix H.

Table 18: Measurement Model Fit

Goodness-of-fit measures	χ2	GFI	NFI	RMSEA	RMR
	Test statistics/df				
Recommended values	≤ 5.00*	≥0.80*	≥0.80*	≤ 0.10*	≤0.08*
CFA model	4.0	0.80	0.80	0.80	0.07

*(Ryu, et al., 2003)

5.10 Structural Model

In this thesis, for the statistical treatment of the data, structural equation models (SEM) were utilised, following the two-step method as recommended by several statisticians (Anderson & Gerbing, 1988; Lin & Lee, 2004; Sit, Ooi, Lin, & Chong, 2009). Thus, the first measurement model was based on confirmatory factor analysis (CFA), and then the structural model was created. The reason for applying SEM to data analysis was to confirm the extent to which data was consistent with the causal relationships specified in the proposed model (see Figure 2, Chapter One) (Bollen, 1998; Kline, 2010; MacCallum & Austin, 2000).

In this thesis, as shown in the figure, the four hypotheses' paths in the final model were simultaneously tested. Overall, the model was supported and the data was a good fit with this model. To determine the validity of the hypothesised paths, the statistical significance of all the structural parameter values was examined. The results from the analysis implied that of the four hypotheses, hypotheses H1, H2, and H4, were strongly supported, while H3 was found not to be supported. See Table 19 for the hypotheses results.

Table 19: Hypothesis Testing

Hypothesis	Path	Path coefficient	Std. error	Critical ratio	P -value	Remarks
H1	**Collaborative Practices → KS**	.495	.135	3.655	***	Supported
H2	**Trust → KS**	.510	.072	7.039	***	Supported
H3	**Monetary rewards→ KS**	.001	.023	.057	.954	Not Supported
H4	**KS → Individual Capability**	1.045	.119	8.813	***	Supported

*** *Significant at p < 0.001*

Inspection of scalar estimates reveals that three of the four hypothesised paths are statistically significant. These are: collaborative practices to KS (H1, β=0.495, $p< 0.001$), trust to employees' knowledge sharing (KS) (H2, β= 0.510, $p< 0.001$), and employee KS to organisational capability (H4, β=1.045, $p< 0.001$). The remaining path from monetary reward to KS (H3, β=0.001), was not significant at $p>0.05$.

5.11 Rationale for Using the SEM Approach

SEM is more advanced and requires substantial computing power, but provides complete measurement of all path co-efficients, even for complex models (Bryne, 2010). Although other multivariate methods such as linear and multiple regression are known to be statistically powerful in testing independent and dependant variables, human and behavioural factors are complex in the field of management. The dependant and independent variables can be interchanged and are complex. SEM methodology is a useful statistical technique to test complex models, using measurement models and structural models (Cheng, 2001).

In addition, SEM provides modification indices that specify and locate where the fit of a given model is especially poor. SEM techniques provide all the information regarding path analysis, including path coefficient, measures of explained variance, and total effects. SEM is a comparatively statistically stronger technique than linear regression (Mitchell, 1992). Hence, in this thesis, results based on SEM methodology are used for the interpretation and inference of results.

Ideally the model should be tested using two independent samples that are of sufficient size, to conduct the EFA on one, and the CFA and SEM on the other. In this analysis, both analyses EFA and CFA were applied on the same sample due to the small sample size. The

reason for the small sample size has been explained earlier in Section 4.7.1, Chapter 4. The rationale for using the SEM approach on such a small sample size is that there are several recent studies in the field of HRM with purposes similar to this research which have similarly utilised relatively smaller samples(for instance, Camelo-Ordaz, Garcaa-Cruz, Sousa-Ginel, & Valle-Cabrera , 2011; López-Cabrales, et al., 2011).

5.12 Chapter Conclusion

This chapter has discussed the data analysis strategies procedure and has presented the findings obtained in relation to the previously proposed hypotheses. In this thesis, both principal components analysis (PCA) and principal axis factoring (PAF) were used to identify (extract) the items underlying the LCs of this thesis. Due to the limitations of PAF, PCA results were used in further data analysis. Orthogonal rotation, Varimax, was applied to the dataset, but the resulting distribution pattern of items was not as expected. A final model was proposed based on items face validity to aid further analysis. For the empirical study of this thesis and for the statistical treatment of the data, structural equation models (SEM) were utilised, which included the two-step method. Firstly, a measurement model fit was tested using CFA. Structural models were designed to statistically test the proposed model and to determine the model fit for the dataset.

The structural model shows an acceptable fit. Out of four hypotheses, three hypotheses were supported and one hypothesis was not supported. It is important to emphasise that no implications and interpretations have been presented in this chapter. The next chapter will present the interpretations of these results together with the research limitations, and the implications and opportunities arising for future research.

CHAPTER 6: DISCUSSION

6.1 Introduction

The previous chapter, chapter 5 presented and briefly discussed the results obtained from the testing of the four hypotheses of the final model shown in Figure 11. This chapter, chapter 6, discusses the two sets of causative relationships of the final model. Firstly, it discusses the antecedents of employees' knowledge sharing (including employee collaborative practices Trust and monetary reward systems). Secondly, the effect of employees' knowledge sharing on Individual capability is discussed. The findings of this thesis suggest that employee collaborative practices and trust have a positive effect on employees' knowledge sharing behaviour. However, reward systems, have no effect on employees' knowledge sharing behaviour.

Section 6.2 discusses the causative relationships between each of the latent constructs that affect employees' knowledge sharing behaviour in the final model. This section also addresses the path of the model that is not statistically significant. Section 6.3 discusses the findings in relations to the outcomes of knowledge sharing. Section 6.4 discusses the research contribution followed by research limitations. Section 6.6 discusses the implications for researchers (through the lens of the research limitations) followed by the prospects of future research arising from this thesis.

6.2 Antecedents of Employees' Knowledge Sharing

Antecedents of knowledge sharing are shown in Figure 12 below. This breakdown shows the antecedents of knowledge sharing in the model. This section discusses the causative relationships between antecedents of knowledge sharing.

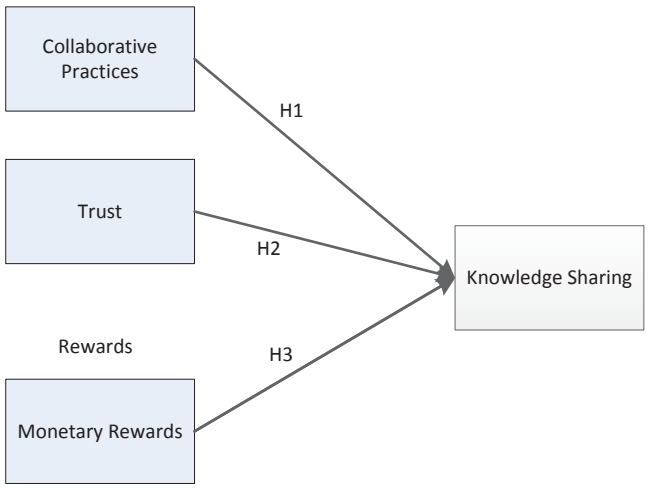

Figure 12: Final model (antecedents of knowledge sharing)

With regard to the antecedents of employees' knowledge sharing behaviour, the results of this model suggest that employee collaborative practices and trust have a strong effect on employees' knowledge sharing behaviour, but the rewards system have no effect on employees' knowledge sharing behaviour. These findings suggest that employees in knowledge intensive organisations perceive that interpersonal trust and collaborative practices motivate employees to share knowledge with other colleagues, thereby effectively developing new skills and/or knowledge within their organisations. The next section will discuss the statistically significant paths of the antecedents of employees' knowledge sharing, followed by the non-significant paths of the final model.

6.2.1 Employees' Collaborative Practices and Knowledge Sharing

As shown in Table 18, Chapter 5, the result suggests that employees' collaborative practices have a positive effect on knowledge sharing behaviour at (β=0.495, p< 0.001). The findings

are consistent with previous studies of employees' knowledge sharing behaviour in higher education institutes, for instance, Sohail and Daud (2009) in Malaysian university teachers.

This thesis result supports the view that employee collaborative practices through knowledge of know-where, know-whom with other colleagues in organisations provide opportunities for employees to collaborate in organisations. Knowledge of know-whom and know-where is an essential part of collaboration that can help employees find the appropriate knowledge holder(s) in organisations. Knowledge of know-where acts as a guide and pointer for potential collaboration, whereas, knowledge of know–whom can trigger collaboration among employees where the goal may be the sharing of their knowledge.

In essence, know-where and know-whom are navigational tools for employees to facilitate tacit knowledge sharing in organisations. This thesis acknowledges Lee's (2001) suggestion that knowledge of know-where and know-whom may be converted into explicit knowledge (for instance, in files and databases of employees' expertise along with their relevant position and department within the organisation). This explicit knowledge may help to employees to collaborate where their goal is sharing knowledge. This thesis result can be extended by considering collaboration in terms of tacking advice from other colleagues, which has a positive effect on knowledge sharing behaviour. In an experiment research, Harvey and Fischer suggest that people accept or collect knowledge in order to make better judgments. Employee collaborative practices are key facets of HRM practices because employees can learn when they collect knowledge from other colleagues. This idea has been supported by various scholars, for instance Bontis (1998) Bontis and Serenko, (2007), Laycock (2005) and Smith (2001).

This result shows that employee collaboration across departments in organisations positively influences knowledge sharing behaviour. This result is consistent with the findings of Van

den Hooff and Van Weenen (2004), and Lin (2007). Van den Hooff and Van Weenen suggest that employees use technology (computer aids) for collaboration to collect knowledge outside of their department within organisations, whereas, Lin (2007) found that collaborating outside departments is part of the knowledge sharing process and acts as an antecedent of employees' knowledge sharing in organisations. This result can be extended and may suggest that collaboration outside departments may influence employees' motivation and intentions to share with other colleagues, and can reduce individual knowledge sharing barriers.

Based on the philosophy of Dillenbourg (1999), this thesis extends the result and suggests that collaboration with other members in organisations in collecting knowledge is part of collaborative culture within organisations. This also supports the idea that collaboration between employees helps to better understand contextual knowledge, where contextual knowledge comprises skills that are needed to complete a specific job (Yoo & Torrey, 2002). The result of this thesis can be extended in that employee collaboration across departments may help to minimise the misconception that sharing knowledge results in a loss of power and authority (Iqbal, Toulson, Tweed, 2011; Lin, 2007). Moreover, when employees collaborate to collect knowledge of know-whom, this collaboration recognise the tacit knowledge source (owner) and may lead to improved knowledge sharing behaviour**.**

These results suggest that employee collaborative practices, across departments, positively affect employees' knowledge sharing behaviour. This positive effect can enhance their co-operation and participation to advance their own professional learning (du Plessis, 2007). One of the advantages of team work is that it may help to address differences between employees and may also improve workplace relationships whilst also improving knowledge sharing behaviour between employees (Iqbal, Toulson, Tweed, 2011). This finding is consistent with Lind and Seigerroth's (2003) suggestion that team assignments have a

strong positive effect on individual and organisational capability. Team assignments bring employees together and provide them with opportunities to work together. Team assignments can improve morale as well as improve skills and understanding through collaborative activities (Jost & Karakel, 2008; Van den Bosch, Volberda, & De Boer, 1999).

On the other hand, virtual collaboration is gaining in popularity as emerging technologies save time and costs. However, face-to-face interactions are more effective than virtual collaboration (Bergiel, Bergiel, & Balsmeier, 2008). The result of this thesis suggests that collaborative practices (across departments in organisations) have dual benefits. As well as improving organisational effectiveness through employee learning, they also provide opportunities for employees to share, transfer, and understand relevant knowledge. Hence, face-to-face collaboration keeps employees involved in the workplace, which will ultimately improve the organisational capability and knowledge sharing activities without the aid of technology.

This result of thesis is consistent with an earlier studies for instance, (Kirkman, Rosen, Gibson, Tesluk, & McPherson, 2002; Kasvi, Vartiainen, & Hailikari, 2003). Kirkman, Rosen, Gibson, Tesluk, and McPherson (2002) suggest that employee collaboration across departments can create a positive effect on their own employees' knowledge sharing and their organisational knowledge capability. Similarly Kasvi and his colleagues suggest that employees collaborating through knowledge collecting help employees and organisations utilise the knowledge that can improve the organisation knowledge capability through improved competence.

Inkpen (1996) in his review suggests that in KIFs, knowledge creation is the managers' priority in order to improve organisational innovation capability, and it is this capability that provides sustainable competitive advantages to organisations. On the other hand, failure to

create and manage knowledge may account for poor organisational performance, even in well-established firms. Collaboration through collecting knowledge may lead to new ideas and knowledge that eventually leads to improved organisational innovation capability. Hence, collaborative practices keep employees involved in the workplace, which will ultimately improve organisational capability and knowledge sharing activities.

The result shows that employee collaborative practices, when employees' collect knowledge from other departmental members, can have affect their knowledge sharing behaviour. These findings suggest that organisations should facilitate employee collaborative practices across departments in order to source new ideas and to solve problems, rather than relying on senior management alone to address these issues (Daghfous, 2004). Therefore, the empirical study of this thesis suggests that collaborative activities enhances employees' knowledge sharing behaviours and motivate employees to work together. When employees work together, the element of trust plays a key role, and the next section discusses how interpersonal trust affects employees' knowledge sharing behaviour.

6.2.2 Trust and Employees' Knowledge Sharing

The findings of this thesis show that trust has a strong positive effect on employees' knowledge sharing behaviour at (β=0.510, p< 0.001). The latent construct trust has two dimensions in the results of this thesis. These dimensions are interpersonal trust and trust in the management. Firstly, this thesis discusses interpersonal trust (trust between employees) and later trust in management. Interpersonal trust among employees is a key antecedent of employees' knowledge sharing behaviour in organisations. This finding that trust between their colleagues has a positive impact on their knowledge sharing behaviour is consistent with Sveiby and Simons (2002), Matzler, and Renzl (2006) and Mooradian, Renzl, and Matzler (2006).

The thesis results suggests that interpersonal trust positively impact on employees' knowledge sharing behaviour in organisations. This result is consistent with the findings of Mooradian, Renzl, and Matzler (2006), who found that trust between colleagues positively influences knowledge sharing behaviour in organisations. The result can be extended and suggests that a low level of trust among employees may increase knowledge hoarding behaviours. Trust between employees binds them together and reduces the barriers related to knowledge sharing and creating in organisations (Goh, 2002). Moreover, a lack of trust among employees may result in a lack of confidence, low commitment to collaboration with colleagues, and an increase in employee turnover (Gould-Williams, 2003). This may occur as when employees do not trust their colleagues, they are far less likely to share their knowledge. Their preference is, consequently, to hoard their knowledge, thus reducing both employees' and organisational knowledge capability (Iqbal, Toulson, Tweed, 2011). Employees' knowledge hoarding behaviour may be due to several reasons, for example, for career advancement, to maintain one's position within an organisation, and for job security (Riege, 2005).

Employees' knowledge hoarding behaviour affects both individuals' learning capability and organisational knowledge capability in the long term. Firstly, the knowledge that exists in individual's brain is of no use to an organisation until it is disclosed. Secondly, whilst organisations may have a large human capital pool, this is of little use if the knowledge contained within the brains of the individuals is not shared and utilised to further improve organisational knowledge capability. One of the key factors that binds employees and reduces knowledge hoarding is interpersonal trust.

Therefore, interpersonal trust enables employees to mingle easily in similar networks, both in and out of work, thus boosting knowledge-sharing activities. The findings of this thesis is that interpersonal trust among employees has a strong effect on their knowledge sharing

behaviour, indicating that interpersonal trust removes knowledge-sharing barriers in an organisation (Cross, Rice, Parker, 2001; Holste & Fields, 2010; Tsai & Ghoshal, 1998).

The thesis result suggests that trust (trust in management) has a positive impact on knowledge sharing behaviour is consistent with Fang and Chiu (2010), and Renzl (2008) findings. Trust in management refers to benevolence to employees (considering the needs of the employees) and integrity of the managers (being fair with all employees) (Cook & Wall, 1980; Fang, & Chiu, 2010).

One-sided decision-making and a dogmatic/autocratic environment where management is controlling can reduces the level of trust among employees in the workplace (Yahya & Goh, 2002).These findings support Nonaka's (1994) suggestions that trust between managers and employees can build a healthy atmosphere in which to share knowledge. Whilst new employees may lack confidence due to an initial lack of trust in management and other members, this can be improved by identifying interpersonal similarities and joint problem solving techniques (Renzl, 2008; Wang, Shieh, & Wang, 2008).

The results of this thesis suggest that in KIFs, particularly in the telecommunications and higher education sectors in Pakistan, trust (interpersonal as well as management and organisational) has a significant impact on employees' knowledge sharing behaviour. Personal similarities and common goals of employees may boost their interpersonal trust in each other. However, the role of managers and organisations is critical in boosting knowledge sharing in organisations. At organisational level, fair and transparent policies may boost employees trust in their organisation, whereas the traditional administrative style may hinder knowledge sharing in organisations. The role of manager may be as a coach and facilitator in KIFs to foster employees' knowledge sharing in organisations. Although these results are based on only two business sectors in a developing nation, the role of

employees' knowledge is critical in organisations where most of the work is of an intellectual nature. Hence, considering employees' knowledge as a resource, organisations can take measures to implement fair and transparent policies through managers who understand the value of employees' knowledge to their organisation.

6.2.3 Monetary rewards in the Knowledge Context

Most of the literature argues that monetary rewards are one of the main components of HRM practices that can enhance an employee's motivation to share knowledge. A review of key articles in the field of HRM and KM suggests that rewards have a positive effect on employees' knowledge sharing behaviour (Ipe, 2003). Some scholars support that monetary rewards in knowledge management context, may be given to those employees who spend their time facilitating and working with other staff, especially in collaboration with other employees (Song, 2009; Sweeney & McFarlin, 2005).

Contrary to the above expectations, the results of this thesis shows that monetary rewards have no statistical significant effect on employees knowledge sharing behaviour at (β=0.001, p>0.05). This result shows that employees' knowledge sharing behaviour is independent of organisational incentives; hence, monetary incentives are not an influential technique to improve employees' knowledge sharing behaviour in organisations. This finding supports the previous research on the causative relationship between monetary incentives and employees' knowledge sharing behaviour. For example, Bock and Kim (2002) suggest that incentives (routine annual monetary rewards) negatively impact employees' knowledge sharing behaviour in the Korean public sector. Similarly, such routine reward systems can only provide temporary compliance in regards to employees' knowledge sharing behaviour (Dong, Liem, & Grossman, 2010).

Temporary compliance is not an effective tool to change employees' knowledge sharing behaviour in KIFs (Bock & Kim, 2002; Dong, et al., 2010; Gammelgaard, 2007). Temporary compliance related to compensation for routine daily jobs may discourage innovation and knowledge creation. Organisations may introduce performance-based incentives for employees to promote organisational knowledge sharing and can link these incentives to employees' personal development needs (Riege, 2007).

Another reason that monetary rewards have no effect on knowledge employees' sharing behaviour in KIFs is due to younger employees who have less job experience in Pakistani KIFs. Almost half of the respondents were under 30 years of age, and more than 85% had less than five years' work experience (see Table 5, chapter five). It could be argued that employees with relatively little work experience in Pakistani KIFs in the telecommunication and higher education sectors are more inclined towards career development than monetary rewards. The monetary rewards may be important but are not a priority. This perception is known as employees' instrumentalism, which is "...the belief that work is primarily a means to non-work ends rather than a central life interest" (Macky, 2012, p.1). Hence, it could be argued that young Pakistani employees are orientated more towards knowledge sharing for their own personal development rather than towards incentives in knowledge intensive organisations.

It could be argued that young Pakistani employees are orientated more towards knowledge sharing for their own personal development rather than towards incentives in knowledge intensive organisations. Another reason could be that young employees feel recognised when they are being hired by an organisation (at a comparatively younger age in the labour market). Therefore, these young workers may not be inclined towards incentives but to their own personal development.

Wolfe and Loraas, (2008) have suggested that employees' knowledge sharing may be independent of rewards when the work environment discourages knowledge sharing and encourages knowledge hoarding due to unfair incentives. Hence, incentives may not positively influence knowledge sharing behaviour when they are not fair and are merged with targets set by management. Both these issues are related to poor management policies in KIFs.

On the other hand, Kohn (1993) describes several reasons why monetary rewards may not be effective in workplaces. These reasons can be applicable in the knowledge sharing context. Kohn (1993) suggests that reward systems can negatively affect and terminate relationships among employees and managers. This occurs because employees who are rewarded feel they are achievers, while other employees may feel they are losers because they are not rewarded for their efforts. This situation may create unnecessary competition among employees. Kohn (1993) also suggests that managers may use the reward system as a tool to get more out of their employees. Therefore, employees tend to consider rewards as a punishment rather than as an incentive. However, Kohn's (1993) results are based on managers' and CEOs' perceptions, and not on the perceptions of employees. However, the findings of this thesis are based on employees' perceptions which suggest that rewards not effective in improving knowledge sharing behaviour when compared with other HRM practices such as employee collaboration.

6.3 Outcome of Employees' Knowledge Sharing

The next sections discuss the results of knowledge sharing outcome and the corresponding findings in existing literature.

6.3.1 Employees' Knowledge Sharing and Individual Capability

The result of this thesis shows that employees' knowledge sharing has a strong positive effect on individuals' capability (personal development) at (β=1.045, p< 0.001) and supports the findings of Swart and Kinnie (2009). Employees' personal development takes place through the validation of employees' tacit knowledge. Validation of knowledge occurs when colleagues who receive the knowledge utilise it, and provide feedback to the knowledge source. Once knowledge is validated, employees are provided with opportunities to suggest improvements in their organisation. In fact, managing employees' knowledge is different from traditional management, where managers administer and engage in decision-making, and the employees' roles are to act according to the instructions of their line and top managers. However, in KIFs role of managers may be as a coach and facilitator. When organisations provide opportunities to their skilled employees by asking them to take part in the organisational process, this may increase employees' willingness to share and improve their knowledge and organisational knowledge capability.

Other benefits are as reported by Cabrera and Cabrera (2002) that knowledge shared at an individual level can be converted into organisational knowledge but it may also result in a fear of losing career progression. This fear can be mitigated when employees understand that their knowledge sharing helps to improve both their own learning capability and professional development (Davenport & Volpel, 2001). Another way in which sharing employee knowledge may also improve its value in terms of validity; an employee's knowledge is applied to his or her everyday tasks and feedback is obtained from his or her peers. However, future research is necessary to understand the value of an individual's knowledge after it has been shared with others (Wang & Noe, 2010).

In essence, individuals' knowledge plays a pivotal role in organisational success in the current dynamic business environment. Several factors can hamper employees' knowledge sharing, with the most important factors being employee turnover and lack of trust (between employees and management) which are critical to business success. Employee turnover may create a knowledge vacuum, when skilled employees quit the job for good and take their tacit knowledge with them. To address this, collaborative practices foster knowledge sharing behaviour and create a collaborative learning culture.

The improvement of individuals' capability can be linked to reduction in their turnover that may not be such a big issue when compared to other factors such as lack of trust between employees and management. The consequence of a lack of trust is unwillingness on the part of employees to share their knowledge with other members and instead encourages knowledge hoarding behaviour. To build trust, management needs to implement fair, transparent policies, involving all employees in organisations without distinction. Tacit knowledge is mostly unexplained and it is more than likely that most employees know more than they discuss. Hence involving employees in knowledge sharing will not only help improve organisational knowledge capability but also improves individual capability. O'Neill and Adya (2007) propose that once a high level of trust in managers and colleagues has been built, employees' knowledge hoarding is very unlikely. However, this proposition merits further empirical verification and is beyond the scope of this thesis.

6.4 Research Contributions

Firstly, this thesis contributes to existing theory by demonstrating the antecedents of employees' knowledge sharing through employees' perceptions. This thesis investigates the antecedents and outcomes of employees' knowledge sharing in knowledge intensive organisations of a developing country (Pakistan). Initially, a proposed model was developed

based on the review of the literature. The proposed model was revised as a result of EFA. The results of the EFA also provided a psychometric design for the final model tested in this thesis. The final model was tested using the two step process of the structural model, initially a measurement model was developed and the model fit assessed using CFA. Based on good mode fit results, a fully mediated model and alternative model (structural models) were developed to test the casual relationships of the revised proposed model.

Secondly, although several researchers in the field KM are aware of a linkage between KM initiatives and people-related issues, however, managing knowledge is still an emerging research concept (Edvardsson, 2008; Jimenez-Jimenez & Sanz-Valle, 2012; Lam, Tan, Fong, & Ng, 2011). In regard to managing knowledge, researchers in the field of business and management suggest that most of the employees' knowledge is not useful until it is shared with other members in an organisation or captured in the organisation's structure. Therefore, knowledge sharing should be people-driven rather than technology-driven in the workplace (Cross & Baird, 2000; Riege, 2005). Whilst this thesis acknowledges the importance of technology, it argues that technology is a supplement to, not a substitute for, knowledge sharing and knowledge management in general. Technology cannot capture tacit knowledge because it depends on individuals to share it and to use their tacit knowledge in the workplace. However, technology can support knowledge-sharing activities in various ways such as finding knowledge-sources through online directories, databases, and video conferencing (Holste & Fields, 2010; Song, 2002). Informal face-to-face meetings facilitate the development of innovation and creativity. This thesis contributes to both disciplines (i.e. KM and HRM) with the influence of the human factor that was largely ignored in the early years of KM research.

Thirdly, this thesis explores causal relationships that have been empirically tested and reported in the literature. However, as discussed in Chapter 2 Section 2.9, most of the HRM

related empirical research is based on the perceptions and opinions of senior management and CEOs (Skyrme, 2002). Management opinions may not reflect the actual knowledge sharing process, as most of the managers perceive that if employees are not doing something in the workplace, they are wasting their time and are not working productively (Riege, 2005). This thesis focuses on actual knowledge owners at lower levels (i.e. employees rather than manager) their knowledge sharing behaviour and knowledge sharing outcomes. Therefore, these findings can assist in our understanding through the lens of employees' perceptions that are at the lower level of organisational structures. This thesis contributes to the theory in terms of specific HRM practices and KM linkages to better understand employees' perceptions rather than through senior management's perceptions about the impact of HRM practices on employees' knowledge sharing behaviour.

Perception is a process by which individuals organise and interpret their inputs using their senses in order to give meaning to the world and their immediate environments (Robbins, 2005). One of the important employee perceptions in the HRM and KM study is that the perceptions of senior managers may be influenced by their authority and position in the organisation, whereas employees, being at a lower level in the organisation, may not be as influenced by authority. In addition, in KIFs, most of the tacit knowledge resides in the employees' brains, and hence sharing their knowledge can be better perceived by employees within organisations.

Fourthly, this thesis highlights the significance of the employees' collaboration in organisations. As discussed earlier in Section 6.2.1, one of the key aspects of employee collaboration is to prevent knowledge loss in terms of employee turnover or knowledge hoarding behaviour. Employee turnover in organisations does not just result in knowledge loss, but also can result in significant customer loss and individual employee networks, especially in the service sector (Davenport, Cross, & Parise, 2006). One study shows that

Pakistan scored low in individualism (ranked 38th), and very high (ranked 6th) on collectivism (Hofstede, Hofstede, & Minkov, 1991). Employees in collectivist cultures depend on organisationally cohesive activities to develop new skills (Islam, 2004). This thesis contributes to the theory as to how employees' collaborative activities create a win-win situation both at individual and organisational levels. At an individual level, employees' collaborative practices act as training and developmental tools for employees. At organisational level, collaborative activities can increase the skills and knowledge of employees which eventually increases the human capital pool within organisations. Organisations can utilise their human capital pool when problems occur without needing to outsource.

Fifthly, employee reward systems are part of HRM practices to encourage knowledge-sharing behaviours. However, the empirical results of this thesis show that reward systems as motivational techniques have no statistically significant effect on employees' knowledge sharing behaviour. These findings are surprising and are in contrast to previous research. One reason could be that the concept of knowledge management is in its infancy in the Pakistani business environment and there is insufficient organisational support for knowledge sharing, fair treatment, and working conditions.

Sixthly, this thesis suggests that employees in knowledge based organisations prefer personal development to occur through collaborative activities built on trust rather than on incentives from the organisation. Based on these results, it is recommended that managers help employees by using supportive policies to create better organisational knowledge sharing environments in their organisations.

Seventhly, several empirical studies have examined the enablers of knowledge management in Pakistani organisations (Jamal & Naser, 2003; Malik & Malik, 2008; Tariq, et al., 2012).

There is, however, little empirical research to test the effect of HRM practices on knowledge sharing behaviour using employees' perceptions in Pakistani KIFs. This thesis examines the effect of HRM practices on employees' knowledge sharing behaviour and tests the knowledge sharing outcomes at organisational and individual level.

Eighthly, this thesis contributes to the literature relating to the resourced based view (RBV) of organisations by suggesting that competitive advantage in the current knowledge economy is linked to employees as the knowledge resides in individuals' heads (tacit knowledge). Knowledge transfer can only take place when skilled employees with the relevant tacit knowledge collaborate with their colleagues. Most employees have a wealth of tacit knowledge, skills and abilities that organisations do not use for routine jobs. This is often referred to as the human capital pool, also known as the collective workforce potential (Wright, McMahan, & McWilliams, 1994). The human capital pool can be developed further through employees' collaborative activities within the organisation and act as a source of a sustained competitive advantage. Whenever problems occur, organisations can use the expertise that is part of its resident human capital pool to solve particular problems. If organisations fail to utilise their human capital pool, they have to seek external expertise through the use of outsourcing, to solve the problems which is an increased labour cost.

Overall, the findings of this thesis support the notion that specific HRM practices can be used as a tool to improve employees' knowledge sharing behaviour within organisations, which is consistent with previous research (Currie & Kerrin, 2003; Hsu, Lin, Lawler, & Wu, 2007). However, there is a strong need to reorder HRM practices in KIFs as employees perceive that rewards as part of HRM practices are not as high a priority as employees' collaboration and participation. A learning culture in work places is rooted in employees' collaborative activities to gain competitive advantage in the current dynamic business environment.

6.5 Research Limitations

Every research investigation has its limitations; this thesis has some research limitations that relate to the sampling, the research instrument, and the data analysis strategy. These limitations are discussed below.

The research sample was taken from Pakistani KIFs in the telecommunications and higher education sectors. Therefore, the generalisation of the results to other sectors is a major limitation of this thesis. The sample was taken from the Punjab Province, and thus these results may differ from a national sample of Pakistan as a whole. However, all provinces of Pakistan are in one federation, and business-related policies are designed and implemented from the central capital of Pakistan. Therefore, the same rules and regulations apply in all four provinces of Pakistan. As the sample was taken from Pakistan, a developing country, the results may differ from research conducted in developed countries. The reason for variation in the results among developed and developing countries may due to the difference in their economies. Research conducted among developed and developing nations (including Pakistan) suggests that results differ due to the different infrastructures and economies in developing and developed countries (Aycan, et al., 2001).

This thesis used a self-reporting survey questionnaire for data collection to measure the latent constructs based on employees' perceptions in Pakistani KIFs. However, while other techniques, including direct observation could have been used, these were not considered feasible (both in terms of the time and the cost to collect data) for this PhD study. It is acknowledged that the data analysis results obtained from a single source data collection method may be affected by method variance which may be the case with survey method research (Podsakoff & Organ, 1986).

As discussed in Section 6.4, the findings of this thesis are based on employees' perceptions only. However, research based on employees' perceptions always comes with some limitations because employees' perceptions are merely opinions based on their experiences rather than actual facts (Erisman, Daniels, Wong, & Franz, 2004). However, employee perceptions drive their behaviour and actions related to their job and personal development (Hoe, 2008). Hence, employees' actions in workplaces are related to how they perceive the organisational environment.

Advanced statistical applications (such as structural equation modelling, SEM) have helped researchers unravel more complex relationships than was previously possible. Although the results are persuasive, there are several limitations to this data analysis, and thus must be interpreted with some caution. Ideally, the model should be tested using two independent samples, conducting the EFA on one, and the CFA on the other. However, as discussed in Chapter 4, Section 4.5.3, the final sample size is smaller than initially anticipated. This was due to poor access to the organisations and severe weather-related events, particularly the flooding that occurred in Pakistan in 2010. It could be argued that studies with purposes similar to this research have also utilised relatively small and single samples. Similarly, if the model presents a good fit, the use of the SEM technique on small or single samples is acceptable. Recently, several HRM studies such as Camelo-Ordaz, et al., 2011 and Lopez-Cabrales, et al., 2011 have applied the SEM technique on small and single samples. Further, the empirical study of the thesis used various fit indices to support the model fit. Fit indices are used to overcome the shortcomings of the chi-square statistic. The chi-square ($\chi 2$) is sensitive to sample size, whereas, the fit indices used in SEM are insensitive to sample size (Fan, Thompson, & Wang, 1999).

The response rate in this thesis was over 60%. However, the number of non-responses is a limitation of survey-based research (Anseel, Lievens, Schollaert, & Choragwicka, 2010). In fact, it is not possible to determine the characteristics of the employees who did not

participate in the study or the reason(s) for their non-response. It is suggested that these results should be generalised carefully as it may not be true for all full time employees of Pakistani KIFs.

6.6 Research Implications

One of the objectives of this thesis was to test the impact of HRM practices on knowledge sharing and knowledge sharing outcomes. The findings from data analysis have several implications for developing the capability of knowledge workers and KIFs themselves. These implications are discussed in detail in the following section. Despite the contributions made by this thesis as discussed in Section 6.4, the following implications should be recognised through the lens of the research limitations as discussed in Section 6.5.

6.6.1 Implications for Theory

The findings of this thesis place KM concepts such as knowledge sharing in the broader HRM literature by bridging the KM and HRM disciplines. This thesis examines the key relationships between HRM practices and employees' knowledge sharing behaviour, knowledge sharing outcomes (i.e. individual and organisational capability) that were reported by the few relevant studies in the literature. Most of the empirical research reported knowledge sharing enablers only.

In the current knowledge economy, research in the field of HRM and KM recognises the role of employees' knowledge and skills, and the importance of collaborative practices based on employees' face-to-face interactions (Kang *et al.,* 2007). This contribution suggests the need for HRM practices that can enable employees to collaborate with other colleagues through knowledge sharing to improve the organisational human capital pool and knowledge capability. Although some empirical research suggests that employee collaboration through

employees' professional relations can influence employee knowledge-sharing behaviour, there is dearth of research regarding the precise role of HRM practices in this relationship.

The results of this thesis extend the research in the field of HRM and KM and suggest that collaborative practices can improve both organisational knowledge capability and individual learning. This thesis extends the organisational learning literature by providing an understanding of employees' collaborative activities in the context of knowledge management. The findings of this thesis show that collaborative activities improve the human capital pool which can eventually lead to a competitive advantage.

The results of this thesis suggest that not all HRM practices positively influence employees' knowledge sharing behaviour in the workplaces. The results suggest, on the one hand, that employees' collaboration, teamwork, face-face to interactions and interpersonal trust positively influence employees' knowledge sharing behaviour. However, on the other hand, employees perceive that reward systems as motivational techniques have little or no impact in changing employees' knowledge sharing behaviour.

One of the findings of this thesis suggests that employees perceive that their knowledge sharing has a positive effect on their own individual capability. These findings explain that employees (as knowledge workers) are well aware of the significance of their knowledge and skills. Employees understand that their unique knowledge needs to be validated in the current emerging technological environment through sharing and utilisation.

6.6.2 Implications and Recommendations for Professionals and Managers

Firstly, an organisation that is trying to improve the creation and development of organisational knowledge should give consideration to its HRM practices. The results suggest that employee engagement through teamwork as a part of HRM practices has a significant impact on their knowledge-sharing behaviour. Experienced employees who have

skills and are confident in their abilities to achieve can share their skills and abilities with other colleagues through participation. These collaborative activities lead to the learning and development of employees, and the participation and involvement of experienced employees should be employed when designing employee development programmes.

Collaborative activities are also an important aspect of an employees' learning that helps to bolster interpersonal relationships in the organisational context (Coetzer, 2007; Hughes, 2004). Hence, employees in the workplace do not have to learn alone or in isolation, but can do this through collaboration with their skilled colleagues (Billett, 2004). Employee collaboration and participation with colleagues is an important source of informal learning for both experienced and inexperienced employees (Ellinger, 2005; Hughes, 2004). Professionals may focus on employee learning and development by building an environment where employees support each other in the learning process. One method that can be effective in improving employees' collaborative practices is by reducing the lack of trust, conflicts and distance (physical and emotional) among employees. One way to improve interpersonal trust between employees is by the use of team assignments.

As discussed in Section 6.4, early KM literature suggests that employees' knowledge sharing has been affected by an over-reliance on technological inputs, and ignoring the human element. "…Knowledge creation relied primarily on attracting and retaining those individuals most capable of communicating and synthesising their knowledge and expertise with others" (Robertson & Hammersley, 2000, p. 251). Hence, employees are a resource like other physical resources in organisations, and are a source of competitive advantage (Barney, 1991). As discussed earlier, KM is in its infancy in Asian countries. Therefore, the concept of employees as a resource could help professionals to redesign organisational policies for longer-term benefits.

The findings may help top level managers, especially human resource managers, to better understand the importance of employees' knowledge sharing behaviour and the way

managers can support collaborative activities effectively. The results may help managers in KIFs to improve knowledge management mechanisms by addressing the design and order of HRM practices that need to be implemented for employees. Skilled employees are an asset in any organisation, and managers could support knowledge sharing and a learning culture in their organisations by engaging skilled employees in team work and collaborative activities. Managers may build strong trust between employees through their own participation as coaches, and in so doing, remove the traditional bureaucratic label. Interpersonal trust supports communication (Sveiby, 1997), and this could be enhanced if managers are open and sensitive to employees' concerns.

Recruiting groups of experienced and talented individuals cannot by itself guarantee to provide organisations with a competitive advantage over their competitors, and individual employees need to work together to achieve improved organisational capability. Organisational support to create interpersonal trust through the use of collaborative activities may reduce the barriers to individual employees' knowledge sharing behaviour (Iqbal, Abdul Jalal, Toulson, & Tweed, 2012).

6.6.3 Implications for Pakistani Policymakers

As discussed in Section 1.1, the concept of managing knowledge in Pakistan is in its infancy among managers and professionals which may lead to insufficient organisational and management support for employees' knowledge sharing. The results show that collaborative practices can influence employees' knowledge sharing.

A Gallop survey in 2001 suggests that there is a continuous brain drain in Pakistan, and talented and skilled individuals are leaving Pakistan for good due to poor working environments in terms of unfair policies and incentives. Pakistan's Overseas Employment Corporation shows that the approximate number is about 36,000 professionals, including

doctors, engineers and teachers, who have moved to other countries in the last 30 years (Ibrahim, 2012). For last decade, to reduce and reverse the brain drain, the Pakistani government has focused on individual development, as discussed in Section 1.1. The Pakistani government has made it a policy to send skilled individuals (from different professions, for example, teachers and IT workers) abroad for their professional training and learning. The main motive for sending such talented individuals abroad is to learn and improve their capability through sharing knowledge, skills and experiences with foreign staff.

The results of the thesis complements Pakistani government policy and suggests that sharing knowledge with skilled professionals increases individual capability in terms of improved skills, experiences and stock of tacit knowledge. The results of this thesis can be extended, and suggests that by providing a collaborative learning among skilled and talented workers (particularly in KIFs in Pakistan) encourages employees to stay in Pakistan and in their organisations.

6.7 Future Research

There are a number of directions for future research that arise from the results and findings of this thesis. Further research can expand the current study in number of ways:

- As discussed in the Section 5.7, organisational capability is removed from the final model, Figure 11, because the analysis of this thesis is at employee level. As it is very difficult to relate it to the employee's knowledge sharing behaviour for as long as the analysis is at the level of an employee. A future research capability can be considered when the unit of analysis is at organisational level.

- While the findings of this study are based on data collected from only two sectors of Pakistan, future research can be done by collecting data from other knowledge

based sectors (i.e. health, banking, and the tourism sectors). While several significant results have been obtained, a larger sample, which brings more statistical power, would allow more sophisticated statistical analysis and greater precision.

- In the future, a comparative study could also be undertaken to see the difference between employees' perceptions regarding HRM practices and knowledge sharing among private and public sector organisations in Pakistan. Such comparisons could provide better insight to knowledge sharing in the public sector.

- Cross-cultural empirical research, particularly among developing and developed nations, can provide better insight into HRM and KM linkages. Since different countries are culturally different from each other based on their economies, national culture and economy may affect employees' perceptions regarding knowledge sharing behaviour.

- The focus of this is on quantitative methodology using a survey questionnaire. Future researchers could utilise other research methodological techniques including qualitative methods (e.g. case study approach), or mixed methods approaches to explore the results reported in this thesis in more depth. Future research may use demographic variables (e.g. gender, education qualifications and job experience) and their relationships with employees' knowledge sharing behaviour. Research questions could be empirically tested including how the role of gender affects employees' knowledge sharing behaviour in work places, and also the extent to which employees' experiences and educational qualifications influence their knowledge sharing behaviour with other employees.

- This thesis acknowledges that there are other HRM practices (e.g. training and development, and performance appraisal) that may affect employees' knowledge sharing behaviour in workplaces. Future research could test the relationship with employees' training and employees' knowledge sharing behaviour, employees' performance appraisal and their knowledge sharing behaviour in organisations.

- This thesis also acknowledges that many other factors besides HRM practices may influence employee' knowledge sharing behaviour in workplaces. Future research could unfold the influence of leadership, self- efficacy, and diversity on knowledge sharing behaviour.

This chapter has discussed the results of this thesis and has provided support from the existing literature to strengthen the findings followed by the research contributions and research limitations of the results. This chapter briefly provides some implications to theory, professionals and Pakistani policymakers. The implications should be viewed through the lens of research limitations. Finally, this chapter presents opportunities that arise from the thesis for future research. The next chapter concludes and provides a summary of the whole thesis.

CHAPTER 7: THESIS CONCLUSION

People gain knowledge through their personal experience and some part of that knowledge cannot be expressed or documented easily. Due to competitive pressures, organisations are focusing more on how to manage knowledge resources. KM scholars argue that there is a need to develop a mechanism for effective KM in organisations. KM needs suitably motivated employees to share their knowledge in their organisation. HRM practices can influence employees' motivation and behaviour in workplaces to influence their knowledge sharing behaviour. By sharing employees' knowledge, organisations can improve their knowledge capability and perform better than their competitors. Employees' knowledge gained through experience is often thought to be the property of an individual but a great deal of knowledge is created and held collectively through knowledge sharing between members of an organisation. Collaboration and trust, through employees' knowledge sharing behaviour, can help to improve organisational capability (innovation capability). When employees collaborate to share knowledge they learn from other members and knowledge creation may take place (Borjesson, 2011).

For years, knowledge management (KM) has been the topic of seminars, presentations, articles and organisational intervention strategies. The growing research on KM suggests that the effective utilisation of employees' knowledge can improve their organisational capability. Although empirical research on KM has focused on KM enablers (Minbaeva, Makela, & Rabbiosi, 2012; Noorderhaven & Harzing, 2009; Seba, Rowley, & Lambert, 2012) there is a dearth of research on the strength of the relationship between HRM practices and KM enablers, for instance, employees' knowledge sharing (Jimenez-Jimenez & Sanz-Valle, 2012; Oltra, 2005).

In KBV, employees' knowledge has been extensively considered as an important resource to provide sustainable competitive advantage to organisations. However, in the current knowledge economy, one of the challenges faced by KIFs is to manage this resource effectively to build a human capital pool. One of the reasons for this challenge is that knowledge in KIFs is not symmetrically distributed. There is also little empirical research to test HRM and knowledge sharing relationships through the lens of employees' perceptions (Jimenez-Jimenez & Sanz-Valle, 2012). The objective of this thesis is to address this research gap by examining employees' perceptions on the impact of HRM practices on employees' knowledge sharing and knowledge sharing outcomes.

The data for this study was collected from two Pakistani 19 KIFs from two business sectors - telecommunication and higher education institutes. As discussed in Section 1.1, there are several reasons for choosing Pakistan for this study. Apart from Pakistani cultural familiarity, one of the main reasons is that the Pakistani government has implemented a number of policies to improve Pakistani individuals' learning capability through knowledge sharing activities which is one of the aims of this thesis. The population of interest for data collection is employees identified as knowledge workers in Pakistani KIFs. A simple random sampling technique was applied to the Pakistani database of telecommunications and higher education institutes to select a suitable number of organisations. In these selected organisations, knowledge workers are the target respondents. Knowledge workers are defined as employees that help to share and create knowledge within the organisations (Collins & Smith, 2006). The sample frame comprised of full time employees having Pakistani nationality.

The thesis has 390 useable questionnaires and the dataset was analysed through EFA to see how items clump together and represent the latent constructs of this thesis. Varimax rotation was applied to increase the interpretability of factor rotation (Hair, et al., 1998). The

result of factor rotations shows that new factors are formed and the thesis designed a final model (as shown in Figure 11) which was tested and discussed. As discussed in Section 5.7, the final model was designed by removing two concepts recognition and organisational capability. For CFA, the measurement model (of final model) is evaluated by examining the factor loading/regression weights of each item for statistical significance. The cut-off value of factor loading is 0.50 and above for adequate individual item reliability (Bagozzi & Yi, 1988; Browne & Cudeck, 1993). The empirical analysis of the thesis utilised several fit indices to examine the model fit of the measurement and structural model. Based on measurement model good fit, a structural model was tested.

This thesis found a mix of consistent and contrasting results with regards to the antecedents of employees' knowledge sharing behaviour. This thesis concludes that the first and highest priority for organisations is to focus on employees' collaborative practices and trust to foster knowledge sharing behaviour. The results of this thesis show that employees' collaboration across departments in organisations positively influences knowledge sharing behaviour. Collaboration with other members in organisations for collecting knowledge is part of a collaborative learning process and leads to a better understanding of contextual knowledge. When employees collaborate for know-whom to acquire knowledge, this form of collaboration acts as employee recognition and may influence knowledge sharing behaviour.

The findings of this thesis show that trust has a strong positive effect on employees' knowledge sharing behaviour. The latent construct trust has two dimensions in the results of this thesis. These dimensions are interpersonal trust and trust in management. Personal similarities and common goals of employees may boost their interpersonal trust in each other in their organisations. At management level, fair and transparent policies may boost employees' trust in management, whereas the traditional administrative style may hinder knowledge sharing in organisations. However, the role of managers and organisation is critical to boost knowledge sharing in organisations.

With regards to monetary rewards, the thesis concludes that rewards have no effect on employees' knowledge sharing behaviour. This conclusion is surprising and in contrast to most of the existing literature in general. The reasons for this contrasting conclusion may be due to the routine monetary rewards in Pakistani KIFs. Most employees are entitled to annual financial bonuses and regular pay rises, irrespective of an employee's contribution in the organisation. Such routine rewards may not influence employees to share their experiences with other colleagues. It can be argued that routine reward systems are given on a regular basis, irrespective of an employee's participation and can discourage knowledge sharing behaviour in the workplace. Another reason may be that such regular pay rises and monetary incentives are not transparent and may be perceived by employees as being unfair (Riege, 2005).

This conclusion of this thesis regarding monetary rewards is based on employees' perceptions and suggests that employees themselves appear to acknowledge that monetary incentives do not change their behaviour that much. All of this information needs to be considered in the context of the fact that this is an employee perception study. The literature seems to emphasise the importance of rewards in driving behaviour, but there is no effect when compared to other antecedents of employees' knowledge sharing behaviour. This thesis proposed reordering priorities around HRM practices, and organisations may focus on employee collaborative practices through building trust to improve employees' knowledge sharing behaviour that can eventually improve individual capability.

Through the organisation lens, employees have knowledge, skills and abilities. Employees' knowledge and skills are trainable, and different organisations require different levels of skills and knowledge for particular jobs. However, employees' abilities are related to 'who employees are and what employees can do. For instance, some employees may have

unique abilities and knowledge and by recognising employees' abilities, organisation can motivate their workforces to improve its capability.

These conclusions have a number of implications for managers and Pakistani policymakers. Firstly, the highest priority in improving organisational capability is to facilitate employees' collaborative practices. As discussed in Section 1.1, the concept of managing knowledge in Pakistani organisations is in its infancy, leading to inadequate organisational support to improve collaborative practices through employees' knowledge sharing. These collaborative practices help to create a learning culture where employees can share and utilise their knowledge. When a learning culture is established and supported by the organisation, employees are able to share their knowledge to support their colleagues.

Secondly, the significant effect of knowledge sharing on individual capability suggests that sharing knowledge helps to improve individuals' learning ability. As discussed in Section 1.1, Pakistani policymakers are focusing on improving individuals' capability through different channels. One of the channels is through sharing experiences and knowledge from foreign skilled individuals. The Pakistani government has a policy to send Pakistani professionals overseas to improve their skills and knowledge. Similarly, sometimes foreign professionals are hired on short or long term contracts to improve the Pakistani professional capability at home. For instance, several skilled professionals are coaching Pakistanis in Pakistan in the fields of telecommunications, medical, education and even in sport. The motive behind sending Pakistanis overseas and hiring foreign skilled individuals is to learn through sharing knowledge from foreign skilled colleagues. This thesis fully supports this Pakistani policy and suggests that sharing knowledge in collaboration with experienced colleagues may improve Pakistani individual learning capability and skills.

Thirdly, within organisations, the conclusions of this thesis can help senior managers, especially human resource managers of Pakistan KIFs. This thesis suggests that managers should support a knowledge sharing culture in the workplace to improve organisational and individual knowledge capability. During the last decade, due to emerging technologies and the dynamic business environment, the Pakistani skilled workforce within Pakistan has a rapid turnover rate. One of the reasons for this turnover is lack of their own learning and professional skills. This thesis suggests that building a human capital pool through supporting collaborative practices in the workplace may help to reduce employee turnover. Organisations can minimise their dependency on outsourcing by building a strong human capital pool. This thesis suggests that recruiting groups of experienced and talented individuals cannot guarantee a competitive advantage to organisations until employees work together to achieve improved organisational capability for better organisational performance. Organisational support to facilitate employees' collaborative practices and build interpersonal trust among employees and managers may reduce the barriers to employees' knowledge sharing behaviour, (Iqbal, Abdul Jalal, Toulson, & Tweed, 2012).

This thesis contributes to the HRM literature in a number of ways by demonstrating that both HRM and KM are emerging, interlinked research concepts (Edvardsson, 2008; Jimenez-Jimenez & Sanz-Valle, 2012; Lam, Tan, Fong, & Ng, 2011). Firstly, this thesis contributes to both disciplines without the influence of technology that has been the predominant feature in the early years of KM research .The position taken by this thesis is that technology is a supplement not a substitute for employees' knowledge sharing behaviour. Knowledge resides in an individual's brain so knowledge sharing should be people-driven rather than driven by technology (Cross & Baird, 2000; Riege, 2005). This thesis acknowledges the importance of technology, but technology cannot fully store the employees' knowledge because it depends on individuals to share and use their knowledge. Technology, however, can support knowledge-sharing activities in various ways such as finding knowledge-sources

through online directories, the use of databases and through video conferencing (Holste & Fields, 2010; Song, 2002).

Secondly, the thesis tests the HRM and KM causative relationships in two Pakistani business sectors. As discussed in Section 1.1, there are several reasons for considering Pakistan for data collection. Academically, there are empirical studies that have examined the knowledge management enablers in Pakistani KIFs and discusses knowledge sharing successes through its antecedents and managing knowledge in general (Jamal & Naser, 2003; Malik & Malik, 2008; Tariq, et al., 2012). However, there is dearth of empirical research in the field of two disciplines, HRM and KM, in Pakistani business sectors. The reason for such little research may be that KM is in its infancy in Pakistan. To address this research gap, this thesis examined the effect of HRM practices on employees' knowledge sharing behaviour and empirically tests the knowledge sharing outcomes at organisational and individual level.

Thirdly, this thesis highlights the importance of employees' collaboration in knowledge based organisations. Due to the current dynamic business environment, employees of knowledge based organisations want to be part of the collaborative culture for their own professional development. The key aspect of employee collaborative practices is to prevent knowledge loss that could occur due to staff turnover. Employees in the workplace could learn faster through collaborative activities than by working alone (Billett, 2004), and is an important source of learning for both experienced and new employees (Ellinger, 2005; Hughes, 2004).

Fourthly, employee collaborative practices can lead to learning and development of employees in the workplace. In view of this, professionals may pay attention to experienced employee participation and involvement when designing employees' development programs. This thesis established the importance of employees' learning through collaborative

activities, and professionals could focus on employees' learning and development through building an environment where employees support each other in the learning process.

Although the results of this thesis are persuasive, there are some limitations to the data analysis which should be interpreted with some caution. As discussed in Chapter 6, Section 6.5, a larger sample can provide better insight into the results. In the literature, several studies used small and single samples in the field of HRM. In addition, this thesis used both the chi-square and fit indices to test the model fit results. Model fit indices results are not influenced by sample size; hence the results of this thesis are acceptable.

Although several significant results have been obtained, a larger sample, which brings more statistical power, would allow more sophisticated statistical analysis and greater precision. The findings of this thesis are based on two sectors in Pakistan, and future research can be conducted by collecting data from other knowledge based sectors. A comparative study between private and public KIFs can help to gain better insights regarding employees' knowledge sharing behaviour. Several other factors besides HRM practices can influence employee' knowledge sharing behaviour in KIFs, and future research can unfold the influence of such factors, for example, leadership, self- efficacy, and diversity on knowledge sharing behaviour.

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Appendices

APPENDIX A: ETHICS APPROVAL

MASSEY UNIVERSITY

28 September 2010

Salman Iqbal
185B Park Road
West End
PALMERSTON NORTH 4410

Dear Salman

Re: The Relationship between Tacit Knowledge and Capability: Evaluating the Role of HRM

Thank you for your Low Risk Notification which was received on 22 September 2010.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

J. O'Neill

John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Assoc Prof Paul Toulson
School of Management
PN214

Dr David Tweed
School of Management
PN214

Prof Claire Massey, HoS
School of Management
PN214

Massey University Human Ethics Committee
Accredited by the Health Research Council

Te Kunenga ki Pūrehuroa

Research Ethics Office, Massey University, Private Bag 11222, Palmerston North 4442, New Zealand
T +64 6 350 5573 +64 6 350 5575 **F** +64 6 350 5622
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APPENDIX B: QUESTIONNAIRE INFORMATION SHEET

MASSEY UNIVERSITY
COLLEGE OF BUSINESS
KAUPAPA WHAI PAKIHI

SCHOOL OF MANAGEMENT
Private Bag 11 222
Palmerston North
New Zealand

Telephone: 64 6 356 9099 x 2361
Facsimile: 64 6 350 5661
http://management.massey.ac.nz

Questionnaire

(Information for participants)

Research topic: The relationship between HRM practices and capability: The mediating role of knowledge sharing.

Hi! I'm Salman Iqbal. I am a student at Massey University, Palmerston North, New Zealand, and am doing a research project on above topic for my PhD study.

You are requested to assist in a study that seeks to provide a better understanding of how you and your organisation can work together to improve capability. This questionnaire is designed to examine how an organisation can develop capability both at the individual and organisational levels through its human resource management (HRM) practices.

The questionnaire will take approximately **25 - 30** minutes to complete and includes questions about:

- Participants' demographical information.
- HRM practices (recruitment & selection, rewards & recognition, collaboration & communication and trust) in your organisation and whether these support or hinder knowledge sharing.
- The ability of an individual and organisation to improve innovation and learning through knowledge sharing.

Completing this questionnaire is entirely **voluntary.** You have the right to withdraw anytime and **decline** to answer any particular question. However, your time and cooperation regarding this survey will be greatly appreciated since you are the people who have expertise and practical experience of the business market. The results of this study will enhance my understanding of knowledge sharing in an organisation to build a better employee-employer relationship. At the conclusion of this research, a summary of findings will be emailed to you upon request.

The survey is completely **anonymous**. All individual responses to this survey will be kept **confidential**. Your organisation, colleagues and managers will **NOT** have access to the information you have provided me. **NO** reference will be made in written or oral materials that could link you to this study**.** Your identity will **NOT** be disclosed anywhere on the documents, therefore, I would appreciate your impartial opinion to make this research successful.

The information you provide on questionnaire will be transferred to an electronic data set, and the original questionnaire will be **destroyed** after the data has been analysed. The data set will be held in complete confidence at Massey University computer hard disc and can only be accessed by the researcher, supervisors, and statisticians to complete this and any future research.

The responses that you give will be put together with the responses of all other people to form general results to ensure that no individual organisation can be identified. If there is any information that could identify you individually, it will be kept confidential.

If your manager has agreed, you will be able to complete this questionnaire during work time or in a lunch break. If you are not able to answer the questionnaire at work, you can complete it at a place in the community you are comfortable in at a time that suits you.

Please feel free to contact any of us on the details below if you have any questions and concerns about the research or just wish to know more.

Researcher's name	Telephone	Email
Associate Prof. Paul Toulson	64 6 3505799 extn. 2389	P.Toulson@massey.ac.nz
Dr. David Tweed	64 6 3505799 extn. 2805	D.M.Tweed@massey.ac.nz
Salman Iqbal	(042) 35015684	S.iqbal@massey.ac.nz

APPENDIX C: QUESTIONNAIRE

(Note: Items with ** are designed during this PhD study)

Section A:

Demographical information

1. **Age** (*Please Tick your age group)*

21-30 year	❑1	51-60 years	❑4
31-40 years	❑2	61 and more	❑5
41-50 years	❑3		

2. **Gender (**Please Tick your gender)

Male ❑1 Female ❑2

3. What is your highest qualification? *(Please Tick in one box)*

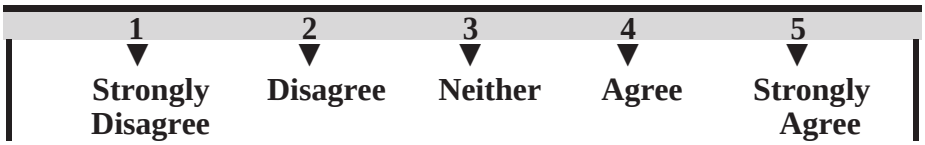
Bachelors ❑1 Master ❑2 PhD ❑3 Other ❑4 *(Please state)* ----------

4. Total years of experience with this organisation ----------

5. How many staff directly report to you----------

Section B:

Part I: HRM Practices: Please indicate the extent of your **agreement** with the following statements on a 5-point scale. (Please only **Cross** one)



Recruitment & Selection

	SD	D	N	A	SA
1. The selection systems followed in our organisation are highly scientific and rigorous.	1	2	3	4	5
2. In our organisation, line managers and HR managers participate in selection.	1	2	3	4	5
3. Valid and standardized tests are used when required in the selection process.	1	2	3	4	5
4. The selection system in our organisation selects those having the desired knowledge, skills and attitudes using employee referral.	1	2	3	4	5
5. Favoritism is not evident in any of the recruitment decisions made here.	1	2	3	4	5
6. Interview panels are used during the selection process in this organisation.	1	2	3	4	5
7. All appointments in this organisation are based on merit (i.e. the best person for the job is selected.	1	2	3	4	5
8. This organisation does **NOT** need to pay more attention to the way it recruits people.	1	2	3	4	5
9. The recruitment/selection process assesses the candidate's industry knowledge and experience.	1	2	3	4	5
10. The recruitment/selection process emphasises the candidate's ability to collaborate and work in teams.	1	2	3	4	5
11. The recruitment/selection process focuses on selecting the best all round candidates, regardless of the specific job.	1	2	3	4	5
12. The recruitment/selection process involves screening many job candidates.	1	2	3	4	5
13. The recruitment/selection process places priority on candidate's potential to learn (e.g., aptitude).	1	2	3	4	5
14. The recruitment/selection process uses many different recruiting sources (agencies, universities, etc.).	1	2	3	4	5
15. ** My organisation always offers trial period for new employees to assess person fit for jobs.	1	2	3	4	5

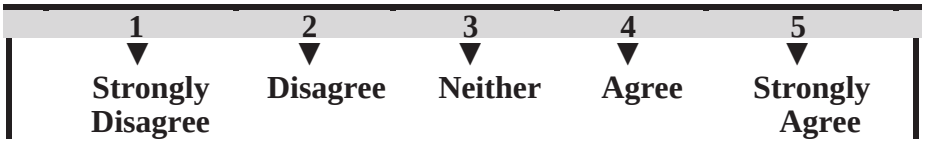
Rewards & recognition

	SD	D	N	A	SA
16. I feel that the monetary rewards given by the organisation to employees for sharing knowledge are fair.	**1**	**2**	**3**	**4**	**5**
17. I am satisfied with the monetary rewards that I receive in exchange for the knowledge I give the organisation.	**1**	**2**	**3**	**4**	**5**
18. My feelings about the monetary rewards I receive for sharing knowledge are excellent.	**1**	**2**	**3**	**4**	**5**
19. I feel that the non-monetary rewards given by the organisation to employees for sharing knowledge are fair.	**1**	**2**	**3**	**4**	**5**
20. I am satisfied with the non-monetary rewards that I receive in exchange for the knowledge I give the organisation.	**1**	**2**	**3**	**4**	**5**
21. My feelings about the non-monetary rewards I receive for sharing knowledge are excellent.	**1**	**2**	**3**	**4**	**5**
22. In my company, pay raises are determined mainly by an employees' job performance.	**1**	**2**	**3**	**4**	**5**
23. My company is committed to a merit pay system.	**1**	**2**	**3**	**4**	**5**
24. An employees' seniority does **NOT** enter into pay decisions.	**1**	**2**	**3**	**4**	**5**
25. I want to become a person with professional knowledge in the eyes of my colleagues.	**1**	**2**	**3**	**4**	**5**
26. I believe that knowledge sharing among teams can help establish my image as an expert.	**1**	**2**	**3**	**4**	**5**
27. I respect others' impression that I am willing to assist people.	**1**	**2**	**3**	**4**	**5**

Employees' Collaboration

	SD	D	N	A	SA
28. Employees in this organisation are allowed to make decisions related to cost and quality matters.	**1**	**2**	**3**	**4**	**5**
29. Employees in this organisation are asked by their superiors to participate in operations / production.	**1**	**2**	**3**	**4**	**5**
30. Employees are provided opportunities to suggest improvements in the way things are done here.	**1**	**2**	**3**	**4**	**5**
31. ** In my organisation employees' always prefer to share their experiences in face to face interactions.	**1**	**2**	**3**	**4**	**5**
32. ** In my organisation employees' always share their experiences in casual meetings.	**1**	**2**	**3**	**4**	**5**
33. **In my organisation employees' always share their experiences in formal teamwork.	**1**	**2**	**3**	**4**	**5**
34. ** In my organisation employees' always share their experiences with colleagues from other departments.	**1**	**2**	**3**	**4**	**5**
35. **My organisation supports cross-functional team work for learning through collaboration.	**1**	**2**	**3**	**4**	**5**
36. Our employees are skilled at collaborating with each other to diagnose and solve problems.	**1**	**2**	**3**	**4**	**5**
37. Our employees share information and learn from one another.	**1**	**2**	**3**	**4**	**5**
38. Our employees interact and exchange ideas with people from different areas of the company.	**1**	**2**	**3**	**4**	**5**

Part II: Tacit knowledge sharing, please indicate the extent of your **agreement** with the following statement on a 5-point scale. (Please only **Cross** one)

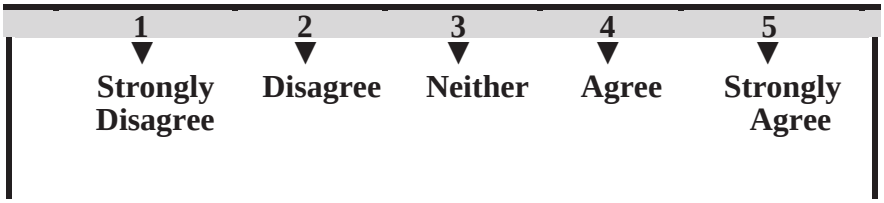


	SD	D	N	A	SA
39. People in my organisation frequently share knowledge based on their experience.	1	2	3	4	5
40. I frequently collect knowledge from other organisational members based on their experience.	1	2	3	4	5
41. I frequently share knowledge based on my experience with other organisational members.	1	2	3	4	5
42. People in my organisation frequently collect knowledge from other organisational members.	1	2	3	4	5
43. People in my organisation frequently collect knowledge of know-where or know-whom with other organisational members.	1	2	3	4	5
44. People in my organisation frequently share knowledge of know-where or know-whom with other organisational members.	1	2	3	4	5
45. I often share with my colleagues the new information I acquire.	1	2	3	4	5
46. I often share with my colleagues the new working skills that I learn.	1	2	3	4	5
47. My colleagues often share with me the new working skills that they learn.	1	2	3	4	5
48. My colleagues often share with me the new information they acquire.	1	2	3	4	5
49. Sharing knowledge with my colleagues is regarded as something normal in my company.	1	2	3	4	5
50. I share the information I have with colleagues within my department, when they ask me to.	1	2	3	4	5
51. Colleagues within my department tell me what their skills are, when I ask them about it.	1	2	3	4	5
52. I share the information I have with colleagues outside of my department, when they ask me to	1	2	3	4	5
53. Colleagues outside of my department tell me what their skills are, when I ask them about it.	1	2	3	4	5

Trust

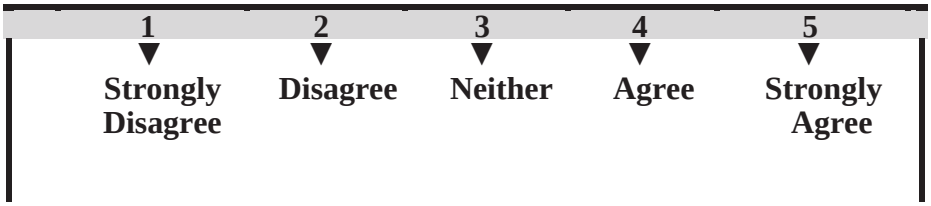
	SD	D	N	A	SA
54. If I got into difficulties at work I know my colleagues would try and help me out.	**1**	**2**	**3**	**4**	**5**
55. I can trust the people I work with to lend me a hand if I needed.	**1**	**2**	**3**	**4**	**5**
56. Most of my colleagues can be relied upon to do as they say they will do.	**1**	**2**	**3**	**4**	**5**
57. Management at my firm is sincere in its attempts to meet the employees' points of view.	**1**	**2**	**3**	**4**	**5**
58. I feel quite confident that the firm will always try to treat me fairly.	**1**	**2**	**3**	**4**	**5**
59. I can trust the people in other department to lend me a hand if needed.	**1**	**2**	**3**	**4**	**5**
60. At work, I know my colleagues would help me if needed.	**1**	**2**	**3**	**4**	**5**
61. Most of my peers can be relied upon to do as they say they will do.	**1**	**2**	**3**	**4**	**5**
62. **I always trust my colleagues' opinions due to their competence.	**1**	**2**	**3**	**4**	**5**
63. **I always listen to my team- mates' opinions irrespective of their competence.	**1**	**2**	**3**	**4**	**5**

Part III: Organisational capability, please indicate the extent of your **agreement** with the following statement on a 5-point scale. (Please only **Cross** one)



	SD	D	N	A	SA
64. Our company often develops new products and services well accepted by the market.	**1**	**2**	**3**	**4**	**5**
65. A great majority of our company's profits are generated by the new products and services developed.	**1**	**2**	**3**	**4**	**5**
66. The new products or services developed by our company always arouse imitation from competitors.	**1**	**2**	**3**	**4**	**5**
67. Our company can often launch new products or services faster than our competitors.	**1**	**2**	**3**	**4**	**5**
68. Our company always develops novel skills for transforming old products into new ones for the market.	**1**	**2**	**3**	**4**	**5**
69. Our organization uses patents and licenses as a way to store knowledge.	**1**	**2**	**3**	**4**	**5**
70. Our organization embeds much of its knowledge and information in structure, systems, and processes.	**1**	**2**	**3**	**4**	**5**

Part IV: Individual capability, please indicate the extent of your **agreement** with the following statement on a 5-point scale. (Please only **Cross** one)



	SD	D	N	A	SA
71. **I often develop new products and services that are well accepted by the market.	1	2	3	4	5
72. **I can often develop new products or services faster than others.	1	2	3	4	5
73. **I always develop novel skills for transforming old products into new ones for market.	1	2	3	4	5
74. **The knowledge I receive from my colleagues helps me at work	1	2	3	4	5
75. **I always get valuable feedback from my colleagues, whenever, I share my Knowledge with them.	1	2	3	4	5
76. **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
77. **Managers or co-workers often let me know how well they think I am performing my job.	1	2	3	4	5

Thank you!

APPENDIX D: PSYCHOMETRIC PROPERTIES

(Studies from which questionnaire items were adopted)

Construct	Psychometric properties	Items adopted from
Recruitment and selection	The data was collected through mail survey and the study is in the context of HRM practices and firm performance. Alpha coefficient values of the adopted items were more than 0.60. The study is based on respondents' perception in India.	(Kuldeep, 2004).
	In this study, a survey was distributed through contact person. The research is in the context of HRM practices, job satisfaction and organisational commitment in New Zealand. It is employees' perception study and the alpha coefficients of adopted items were higher than 0.80.	(Edgar & Geare, 2005).
Employees' Collaboration	This data was collected through mail survey, in the context of HRM practices. The respondents were informants. Alpha coefficient values of adopted items were more than 0.80.	(Lepak & Snell, 2002).
	The data was collected through survey and the study is in the context of employees' collaboration and firm performance. The alpha coefficient values of adopted items were more than 0.60.	(Kuldeep, 2004).
	The data was collected through survey and study is in the context of intellectual capital, where the respondents were informants. Cronbach's alpha values of the adopted items were higher than 0.80.	(Youndt, 2004).
Rewards & Recognition	This study is based on survey, in the context of monetary incentives, based on individuals' perceptions. Cronbach's alpha values of the adopted items were higher than 0.70.	(Sweeney & McFarlin, 2005).
	This study is based on survey, in the context of compensation, based on HR executives as informants of manufacturing firms. Cronbach's alpha values of the adopted items were higher than 0.90.	(Balkin & Gomez-Mejia, 1990).
	This study is based on survey, in the context of individuals' reputation and recognition. Cronbach's alphas of the adopted items were higher than 0.85.	(Davenport & Prusak, 1998).
Knowledge sharing	This study is based on survey, in the context of knowledge sharing based on individuals' perceptions. Cronbach's alphas value of the item was higher than 0.90.	(Bock, Zmud, Kim, & Lee, 2005).

	This study is based on survey, in the context of knowledge sharing based on individuals' perceptions in Telecom companies. Cronbach's alphas value of the items were higher than 0.90.	(Reychav & Weisberg, 2009).
	This study is based on survey, in the context of knowledge sharing based on individuals' perceptions in two companies. Cronbach's alphas value of the adopted items were higher than 0.80	(Van den Hooff & Van Weenen, 2004).
Trust	This study is based on survey, in the context of trust and organisational commitment based on individuals' perceptions. Cronbach's alphas value of the adopted items were higher than 0.80.	(Cook & Wall, 1980).
Organisational capability	This study is based on survey, in the context of knowledge sharing and innovative capability in KIFs, this study is based on individuals' perceptions. Cronbach's alphas value of the adopted items were higher than 0.90.	(Shu-hsien, Wu-Chen, & Chih-Chiang, 2007).
	This study is based on survey, in the context intellectual capital, where the respondents were informants. Cronbach's alphas of the adopted items were higher than 0.80	(Youndt, 2004).

APPENDIX E: PRINCIPAL COMPONENT ANALYSIS

TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	23.529	30.558	30.558	23.529	30.558	30.558
2	3.637	4.724	35.281	3.637	4.724	35.281
3	2.585	3.357	38.638	2.585	3.357	38.638
4	2.256	2.930	41.568	2.256	2.930	41.568
5	2.191	2.845	44.413	2.191	2.845	44.413
6	1.900	2.468	46.881	1.900	2.468	46.881
7	1.796	2.333	49.213	1.796	2.333	49.213
8	1.557	2.023	51.236	1.557	2.023	51.236
9	1.508	1.958	53.194	1.508	1.958	53.194
10	1.467	1.905	55.099	1.467	1.905	55.099
11	1.427	1.853	56.952	1.427	1.853	56.952
12	1.310	1.701	58.653	1.310	1.701	58.653
13	1.222	1.587	60.240	1.222	1.587	60.240
14	1.171	1.521	61.762	1.171	1.521	61.762
15	1.166	1.514	63.276	1.166	1.514	63.276
16	1.080	1.403	64.679	1.080	1.403	64.679
17	1.062	1.380	66.058	1.062	1.380	66.058
18	**1.040**	**1.350**	**67.409**	**1.040**	**1.350**	**67.409**
19	.967	1.256	68.664			
20	.924	1.200	69.864			
21	.897	1.166	71.029			
22	.880	1.143	72.172			
23	.868	1.127	73.299			
24	.849	1.103	74.402			
25	.831	1.079	75.481			
26	.775	1.006	76.488			
27	.761	.988	77.476			
28	.726	.943	78.419			
29	.720	.936	79.354			
30	.669	.869	80.223			
31	.640	.832	81.055			
32	.623	.809	81.863			
33	.609	.791	82.654			
34	.584	.759	83.413			
35	.575	.746	84.159			
36	.571	.741	84.901			
37	.553	.718	85.619			
38	.522	.678	86.297			
39	.508	.659	86.957			
40	.505	.655	87.612			
41	.503	.653	88.265			
42	.474	.616	88.881			
43	.437	.567	89.448			
44	.419	.544	89.992			

45	.413	.536	90.528			
46	.404	.525	91.053			
47	.392	.509	91.562			
48	.373	.484	92.046			
49	.346	.450	92.496			
50	.331	.430	92.926			
51	.325	.423	93.348			
52	.319	.414	93.762			
53	.310	.402	94.165			
54	.297	.385	94.550			
55	.283	.368	94.918			
56	.261	.339	95.257			
57	.253	.329	95.586			
58	.249	.323	95.909			
59	.237	.308	96.217			
60	.228	.296	96.513			
61	.220	.286	96.799			
62	.217	.282	97.080			
63	.204	.266	97.346			
64	.200	.260	97.606			
65	.186	.242	97.848			
66	.177	.230	98.078			
67	.174	.226	98.304			
68	.167	.217	98.521			
69	.154	.200	98.722			
70	.152	.197	98.919			
71	.147	.191	99.110			
72	.142	.185	99.295			
73	.123	.160	99.455			
74	.122	.158	99.613			
75	.107	.139	99.752			
76	.097	.126	99.878			
77	.094	.122	100.000			

Extraction Method: Principal Component Analysis.

APPENDIX F: Principal Axis factoring: Total Variance Explained

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	23.529	30.558	30.558	23.132	30.041	30.041
2	3.637	4.724	35.281	3.228	4.192	34.233
3	2.585	3.357	38.638	2.166	2.813	37.046
4	2.256	2.930	41.568	1.816	2.358	39.404
5	2.191	2.845	44.413	1.784	2.317	41.721
6	1.900	2.468	46.881	1.477	1.918	43.640
7	1.796	2.333	49.213	1.349	1.751	45.391
8	1.557	2.023	51.236	1.110	1.441	46.832
9	1.508	1.958	53.194	1.064	1.381	48.214
10	1.467	1.905	55.099	1.006	1.306	49.520
11	1.427	1.853	56.952	.982	1.276	50.795
12	1.310	1.701	58.653	.877	1.139	51.934
13	1.222	1.587	60.240	.777	1.009	52.943
14	1.171	1.521	61.762	.752	.976	53.920
15	1.166	1.514	63.276	.712	.925	54.845
16	1.080	1.403	64.679	.660	.858	55.702
17	1.062	1.380	66.058	.633	.822	56.524
18	**1.040**	**1.350**	**67.409**	**.604**	**.784**	**57.308**
19	.967	1.256	68.664			
20	.924	1.200	69.864			
21	.897	1.166	71.029			
22	.880	1.143	72.172			
23	.868	1.127	73.299			
24	.849	1.103	74.402			
25	.831	1.079	75.481			
26	.775	1.006	76.488			
27	.761	.988	77.476			
28	.726	.943	78.419			
29	.720	.936	79.354			
30	.669	.869	80.223			
31	.640	.832	81.055			
32	.623	.809	81.863			

33	.609	.791	82.654			
34	.584	.759	83.413			
35	.575	.746	84.159			
36	.571	.741	84.901			
37	.553	.718	85.619			
38	.522	.678	86.297			
39	.508	.659	86.957			
40	.505	.655	87.612			
41	.503	.653	88.265			
42	.474	.616	88.881			
43	.437	.567	89.448			
44	.419	.544	89.992			
45	.413	.536	90.528			
46	.404	.525	91.053			
47	.392	.509	91.562			
48	.373	.484	92.046			
49	.346	.450	92.496			
50	.331	.430	92.926			
51	.325	.423	93.348			
52	.319	.414	93.762			
53	.310	.402	94.165			
54	.297	.385	94.550			
55	.283	.368	94.918			
56	.261	.339	95.257			
57	.253	.329	95.586			
58	.249	.323	95.909			
59	.237	.308	96.217			
60	.228	.296	96.513			
61	.220	.286	96.799			
62	.217	.282	97.080			
63	.204	.266	97.346			
64	.200	.260	97.606			
65	.186	.242	97.848			
66	.177	.230	98.078			
67	.174	.226	98.304			
68	.167	.217	98.521			
69	.154	.200	98.722			
70	.152	.197	98.919			

71	.147	.191	99.110			
72	.142	.185	99.295			
73	.123	.160	99.455			
74	.122	.158	99.613			
75	.107	.139	99.752			
76	.097	.126	99.878			
77	.094	.122	100.000			

Extraction Method: Principal Axis Factoring.

APPENDIX G: Rotated Component Matrix

Item number	Component						
	Employees' knowledge sharing	Organisational. Capability	Collaborative practices.	Reward systems	Individual capability	Trust	Recognition
51	.769						
62	.733						
50	.713						
49	.711						
75	.707						
13	.706						
46	.682						
61	.675						
60	.667						
27	.656						
47	.650						
40	.633						
54	.627						
52	.624						.432
12	.613						
53	.605						
56	.590						
36	.588						
9	.586						
55	.569						.404
10	.538						
76	.531						
63	.512						
35	.509						
32	.495						
16	.491						
41	.467						
67	.463	.457					
28	.462	.427					
39	.452						
48	.448						
77	.439						
08	.436						
07	.428						
42	.410		.				
44	.401						
66		.695					
68		.652					
62		.570					
69		.531					
23		.526					
31		.457					
34			.725				
18			.576				
43			.492				
45			.411				

22				.656			
20				.618			
21				.550			
19				.489			
17				.409			
37					.640		
74					.620		
01					.545		
30					.536		
29					.431		
72							
70						.598	
57	.447					.579	
73						.578	
58						.531	
14	.409					.434	
25							.595
64							.551
26							.549
59							.518
06							

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

APPENDIX H: MEASUREMENT MODEL FIT SUMMARY

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	68	1493.203	367	.000	4.0
Saturated model	435	.000	0		
Independence model	29	6914.317	406	.000	17.030

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.077	.805	.790	.666
Saturated model	.000	1.000		
Independence model	.543	.173	.114	.161

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.80	.761	.828	.809	.830
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

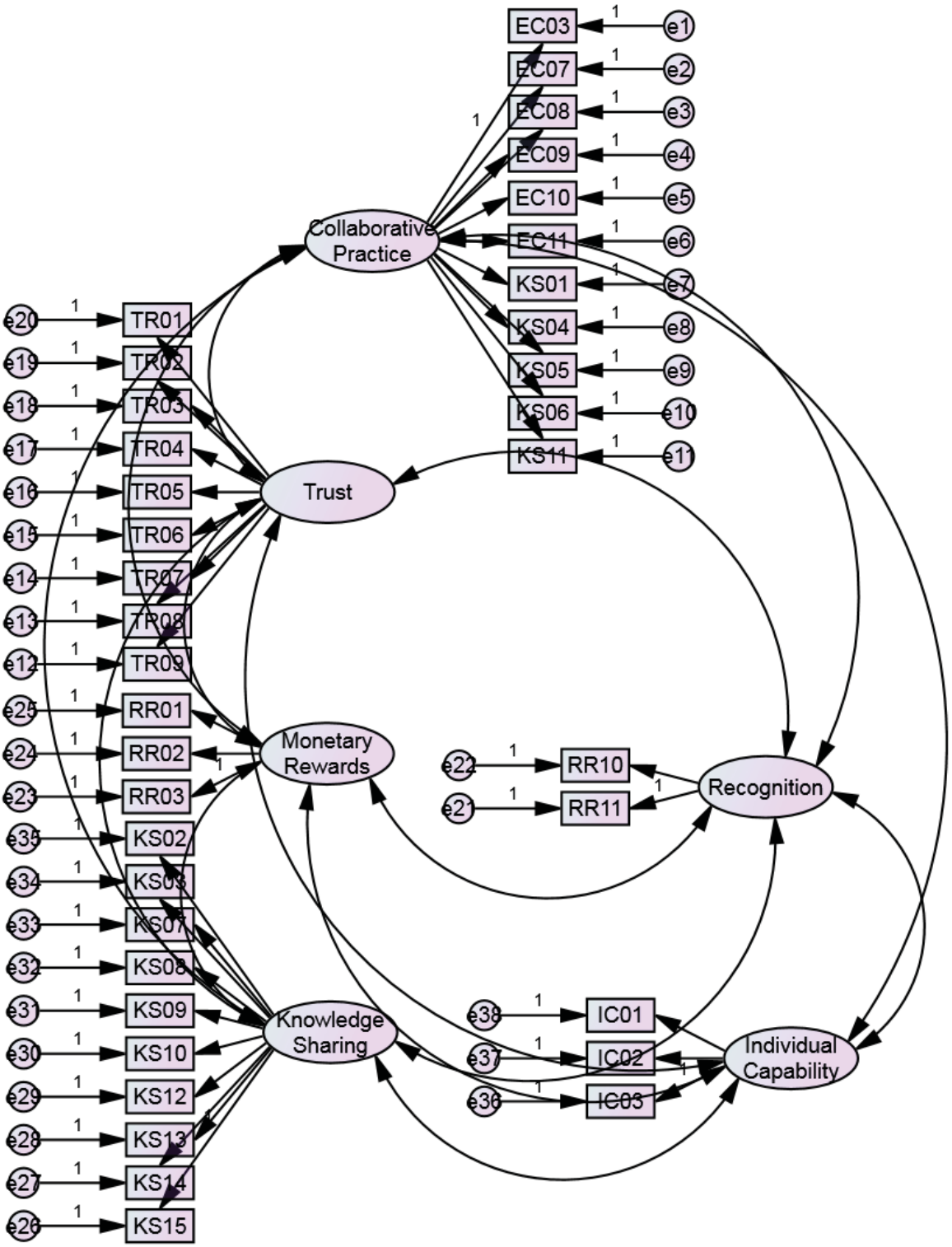
Model	PRATIO	PNFI	PCFI
Default model	.904	.709	.748
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.080	.084	.094	.000
Independence model	.203	.199	.207	.000

APPENDIX I: MODEL FIT

(With Recognition)


Collaborative Practice
Trust
Monetary Rewards
Knowledge Sharing
Recognition
Individual Capability
EC03
EC07
EC08
EC09
EC10
EC11
KS01
KS04
KS05
KS06
KS11
TR01
TR02
TR03
TR04
TR05
TR06
TR07
TR08
TR09
RR01
RR02
RR03
KS02
KS03
KS07
KS08
KS09
KS10
KS12
KS13
KS14
KS15
RR10
RR11
IC01
IC02
IC03

Regression weights of the Items (with recognition concept)

EC03	<---	Collaborative_Practice	.497
EC08	<---	Collaborative_Practice	.619
EC09	<---	Collaborative_Practice	.755
EC10	<---	Collaborative_Practice	.563
EC11	<---	Collaborative_Practice	.613
KS01	<---	Collaborative_Practice	.673
KS04	<---	Collaborative_Practice	.586
KS05	<---	Collaborative_Practice	.625
KS06	<---	Collaborative_Practice	.563
KS11	<---	Collaborative_Practice	.739
TR09	<---	Trust	.788
TR08	<---	Trust	.680
TR07	<---	Trust	.644
TR06	<---	Trust	.383
TR05	<---	Trust	.369
TR04	<---	Trust	.594
TR03	<---	Trust	.671
TR02	<---	Trust	.695
TR01	<---	Trust	.731
RR11	<---	Recognition	.700
RR10	<---	Recognition	.353
RR03	<---	Monetary_Rewards	.511
RR02	<---	Monetary_Rewards	.467
RR01	<---	Monetary_Rewards	.679
KS15	<---	Knowledge_Sharing	.674
KS13	<---	Knowledge_Sharing	.780
KS12	<---	Knowledge_Sharing	.719
KS10	<---	Knowledge_Sharing	.581
KS09	<---	Knowledge_Sharing	.700
KS08	<---	Knowledge_Sharing	.692
KS07	<---	Knowledge_Sharing	.552
KS03	<---	Knowledge_Sharing	.651
KS02	<---	Knowledge_Sharing	.749
IC03	<---	Individual_Capability	.500
IC02	<---	Individual_Capability	.537
IC01	<---	Individual_Capability	.623

Model fit with recognition

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	91	2538.414	650	.000	4.105
Saturated model	741	.000	0		
Independence model	38	8209.061	703	.000	11.677

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.071	.709	.702	.648
Saturated model	.000	1.000		
Independence model	.378	.178	.133	.169

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.691	.666	.750	.728	.748
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.086	.083	.090	.000
Independence model	.166	.162	.169	.000