The Relationship between Knowledge Sharing and Workplace Innovation in a Transnational Corporation: A Behavioral Perspective

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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; and the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work paid or unpaid, carried out by a third party is acknowledged; and, ethics, procedures and guidelines have been followed – BCHEAN project approval number: 1000351.

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ABSTRACT

There is a paucity of literature addressing the relationship between knowledge sharing and workplace innovation within the context of a knowledge-intensive transnational corporation. This is more so when a behavioral perspective is taken.

Thus the key question driving this thesis is: What is the relationship between knowledge sharing and workplace innovation in the context of a transnational corporation, from a behavioral perspective?

A survey of 2723 (2695 random + 28 non-random corporate) transnational corporation employees was conducted in seven geographic operating entities (Africa, Asia, Australasia, Canada, Europe, South America, USA) and Corporate (across all geographies). Of these, 853 surveys were completed. Data was analyzed using correlation, regression and structural equation modeling. The findings show that the six factors of Subjective Norm, Attitude, Intention, Behavior, Self-Worth, Perceived Behavioral Control and Knowledge Sharing Activity influence employees' individual Knowledge Sharing Behavior. While the factors of Knowledge Absorptive Capability and Organization Citizenship Behavior influence Knowledge Sharing Behavior at a team or workgroup level, also directly influence workplace innovation. Overall, Knowledge Sharing Behavior was shown to be a significant antecedent of Workplace Innovation.

This thesis makes four significant contributions to the literature. First, the factors selected appear significantly related to Knowledge Sharing Behavior. Second, this thesis reveals that Knowledge Sharing Behavior directly affects Workplace Innovation. Thirdly, an extended model based on the Theory of Planned Behavior has been supported. Finally, a new scale, K*nowledge Sharing Innovation Behavior*, has been developed to support further research into this important area.

Practical implications: Given the importance of knowledge sharing as an enabler of workplace innovation in today's competitive business world, this thesis provides a broader understanding of different dimensions of employees' Knowledge Sharing Behavior in relation to Workplace Innovation. These findings suggest that organizational administrators and managers should look into ways of improving the levels of knowledge sharing behavior in order to facilitate workplace innovation.

The composition of work teams, in terms of the behavioral aspects of members, and how their performance is measured is another opportunity for research.

Keywords: knowledge sharing, workplace innovation, transnational, behaviors, empirical, quantitative

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Chapter 1. Introduction

1.1 Objective

The purpose of this chapter is to provide an introduction to the thesis. This chapter sets out the objectives and the theoretical background of the thesis, the justification for the research, the research questions; the methodology adopted; the structure of the thesis; the definitions used; the limitations of the research; the key assumptions; and this thesis' contribution to the literature.

1.2 Introduction

The knowledge intensive services and project engineering industry, one of the most competitive on a world-wide scale, has been affected by the unavoidable process of market globalization. Characterized by the constant pressure of delocalization processes, cost reductions, quality improvements, the need to innovate and change what is offered (product or service innovation) and the ways in which those offerings (process or management innovation) are created and delivered, have become common issues to be solved in this market (Moon, Miller & Kim 2013). Without successful innovation, there is considerable risk of losing competitive edge and eventual business failure (Ghosh 2013).

Transnational organizations are increasingly driven to establish a presence in multiple countries in order to reduce labor costs, capture specialized expertise, address market opportunities and gain understanding of emerging markets. In doing so, they create conditions in which staff must collaborate and share knowledge across national boundaries. These in-country subsidiary staff are interdependent but reside in different countries, creating a global work environment where intercultural global collaboration is pervasive (Kasper et al. 2013).

Although collaborations among nations have a long history, the past three decades have experienced an intensity and growth due to a 'relatively stable international political order, an integrated global economy and dramatic advances in technology that sustains the work of organizations across spatial and temporal boundaries' (Hinds, Liu & Lyon 2011, p. 137).

In this context, the creation of a competitive advantage strategy and the embedding of a culture of innovation and knowledge sharing, are essential for any company that aims to remain in their market. These practices support the adoption

and sharing of new and better processes, as well as the capability to transfer and ensure the use of service innovations across their operating geographic locations. They are key determinants for the success of today's transnational organization. The delocalization of work teams entails an added difficulty because of the cultural diversity in which transnational management is conducted.

In addition, the development of information technology and infrastructure, as well as knowledge sharing practices, have been highlighted by the managers of the competitive companies as the highest priority trends in the global business environment (Hirt & Willmott 2014; IBM 2012).

Over the last decade, knowledge sharing across national boundaries has become increasingly prevalent (IBM 2012), yet the management literature is limited in answering questions about what occurs when people across cultures and nations work closely together to create, share, and implement innovation (Nessler & Muller 2011).

This thesis seeks to understand the behaviors of employees, who reside in different countries, in sharing knowledge as a part of their organization's innovation initiatives. The challenge is one of identifying the behaviors that drive how knowledge is created and shared and this represents a key issue in innovation adoption behaviors (Li 2013; Moore & McKenna 1995).

In particular this focuses attention on the knowledge sharing behavior associated with creating, acquiring and absorbing new knowledge and transforming it into competitive capabilities by successful workplace innovation.

In principle, knowledge intensive transnational organizations can increase innovation capabilities by enabling knowledge sharing (individual, team and organizational) through experimentation (e.g. R&D); through transfer of ideas (across organizational unit boundaries and from outside); through working with different stakeholders (suppliers, partners, customers, academia); through reviewing and reflecting on past initiatives and projects; and through failed past attempts. Sharing knowledge is not automatic; the workplace innovation climate must provide the conditions and sufficient arousal for sharing to occur and for innovation to succeed (Von Treuer & McMurray 2012).

1.3 Research objective

This thesis has two main objectives with five supporting sub-objectives:

The first main objective is the investigation of the relationship between knowledge sharing and workplace innovation from a behavioral perspective. This focuses the thesis and guides the research. It brings together theory on knowledge sharing, workplace innovation and their related behavioral factors.

The supporting sub-objectives are to: conceptualize the Knowledge Sharing Innovation Behaviors construct; design a valid and reliable measurement scale for Knowledge Sharing Innovation Behaviors to be used in the measurement model; test the relationship of Knowledge Sharing Behavior, Workplace Innovation and their demographic moderators; and conduct post-hoc model modification to provide an improved model.

The second main objective frames the research within a multi-geography transnational knowledge intensive setting.

1.4 Background

The author has worked in a number of technical and senior management roles for 34 years with three leading transnational corporations with the majority of organizational tenure being spent in the information technology and services field. The last eight years with the last company were spent in international consulting in the areas of knowledge management, business transformation and e-business implementation.

During that working life, the author set-up and managed the Australian software business unit of a top international ICT company; was the pharmaceuticals segment manager responsible for interfacing with pharmaceutical companies, R&D, manufacturing, wholesale distribution and retailing together with government and industry bodies; managed a specialist team responsible for consulting and advising clients planning major IT roll-out projects, for example ATM roll-outs for three major banks; supermarket point-of-sale roll-outs for two major retail chains; roll-out of 134 office management computer systems for a major Australian trading company. These roles allowed the author to develop extensive leadership experience and knowledge across multiple industries. The author worked with both private and public sector organizations in Australia, New Zealand, Hong Kong, Japan, America, Switzerland, Singapore and India.

1.4.1 Justification

To be successful in the dynamic competitive business environment of today depends largely on the organization's ability to leverage knowledge. New and existing knowledge is used to develop competitive capabilities to aid in developing new products, services, processes and strategies to outperform those of rivals and ultimately to the competitive advantage of the organization. This challenge is even more apparent when organizations operate in a cross-border environment.

In a corporate organizational context, teams are established for a variety of reasons. For example, their purpose is to delivery an outcome (task force) or project; or to manage and implement a work process (e.g. accounts receivable, sales). The performance of the team is dependent on the availability of knowledge and the efficient use of that knowledge, often in the form of skills, competencies and expertise. As corporations expand their operations and supply chains via overseas subsidiaries and partnerships, cross-border knowledge sharing becomes mandatory. As workforce renewal occurs due to expansion, generation change or structural change, the creation of value from knowledge sharing and innovation and the resilience and retention of their knowledge assets is of key interest to management.

Buckman Labs president, Bob Buckman, attributes his company's more than doubling of innovation in new products from 14% of sales to 34% to an increased willingness to share knowledge (see Sveiby & Simons 2002).

This thesis seeks to explore the behavior of employees in sharing their knowledge and in workplace innovation.

This thesis identifies the key behavioral aspects that should be considered during the development and introduction of the strategy required to ensure effective adoption of knowledge sharing across the corporation. These key aspects will be identified by analysis of the behavioral differences between representatives of the operating entities, and will be used as a base on which to build up the strategic lines within an integrative framework to improve the synergies, encourage knowledge related behaviors, facilitate knowledge sharing and support workplace innovation.

1.4.2 Significance

The review of the literature informed the development of the following research question:

RQ1. *What is the relationship between Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

Following a review of the knowledge sharing and workplace innovation literature to answer the question it first needed to be deconstructed into its constituent components. A concise and agreed definition of the term knowledge sharing proved elusive with the term conflated with other terms such as knowledge flow, knowledge transfer, knowledge diffusion and even with information sharing/transfer/diffusion. In addition, analysis of the literature uncovered that knowledge sharing studies utilized different levels of analysis: individuals; teams/groups/within and between organizations; and organizations. Other studies use different conceptualizations of knowledge: as an object; an asset resource; a state of mind. These inconsistencies influence the nature of their findings. Where knowledge sharing behavior was the focus, different theoretical bases were used. For example: Five Factor Theory; Theory of Reasoned Action/Theory of Planned Behavior; Social Exchange Theory; and Social Capital Theory. These inconsistencies in the literature, due to the differing definitions, units of measure and different population samples are factors that make it difficult to make generalizations.

Similar challenges were faced when reviewing the extant research in the field of workplace innovation with a variety of definitions, levels of analysis and theoretical bases.

Empirical studies tended to focus on one country, on smaller sample sizes with a number using a sample population selected from university post-graduate students.

This thesis uses a large sample (n=853) selected from seven geographic operating entities of a single transnational corporation, thus proving a broader analytical base to derive the findings. It also conjoins the two fields of knowledge sharing and workplace innovation from a behavioral perspective, thus providing a unique theoretical basis for investigation.

Whilst the findings of this thesis are in-line with and support the literature, they confirm that the two concepts of knowledge sharing and workplace innovation are correlated in various contexts. Thus the findings are in agreement with the

literature. But this thesis goes beyond these findings by identifying the specific dimensions within each of the two key concepts and how they are related.

While instruments may differ, and their theoretical bases may also differ, at the highest level, this thesis examines the behaviors of individual humans in their perceptions of knowledge sharing and workplace innovation thus offering unique and significant findings to this field of academic research endeavor.

1.4.3 Research questions and hypotheses

The gaps and research opportunities identified during the literature review process, resulted in the following research questions and their supporting hypotheses:

RQ1. *What is the relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

H1. The dimensions of Knowledge Sharing Behavior have a significant effect on Workplace Innovation Climate.

H2. The dimensions of Knowledge Sharing Behavior have a significant effect on Individual Innovation.

H3. The dimensions of Knowledge Sharing Behavior have a significant effect on Team Innovation.

H4. The dimensions of Knowledge Sharing Behavior have a significant effect on Organization Innovation.

RQ2. *Is there a difference in perception among demographic groups towards Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

H5. There are differences in perceptions among demographic groups toward the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

RQ3. *To what extent do demographic group characteristics affect Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

H6. Demographics characteristics will significantly affect the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

RQ4: *To what extent does the measurement model, representing the effect of Knowledge Sharing Behavior on Workplace Innovation, fit the data gathered from within the transnational corporation sample population?*

H7: The measurement model, representing the effect of Knowledge Sharing Behavior on Workplace Innovation, significantly fits the data gathered from the transnational corporation.

Research question 1 addresses the relationship between Knowledge Sharing Behavior and Workplace Innovation and is to be used as a basis for this thesis.

It is supported by hypotheses H1 to H4. It also supports the development of the conceptual model and the dimensions of both influence Knowledge Sharing Behavior and Workplace Innovation that form the measurement model for this research.

Research question 2 refers to the measurement model for this research. This question is addressed by the support for Hypothesis 5. This question also tests the relationship with demographic moderators.

The research question 3 (H6) addresses the different strengths of the relationship at different levels of the demographic variables, e.g. gender, age, education level, role, operating entity.

Finally, research question 4 (H7) examines the fit of the proposed model to the data collected from the transnational sample population.

These hypotheses can be depicted in the following figure.

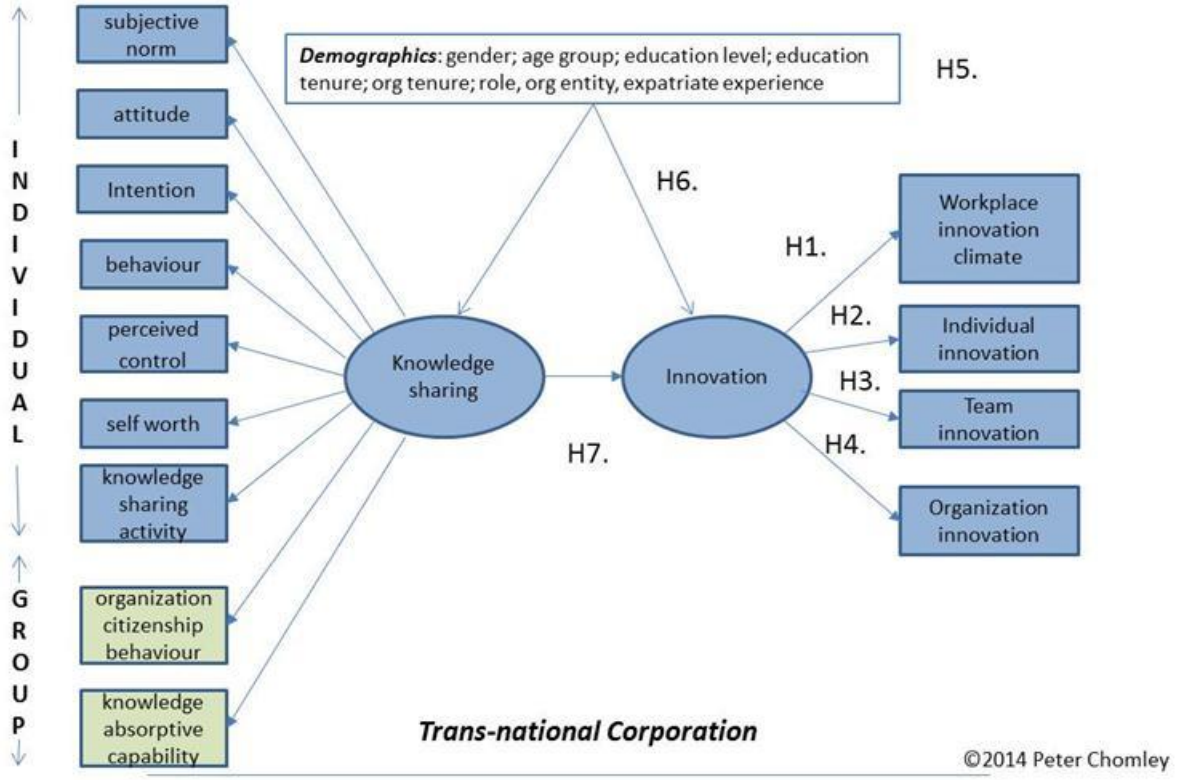


Figure 1.1 Proposed Conceptual Model showing Hypotheses

Source: author

1.5 Research methodology

This thesis has collected data and additional demographic characteristics. Data was collected from eight geographic operating entities representing 26 countries. However, conducting detailed group analysis or including other demographic variables in the research model is not part of the scope of this thesis.

This thesis follows a post-positivist approach, associated with an objective approach the study of social reality, which can only be imperfectly and probabilistically understood. The research on this thesis is framed in a quantitative tradition, therefore in the deductive stream of research. A web-based and stratified random sample design was considered appropriate to collect quantitative primary data, given the geographic scope of the research project. Web based self-administered questionnaires, translated into four languages, are used in semi-natural settings where respondents are asked to report. These decisions are based in assessing methodology options from the literature of research methods, e.g. (Blaikie 2010; Guba & Lincoln 1998; McMurray, Pace & Scott 2004; Neuman 2009a)

The process is summarized in five stages. The first stage began with the literature review of knowledge sharing behavior, workplace innovation and knowledge intensive transnational organizations. It included identifying research problem, the main theoretical models; developing of a conceptual framework, research questions, and hypotheses. The second stage included questionnaire selection and development, including contextualization and translation, and sample population frame development. The scale development process included item generation, expert review and pre-testing in order to ensure content validity (DeVellis 2011; Moore & Benbasat 1991). A scale was only developed for the Knowledge Sharing Activity (KSA) construct only, while other widely tested and established reliable scales were selected and contextualized.

The process of the analysis comprised (1) data preparation, (2) reliability test, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), (3) criterion-related validity assessment, and (4) correlation and regression testing, model testing and model modification.

The structural models were tested with covariance-based structural equation modeling (SEM) primarily, and cross-validated with variance-based structural equation modeling. Additionally, redundancy analysis and f-tests were used to address collinearity concerns.

1.6 Structure of the thesis

The structure of the thesis is as follows:

Chapter two reviews the research literature of the two primary concepts in this study, knowledge sharing and workplace innovation, and also considers the literature exploring related concepts in this study including transnational organization structure. The chapter also identifies gaps in previous research and formulates research questions and hypotheses.

Chapter three explains and justifies the methodology used in this thesis, including the data collection through the use of expert panel pre-testing, the pilot study and data analysis techniques. It further explains how the author dealt with issues such as ethics and data screening. A description of the sample used in this study is also included.

Chapter three also describes the development of the survey questionnaire used to gather data in this study. The evolution of the questionnaire is explained and the

questionnaire used in the final survey of the study is described. There is a brief discussion about survey translation and potential bias.

Chapter four contains the analysis of the data gathered in this study. The chapter is structured according to the research questions and the hypotheses articulated in chapter two.

Chapter five contains the findings of this study wherein the analysis of chapter four is contextualized with the literature reviewed in chapter two. This chapter explains how this thesis has added to previous research in management and organizational science studies by filling existing gaps in the literature or by confirming previous research.

Chapter six provides a summary of this thesis. It draws conclusions from this research and explains how it has met its objectives and answered the research questions and confirmed or disaffirmed the hypotheses of this thesis. The chapter also sets out recommendations for future research.

1.7 Definitions and terms

The definitions and terms (including abbreviations) that are used within this thesis are given in Appendix A. Definitions and Abbreviations.

1.8 Theoretical framework

After careful review of the literature relevant to knowledge sharing and workplace innovation and to the research population frame setting, this thesis has selected the Theory of Reasoned Action (TRA) (Ajzen & Fishbein 1977) and its extension, the Theory of Planned Behavior (TPB) (Ajzen 1991). These theories and their factors, form the basis of a number of studies in knowledge sharing behavior, and give strong foundations for this thesis and the potential for comparison of findings.

In addition the Social Exchange Theory (SET) and Social Capital Theory (SCT) together with Organizational Climate Theory (OCT) and the Resource-based (RBV) / Knowledge-based View of the Firm Theory (KBV), inform and underpin the development of this thesis.

1.8.1 Theory of Reasoned Action/Theory of Planned Behavior

To date, limited attention has been paid to factors that influence an individual's intention to share knowledge and their relation to workplace innovation, especially within a transnational setting (Mäkelä & Brewster 2009; Nessler & Muller 2011).

Thus, the first objective of this thesis is to provide a conceptual framework that partially explains factors that determine an individual's behavioral traits to share knowledge, and their relationship to workplace innovation behavior. Specifically, Ajzen's (1991) Theory of Planned Behavior (TPB) is adopted and extended as the theoretical base for examining knowledge sharing.

In the research model, an individual's Attitude, Subjective Norm, Intention, Behavior, Perceived Behavioral Control, and Self-Worth determine his or her knowledge sharing behavior (see Appendix A. Definitions and Abbreviations).

Miller (2005) suggests that both the nature (personality) of the individual and also the situation will influence their attitudes and norms and thus their behavioral intention, giving different 'weights associated with each of these factors in the predictive formula of the theory' (p. 127).

In their later book, Fishbein & Ajzen (2010) provide detailed examples of indirect measures of TRA and TPB (pp. 449–463) which they call the 'Reasoned Action Approach'.

The second objective frames the research within a multi-geography

trans-national knowledge intensive organizational setting.

1.8.2 Extensions to the TRA/TPB model

Knowledge Sharing Activity (KSA)

Although alternative concepts, such as willingness, are argued to be measures of intentions (Ajzen 1985), implicit associations are often different from explicit attitude measures. Van den Hooff and Hendrix (2004) posits that a person's *willingness* to share knowledge, and also their *eagerness* to share, are defined as the extent to which an individual has a strong internal drive to communicate their individual knowledge to others.

This eagerness and willingness behavioral activity has been posited in this thesis as *Knowledge Sharing Activity*. It is derived from Van den Hooff and Hendrix's scales for donating and collecting and for willingness and eagerness (2004).

This new factor Knowledge Sharing Activity (KSA) explores the individual's passion for learning and sharing knowledge, is comprised of four items:

ksa1 - I actively search for more about the subject when I learn something new and interesting.

ksa2 - I discuss it with my colleagues when I learn something new.

ksa3 - I am willing to change my previous mindset when my colleagues share something new.

ksa4 - When my colleagues learn something new, I want to find out more about it.

As knowledge sharing is a dyadic activity where the individual works in a sharing relationship with one or more other people to expand their common understanding and for benefits to be gained by each actor (Liyanage et al. 2009). The individual's knowledge sharing propensities are influenced by the behaviors of the group, and by their capabilities to collect, reinvent and to create value from their knowledge stock.

Organizational Citizenship Behavior (OCB)

The construct *organizational citizenship behavior*, first introduced by Organ and colleagues (Bateman & Organ 1983; Organ 1988; Smith, Organ & Near 1983) as a way to relate job satisfaction and core job performance and the specific types of activities that comprised OCB at the time. This led scholars to propose five main categories of OCBs: altruism, conscientiousness, sportsmanship, courtesy, and civic virtue (Organ 1988; Podsakoff et al. 1990).

Over time, other researchers proposed further dimensions in addition to the original five categories described above. In a recent review, Organ and colleagues (Organ, Podsakoff & MacKenzie 2006) counted more than 25 dimensions of OCB. The *voice behavior* dimension, defined as: making suggestions, participating in activities, or speaking out with the intent of improving the organization's products, or some aspect of individual, group, or organizational functioning (LePine & Van Dyne 1998; Van Dyne, Linn & LePine 1998), is of interest to this thesis as it implies knowledge sharing and workplace innovation activity.

In their research into work design in a knowledge intensive corporation, Dekas et al. (2013) posit a new OCB dimension of knowledge sharing, which they describe as sharing what a person knows and distributing expertise to others. Examples from their focus groups included 'teaching software to others' and 'participating in group meetings.

Knowledge Absorptive Capability (KAC)

Cohen and Levinthal (1990) conceptualized absorptive capacity as a firm's ability to recognize the value of external knowledge (to the firm or workgroup/team),

assimilate it, and commercially utilize it. This is very similar to how innovation is defined: find a good idea, assimilate and contextualize (localize) it; create value from it.

Scholars have explored AC in various contexts: intra-firm (Szulanski 1996) and inter-firm knowledge transfer (Camisón & Forés 2011; Lane & Lubatkin 1998); open innovation (Laursen & Salter 2006); and as linkage between external knowledge and firm performance (Sun & Anderson 2010; van den Bosch, Volberda & de Boer 1999). Conversely, other studies on inter-firm knowledge transfer in non-developed economies posit AC as the major constraint to effective knowledge transfer (Lane, Salk & Lyles 2001; Lyles & Salk 1996; Park 2010; Zhao & Anand 2009).

As Cohen and Levinthal's (1990) concept was empirical validated at the firm level, recent conceptualization has de-emphasized the role of individuals (Volberda, Foss & Lyles 2010; Zahra & George 2002). In their review of AC literature, Ojo et al. (2014) re-examined the individual antecedents and proposed a conceptual model which included the individual and collective perspectives. They posit (p. 179) that the 'abilities to recognize the value of and assimilate new knowledge are influenced by' the *individual's* behavioral traits and both 'disposition and cognitive intuition' (also Crossan, Lane & White 1999; Matusik & Heeley 2005), whereas the ability for the collective assimilation of knowledge at *team level* underlines the ability to utilize knowledge (Knight et al. 1999).

This thesis supports the view of Ojo et al.'s (2014) and examines the individual perceptions of their behavior and the individual's perceptions of the project team's (or workgroup) behavior.

Consistent with this view, value creation in knowledge-intensive activity that occurs in engineering projects within the researched population frame, emanates from the integration and application of individually embedded specialized knowledge within and across project teams (Grant 1996; Ruiz-Mercader, Merono-Cerdan & Sabater-Sanchez 2006; Tsoukas 1996).

This thesis views capacity as a 'volume' related term while capability is a 'quality' term more aligned with an individual ability, therefore has adopted 'Knowledge Absorptive Capability' as the description for this factor (Macquarie 1982).

Both learning and performance goal orientation are also proposed to impact an individual's ability to recognize the value of and assimilate external knowledge (Dweck 1986; Taggar 2002). However, such personality traits are beyond the scope

of this thesis.

1.8.3 Social Exchange Theory (SET)

Social Exchange Theory (SET) is one of the most important conceptual models for understanding organizational behavior. Interactions within SET are often looked upon as interdependent actions and depend on another person action (Emerson 1976). Thus SET informs the inclusion of AC and OCB as team related activities and influence knowledge sharing (for example Wu, Lin & Lin 2006).

Hall and Widen-Wulff (2008) in another study about motivational knowledge sharing factors in online environments reported that the extent to which information may be exchanged in an online environment depends on the degree to which actors are integrated with other actors.

1.8.4 Social Capital Theory (SCT)

The conceptual foundations of social capital theory SCT have their roots in the 19th century and recent interpretations (Nahapiet & Ghoshal 1998) have focused on the role of social capital in the creation of intellectual capital, suggesting that social capital should be considered in terms of three clusters: structural, relational, and cognitive. The structural dimension focuses on an actor's network and the relationship of ties between members (Granovetter 1973; Hazleton & Kennan 2000). The relational dimension focuses on the character of the connection between individuals and such factors as trust and identification and includes communication (Boisot 1995; Boland & Tenkasi 1995). The final dimension, cognitive, focuses on the shared meaning and understanding that individuals or groups have with one another. It is this cognitive dimension that is of interest to this thesis.

1.8.5 The Resource Based View of the Firm

The strategic management research stream posits the Resource Based View of the Firm (RBV) describing organizations as a 'broader set of resources' (Wernerfelt 1984, p. 171). These RBV resources include the traditional 'bricks and mortar' assets, capabilities, organizational processes, attributes as well as information and knowledge and human capital (Barney 1991, p. 101).

The assumptions underpinning RBV theory are that strategic resources within an industry are heterogeneously distributed, and that they are not perfectly mobile between firms (Barney 1991; Teece Pisano & Shuen 1997) or even between country-

based subsidiaries (Michailova & Mustaffa 2012; Minbaeva & Michailova 2004).

Two perspectives exist within the RBV 'school': the conservative approach suggesting that firms focus on what they are good at, that they already possess the requisite competences (Browne 1994), and that a firm's resources determines 'what it can do' (Hitt, Ireland & Hoskisson 2001, p. 98). The second focuses on the dynamic capabilities required to support the organizational strategies (Eisenhardt & Martin 2000; Teece, Pisano & Shuen 1997). But the challenge is that these two approaches are almost mutually exclusive.

1.8.6 The Knowledge Based View of the Firm

Development of the dynamic capabilities perspective has resulted in the Knowledge Based View of the firm (KBV) (April 2002; Gehani 2002; Spender & Grant 1996). This view is conceptually founded on 'competitive advantage comes from intangible assets such as firm-specific knowledge, the tacit knowledge of its people' (James & Sankaran 2006, p. 153), the sharing of their knowledge, and the creation of new knowledge (Gehani 2002; Nonaka & Takeuchi 1995; Spender 1996b, 1996c). This view posits 'knowledge assets, resources and capabilities as the prime strategic resources of an organization' (James 2004, p. 8; Grant 1996; Spender 1996a).

1.8.7 Organizational Culture and Climate Theory

Some researchers often cited the terms interchangeably (Schneider 2000; Von Treuer 2006), but organizational climate and organizational culture are two distinguishing terms and have been examined independently: as distinct (Glisson & James 2002; Schein 2004); or have common characteristics (Denison 1996).

The primary difference between culture and climate is that culture focuses upon shared values and assumptions in an organization (Cooke & Szumal 1993), whereas climate focuses on workgroup perceptions of individuals which may or may not be shared (James et al. 2008).

Reichers and Schneider (1990) posited organizational climate as a manifestation and visible part of organizational culture (Glisson & James 2002). Supporting this, Schein (2004) viewed organizational climate as small part of organizational culture and as is less stable as compared to organizational culture and could be changed with modification of practices and procedures. Thus organizational climate is posited as being a more short term construct.

Organizational climate is only confined to the workgroup; however organizational culture can be related to workgroup level, department level as well as organizational level (Bamel, Budhwar & Bamel 2013). Another distinction between climate and culture is that they explain different level of abstraction (Bamel, Budhwar & Bamel 2013).

Based on methodology used, organizational culture scholars relied upon qualitative techniques whereas quantitative techniques are applied more frequently in climate research (Denison 1996; Sleutel 2000). Supporting this, Chan (1998) differentiated between organizational climate and organizational culture on the basis of measurement of dimensions, presenting a 'typology of elemental composition', concluding that climate measurement addresses individual responses while collective responses are required to investigate organizational culture.

In the development of Organizational Culture/Climate Theory, scholars derived a theoretical framework of three broad groups: objectivist (Payne & Pugh 1976; Schneider & Reichers 1983); subjectivist (James & Jones 1974; Schneider 1983; Schneider & Reichers 1983); and interactive (Ashforth 1995; Moran & Volkwein 1992). These perspectives suggest that Organizational Climate (OC) involves and is influenced by the interaction of the organization and its members and that this influences the attitude, motivation, behavior and performance of employees at the work place (Hemingway & Smith 1999).

Bamel et al.'s (2013) review found that much of the research work in OC is based on empirical and quantitative research design e.g. Von Treuer and McMurray (2012) who relied on a social constructionist (objectivist) approach, or Hassan and Rohrbaugh (2012) who followed a general psychological climate (subjectivist) perspective.

This thesis follows a general psychological climate (subjectivist) approach, where the transnational corporation employees' responses, interpretations and their perceptions regarding workgroup's characteristics, properties and conditions interact to form the Organizational Workplace Climate (OWC), and that Workplace Innovation Climate (WIC) is a subset of OWC (Von Treuer & McMurray 2012).

Workplace Climate

Organizational culture reflects the personality of an organization and refers to values or norms, beliefs, principles and legends practiced in an organization that

can affect how a person thinks, makes decision and acts (Yassin, Salim & Sahari 2013).

Conceptually, organizational culture is treated as a long term influence which takes years to develop and acculturate within the organization. The artifacts that support the organizational culture are often described as aspirational goals.

In this thesis, on the other hand, the workplace climate is seen as a more immediate 'perceptional' (Ashforth 1985, as cited in McMurray 1994, p. 7) manifestation of the organizational culture (Baer & Frese 2003) and, like the analogy of climate in meteorological terms, may change and may exhibit local variations as in micro-climates (Von Treuer & McMurray 2012). These differences may manifest between country or regional subsidiaries, between departments, workgroup or teams, even with a change of manager.

Knowledge sharing and workplace innovation behavioral traits may be influenced by these local micro-climates (Moffett, McAdam & Parkinson 2003); (van den Hooff & de Ridder 2004; Von Treuer & McMurray 2012).

Bock et al.'s (2005) TRA based structural framework posited that attitudes toward and subjective norms with regard to knowledge sharing (as well as organizational climate) affect an individual's intention to share knowledge, which subsequently influences an individual's attitude toward sharing knowledge. Additional findings maintained both a sense of self-worth and the organizational climate affect subjective norms.

Although few studies have shown a direct association between organizational culture and employees' knowledge sharing behavior, the importance of the workplace climate aspect is significant. Workplace climate is said to be an important factor to create, share, and use knowledge in that it establishes norms regarding knowledge sharing (de Long & Fahey 2000) and creates an environment in which individuals are motivated to share their knowledge with others (Cabrera, EF & Cabrera 2005).

Just as Chapman and Magnusson (2006) state, 'knowledge is a key component of all forms of innovation' (p. 129) and that this posit needs exposure to empirical testing. Chapman and Magnusson (2006) also call for the need to 'allow individuals to engage in interaction and communication, which eventually result in new knowledge and innovation' (p. 129) and to adjust knowledge-related behaviors to improve organizational performance.

1.9 Delimitation of scope

The delimitations of this thesis include: the sample from which data were gathered; the data is predominantly quantitative; the research for this thesis was conducted within one employee-owned knowledge-intensive services sector organization with head-quarters in Canada; the nature of the major concepts included in this study is that they are context specific phenomena and have been collected via self-reporting.

This thesis is oriented towards the sharing of tacit knowledge (Polanyi 1983) as tacit knowledge resides in the mind of the knower/individual and is thus subject to the behaviors of that individual. It does not exclude the sharing of explicit knowledge as long as the act of sharing explicit knowledge increases the common ground between the parties sharing that knowledge (Dixon 2002).

Early attempts to measure innovation output were based on available measure of R&D expenditures and staffing costs associated with R&D activity (e.g. the Frascati Manual (OECD, 1993)), thus enabling 'between country' comparisons. This approach was based on the linear model of innovation that assumed a logical step-wise progression from invention to adoption. After criticism of this approach, researchers such as Kline & Rosenberg (1986), then Klomp & Van Leeuwen (2001) incorporated feedback loops to improve the model. The challenge (Acs et al. 2002; Klomp 2001) still remains that innovation value can still be created without invention (and thus R&D) as a necessary first step. Gault (2001) examined the transmission and use of knowledge as an indicator of cooperation in innovation process and in the identification and use of knowledge sources external to the group/organization. Recent work by the OECD (2013) acknowledge the wider drivers of innovation and focuses on "four Innovation Union Scoreboard (IUS) indicators, from the outputs and firm activities types in the IUS, grouped into three components (patents, employment in knowledge-intensive activities (KIA), and competitiveness of knowledge-intensive goods and services), and a new measure of employment in fast-growing firms of innovative sectors" (p.8).

The thesis explores the behaviors of the individual in a team and organizational setting. It does not examine the relevance of innovation outputs or their measurements (e.g. organizational performance in terms of patent counts, financial returns, R&D staffing or expenditures, IUS measures, etc.).

For these reasons, the generalizability of the findings in this thesis is limited.

1.10 Thesis contribution to literature and practice

It is widely reported that organizational performance in knowledge intensive industries is dependent on workplace innovation. Therefore, knowledge sharing can be regarded as an enabler of workplace innovation. These behavioral factors are especially relevant to research on knowledge sharing and therefore to research on workplace innovation. This thesis is limited to a cross sectional view of a single organization and is based on self-reporting.

Given the importance of knowledge sharing as an enabler of workplace innovation in today's competitive business world, this thesis provides a broader understanding of different dimensions of employees' knowledge sharing behavior in relation to workplace innovation. These findings suggest that organizational administrators and managers should look into ways of improving the levels of knowledge sharing behavior in order to facilitate workplace innovation.

This thesis makes three distinct additions to the organizational behavior, knowledge sharing and workplace innovation literature. First, Attitude, Behavior, Intent, Knowledge Sharing Activity, Self-Worth and Subjective Norm appear to be significantly related to Knowledge Sharing Behavior, addressing a research gap in the literature of knowledge sharing and employee behaviors. Second, this thesis reveals that Knowledge Sharing Behavior directly affects Workplace Innovation. Finally, it introduces a new construct scale, Knowledge Sharing and Innovation Behavior scale (KSIB), to support further research into this important area.

1.10.1 Academic Contributions

This thesis developed the KSIB construct, created by linking known and tested scales based on the Theory of Planned Behavior within the Knowledge Sharing Behavior (KSB) scale and the Workplace Innovation Scale (WIS) into one construct (KSIB).

The findings extended the literature in regards to gaps identified by the literature review phase, thus determining the relationship between Knowledge Sharing Behavior and Workplace Innovation. These findings were developed by collecting then analyzing a large (n=780) global sample of transnational knowledge-intensive professional employees.

It identified the Knowledge Sharing Behavior (KSB) of individuals to be significant determinants of Workplace Innovation within this sample population context.

Demographic characteristics of the sample population members were shown to affect the relationship between Knowledge Sharing Behavior and Workplace Innovation dimensions.

1.10.2 Management/Practice contributions

By exploring the demographic characteristics of employees relative to the Workplace Innovation Climate, change initiatives to encourage an innovation mindset can be developed and implemented.

With the pending retirement of a significant number of senior executives, the issue of organizational knowledge resilience and retention needs to be addressed. The findings of this thesis show that encouraging a knowledge sharing culture within the organization should focus on the behavioral aspects with implementing a technology based support structure.

Cross-border knowledge sharing recognizes that workplace innovation can benefit both the donor and the collector but should be mediated by local contextual requirements and by national cultural variations.

Individual development activities provide the foundations for encouraging a knowledge sharing and innovation mindset where employees can identify the knowledge they need to improve their capabilities, expertise and skills to create current and future value for them and for their organizational unit.

Team composition / diversity in a transnational knowledge-intensive services environment provide the foundation for organizational performance improvement. By understanding the behavioral traits that contribute to team/workgroup performance, team structures can be tuned to improve performance.

Team performance indicators can be adjusted to better emphasize the behavioral traits that encourage knowledge sharing and workplace innovation.

Expatriate policy can be developed to encourage a learning orientation where the local subsidiary develops skills and expertise in addition to the immediate assignment outcomes. Additionally the expatriate can scan organizational boundaries for potential local knowledge and workplace innovation, which can benefit the parent organization and be contextualized to suit other geographic subsidiaries.

Management policy is informed by these findings and can be further developed to encourage a sharing, learning and innovative growth mindset, based on these

findings. Mentoring across organizational boundaries, age groups and roles has the potential to contribute to knowledge resilience and retention as senior staff approach retirement. Technology initiatives can be supported by change initiatives with behavioral, individual and organizational learning focus, all contributing to future operational and financial performance improvements.

1.11 Summary

This chapter provided an overview of this thesis. It set out the objectives of the research, research questions, research methodology, and the justification and contribution of this thesis. Moreover, the chapter presented the need to investigate the relationship between Knowledge Sharing Behavior and Workplace Innovation in a transnational, knowledge intensive, professional services corporation.

The next chapter reviews the research literature of the two primary concepts in this study, Knowledge Sharing Behavior and Workplace Innovation, and also considers the literature relating to related concepts in this study including transnational organization structure.

Chapter 2. Literature review

2.1 Objective

The purpose of this chapter is to systematically review and analyze the literature relevant to this thesis, to identify gaps in existing research, and to formulate research questions and hypotheses that will form the basis for this thesis.

There are six main sections to this chapter following the introduction. The first relates to the theoretical basis for this thesis. The second reviews knowledge and knowledge sharing, its definition, and behavior traits associated with this activity. The third section reviews the literature on innovation and in particular examines behavioral traits supporting innovation in terms of workplace climate, individual, team and organization behaviors. The fourth section includes a review of literature addressing the subsidiary theme of this thesis, transnational organization structure. The fifth section reviews the demographic factors of a transnational environment. The final sixth section considers the opportunities arising for further research as the scope for this thesis as a result of gaps identified during the literature review are summarized.

2.2 Introduction

The focus of this literature review chapter is to review and analyze the literature addressing Knowledge Sharing Behavior and Workplace Innovation within a transnational corporation setting, thus leading to an understanding of the relationship between Knowledge Sharing Behavior and Workplace Innovation, from a behavioral perspective.

The interrelatedness of knowledge sharing, workplace innovation and their behavioral conditions require a conceptualization of both knowledge sharing and workplace innovation as a collective activity (dyad as a minimum condition), rather than as activities of an individual. The dearth of literature about knowledge sharing and workplace innovation requires a search for literature from a variety of sources (See Appendix C. Literature Review Search Strategy Method).

It should be noted that each literature domain is not discussed in the same level of detail. Through the review, the focus is not on the debating the question of what knowledge is, nor on developing further understanding of knowledge management,

nor on environmental support (managerial or technological). Research into these areas is plentiful and would fall out of scope of this thesis.

Such a thesis is conducted firstly in order to identify the opportunities (gaps) in the existing literature and so develop and inform the specific research questions. After uncovering the gap questions (GQ.x), these are then reframed as research questions (RQ.x) and supporting hypotheses (H.x) are subsequently derived.

Secondly, this literature review is aimed at helping this thesis create a model of knowledge sharing and workplace innovation that would extend current research knowledge in this literature. Thus, the purpose of this chapter is to study the literature in a scholarly manner in order to specifically achieve the following:

Uncover or develop an acceptable definition of knowledge, knowledge sharing and how individual behaviors influence them, as it is currently conceived.

Identify the factors influencing Knowledge Sharing Behavior relevant to this thesis.

Identify the factors influencing Workplace Innovation relevant to this thesis

Examine the existing research opportunities (gaps) in the knowledge sharing and workplace innovation behavior (domain literature), that takes place in and between subsidiary operating entities of a transnational corporation.

2.3 Knowledge and knowledge sharing

To be successful in the fiercely competitive and dynamic business environment of today depends largely on the organization's ability to leverage knowledge to develop competitive capabilities to aid in developing new services, products, processes and strategies to outperform rivals (Kogut & Zander 1992; Nickerson & Zenger 2004; Stewart 1999; Szulanski 2000) and ultimately to the organization 's competitive advantage (Jackson et al. 2006; Massa & Testa 2009).

The challenge is that the definition of what is knowledge and what knowledge is, is still in flux, many definitions abound (Davenport & Prusak 1997; Liyanage et al. 2009) and as yet, there is no consensus in this regard.

Since the 1950s, information and communications technology (ICT) has played an increasingly significant, even dominant, role in the management, both operational and strategic, of many organizations (Gamble & Blackwell 2001). As a result, information and explicit knowledge has grown in importance as an organizational resources (Drucker 1999), resulting in the growth of the knowledge management

domain of research literature. Because of its foundations in ICT, the definition of knowledge has been often blurred by its close association with information management.

While researchers have identified different types of knowledge (Nonaka & Takeuchi 1995), its most common classification, however, is between explicit and tacit knowledge (Nonaka 1994; Polanyi 1983) because explicit knowledge can be made readily available in the form of files, library collections, or databases (Nonaka & Takeuchi 1995) – the subset of knowledge management known as document management or records management.

On the other hand, tacit knowledge is difficult to express in words or to codify in documentation, as it resides inside individuals' brains (Hlupic, Pouloudi & Rzevski 2002). In an organizational context, it is the personal knowledge that is embedded in individual members and used by them in enacting their work (Argote & Ingram 2000). Davenport and Prusak (1998) view knowledge as an 'evolving mix of framed experience, values, contextual information and expert insight that provides a [mental] framework for evaluating and incorporating new experiences and information' (p. 5).

It is only by harnessing and exploiting this collective wisdom and knowledge of their individual members, that organizations can adapt and develop innovative processes, products, services, tactics and strategies (Alavi, Kayworth & Leidner 2005; Arthur & Huntley 2005; Collins & Smith 2006; Cummings 2004; Hansen 2002; Liyanage, Elhag & Ballal 2012; Maccoby 2003). Frequently 'harnessing' knowledge is interpreted as embedded it in artifacts such as audio recordings, video, documents or repositories and in organizational policies, procedures or routines, where it becomes static i.e. 'explicit'.

Davenport and Prusak (1998) also say that for knowledge to have value, it must include the human additions of culture, experience, context and interpretation. Liyanage et al (2009) describe this as translation, Furthermore, Nonaka (1994) adds value to this interpretation by stating that knowledge is about meaning i.e. it is context-specific – a specially relevant point in transnational research. By introducing the context-specific individualist view, these researchers are framing the view in terms of the cultural norms, both national and organizational, that the individual possess and/or adopts.

Jennex (2008) reviews the role of culture and context in knowledge management and posits that knowledge sharing is 'is dependent upon the transfer of a common understanding from the knower to the user of the knowledge' (p. 7) which includes the context of the knowledge, the embodied experience both actors expressed in a culturally understood social framework. These posits were framed in terms of findings by Sherif and Sherif (2006) – social capital; Hofstede (1980, 2001), Schwartz (1992) and Trompenaar and Hampden-Turner (2004) – national cultural and values traits; and organizational cultural traits (e.g. Alavi & Leidner 1999; Bock & Kim 2002; Chan & Chau 2005; Davenport & Prusak 1998; Forcadell & Guadamillas 2002; Jennex & Olfman 2000; Sage & Rouse 1999; Yu, Kim & Kim 2004).

In exploring the 'common understanding' or common ground that both actors need to maximize the value of shared information, the context in which the knowledge has been created and interpreted is very important. The lack of this context-specific metadata in KM repositories and in explicit artifacts (e.g. paper documents) is claimed as the cause of failure of many KM systems (e.g. Mars orbiter crash 1999 where different measurement systems were used during component manufacturing/sourcing (Boisot 2006)). Context knowledge can also be expressed as the experience that both knowledge receivers and knowledge donators use to generate shared mental models of how to frame, use or apply the knowledge (Degler & Battle 2000).

This thesis is oriented towards the sharing of tacit knowledge (Polanyi 1983) as tacit knowledge resides in the mind of the knower/individual and is thus subject to the behaviors of that individual. It does not exclude the sharing of explicit knowledge as long as the act of sharing explicit knowledge increases the common ground between the parties sharing that knowledge (Dixon 2002).

2.3.1 Defining knowledge sharing

The terms 'knowledge sharing,' 'knowledge transfer,' 'knowledge flow', 'knowledge diffusion' and 'information transfer' are often used interchangeably to describe knowledge transmission occurs among people within or across organizational boundaries (Yi 2009). But Szulanski et al.(2004) believe that knowledge sharing differs from knowledge exchange and knowledge transfer. They argued that knowledge transfer describes the movement of knowledge between different units, divisions, or organizations while, knowledge sharing typically has been used to identify the knowledge movement between individuals. Similarly for

Pulakos et al. (2003): knowledge sharing refers to collaboration with others to help them and solve their problems, implement policies, or develop new ideas.

In their literature review of the use of the terms knowledge transfer (KT) and knowledge sharing (KS), Paulin and Suneson (2012) found that these terms are sometimes used synonymously or have overlapping content, thus causing a 'blurriness' (p. 81) and introducing ambiguity in the research literature. This is especially apparent in Dawes et al.'s paper (2012) where the terms sharing, transfer and exchange are used together when discussing the same point. They also conflate information and knowledge, sometimes mixing all terms in the same sentence. Paulin and Suneson (2012) attribute this apparent lack of precision to the application of two different knowledge perspectives: knowledge as a subjective contextual construction (or the K-SCC view) and knowledge as an object (or the K-O view) (Sveiby 2007); as well as to the analytical level that the specific research is based on.

For example both Jonsson and Liyanage et al. highlight this confusion in their respective papers:

'Within the frame of reference both "knowledge sharing" and "knowledge transfer" are used and discussed interchangeably. As it is not clear if there is a difference, both terms will be used.' (Jonsson 2008, p. 39); and

'... many authors and researchers have failed to provide a clear-cut definition for knowledge transfer and, at times, it has been discussed together with the term "knowledge sharing"' (Liyanage et al. 2009, p. 122).

A review by Major and Cordey-Hayes (2000) who look at several models and frameworks of knowledge transfer by Cooley (1987), Cohen and Levinthal (1990), Trott et al (1995), Slaughter (1995) and distinguished two streams of models: node models that focused on the steps in the process; and process models focusing on the separate processes involved. Each model choice influenced the definition and terminology used.

Later Liyanage et al. (2009) in their review of different theories and models of knowledge transfer, posit the variance in definition and term usage was due to the use of different foundation theories, for example: translation theory (Abjanbekov & Padilla 2004; Holden & Von Kortzfleisch 2004; Jacobson, Butterill & Goering 2003); agency theory (Arrow 1985 as cited in Boyce 2001); intermediate modes and voice-exit and game theory (Boyce 2001).

Paulin and Suneson's (2012) review posited that KT was usually used in research aligned with the knowledge-based theory of the firm (Grant 1996; Hansen 1999; Kogut & Zander 1992; Szulanski 1996; Tsai 2001) and also aligned with the higher level of analysis e.g. Easterby-Smith et al. (2008) and van Wijk et al. (2008). This supported earlier work by Argote and Ingram who found KT is used more frequently when groups, departments, organizations or even businesses are in focus, while KS is used more frequently by authors focusing on the individual level (Argote & Ingram 2000).

Easterby-Smith et al. (2008) also raise the issue of the need for analysis on the individual level.

The use of the term knowledge sharing (KS) is more prevalent in streams of research that are the psychological and the sociological based, such as work by Cabrera and Cabrera (2002), Ipe (2003) and Fernie et al. (2003) who argue that knowledge is highly individualistic and that it is embedded in specific social contexts. Further Wang and Noe (2010) found that previous reviews have focused on technological issues of knowledge transfer or knowledge sharing across units or organizations, or within inter-organizational networks.

Similar to the problems of definition, there is no consensus about the concept of knowledge sharing. To some researchers, knowledge sharing may mean knowledge sharing behavior, or the term may mean both the ability to share knowledge and the action of sharing it. While others refer to knowledge sharing as the attitude or ability to share knowledge, yet another group focus on technology support and talk of knowledge sharing in those terms.

Knowledge could be shared at individual, unit or group, and organizational levels, within or across organizations (Ipe 2003).

Knowledge sharing, as a dimension of organizational knowledge management, is defined as the provision or receipt of work-related information, know-how and feedback regarding a work product (product, service, process or procedure, or strategy) (Cummings 2004; Kim & King 2004), while work-related knowledge is defined as 'the explicit job-related information and implicit skills and experiences necessary to carry out tasks' (Kubo, Saka & Pam 2001, p. 467). It also it results in shared intellectual capital (Liao, Chen & Yen 2007).

At the individual level, knowledge sharing is referred to as the talking to colleagues to help one get something done better, more quickly, or more efficiently (Lin

2007). Nonaka and Takeuchi (1995) discuss this in terms of internalizing, socialization and combination (including reflecting), then externalizing the knowledge, thus describing a social process. By enacting this process with other actors, individuals can realize synergistic results greater than those achievable by sharing explicit knowledge (Cordoba & Isabel 2004).

A number of studies have examined the outcomes of knowledge sharing between actors/dyads that includes task completion time, organizational learning and work productivity (Argote 1999; 2000; Cummings 2004), enhancing innovation performance and reducing redundant learning efforts (Scarbrough 2003).

Churchill (1979) noted that the conceptual definition of a construct should include not only what it is, but also what it is not. That is, how it differs from other related concepts. In the canon of knowledge sharing literature, there was either no description of knowledge sharing behavior, or where definitions were offered, the definitions lacked precision. From the review, the following definitions do not meet Churchill's definition and are weak in at least one of the following criteria: use of unambiguous terms, specification of a common theme, contribution to overall understanding of the concept, and clear distinction from related concepts (Podsakoff 2003).

From examination of the literature relevant to knowledge sharing, it was apparent that no clear definition of knowledge sharing has been agreed and adopted by the research community. This gives rise to the first literature gap question (GQ):

GQ1. *What is the definition of knowledge sharing?*

Table 2.1 *Example knowledge sharing definitions*

Definition	***Source***	***Implication***
'Knowledge sharing is defined as activities of transferring or disseminating knowledge from one person, group or organization to another. This definition broadly includes both tacit and explicit knowledge.'	Lee, 2001, p. 324	*Weakness: Implies a one directional event; Focus on activities; No behavior.* *Strength: includes both tacit and explicit.*
'We define knowledge sharing as individuals sharing organizationally relevant information, ideas, suggestions, and expertise with one another. The knowledge shared could be explicit as well as tacit.'	Bartol & Srivastava, 2002, p. 65	*Weakness: limited to organizational. No behavior.* *Strength: includes both tacit and explicit. Specifies bidirectional event.*
'Knowledge sharing refers to the degree to which one actually shares knowledge with others.'	Bock & Kim, 2002, p. 16; Lin & Lee, 2004, p. 115	*Weakness: a quantitative definition; No behavior; Implies a one directional event.* *Strength: ?*
The process where individuals mutually exchange their knowledge and jointly create new knowledge.	Van den Hooff & De Ridder, 2004, p. 118	*Weakness: ?* *Strength: Specifies bidirectional event; creation of new knowledge*
'Knowledge sharing is defined as a set of behaviors involving exchange of knowledge or assistance to others.'	Erhardt, 2003, p. 2	*Weakness: broad definition - assistance.* *Strength: Specifies bidirectional event. Includes behavior.*
'Knowledge sharing is basically the act of making knowledge available to others within the organization.'	Ipe, 2003, p. 32	*Weakness: Broad. Implies a one directional event. Focus on activities. No behavior.* *Strength: ?*
'People who share a common purpose and experience similar problems come together to exchange ideas and information.'	MacNeil, 2003, p. 299	*Weakness: broad definition; No behavior.* *Strength: Specifies bidirectional event.*
'Knowledge sharing is the behavior of disseminating one's acquired knowledge with other members within one's organization.'	Ryu et al., 2003, p. 113	*Weakness: broad definition; Implies a one directional event; Limited to organization.* *Strength: Includes behavior.*
'Social interaction culture, involving the exchange of employee knowledge, experiences, and skills through the whole department or organization'	Lin, 2007, p. 136	*Weakness: No behavior.* *Strength: includes types of knowledge; Implies a bidirectional event at dept and org level.*
'Knowledge sharing is defined as a process of communication between two or more participants involving the provision and acquisition of knowledge'	Usoro et al. 2007, p. 201	*Weakness: No behavior.* *Strength: includes both provision and acquisition; Implies a bidirectional event.*
'A two-way exchange leading to mutual understanding, common sense and insight providing the capability for collective decision-making and action.'	Hasan, 2009, p. 3	*Weakness: ?* *Strength: bidirectional event; insight; resulting action.*

Source: author and as noted.

As noted by Jonsson, (2008), Liyanage et al. (2009) and Paulin and Suneson (2012), the lack of an accepted definition of knowledge sharing has hampered the value and acceptance of research in this field.

Definition of choice

Ho and Hsu (2009) argue that the reason for this difficulty in presenting a standard definition of 'knowledge sharing' is due to KS consisting of many elements. The three key elements they defined are: objects, referring to the type or kind of shared knowledge; the method of sharing (e.g. face to face, conference, knowledge network, and organizational learning); and finally, the level of sharing (e.g. involving individuals, teams, or organizations). But knowledge sharing always starts at the individual level (Dixon 2002; Gurteen 1999) and relies on the behavioral choice of those individuals (Alkhaldi, Yusof & Ab Aziz 2011; Dougherty 1999; Yi 2009).

This thesis focuses on the analysis of knowledge sharing at the dyadic individual level within an organization because knowledge sharing fundamentally takes place between at least two individuals. This thesis uses Hasan's (2009) definition as it emphasizes mutual understanding, insight and the potential for action and implies a dyadic relationship where the 'common ground' is expanded.

'A two-way exchange leading to mutual understanding, common sense and insight providing the capability for collective decision-making and action.' (Hasan 2009, p. 3)

This relationship implies individual behavioral factors and also individual perceptions of team behaviors (OCB-Voice and Knowledge Absorptive Capability) to enable mutuality.

By accepting this definition for use within this thesis, the first literature gap question of:

***'GQ1**. What is the definition of knowledge sharing?'* has been addressed.

2.3.2 Knowledge sharing

Research concerning the factors affecting knowledge sharing has identified a number of different variables, from 'hard' issues such as technologies and tools (Hlupic, Pouloudi & Rzevski 2002) to 'soft' issues such as behaviors and motivations (Hall 2001a; Hinds & Pfeffer 2003; Kalling 2003). Thus personal behavioral characteristics may also affect the extent to which the employees share knowledge for various purposes (Wang & Zhou 2007) and their inherent tendency and eagerness, willingness and passion to share their knowledge, which is essential to

the success of the organization (Bock et al. 2005; Sié & Yakhlef 2013; van den Hooff et al. 2004).

Organizations find knowledge sharing a challenge for numerous reasons. First, employees possess tacit knowledge, which is highly personal and difficult to formalize, making it difficult to transfer or share (Nonaka & Takeuchi 1995). Second, it can be argued that a prime factor in knowledge sharing is building and developing a dyadic relationship between knowledge donors and knowledge receivers (Van den Hooff & Van Weenen 2004). Any lack of mutual trust between these two actors in the dyadic relationship will reduce the effectiveness of the sharing (Islam et al. 2011).

Since knowledge sharing is considered a voluntary and pro-social behavior (Gagné 2009), behavioral traits may be considered a key factor in explaining knowledge sharing.

Extant research shows that a number of behavioral factors have been examined to explore their relationship with KS.

This leads to the second research gap question:

***GQ2**. What are the behavioral factors influencing Knowledge Sharing Behavior and Workplace Innovation in a transnational corporation?*

In extant literature on knowledge sharing behavior, researchers have highlighted various factors that affect an individual's willingness to share knowledge, such as incentive systems, extrinsic and intrinsic motivation, information and communication technologies, costs and benefits, social capital, social and personal cognition, organization climate, and management championship (Alavi & Leidner 1999; Bock & Kim 2002; Bock et al. 2005; Chiu, Hsu & Wang 2006; Hsu et al. 2007; Kankanhalli et al. 2005; Koh & Kim 2004; Orlikowski 1993; Purvis, Sambamurthy & Zmud 2001; Wasko & Faraj 2005). As a result of their differing psychometric foundation, researchers have used a variety in behavioral constructs in their research studies. Examples of these are given in Definitions and Abbreviations

Other antecedents include: organizational structure, organizational culture, leadership, information systems (Ardichvili et al. 2006; Bock et al. 2005; Davenport & Prusak 1998).

The challenge to researchers is that the findings into some factors contradict, for example, considering the relationship between rewards and knowledge sharing:

some research (Hall 2001a, 2001b; Kankanhalli, Tan & Wei 2005) have found a positive relationship between the reward system and knowledge sharing; others have found a negative relationship (Bock & Kim 2002; Bock et al. 2005). Results are also equivocal regarding reciprocity, as some studies have suggested a positive relationship between reciprocity and knowledge contribution (Kankanhalli, Tan & Wei 2005; Wasko & Faraj 2005), but other research has found different results (He & Wei 2009).

Additionally, the review of knowledge sharing literature shows most of the extant research has been conducted in Western and East Asia countries, with Malaysian researchers being very active in recent years (for example: Teh & Yong 2011; Teh et al. 2011; Teh & Sun 2012; Aliakbar et al. 2012, 2013). A selection of empirical studies is shown in the Appendix C: Representative studies of knowledge sharing and behaviors – 2000 to 2014.

2.3.3 Knowledge Sharing Behavior factor

Knowledge Sharing Behavior (KSB) is a second order factor and is regarded as the degree to which employees share their acquired knowledge with their colleagues (Ryu, Ho & Han 2003).

Knowledge sharing concerns the willingness of individuals in an organization to share with others the knowledge they have acquired or created (Gibbert & Krause 2002). The operative phrase here is 'the willingness of individuals' because organizational knowledge largely resides within individuals. Even with the codification of knowledge, knowledge objects remain unexposed to (and hence unrecognizable by) others until the knowledge owner makes the objects available.

However, the flow of knowledge across individuals and organizational boundaries, and into organizational practices relies heavily on individual employees' knowledge sharing behavior (Bock et al. 2005). Inherently, the flow of knowledge from one individual or one unit of an organization to another unit or subsidiary significantly contributes to the organizational performance (Argote et al. 2000).

So in a practical sense, knowledge sharing cannot be mandated but can only be encouraged and facilitated.

In a review of knowledge sharing literature, Kalling and Styhre (2003) comment on the relative lack of attention paid to the role of motivational factors that influence knowledge sharing behavior. The Theory of Reasoned Action (TRA) was first

developed by Martin Fishbein (1965, 1967) as an improvement over Information Integration theory (Anderson 1962; 1971), and later revised and expanded by Fishbein and Azjen(1975) over time. Papers based on the Theory of Planned Behavior (TPB), an extension of TRA (Ajzen 1991), to explain the knowledge sharing behavior were rare (Cheng & Chen 2007).

Perceived Behavioral Control refers to the individual perception of difficulty to carry out the advantageous behavior and corresponds to self-efficacy which directly affects the behavior intention and behavior. The factors which affect directly or indirectly the Knowledge Sharing Behavior are Subjective Norm, Attitude, Intention, Perceived Behavioral Control and so on (Ryu, Ho & Han 2003). According to the TPB, the more advantageous these factors are seen to be, the stronger the individual intention to solve the behavior question will become.

In articulating this sharing environment, Senge (1990) characterizes organizations as places where 'people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together' (p. 3).

Marchand, Kettinger and Rollins (2002, p. 121) have argued that employees are more likely to share information with, and use information provided by, colleagues whom they deem to have 'information integrity', i.e. colleagues who use information 'in a trustful and principled manner.' Similarly, Knowledge development can be understood as a socializing process.

Szulanski (1996) suggests that motivational forces towards sharing derive from one of two bases: (1) employees' personal belief structures (their ethnic cultural traits) and (2) institutional structures, i.e., values, norms and accepted practices which are instrumental in shaping individuals' belief structures (DeLong & Fahey 2000) i.e. the organizational culture. Other researchers have articulated these beliefs and practices in terms of motivation through perceived benefit:

Individual benefit with emphasis on self-interest, personal gain, self-worth, etc. (Constant, Kiesler & Sproull 1994, 1996; Tampoe 1996; Wasko & Faraj 2000); group benefit i.e., reciprocal behaviors, relationships with others, community interest, etc. (Constant, Kiesler & Sproull 1994, 1996; Kalman 1999; Marsick & Watkins 2003; Wasko & Faraj 2000); and organizational benefit i.e., organizational gain,

organizational commitment, etc. (Dorai, McMurray & Pace 2002; Kalman 1999; Pace 2002a; Waters 2004).

Various factors and processes, beliefs and expectations that motivate and determine the intention to share knowledge with others in an organization, include: the moral value of sharing, personal growth, reputation, relations with others and extrinsic rewards (Andriessen 2006). Employees who are operating on the basis of their desire for fairness and reciprocity, and believe their mutual relationships with others can improve through their knowledge sharing (Huber 2001), are likely to have positive attitudes toward knowledge sharing.

Watkins and Marsick (1996) identify team behavioral factors such as appreciation of teamwork, opportunity for individual expression and operating principles together with the organizational factors of support for the operation of teams and for support for collaboration across traditional boundaries, as impacting knowledge sharing.

Leithwood et al. (1997) identified the team's culture (shared norms beliefs and assumptions; team self-talk; and, group vision) as having a direct impact the manifestation of team knowledge sharing and learning.

The factors that this research will examine are:

2.3.3.1 Attitude

Ajzen's theory of planned behavior (TPB) defines attitude toward a behavior as 'the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question' (Ajzen 1991, p. 188). In a technology adoption context, the use of the system is the key behavior of interest. As a result, attitude toward behavior is an employee's affective evaluation of the benefits and costs of using the new technology. This perspective is consistent with other models of technology acceptance, such as technology acceptance model (TAM) (Schepers & Wetzels 2007; Venkatesh & Davis 2000), that conceptualize individual perceptions of usefulness based on instrumentality as being strongly related to attitude toward technology use.

Knowledge Management researchers report the loss of power due to knowledge contribution as a barrier to knowledge sharing (Davenport & Prusak 1998; Orlikowski 1993). Where knowledge is perceived as a source of power, knowledge contributors fear losing their power or value if others know what they know (Gray

2001; Thibaut & Kelley 1986). Thus potential knowledge contributors do not participate in a knowledge exchange if they feel they can benefit more directly from hoarding their knowledge than sharing it (Davenport & Prusak 1998; Kankanhalli, Tan & Wei 2005).

In the Theories of Reason Action and of Planned Behavior, attitudes are important predictors of organizational behaviors. For instance Bock et al (2005) studied the positive effects of attitudes on people' intentions to share knowledge. In this thesis, attitudes toward knowledge sharing are the positive or negative evaluation of the knowledge sharing behavior of the employees of the transnational corporation under research. Based on the Theory of Reason Action and the Theory of Planned Behavior regarding the attitude of transnational employees toward knowledge sharing behavior, the following factor is adopted: *The Attitudes of transnational employees toward knowledge sharing influence their Knowledge Sharing Behavior*.

2.3.3.2 Subjective Norm

Within TPB, a subjective norm, 'the perceived social pressure to perform or not to perform the behavior' (Ajzen 1991, p. 188), has received considerable empirical support as an important antecedent to behavioral intention (Bock et al. 2005; Mathieson 1991; Taylor & Todd 1995; Thompson, Higgins & Howell 1991).

Lee (1990) argues that the more individuals are motivated to conform to group norms, the more their attitudes tend to be group-determined than individual-determined. Thus, it can be posited that subjective norms regarding knowledge sharing will influence organizational members' attitudes toward knowledge sharing, TPB views the role of the normative pressure to be more important when motivation to comply with that pressure is higher (Morris, Venkatesh & Ackerman 2005; Venkatesh & Davis 2000; Venkatesh & Morris 2000).

Therefore, subjective norms are critical in knowledge sharing. De Long and Fahey's (2000) study of the application of knowledge management in 50 companies, found that the negative organizational atmosphere is a serious barrier in organizational knowledge innovations.The positive organizational atmosphere affects the formation of subjective norms and consequently affects the individual's intention to share knowledge (Bock et al. 2005). Based on this review, the following factor is adopted: Perceived *Subjective Norms* regarding knowledge sharing activities influence employees' tendency to share knowledge.

2.3.3.3 Intention

Scholars in cross-cultural research argue that cultural factors such as face saving and group conformity in a Confucian society can directly affect intention (Bang et al. 2000; Tuten & Urban 1999).

Consistent with the previously noted findings of Lin and Lee (2004), Bock and Kim (2002) and Millar and Shevlin (2003), Teh and Yong (2011) have confirmed that the individual's intention to share knowledge is an important factor influencing the actual knowledge sharing behavior among IS personnel.

Hence, as a result of this review, the following factor is submitted for investigation: *intention* of employees to share their knowledge will effect on their Knowledge Sharing Behavior.

2.3.3.4 Actual behavior

In the early literature, Sheppard et al. (1988) conducted a meta-analysis of 87 different studies, and found a positive relationship between behavioral intention and actual behavior. In more recent information systems research literature, the positive relationship has received substantial empirical support from Lin and Lee (2004), Bock and Kim (2002), Millar and Shevlin (2003). On the basis of these studies, it is apparent that an individual's knowledge sharing behavior is influenced by his or her behavioral intention to share knowledge.

Hence based on this part of the review, the following factor is adopted: planned *Behavior* of employees to share their knowledge will influence their actual knowledge sharing behavior.

2.3.3.5 Perceived Behavioral Control

Ajzen's TPB is an extension of TRA with the addition of Perceived Behavioral Control (PBC) as a factor. According to Gentry and Calantone (2002), control beliefs are assessed in terms of opportunities and resources acquired (or not acquired) by the individual. Items to measure behavioral Intention, Attitude, Subjective Norm and Perceived Behavioral Control were generated based on the procedures suggested by Ajzen and Fishbein (1980) and Ajzen (1985, 1991).

In the context of knowledge sharing, the subjective norm has manifested itself in both peer influence and in the influence of a superior members' intention (Mathieson 1991; Taylor & Todd 1995). Similar arguments have been made (Lewis, Agarwal & Sambamurthy 2003; Venkatesh & Davis 2000) that subjective norms,

through social influence processes (Fulk 1993; Schmitz & Fulk 1991), also have an important influence in forming knowledge sharing attitudes.

Hence, as a result of this review, the following factor is submitted for investigation: the *Perceived Behavioral Control* that employees have in sharing their knowledge has an effect on their Knowledge Sharing Behavior and Workplace Innovation.

2.3.3.6 Self-Worth

According to role theory, which is the cornerstone of the symbolic interactionist perspective on self-concept formation (Gecas 1982; Kinch 1963), appropriate feedback is critical in an ongoing interaction setting such as knowledge sharing in an organization. 'When others respond in the way that has been anticipated, we conclude that our line of thinking and behavior are correct; at the same time, role taking improves as the exchange continues' (Kinch 1973, pp. 55, 77 cited in Bock et al 2005, p. 92). This process of reflected appraisal contributes to the formation of self-worth (Gecas 1971), which is strongly affected by a sense of competence (Covington & Berry 1976) and closely tied to effective performance (Bandura 1978).

The negative aspect of this may lead to 'validation seeking' (Dykman 1998) rather than 'growth seeking' (Dweck 2000).

Consequently, employees who are able to receive feedback on past instances of knowledge sharing are more likely to understand how their actions have contributed to the work of others and/or to improvements in organizational performance. This increased understanding increases their sense of self-worth and they become more likely to develop favorable attitudes toward knowledge sharing than employees who are unable to see such linkages.

Individuals characterized by a high sense of self-worth through their knowledge sharing are more likely to both be aware of the expectations of significant others regarding knowledge sharing behavior and comply with these expectations.

In this regard, organizational members who receive feedback on previous knowledge sharing processes are more likely to recognize the value of the work of other members and the resulting enhancement of organizational performance (Bock et al. 2005; Teh & Yong 2011).

From the perspective of shared worth, the behavior is evoked by the employees' need of self-efficacy and competence in facing their environment. Competence or

self-efficacy is defined as peoples' judgment about their abilities to organize and administrate the operation phases needed to get to a certain level of performance. Competence or self-efficacy can help employees with their motivation for knowledge sharing with colleagues (Kankanhalli, Tan & Wei 2005). Researchers found that those employees, who are more confident about their abilities, possibly would provide more valuable knowledge to perform specific activities. Knowledge self-efficacy in individuals reveals with the belief that their knowledge can help them to solve job problems and improve working (Asllani & Luthans 2003). The employees who believe that they can help the organization's performance by sharing their knowledge, have a more positive attitude and stronger intention to share knowledge, therefore the following factor is submitted for investigation: the employees' perceptions of *self-worth* influences their behavior in sharing knowledge.

2.3.3.7 Knowledge Sharing Activity

Hall (2001b) argues that people are more willing to share their knowledge if they are convinced that doing so is useful—if they have the feeling that they share their knowledge in an environment where doing so is appreciated and where their knowledge will actually be used.

Ardichvili, Page, and Wentling (2003) also defined a dyadic process, where knowledge sharing consists of both the supply of new knowledge to and the demand for new knowledge from.

Van den Hooff and van Weenen (2004) found a relationship: the extent to which people collect knowledge from others positively influences the extent to which they also donate knowledge to others. Successful knowledge collecting was posited as a condition for the willingness to donate one's own knowledge.

Knowledge sharing is the activity where individuals jointly create new knowledge via the mutual exchange their (tacit and explicit) knowledge (van den Hooff & de Ridder 2004).

Following Van den Hooff and De Ridder (2004), the two central behaviors can be labeled as follows: (a) knowledge donating, communicating one's personal intellectual capital to others; and (b) knowledge collecting, consulting others to get them to share their intellectual capital.

Both behaviors distinguished here are active processes—either actively communicating to others what one knows or actively consulting others to learn what they know.

The distinction between the activities of willingness and eagerness to share was originally made in an effort to explain the results of a field experiment on the relationship between group norms and knowledge sharing (Van den Hooff & Hendrix 2004).

Willingness is defined as the extent to which an individual is prepared to grant other group members access to his or her individual intellectual capital.

Eagerness, on the other hand, is defined as the extent to which an individual has a strong internal drive to communicate his or her individual intellectual capital to other group members.

Actors are willing to provide access to their personal knowledge, but because their focus is on the group's interest, they expect others to behave similarly—and focus on the group's interest as well. They seek to attain a balance between donating and collecting knowledge, while an actor who is eager to share knowledge will espouse his or her knowledge, invited or uninvited.

Passion has also been posited as another factor influencing Knowledge Sharing Activity and workplace innovation (Klaukien, Shepherd & Patzelt 2013; Sié & Yakhlef 2013).

As a result, the following factor is proposed for further investigation: *Knowledge Sharing Activity* of employees has an effect on their Knowledge Sharing Behavior.

2.3.4 Perceptions of team knowledge sharing

Two team based behaviors are examined from the individual's perceptions of those behaviors. These are: firstly, the knowledge absorptive capacity (KAC) of an organization as it has been found to influence innovation capability positively (Liao et al. 2010a); and secondly, organizational citizenship behavior (OCB).

2.3.4.1 Knowledge Absorptive Capability

Jantunen (2005) found that most studies in the innovation literature stressed the importance of capacity in using external knowledge, that is, absorptive capacity influenced innovation capability. Earlier, Van den Bosch et al. (1999) had concluded that absorptive capacity played a mediation role in creating new

knowledge. This was later supported when Liao (2010a, 2010b) proposed that absorptive capacity is a mediator between knowledge acquisition and innovation capability. This had confirmed Darroch & McNaughton (2002) who had posited that knowledge acquisition had more indirect than direct influence on innovation. Another early study showed that the more organizations absorb new knowledge and acquire knowledge, the more innovation and competitive advantages they will obtain in the process (Kim 1998). This thesis uses the term 'capability' as it is more aligned with behavior, rather than 'capacity' which is more aligned with organizational resource measure.

In their study of Chinese firms, Song et al. (2008) found that knowledge sharing within firms has a positive influence on innovation capabilities and that a higher level of absorptive capacity will lead to higher level of innovation capability. That also posited that absorptive capacity acted in a mediating role between knowledge sharing and innovation capability.

Hence the following factor is proposed for further investigation: absorptive capability of employees to share knowledge has an effect on their Knowledge Sharing Behavior and on their Workplace Innovation behavior.

2.3.4.2 Organizational Citizenship Behavior

A positive relationship between knowledge sharing intention and organizational citizenship behavior was hypothesized as studies perceive Knowledge Sharing Behavior as a display of Organizational Citizenship Behavior (Jo & Joo 2011).

As an example, Yu and Chu (2007) consider the knowledge sharing as a form of OCB in that knowledge sharing process involves automatic, discretionary, and altruistic behaviors that are not requested. Bock and Kim (2002) also view a knowledge sharing behavior as an outcome of the rendering of organizational citizenship behavior. They also posited that experienced workers are likely to exhibit these behaviors. In a more recent study, Hsu and Lin (2008) postulated that individuals with higher OCB are more willing to share their knowledge.

OCBs are crucial in the knowledge economy and in knowledge intensive industries, where roles are less defined and the nature of work is rapidly evolving. Dekas et al.(2013) examined OCBs at a specific knowledge workplace (Google Inc.) to determine if a new measure of OCB for knowledge workers was needed. They conceptualized that anyone tasked with continual innovation and creativity can be considered a knowledge worker. The nature of work in this type of workplace is

characterized by its focus on 'non-routine' problem-solving requiring convergent, divergent, and creative thinking (Reinhardt et al. 2011). This could describe the workplace under investigation.

Therefore the following factor is adopted for further investigation: *organizational citizenship behavior* of employees influences their Knowledge Sharing Behavior.

2.3.5 Knowledge sharing as a dyadic process

Van den Hooff and De Ridder (2004, p. 118), in their study of factors that promote or impede knowledge sharing, define knowledge sharing as 'the process where individuals mutually exchange their knowledge and jointly create new knowledge.' They identify two processes central to knowledge sharing: *Knowledge donating*, i.e. communicating to others what one's personal intellectual capital is, and *Knowledge collecting*, i.e. consulting colleagues in order to get them to share their intellectual capital

In terms of Van den Hooff and De Ridder's central processes, knowledge donating requires an employee to invest effort to make sure a colleague truly understands and makes sense of what is shared. Knowledge collecting, on the other hand, requires the recipient of expert insight to actively engage in a process of listening and learning. The parties involved in knowledge sharing need to be willing to engage in deep dialogue, including providing context, articulating feedback, and being open to having their contributions assessed critically. As Grey (2004) points out, knowledge sharing is about more than just access.

Von Baeyer (2004, p. 25) expresses concern regarding the inadequate definition of 'information' and proposes information as the 'communication of [ideas and] relationships', thus conflating prior colloquial usage and technical usage (symbols used to transmit a message.

Echoing the power constraints of Holden (2004), De Long and Fahey (2000) point out that employees' behavior with regards to knowledge sharing is influenced by organizational culture as reflected in organizational practices, norms and values:

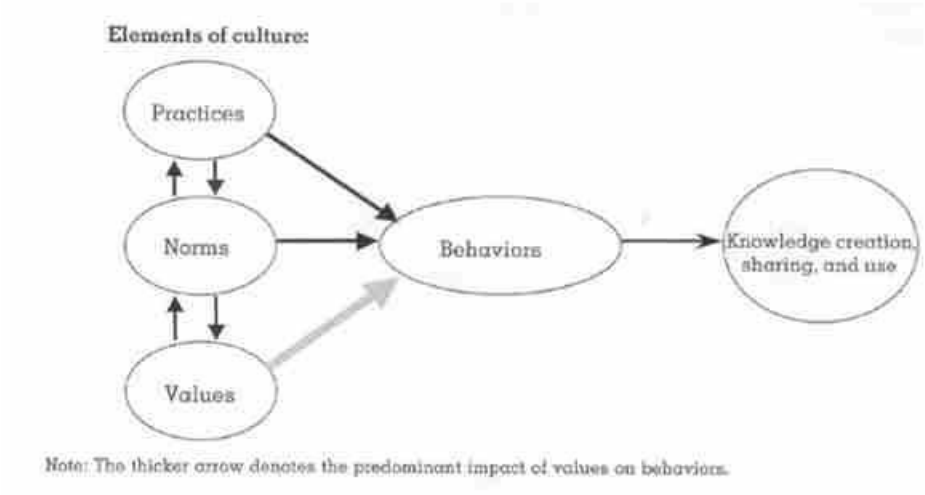


Figure 2.1 Elements of Culture

Source: De Long and Fahey (2000, p. 116)

From the perspective of the antecedent factors examined above (Attitude; Subjective Norms; Intention; Behavior; Perceived Behavioral Control; Self-Worth; Knowledge Sharing Activity; Organizational citizenship behavior; and Knowledge Absorptive Capability) that are posited to influence the Knowledge Sharing Behavior of employees in a transnational corporation.

2.4 Workplace Innovation

Previous psychological research supported the notion that human beings have the capability to solve complex problems, and that when this creative behavior can be harnessed amongst a group of people with differing perspectives and skills, extraordinary achievements could be made (Tidd, Bessant & Pavitt 2005). Teamwork, knowledge sharing and the creative combination of different disciplines and perspectives have become central to analyzing innovation (Reiche et al. 2009b). Despite this, it has also been noted that innovation has seldom been considered at a group level (Crossan & Apaydin 2010; McMurray & Dorai 2003; West & Farr 1989).

Innovation is a critical construct which was likely to depend on many organizational factors such as knowledge creation and sharing, learning, leadership and organizational climate. Thus appropriate knowledge sharing in an innovation-demanding environment is imperative (Mahr & Lievens 2012; Porzse et al. 2012).

Understanding of factors which affected an organization's capacity to innovate was crucial for success and survival (Jaskyte 2004). Post-industrial organizations are knowledge-based, even knowledge intensive organizations and their success

depends on factors such as innovation, creativity, inventiveness and knowledge discovery (Martins & Terblanche 2003). Innovation has been strongly associated with knowledge creation (Mahr & Lievens 2012; Merx-Chermin & Nijhof 2005), while innovation diffusion is associated with knowledge sharing (Baxter 2004).

To reflect this, many studies have focused on the production of new knowledge in the perspective of a knowledge economy (Bell 1976; Drucker 1998; Nonaka & Takeuchi 1995). The extensive work by Lindley (2002, p. 97) stated that the

'... knowledge society is a long run structural change in the economy; the production, dissemination and use of knowledge will play a prominent role as a source of wealth creation and exploitation.'

Learning is critical to such a society in terms of accommodation, assimilation and transformation, dependent on issues, contexts and conditions, and to individuals, organizations and nations in terms of new skill formations (Illeris 2002; Lindley 2002; Nijhof 2005) to be able to produce knowledge (Merx-Chermin & Nijhof 2005).

Therefore, the organizational context, knowledge sharing, and workplace climate had the potential to affect an organization's ability to innovate.

The potential to manage the innovative process in order to maximize innovative success depends upon the organization's ability to learn and consequently be able to repeat those behaviors (Martensen & Dahlgaard 1999; Tidd, Bessant & Pavitt 2005). Supporting this, Hong (1999) identified employee roles, culture, leadership, individual's willingness and the organizational structure as influences on the extent to which employees could maximize their learning, thus contributing to the 'knowledge organization'. The study and development of models of relationships between constructs become more critical as some constructs such as knowledge sharing are noted to affect other constructs such as innovation.

In this review, the theme of the importance of understanding the relationship between the two constructs of Knowledge Sharing Behavior and Workplace Innovation Climate has been raised. Review of the literature indicates there have only been minimal studies on the relationship between these constructs, particularly in transnational organizations (See Appendix C. Literature Review Search Strategy Method). Given the emergence of the importance to understand the contextual factors of these constructs and how they relate, the relationship between knowledge sharing and innovation will now become the focus.

The objective of this chapter was to review current literature in knowledge sharing and innovation including how these constructs are defined and operationalized. This exploration laid the foundation for reviewing the prior research on the relationship between these constructs.

The review of the literature, as outlined in this chapter, led to a number of conclusions and the identification of gaps within the literature. There was minimal empirical analysis of the relationship between the constructs knowledge sharing and innovation. Evidence was shown to be fraught with definition confusion, operationalization, reliability and validity challenges. The Crossan and Apaydin (2010) framework consists of the two sequential components: innovation as a process (how?), and innovation as an outcome (what?). The 'why?' is poorly represented in the literature and is a gap which this thesis is intended to address.

Thus, further research in this important field has merit. Overwhelmingly, the relationship between knowledge sharing and workplace innovation merits further investigation.

2.4.1 Definitions of innovation

The academic focus on innovation was initiated by the work in 1934 of the economist, Joseph Schumpeter, who defined an innovation as any of the following: (1) the introduction of a new good, (2) the introduction of a new method of production, (3) the opening of a new market, (4) the conquest of a new source of supply and (5) the carrying out of a new organization of industry (Schumpeter 1934). He also stressed the novelty outputs aspect which can be summarized as 'doing things differently'.

Accordingly, this definition may be summarized as:

'Innovation is a new or different solution to a new or existing problem or need'.

Novelty can also vary depending on the newness of innovation as an outcome: a product or service can be new to the company (Davila, Epstein & Shelton 2006), the customer (Wang & Ahmed 2004), or the market it serves (Lee & Tsai 2005).

Many authors have followed Schumpeter's lead by associating *newness* with innovation.

Table 2.2 *Example innovation definitions*

'the adoption of change that is new'	(Knight 1967, p. 478)
'an idea, practice, or material artifact perceived to be new by the relevant adopting unit'	(Zaltman, Duncan & Holbeck 1973, p. 53)
'the adoption of means or ends that are new'	(Downs & Mohr 1976, p. 701)
'adopted changes considered new'	(Daft & Becker 1978, p. 5)
'an idea, practice or object that is perceived as new'	(Rogers 1983, p. 11)
a recombination of old ideas etc. that challenges the present order 'the development and implementation of new ideas by people who over time engage in transactions with others within an institutional order'	(Van de Ven 1986, p. 590)
'the successful implementation of creative ideas within an organization'	(Amabile 1988, p. 125)
Often what is presented as 'new' is a simple elaboration of an existing concept	(Grudin 1990).
'something that is new or improved done by an enterprise to create significantly added value'	(Carnegie et al. 1993, p. 3)
Innovation is an elusive concept: they can be new ideas, new technologies, new artifacts, and new ways of doing things	(Rogers 1995)
'the generation, development, and adaptation of an idea or behavior, new to the adopting organization'	(Damanpour 1996, p. 694)
define and measure innovation in degrees of newness	(Johannessen et al. 2001)
'the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.'	(OECD 2005, p. 46)
a connotation of 'newness', 'success', and 'change'	(Assink 2006, p. 261)
'doing new things or doing things in a new way: drawing on knowledge and creativity to add value in products and processes.'	(Green 2007, p. 42)
'Creativity is thinking of new and appropriate ideas whereas innovation is the successful implementation of those ideas within an organization. In other words creativity is the concept and innovation is the process'	William Coyne, Senior VP for R&D at 3M (as quoted by Watson 2008, p. 1)

Here the new (Schumpeter's creative and adaptive responses) and the improved (Schumpeter's adaptive response) are equated, and the idea of change subsumed by the concept of added value. Innovation is not just about the intrinsic value of learning, or comparing the size of innovation networks, innovation needs '*successful implementation*' - a pay-off to create value (commercial or social).

Based on their review, Crossan and Apaydin (2010, p. 1155) composed a comprehensive definition:

> Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome.

Their definition captures several important aspects of innovation: both internally conceived and externally adopted innovation ('production or adoption'); more than a creative process, by including implementation ('exploitation'); emphasizes intended benefits ('value-added') at one or more levels of analysis; relative, as opposed to the absolute; novelty of an innovation (an innovation may be common practice in other organizations or units, but it would still be considered as such if it is new to the unit under research); and it draws attention to the two facets of innovation (a process and an outcome).

The traditional view of innovation focuses on the creation of knowledge, not on its transfer, sharing, expansion and use; that is, the focus is on knowledge stocks and not the flows of knowledge.

Thus an idea is only truly innovative if it is introduced into a market and stays there. The test is time in market or, more precisely, the repeat loyalty of a customer i.e. the sharing or diffusion of the innovation 'knowledge'.

2.4.2 Workplace Innovation Scale (WIS)

The McMurray and Dorai (2003) WIS was originally developed from a 35 item scale as a contextual psychological construct. Initial factor analyses revealed five factors of 'Organizational Innovation', 'Innovation Climate', 'Individual Innovation', 'Team Innovation' and 'Unidentified'. Further testing eliminated the fifth factor 'Unidentified'.

They further modified the scale by altering the way some questions were couched to be more '…acceptable to Australian culture'. The WIS was tested on different population samples and within various industries; service and manufacturing. McMurray and Dorai (2003) concluded that the measurement of Workplace Innovation was a valid measure of the four factors Organization Innovation, Innovation Climate, Individual Innovation and Team Innovation. Their Cronbach Alpha score was reported at 0.89 indicating high reliability. Thus the WIS was deemed a reliable and valid measure of Workplace Innovation and was used in this study.

2.4.2.1 Innovation Climate

Siegal & Kaemmerer (1978) identified support for creativity as a main factor contributing to an innovative climate (see also Koys & DeCotiis 1991). A creative innovative climate was defined as the '…positive approach to creative ideas

supported by relevant reward systems' (Tidd, Bessant & Pavitt 2005, p. 314). Kanter (1984) suggested that there were a number of environmental factors that contributed to stifling an innovative climate, and these reinforced a culture of inferiority (i.e. innovation has to come from outside to be of any value) (Seybold 2006; Spaeth, Stuermer & von Krogh 2008). This view was also supported by Von Treuer and McMurray (2012) and Baxter (2004).

2.4.2.2 Individual Innovation

The presence within organizations of individuals who enable innovation was an important element (Hellstrom & Hellstrom 2002). These key advocates include internal champions, intrapreneurs, promoters, gatekeepers and other roles which support, energize and facilitate innovation, were important organizational factors which support innovation (Rothwell 1992; Tichy & Devanna 1986). Often the innovation advocates could support networking and enhance innovation communication throughout the firm (Tidd, Bessant & Pavitt 2005) and provide boundary-spanning capabilities (Conway 1995; Tushman & O'Reilly 1996; 1981).

2.4.2.3 Team Innovation

Teamwork is an essential element of the innovation process by allowing different perspectives to be surfaced during problem solving (Von Treuer 2006). Identifiable characteristics of high performance project teams were compiled by Forrester & Drexler (1999) who concluded that these teams rarely occurred by accident. Innovative teams often had: clearly defined tasks and objectives, effective team leadership, good balance of team roles and match to individual behavior style, effective group based conflict resolution mechanisms, and continuing liaising with other departments and external organizations (Tidd, Bessant & Pavitt 2005). These teams also require boundary spanning individuals, seen by their colleagues as technically competent and having the background and skills to communicate with different external areas (Blau 1963; Tushman & O'Reilly 1996; 1981).

2.4.2.4 Organization Innovation

Extant research has posited that components needed for organizational innovation include shared vision, a shared language and the will to innovate, thus clearly articulating a sense of purpose and strategic intent with commitment (Champy & Nohria 1996; Hamel 2000; Kanter 1984; Kay 1993; Nayak & Ketteringham 1986). An important organizational factor that assists innovation (Hesselbein, Goldsmith &

Beckhard 1997; Maughan 2012; Mintzberg 1979; Peters 1988; Pfeffer 1994) is an appropriate organizational structure such as displayed by transnational corporations (Bartlett & Ghoshal 1990; Reiche, Harzing & Kraimer 2009). The commitment to continuing development, education and training to ensure a high level of skills and competence exists within the organization was also an important element (Prais 1995), linking learning to innovation. Extensive innovation from within the organization (upwards, downwards and laterally) and outside has also been shown to be influenced by organizational wide communication (De Mayer 1985; Francis & Young 1988; Spence 1994) and knowledge sharing. The high involvement in innovation, Knowledge Sharing Activity has been identified as a contributing factor to an organization's ability to innovate (Bessant & Francis 1999; Boer & Berends 2003; Imai 1997). The emergence of the 'learning organization' within the firm was a further strong potential contributing factor to an organization's ability to innovate (Garvin 2000). Learning organizations exist where there are high levels of involvement from within and outside the firm with knowledge gap analysis, proactive prototyping, finding and solving problems, communications and sharing of knowledge in the form of experiences and knowledge creation, capturing and dissemination (Cohen & Levinthal 1989; 1990; Tidd, Bessant & Pavitt 2005; Zahra & George 2002).

2.4.3 Measuring innovation behaviors

The focus of measuring innovation behaviors at different levels has stimulated some interest amongst researchers, (Baxter 2004; McMurray & Dorai 2003; Von Treuer 2006). Earlier research by Scott and Bruce (1994) considered innovation and climate for innovation relationship issues and suggested that climate for innovation was a central antecedent of Individual Innovation. They also found that innovative behavior was influenced by the 'climate for innovation', which was believed to be a product of management processes (e.g. H.R.), work group relations, and the problem solving strategies present in the organization. Therefore, it was concluded that Individual Innovation was influenced by others, such as co-workers and team leaders, and furthermore, was a product of a multi-staged process between these actors and organizational components such as culture and climate (Scott & Bruce 1994).

Baer and Frese (2003) also proposed two climate dimensions that were of particular importance. The climate dimensions included support for an active approach

toward work, where staff were comfortable to take interpersonal risks and valued each person's contribution of knowledge and skill to the work process. Thus cooperation was proposed to be an important factor. Successful cooperation required the existence of a climate in which employees felt safe in displaying proactive altruistic behavior (e.g. Organizational citizenship behavior – see Dekas et al. 2013; Jain, Giga & Cooper 2011; Smith, Organ & Near 1983)

2.4.4 Relationship between organizational climate and innovation

A recurring theme in the literature was the suggestion that innovation process needed to be accompanied by organizational climates that adopt, implement and diffuse such innovations, but there was little empirical evidence that supported this proposition (Baer & Frese 2003; Von Treuer 2006). The amount of research that examined the link between organizational climate and innovation was scant (Yinghong & Morgan 2004).

Management research literature appeared to support the notion that supportiveness of organizational climate was directly connected with an organization's new product performance, for two reasons. Firstly, increased organizational commitment of employees was associated with a supportive organizational climate (Schuster et al. 1997). Secondly, the cross-functional integration associated in new product innovation success was associated with a high level of co-worker cohesion, or peer support (Griffin & Hauser 1992, 1996; Mahr & Lievens 2012; Song & Parry 1994). As such, co-worker cohesion within an organization was likely to reduce conflict and to enhance communication and cohesiveness within the innovative teams and between the teams and the rest of the organization (Henard & Szymanski 2001; Sethi, Smith & Park 2001).

Empirical investigations supported organizational climate effects innovation (Abbey & Dickson 1983), although empirical research into such directional relationships were minimal (Von Treuer 2006).

Researchers such as Amabile (1998) stated that the generation and implementation of new ideas by employees depended upon creative behavior. Certainly the support for creativity was identified as a main factor which contributed to an innovative climate (Siegal & Kaemmerer 1978). Therefore a link between an organizational climate factor and innovation was established.

Kanter (1984) suggested that there are a number of environmental factors that contribute to a barrier for innovative climate. The barriers include: dominance of

restrictive vertical relationships, poor lateral communications, limited knowledge resources, top down dictates, reinforcing a culture of inferiority (i.e. innovation has to come from outside to be any good), unfocused innovative activity and unsupporting knowledge sharing practices. It was also suggested that the innovative process was culture specific (Sawy et al. 2001). A further study by Baxter (2004) identified workplace politics as a barrier to Workplace Innovation.

2.4.5 Innovation and Knowledge Sharing

Any useful model of innovation, or of change more generally, has to be grounded in the purposive action of individuals (Van de Ven, Angle & Poole 2000a). It has to explain how the members of organizations get things done, and what motivates them to do so.

Karl Popper's theory of knowledge (1979) distinguishes between the worlds of objective knowledge, subjective knowledge, and physical objects. Problems, critical arguments and theoretical models exist in the world of objective knowledge, and for an action to take place in the physical world, an abstract object from the world of objective knowledge has to be grasped by someone, and this is a mental process from the world of subjective knowledge. In other words, looking for explanations of changes in the physical world requires study of both worlds of subjective and objective knowledge.

Innovation research has traditionally specialized in objective knowledge explanations, with a recent minor shift in emphasis towards subjective explanations through analytical concepts such as values, national and corporate culture.

Moch and Morse (1977) and Ries and Trout (1981) showed that innovation is about learning new ways to understand or configure the world around us. In a four-year longitudinal study, Powell et al. (1996) established that, when the knowledge base of an industry is both complex and expanding, the locus of innovation lies in the collaborative learning and knowledge sharing between organizations.

Recent research has examined the different types of motivation that are necessary to transfer the different forms of knowledge in the innovation process (Kim & Lee 2013; Osterloh & Frey 2000; Song, Fan & Chen 2008).

The growing attention to organizational innovation by firms reflects the strategy that sustainable competitive advantage can be fostered by superior dynamic

capabilities. Knowledge-based competition has magnified the role of learning and knowledge sharing as a fast and effective way to develop such capabilities. Sources of knowledge are diffused geographically, requiring flows from the periphery to the center, and from one node on the periphery to another (Teece 2000). This is especially important in a transnational corporate environment where there are opportunities for country-based subsidiaries to place a role (Tortoriello, Reagans & McEvily 2012).

Research (Carillo & Gaimon 2000) has found that firms do not invest in process change to adopt innovation until they have sufficient relevant knowledge and so firms tend to under-invest in the development of absorptive capacity (Cohen & Levinthal 1994; Wang & Han 2011).

In this context, (Zahra & George 2002) define absorptive capacity as a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability. Absorptive capacity has also been defined as the capacity to learn and solve problems (Kim 1997) and as the firm's ability to identify, assimilate, and exploit outside knowledge (Cohen & Levinthal 1990). In a multinational corporation, knowledge exploitation may be necessary between geographically dispersed organizational units to improved effectivity. Acquiring absorptive capacity consists of building (1) the firm's ability to access internal and external knowledge, which requires a knowledge-sharing culture, and (2) the firm's ability to transform, share and implement that knowledge within the organizational units of corporation to enhance its core competencies.

This approach is closely tied with the ability to source external technologies (Kim & Inkpen 2005); ability to identify, assimilate and commercialize new knowledge (Cohen & Levinthal 1990) and absorptive capacity's influence on firms´ path dependence (Ahuja & Lampert 2001) as well as on inter-firm reciprocal learning (Lane & Lubatkin 1998).

Corporations exist within one or more markets and are subject to an external knowledge environment and the ability of the corporation to interact and exchange knowledge (Nonaka & Takeuchi 1995) with its remote units and outside environment will determine its absorptive capacity and innovation capabilities.

For a corporation to become 'innovative', it needs to accept that organizational innovation is a continuous process and thus the categories for required knowledge

are constantly changing and employee need to be empowered, with knowledge sharing metrics adopted as a criteria for performance evaluation (Daghfous 2004).

As a result of these different ongoing trends most new knowledge emerges from outside the firm. Companies cannot base themselves on a few deep core competencies anymore that are cumulated over decades (Chesbrough, Vanhaverbeke & West 2006). Innovation is shifting from Closed Innovation (focus on internal knowledge), where successful innovation requires control, to Open Innovation, where firms use external as well as internal ideas and paths to market (Chesbrough 2003). Today even companies like Procter & Gamble, BASF, DuPoint, Eli Lilly, IBM and Dow Chemical find it wise to seek out ideas and solutions from outside (Chesbrough, Vanhaverbeke & West 2006).

In any case, a successful innovation demands an innovative business model and product offering. The value of an idea or a technology depends on its business model (Chesbrough, Vanhaverbeke & West 2006). Innovations have to be extended to business models because there is no inherent value in technology *per se*. Business model innovation is vital for sustaining open innovation (Chesbrough & Schwartz 2007). Technology by itself has no single objective value. The economic value remains latent until it is commercialized in some way i.e. made innovative. Firms need to develop the ability to experiment with their business models (Chesbrough 2007). Thus innovative business models need prototyping as well (Chesbrough 2003).

These changes are associated with increasing vertical disintegration, outsourcing, modularization, use of open standards, and the growth of the market for specialized technology (Chesbrough, Vanhaverbeke & West 2006). Moreover external knowledge expands more rapidly than internal knowledge (Chesbrough, Vanhaverbeke & West 2006), which leads to in-house knowledge asymmetries associated with corporate scale (Cooke 2005; Ma 2012).

2.4.6 Innovation summary

The Workplace Innovation Scale has been reliably proven in a number of studies mentioned above, to support the investigation of innovation behaviors in a number of settings. It has been adopted for use within this thesis.

Additionally, the definition of innovation posited by Crossan and Apaydin (2010) is adopted for use within this thesis (see above).

2.5 Organizational structure

In broad terms, an 'organization' is defined as a group of people united in a relationship and having some interest, activity, or purpose in common - American Heritage Dictionary of the English Language, (Dictionaries 2011).

Organizational level factors have been observed by previous researchers as having a significant influence on knowledge sharing (for example see Anantatmula 2010; Bartol & Srivastava 2002; Chen, Lin & Chang 2009; Lee & Al-Hawamdeh 2002; Liu, Ghauri & Sinkovics 2010; Riege 2007; Syed-Ikhsan & Rowland 2004).

In the knowledge-based view of the firm (Grant 1991, 1996; Spender 1996b; Teece 2000), knowledge is the foundation of a firm's competitive advantage and, ultimately, the primary driver of an organization's value.

Moving into a knowledge-intensive economy, only rarely does any one person have sufficient knowledge to solve increasingly ambiguous and complex problems. One study (Allen 1977) demonstrated that people are roughly five times more likely to turn to friends or colleagues for answers than other sources of information such as a database or file cabinet. Other research with 40 managers (Cross, Parker & Borgatti 2002), revealed that 85 percent claimed to receive knowledge critical to the successful completion of an important project from other people. This is even more important in a cross-cultural organization (Bhagat et al. 2002; Davenport & Prusak 1998; Govindarajan & Gupta 2001), where the winners of the global marketplace are those organizations who response to rapid and flexible innovation, be it product, service or process, coupled with the management capability to effectively coordinate and share internal and external knowledge and capabilities (Teece, Pisano & Shuen 1997). Thus, knowledge creation and sharing programs play a key role to prepare for the uncertain future (Weick & Sutcliffe 2001).

Similarly, industrial dynamics perspective suggests that in a context of a highly complex and distributed knowledge base, the corporation depends critically on external knowledge assets (Christensen, Olesen & Kjær 2005) and the structures of the organization. An organization's ability to search for and find new knowledge depends on its ability to effectively monitor, integrate, and absorb newly acquired knowledge within its existing knowledge base (Cohen & Levinthal 1990; Hamel 1991; Hansen, Nohria & Tierney 1999; Leonard 1995).

In this thesis, through the lens of Knowledge Sharing Behavior and Workplace Innovation factors, the research on factors such as leadership support; task

characteristics; organization performance; social influence; and barriers are acknowledged but excluded from the scope of this work.

This thesis will examine the implications of organizational structure and workplace climate (as an alternative to organizational culture) as potential modifiers of Knowledge Sharing Behavior and Workplace Innovation.

2.5.1.1 Workplace structure

Structure of the workplace refers to the activity of task allocation, coordination and supervision, which are directed towards the achievement of organizational goals. It can also be considered as a lens to view or perspective through which individuals see their organization (Jacobides 2007; Pugh 1990)

The structure of an open and flexible organization is needed to achieve the sharing of knowledge because a high bureaucratic organization limits the transfer of knowledge and the generation of new ideas (Disterer 2003).

In this thesis, structure refers to the nature of the organization which employees feel exists to promote or prohibit the sharing of knowledge. This organization operates as a knowledge intensive industry which relies on its reputation of knowledge, expertise and skills in its domain of earth sciences and services. As such, the application of their knowledge in a client project-specific context is paramount.

2.5.2 Transnational corporations

In the late 20th century, liberalization of trade and investment flows changed companies' perceptions of globalization and what was permitted. This allowed globally integrated or transnational corporations (TNC) (Palmisano 2006) to integrate production and value delivery worldwide. This shift from multinational corporation (MNC) to globally integrated enterprise (TNC) has evolved into two distinct forms: the first has involved changes in where companies produce things; the second, changes in who produces them (based on shared standards). The spread of outsourcing is encouraging companies to structure themselves as an array of specialized components: procurement, manufacturing, research, sales, distribution, etc. For each of these components, global integration of operations is forcing companies to choose where they want the work to be performed and whether they want it performed in-house or by an outside partner.

2.5.2.1 TNC Characteristics

Recent studies of multinational corporations (MNCs) commonly conceptualize this type of firm (TNC) as a network (Ghoshal & Bartlett 1990; Nohria & Ghoshal 1997; Noorderhaven & Harzing 2009; Rugman & Verbeke 2001) when the hierarchical relationship between the center (headquarters or parent firm) and the periphery (subsidiaries or business units at various locations) is de-emphasized. The TNC is also seen as a 'social community' (Kogut & Zander 1993) or a 'heterarchy' (Egelhoff 1999; Hedlund 1986; Leong & Tan 1993).

Thus the corporation is emerging as a combination of various functions and skills—some tightly bound and some loosely coupled—which are integrated into components of business activity and production on a global basis. The challenges in achieving this are: securing a supply of high-value skills; the regulation of intellectual property worldwide with a shift from protecting intellectual property and limiting its use, to maximizing intellectual capital, based on shared ownership, investment, and capitalization; maintaining trust in corporations based on increasingly distributed business models and based on shared values that cross borders and formal organizations; and significant changes in organizational culture that result in new forms of partnership among multiple enterprises, their in-country subsidiaries and segments of society (Palmisano 2006).

The TNC has become a major actor in the global economy of the twenty-first century. Commentators usually agree on the decisive nature of its socio-economic contribution to the globalization process (Pilkington 2007), however, the increasingly important role of TNCs is not easily apprehended by economic science, which is generally not at ease with those gigantic, multi-dimensional and stateless institutions (Economist 1997).

Their working environment is characterized by a specific set of material (firms, infrastructure), immaterial (knowledge, know-how), and institutional (labor, authorities, legal framework) elements. In such a context, the implementation of new practices within a company, new managerial styles and the focusing of the efforts around the improvement and efficiency on the use of the resources have been underlined by many experts as key strategies for the survival of a company (Adenfelt & Lagerström 2008; Bennet & Bennet 2002; Conner & Prahalad 1996; Schultze 2002).

The understanding of corporations operating in multiple countries around the world is that the key task for headquarters is to coordinate the transactions undertaken within the MNC in three key dimensions: capital flow, product flow, and knowledge flow (Gupta & Govindarajan 1994). The creation and use of knowledge across the MNC units is, according to Gupta and Govindarajan (1994, 2000) and Madhok (2001), the most important flow in an MNC. Consequently, the most important role of headquarters is to enable, facilitate, and coordinate the corporate-knowledge stocks and flows (Gupta & Govindarajan 2000).

Today this TNC structure (Gupta & Govindarajan 2000; Gupta, Govindarajan & Malhotra 1999) is seen as a globally distributed network of differentiated, more of less integrated local units whose competitive capability depends on sharing resources and knowledge both inside the network and outside the network with alliance partners. This departs from the traditional resource based view of the firm where the efficient transfer of resources is primarily through internal channels (Grant 1996; Porter 1985; Singh 2001).

The transnational corporation (TNC) is distinguished by its strategic objectives of global efficiency, national ('local') responsiveness, and worldwide learning. The TNC is characterized by a strong interdependence between the corporate headquarters, centralized specialist units, and national subsidiaries of the firm that allows it to simultaneously 'think globally and act locally' (Hocking, Brown & Harzing 2007). A prerequisite for this interdependence is a multidirectional flow of knowledge across borders between all global units where knowledge may be created in one location, and put to productive use in many other locations (Bartlett & Ghoshal 1989). This 'synthesis' of knowledge originating in diverse locations is seen to be the prime source of MNC innovation (Buckley & Carter 1996); see also (Håkanson & Nobel 2001).

The adoption of the twin processes of ICT adoption and globalization suggest, for example, that distance per se is not necessarily an impediment to the acquisition and diffusion of knowledge, even of tacit forms of knowledge, because organizational structure or relational proximity can act as a surrogate for physical or geographical proximity (Ohmae 1999).

The organizational design of the TNC allows it to function as an integrated and interdependent network where subsidiaries can have strategic roles and act as centers of excellence. They exhibit a large flow of products, people, and

information among subsidiaries (Bartlett & Ghoshal 1989, 1992; Hocking, Brown & Harzing 2007) – for example IBM was cheekily nicknamed 'I've Been Moved'.

2.5.3 Knowledge Intensive Businesses (KIB)

Knowledge intensive organizations in the services field (KIBS) provide knowledge intensive input activities to operations of other sectors and organizations. Typical of these activities, human capital/social capital are a major input factor (Capik & Drahokoupil 2011; Jansen et al. 2011), enabling client firms and organizations to utilize the knowledge, skills and talents of KIBS employees (Miles 2008).

While their main role is that of enabler and project manager, KIBS can also act as innovators in developing methods to utilize domain and project related knowledge, developing new services and improving service delivery (Camacho & Rodriguez 2008). According to Muller (2001), KIBS improve the performances of other companies by providing services characterized by a highly intellectual added value. Thus, they are both delivery agents for their own internal innovation activities and supporters of clients' innovation.

From a knowledge perspective, KIBS have gradually transformed from initially transferring professional information to their clients to a role as influential partners in whom clients seek assistance in resolving problems of the related innovative activities, providing advice to solve problems, due to the strong interactive nature of their services (Hu, Lin & Chang 2013).

KIBS also acquire knowledge from their clients, knowledge which can strengthen their knowledge base and enable them to provide improved solutions for other clients. Therefore, knowledge flows both ways between the KIBS and their clients and partners.

With the advent of new communications networks, transnational KIBS are feasible, and can even incorporate proximity and workforce knowledge diversity advantages (Antonelli 1999; Crevoisier & Jeannerat 2009; Sass & Fifekova 2011), or the need to rely on proximity at different project engagement stages (Muller & Zenker 2001; Rusten, Bryson & Gammelsater 2005; Wong & He 2005; Wood 2006).

However, some researchers offer a different perspective based on the ability of the KIBS to interact with partners and clients, and that innovation networks and proximity allow KIBS to take advantage of regional differences in knowledge, culture and contextual application (Koschatzky 1999).

The transnational corporation as the sample population frame, exhibits these characteristics as a KIBS sector participant.

2.5.4 Organizational structure and knowledge

Early research on agglomeration theory (Malmberg 1996), posited that knowledge accumulation was explained by the emergence and sustainability of spatial clusters of related firms and industries. This was explained as a function of three inter-related processes: first, the localized nature of innovation processes and the role of local environment or setting in fostering such processes; second, the process whereby knowledge tends to stick to the local milieu rather than being rapidly diffused; and third, a process whereby new resources (in the form of people, capital, ideas, patents etc.) may be attracted into the local milieu. But the movement of knowledge across individual and organizational boundaries, into and from knowledge stores, and into organizational routines and practices is ultimately dependent on employees' knowledge-sharing behaviors.

In most cases, however, both theoretical and empirical work has focused on regional innovation strategies situated within a national context (O'Kane 2008). Little research has been done so far on cross-border regional innovation strategies (Trippl 2010). These cross-border areas differ enormously regarding their capacity to develop an integrated innovation space. The regional innovation strategies (RIS) can play a key role for the generation of new knowledge (Cooke, Boekholt & Tödtling 2000; Cooke, Heidenreich & Braczyk 2004; Tödtling & Trippl 2005).

The importance of localized information flows and technological spill-overs has been a topic of research to explain the emergence and sustainability of spatial clusters of related firms (Chesbrough, Vanhaverbeke & West 2006). This contemporary knowledge environment is distinguished by intra-firm knowledge asymmetries. Hence firms in various industries are trying to overcome it by regional knowledge capabilities and systemic innovation strengths of accomplished regional and local clusters (Cooke 2005). Transfer of knowledge can also take place between organizations within a given industry cultural context (i.e., transfer of knowledge from IBM to Apple Computers regarding Apple's use of the IBM PowerPC microprocessor).

Within multi and transnational corporation subsidiaries, the formation of knowledge sharing ties is influenced by the entrepreneurial orientation of the local subsidiary (a proactive force), and the strategic vulnerability of that local

subsidiary (a reactive force) (Gnyawaḷi, Singal & Mu 2009). Subsidiaries of transnational corporations create knowledge by learning from their local milieus and share the knowledge with the rest of the TNC (Gnyawaḷi, Singal & Mu 2009).

These local TNC subsidiaries, placed in the context of a 'cluster' and operating within an individualistic culture, are more likely to seek resources from outside the TNC to support an innovation orientation. Cultural traits such as individualism and collectivism strongly influence ways of thinking. Specifically, they influence how members of a culture process, interpret, and make use of a body of information and knowledge. If the local subsidiary faces high strategic vulnerability, it is likely to seek new partners to mitigate threats and to improve its strategic position. If the organizational culture is supportive, then relationship for knowledge ties is more likely with sister subsidiaries because of the shared culture (Gulati, Noharia & Zaheer 2000). Even if there is perceived competition for financial, human or technical resources, or for power and institutional legitimacy between TNC subsidiaries, they can exhibit co-opertition (Luo 2005) seeking to ease value creation (through cooperation) and value capture (through competition). Subsidiaries with high mutual dependence pursue uncertainty reduction and take on the costs of collaboration with the aim of developing mutually satisfactory knowledge exchange relationships (Casciaro & Piskorski 2005). Inter-unit knowledge sharing relationships – both between sister subsidiaries and between subsidiaries and HQs, play a significant role in this respect (Birkinshaw, Hood & Jonsson 1998; Holm & Sharma 2006). The greater the ambiguity and acquisition difficulty of the knowledge involved, the greater the emphasis on joint knowledge sharing and development (as opposed to just knowledge transfer) (Adenfelt & Lagerström 2008).

An organization's relationship resources can be conceptualized as consisting of trust and commitment; 'trust' is defined as one party's confidence in its partner's reliability and integrity (Kotabe, Martin & Domoto 2003; Leonidou, Katsikeas & Hadjimarcou 2002; Morgan & Hunt 1994), and 'commitment' is defined as the long-term orientation of a party toward a partner (Dwyer, Schurr & Oh 1987; Morgan & Hunt 1994).

When knowledge sharing is limited across an organization, the likelihood increases that knowledge gaps will arise, and these gaps are likely to produce less-than-desirable work outcomes (Baird & Henderson 2001).

Thus firms and subsidiaries might engage in alliances for various incentives. However within the context of innovation, the main motives are usually deriving from knowledge theory. This stresses the importance of learning and knowledge creation, leading to innovation that in turn leads to competitive advantages (Seppälä 2004). Generally the main cooperation-engaging motivator is the learning partner's knowledge absorptive capabilities (Colombo 2003). Thus the transfer occurs through individuals, who interact with each other as a result, change themselves, others, the organization, the culture and the environment (Nonaka & Toyama 2003).

Given the heterogeneity of countries, every subsidiary business unit creates knowledge necessary to meet the demands of its local environment, thus leading to the gradual creation and utilization of location-specific and unit-distinctive knowledge (Forsgren, Johanson & Sharma 2000). The global competitive advantage of the corporation rests upon the capacity to tap into the location-specific knowledge and assimilate it advantageously into global knowledge available throughout the corporation (Bartlett, Doz & Hedlund 1990). The ability to exploit the local knowledge places great demands on adopting organizational forms that support global knowledge creation and sharing (Gupta & Govindarajan 2001; Snell et al. 1996).

With the rise in labor costs, global expansion, and corporate mergers, work groups and project teams are often used as a means for connecting members who are dispersed across different geographic locations, who represent different functions, who report to different managers, or who work in different business units (DeSanctis & Monge 1999; Maznevski & Chudoba 2000). Work group members in different locations who utilize ICT collaboration tools are also likely to have different social networks outside of the group because members run into different people in the hallways, see different people at meetings, and communicate socially with different people (Conrath 1973).

TNCs rely on many kinds of work groups involved in innovation activities, to develop products, improve services, and manage innovation processes. For these groups to be effective, structures and processes must be in place to foster members working together (Cohen & Bailey 1997; McGrath, 1984). Numerous studies have demonstrated benefits for work groups that engage in information exchange and task-related communication within the group (Allen 1977; Tushman 1979). Though successful work groups take advantage of the perspectives, talents,

and ideas of different members, a well-designed group also creates a common understanding of the organizational context through sharing knowledge externally to the group or subsidiary about the work (Hackman 1987). Previous research has shown that knowledge sharing outside of the group is positively related to performance (Ancona & Caldwell 1992; Brown & Utterback 1985). It is increasingly clear that knowledge transfer, both within and outside of groups, plays a fundamental role in the effectiveness of organizations (Argote et al. 2000; Argote, McEvily & Reagans 2003; Dawes, Gharawi & Burke 2012).

Cross-border transfer of organizational knowledge is most effective in terms of both viscosity and velocity when the type of knowledge (i.e. structured, human, or social) being transferred is simple, explicit and independent and when such transfers involve similar cultural contexts. In contrast, transfer is least effective when the type of knowledge being transferred is complex, tacit, and systemic and involves dissimilar cultural contexts (Bhagat et al. 2002).

2.5.5 Organization summary

This review enables the managers of transnational organizations to observe the changes in behavior and expectations of employees across the distinct cultures of regional and country-based subsidiaries and helps them formulate their business strategies differently, suitable for distinct cultures. Training for the knowledge of different cultures is a crucial implication for the organizations encouraging knowledge sharing to support the adoption of innovation processes. This 'culture by culture' focus supports local product, services and process adaptation resulting in improves quality perception and operational performance (Dawes, Gharawi & Burke 2012).

The posit that the adoption of information and communication (ICT) technologies has 'destroyed distance' by enabling rapid information diffusion across organizational and territorial borders wrongly assumes that understanding is also rapidly diffused, by conflating spatial reach with social depth (Morgan, K 2004).

2.6 Demographics

Extant literature suggests that gender (Jarvenpaa & Staples 2000), age (Jarvenpaa & Staples 2000), work experience (role & tenure) (Constant, Kiesler & Sproull 1994), and education level (Constant, Kiesler & Sproull 1994) may affect knowledge sharing behavior. The role of expatriates in knowledge sharing has also been

explored by a number of researchers (Black et al. 1991; Bouquet, Hébert & Delios 2004; Downes & Thomas 2000; Doz, Santos & Williamson 2001; Hébert, Very & Beamish 2005; Lam 1998; Madhok 1997; Martin & Salomon 2003; Peterson, Napier & Shim 1996; Villinger 1996).

This leads to the identification of the third gap question:

***GQ4**. How do the demographic variables influence Knowledge Sharing Behavior and Workplace Innovation in a transnational corporation and what is their significance?*

2.6.1 Expatriation as a knowledge sharing strategy

An important competitive advantage of transnational corporations lies in their ability to create and transfer knowledge from headquarters to subsidiaries using expatriates (Edström & Galbraith 1977; Harzing 2001; Hocking, Brown & Harzing 2004), and vice versa (Bartlett & Ghoshal 1989; Kogut & Zander 1993).

Chang et al. (2012) identified three specific expatriate competencies of ability, motivation, and opportunity seeking as critical for successful knowledge sharing. Ability refers to the knowledge, skills, and experience needed to perform a task and motivation refers to the willingness (or the degree to which a person is inclined) to perform it. In addition they found subsidiary recipient absorptive capacity—the ability to recognize the value of external knowledge, assimilate it, and apply it to subsidiary operations (Cohen & Levinthal 1990) also mattered (Gupta & Govindarajan 2000; Szulanski 1996). Successful knowledge sharing depends on the characteristics of both the source and the recipient of knowledge (Chang, Gong & Peng 2012; Easterby-Smith et al. 2008; Szulanski 1996).

2.7 Gaps

Based on a review of literature on knowledge sharing and workplace innovation, five important gaps appear as:

There is no clear definition of knowledge sharing and the current use of the term is often confused with knowledge transfer and information transfer. This has implications for measurement and the findings of prior studies and leads to the potential consolidation of knowledge sharing literature (Chou & Tang 2014; Ho, Hsu & Oh 2009).

Secondly, there is no substantial literature on knowledge sharing among the employees of transnational corporations (see Definitions and Abbreviations).

The current focus has been given to knowledge management systems perspectives or technology initiatives broadly, but knowledge sharing behavior has received little attention (Chou & Tang 2014).

Whereas, other than technology, there are numbers of antecedents such as behavior, organization structure, culture etc., which impact the extent of knowledge sharing.

Thirdly, very few studies have been made in studying behavioral aspects of knowledge sharing in relation to the workplace innovation behavior (see Appendix C. Literature Review Search Strategy Method).

Scant attention has been directed toward understanding the role of individual behavior traits or perceptions of team behaviors in relation to the knowledge sharing and innovation among the employees of a transnational corporation.

Fourthly, empirical studies with large sample sizes are few and sample population frames across multiple countries and with a focus on knowledge workers (not university students) are rare (see Appendix D. Representative studies of knowledge sharing and behaviors – 2000 to 2014).

Fifthly, the focus on demographic characteristics (such as gender, education, role, tenure, expatriate experience and geographic operating entity) and their linkages to knowledge sharing and innovation are neglected. In addition, the focus on knowledge intensive industries, such as the domain in which the research sample population operate, is limited (See Appendix D. Representative studies of knowledge sharing and behaviors – 2000 to 2014).

Thus, this thesis is intended to fill these research gaps and to examine how individual behavioral characteristics and individual perceptions of team behavior characteristics affect Knowledge Sharing Behavior and Workplace Innovation within a transnational corporation perspective, as the current state of knowledge sharing and workplace innovation in this context is limited.

The novelty of the thesis lies with examining the role of knowledge sharing in the workplace innovation of employees of a transnational corporation.

In the research population, groups/teams, permanent or client project related, typically do more joint hands-on work than inter-unit meetings because the group work toward a clearly defined mutual objective, and this is likely to build a stronger shared knowledge experience base.

Cross-operating entity teams, necessitate richer interaction because their task is more novel, complex, and ambiguous than that of client project groups, and their interdependence is higher due to joint reporting and reduced cognitive distance.

Previous research (Black et al. 1991; Bouquet, Hébert & Delios 2004; Downes & Thomas 2000; Doz, Santos & Williamson 2001; Hébert, Very & Beamish 2005; Lam 1998; Madhok 1997; Martin & Salomon 2003; Peterson, Napier & Shim 1996; Villinger 1996) has associated this type of behavior with expatriate strategies and with transnational corporation structures.

Knowledge sharing is a key component in a TNC's effective operation and that it is built through the kind of collaboration found in cross-border teams and expatriation (Mäkelä & Brewster 2009).

Because such design usually enhances interdependence and often uses teamwork, it implies greater communication between co-workers and greater opportunities and need to share knowledge in order to accomplish organizational goals. In this thesis, this team interaction is represented by the two scales; Knowledge Absorptive Capability (AC) and organization citizenship behavior – voice (OCB). These are measured as the individual's interpretation of group behaviors.

The proposed research work has the following research objectives: (a) to identify and examine the antecedents of knowledge sharing; (b) to examine the relationship between Knowledge Sharing Behavior and Workplace Innovation among the employees of a transnational corporation; and (c) to study the relationship of the effect of Knowledge Sharing Behavior on Workplace Innovation.

Table 2.3 *Gaps table*

Gap	***Reference***	***Addressed by***	***Question***
No clear definition of knowledge sharing and the current use of the term is often confused with knowledge transfer and information transfer.	(Ipe 2003); (Pulakos, Dorsey & Borman 2003); (Szulanski, Cappete & Jensen 2004); (Yi 2009)	Review prior definitions and clearly state which definition is being used in this thesis. Structure research design to support this definition.	GQ1.What is the definition of knowledge sharing?
No substantial literature on knowledge sharing among the teams and employees of transnational corporations.	(Almeida, Song & Grant 2002); (Bock et al. 2005); (Mäkelä & Brewster 2009); (Nessler & Muller 2011)	Review current literature in this domain. Structure research design to support this focus.	GQ2.What are the behavioral factors influencing knowledge sharing and workplace innovation in a transnational corporation?
Very few studies of the behavioral aspects of individual's knowledge sharing in relation to the workplace innovation behavior.	(Foss 2009); (Fenwick 2008); (Song, JH & Chermack 2008); (Geithner 2011); (Felin & Foss 2009)	Review current literature in this domain. Structure research design to support this focus.	
Empirical studies with large sample sizes, a sample population frame across multiple counties and a focus on knowledge workers (not university students) are rare.	(Block 2013b); (Mäkelä & Brewster 2009); (Sié & Yakhlef 2009, 2013); (Lu, Leung & Koch 2006)	Structure research design to support this focus. Selection of sample population frame and target organization. Data collection (and survey) design.	GQ3.How will the sample selection and data collection be undertaken for this thesis?
The focus on demographic characteristics (gender, education, role, tenure, expatriate experience and geographic operating entity) and their linkages to knowledge sharing and innovation are neglected.	(Constant, Kiesler & Sproull 1994); (Downes & Thomas 2000); (Bouquet, Hébert & Delios 2004);(Jarvenpaa & Staples 2000);(Reychav & Weisberg 2010); (Block 2013b)	Structure research design to support this focus. Selection of sample population frame and target organization. Data collection (and survey) design.	GQ4.How do the demographic variables influence knowledge sharing and workplace innovation behaviors in a transnational corporation and what is their significance?
			GQ5.What are the behavioral antecedents of knowledge sharing and how they are related with the consequences of workplace innovation in the context of transnational corporations?

2.7.1 Addressing the gaps

***GQ1**. What is the definition of knowledge sharing?*

Will be answered by reviewing the relevant literature in the field of knowledge sharing.

***GQ2**. What are the behavioral factors influencing Knowledge Sharing and Workplace Innovation in a transnational corporation?*

Will be answered by reviewing the relevant literature in the fields of knowledge sharing behavior, workplace innovation behavior and organizational structure, in particular, knowledge intensive and transnational organizations.

***GQ3**. How will the sample selection and data collection be undertaken for this thesis?*

Will be addressed in the design of the research process and during negotiation with the research candidate organization.

***GQ4**. How do the demographic variables influence Knowledge Sharing Behavior and Workplace Innovation in a transnational corporation and what is their significance?*

Will be addressed in the design of the research analysis process and the selection and interpretation of the appropriate statistical techniques.

***GQ5**. What are the behavioral antecedents of Knowledge Sharing and how they are related with the consequences of Workplace Innovation in the context of transnational corporations?*

Will be addressed by this thesis.

2.7.2 Resultant research questions and related hypotheses

The gaps and research opportunities identified during the literature review process, resulted in the following research questions and their supporting hypotheses:

RQ1. What is the relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?

H1. The dimensions of Knowledge Sharing Behavior have a significant effect on Workplace Innovation Climate.

H2. The dimensions of Knowledge Sharing Behavior have a significant effect on Individual Innovation.

H3. The dimensions of Knowledge Sharing Behavior have a significant effect on Team Innovation.

H4. The dimensions of Knowledge Sharing Behavior have a significant effect on Organization Innovation.

RQ2. Is there a difference in perception among demographic groups towards Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?

H5. There are differences in perceptions among demographic groups toward the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

RQ3. To what extent do demographic group characteristics affect Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?

H6. Demographics characteristics will significantly affect the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

RQ4: To what extent does the measurement model representing the effect of Knowledge Sharing Behavior (KSH) on Workplace Innovation (INNOV), fit the data gathered from within the transnational corporation sample population.

H7: The measurement model representing the effect of KSH on INNOV significantly fits the data gathered from transnational corporation.

2.8 Conceptual Framework Model

The aim of this thesis is to gather evidence to test the research questions that examine the relationship between Knowledge Sharing Behavior and Workplace Innovation in a transnational corporation. This thesis also investigates the demographic factors such as age, gender, qualification, working tenure, education level and tenure, and their relationship with Knowledge Sharing Behavior and Workplace Innovation. The respondents in this thesis are 860 employees of an employee owned transnational company in the earth sciences and services field.

The conceptual framework demonstrated below (Figure 2.2) highlights the interaction of seven demographic factors of these employees, four dimensions of Workplace Innovation and nine dimensions of Knowledge Sharing Behavior. The researcher acknowledges that the dimensions of Workplace Innovation and Knowledge Sharing Behavior are not limited to the dimensions contained in this thesis; however this is done to maintain the scale consistency.

The dimensions of the Workplace Innovation Scale are not altered or transformed. The scale to measure innovation is the Workplace Innovation Scale (WIS) (McMurray & Dorai 2003) which is a 21-item Likert scale ranging from 1 to 5. This

scale is most relevant in terms of reliability, validity and accuracy, and has been utilized in various recent studies (Baxter 2004; McMurray & Dorai 2003; Von Treuer 2006). The Cronbach's Alpha reliability coefficient is 0.73-0.90 which means that WIS is a proven reliable scale.

The scale to measure knowledge sharing is developed consolidating a number of sub-scales – Attitude, Subjective Norms, Intent, Behavior, Perceived Behavioral Control and Self-Worth from Fishbein (1980) and Fishbein and Ajzen's (1975) TRA/TPB research together with the Voice subscale from OCB (Constant, Kiesler & Sproull 1994), the Knowledge Absorptive Capacity scale (Cohen & Levinthal 1990; Mariano & Pilar 2005) and Knowledge Sharing Activity behavior (developed by the author), the resultant scale is called the 'Knowledge Sharing Behavior Scale' - KSB.

The final construct joins the KSB and the WIS together to form a new scale, the Knowledge Sharing and Innovation Behavior (KSIB) scale.

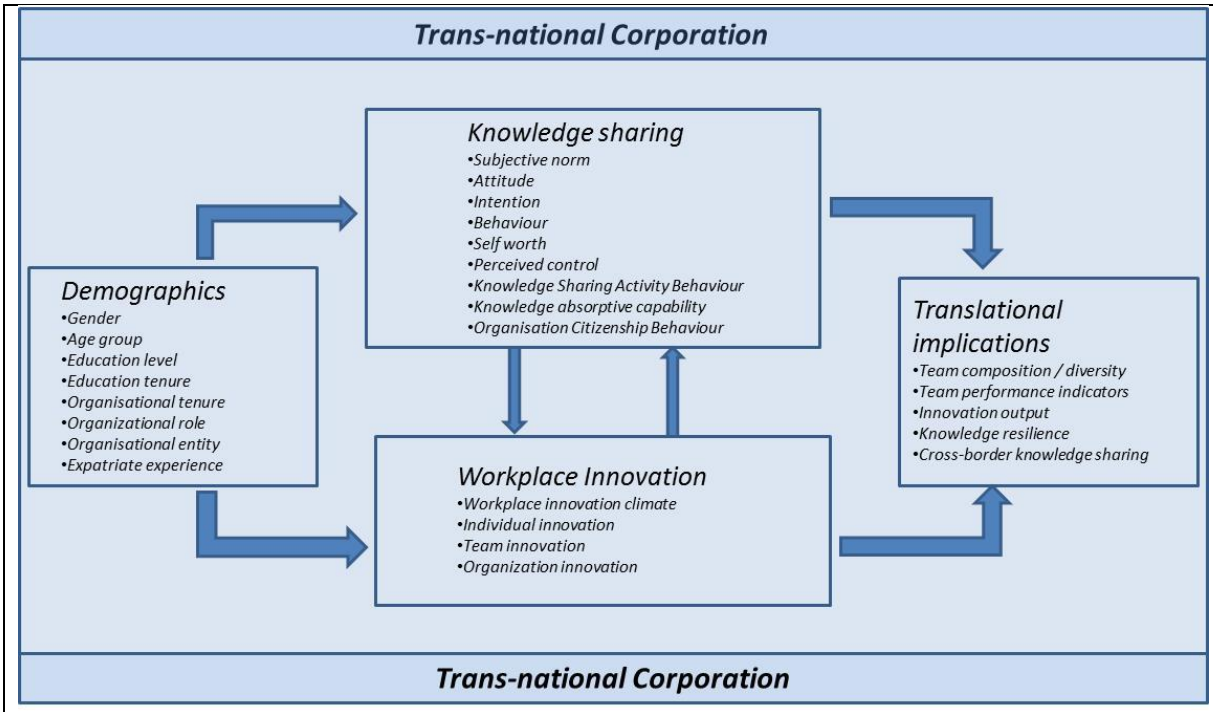


Figure 2.2 Proposed Conceptual Framework Model

Source: author

2.9 Summary

The purpose of this chapter was to examine the literature of prior research in the subject domains of knowledge sharing, innovation and organizational structure relevant to a transnational corporation.

The review uncovered the confusion associated with the academic use of the words 'diffusion', 'transfer' and 'sharing' where they are used interchangeably in research concerning innovation and knowledge.

It also uncovered confusion relating to the unit of measure concerning workplace learning, especially when relating to knowledge acquisition and/or creation.

These confusions are compounded when place in a cross-border or transnational setting.

The vast field of international business research includes many of the findings of the 'knowledge based view' (Peng 2001, pp. 808-809; Zoogah & Peng 2011). However, there seems to be a gap in the field of transnational business especially in research combining knowledge sharing and innovation. Consequently, there is an apparent need for further research in intra-organizational knowledge sharing and for innovation.

This researcher concluded that very little research has been conducted on the con-jointed domains of knowledge sharing, innovation and transnational organizational structures when behavior factors are considered,

It could be argued that this study is essential in bringing intra-organizational knowledge sharing and innovation literature closer together by highlighting the role of knowledge sharing as a behavioral process.

With a view to establishing a model for Knowledge Sharing Behavior and Workplace Innovation implementation within and between country subsidiaries of a transnational corporation, the major purposes of this review have been to:

- Identify established definitions of knowledge, knowledge sharing, workplace innovation and the individual behaviors that influence them.
- Confirm the concept of knowledge sharing in a transnational organizational environment.
- Identify Knowledge Sharing Behavior factors generally accepted as influencing Workplace Innovation.

Chapter 3. Methodology

3.1 Objective

The purpose of this chapter is to justify and explain the research method used in responding to the research questions/ hypotheses and in conducting this quantitative method study.

The previous chapter provided an overview of the research literature relevant to the research objects pursued. This chapter covers and reflects on issues regarding research objective and hypotheses, research paradigm, research design, and methods employed for sampling, data collection and analysis. As well, credibility and ethical issues within the context of this study are addressed.

3.2 Introduction

To identify the appropriate research methodology relevant to the study, the researcher first needs to consider the dominant purpose of the study. To assist in determining the purpose, social research can be classified into four categories: to explore a new phenomenon (exploratory); to explain why or how something is happening (analytical or explanatory); to describe a phenomenon as it exists (descriptive); or to predict certain phenomena (predictive research). Little is known about the topic when the researcher begins to study it. Neuman (2009a) points to the fact that there are few guidelines for exploratory researchers to follow and recommends exploring all sources of information and taking advantage of serendipity. Studies may have multiple purposes, however for the researcher one purpose is usually dominant, helping the researcher to achieve a better understanding of the topic (Babbie 2007; Neuman 2009a).

The research approach to a topic as broad and deep as knowledge sharing and innovation within a transnational corporation, presents significant challenges both in the research and in the testing methodology. This chapter will describe the perspective that was adopted for the testing strategy, the approach that was selected, and the justification for that approach.

As McMurray et al. (2004) point out, decisions on the reasoning process/processes of a research study depend on the nature of the phenomenon under investigation. They further argue that choice of an inductive process will be more logical when little is known about the topic.

In this thesis a quantitative research strategy was adopted and quantitative methods were positioned to test the hypotheses. The theoretical model and the hypotheses for the empirical investigation were developed based on literature review.

The questionnaire used in the data collection was developed based on previous knowledge sharing and workplace innovation research. The data collection was conducted using a web-based questionnaire survey using the Qualtrics survey engine.

Access was negotiated and data was collected from a Canadian-based, employee-owned knowledge intensive professional services corporation because one objective of the study was to understand the influence of Knowledge Sharing Behavior and Workplace Innovation behaviors of employees in a transnational organizational context. The sample was selected by random stratified sampling.

This thesis has collected data and additional demographic characteristics. Data was collected from seven geographic operating entities representing 26 countries. However, conducting detailed group analysis or including other demographic variables in the research model is not part of the scope of this thesis.

3.3 Ontological & Epistemological Overview

The idea for this research came from the author's experience working in multi-cultural environments within a transnational corporation, and witnessing the behavioral traits that people from diverse backgrounds exhibited when sharing knowledge. It was felt that there were general patterns and similarities, blended with cultural and personal individuality, but that they were subtle and difficult to define.

Thus, the ontological approach of this thesis was to use the author's experience as a starting point to formulate and attempt to answer the research questions. At the beginning, the author had a crude outline of aspects for how a transnational setting may influence the way knowledge is shared, and that outline evolved as the author completed the literature review, reflective learning, and research. The author sought to refine the scope by focusing on aspects of knowledge sharing within innovation initiatives and how these are enacted within a transnational organizational structure. As with many journeys, the end is the beginning, and the author found the initial hypothesis to be rather durable. Thus from an ontological

perspective, the author began the journey with a goal in mind, sought expert advice and directions along the way, and found the goal (model) described in somewhat different terms.

From an epistemological perspective, the question was if the model discovered was in fact valid: How much bias was introduced because of the author's prior experience? Did the research embrace enough of the published literature? How would the author test the hypothesis in the most unbiased way possible? The answers to these questions lie in the basic approach to the research. From the beginning, the author sought to find literature from as many relevant related disciplines as possible. This avoided the bias of focusing only on knowledge management literature or on what the author thought would be a fit for the hypothesis. The author pursued the various disciplinary pathways by attempting to spot connections, and to follow the leads out to other disciplines. Once the author found the references pointing back to previous pathways, other disciplines were explored.

Having uncovered a rich diversity of research, the author used the exegetical approach to look for the threads and connections, and this evolved into the structure for the empirical testing.

3.4 Research approach

At the beginning of this research journey, the main question was to consider how to best structure the research for this topic. The first area to be explored was the potential use of case study research. Yin (1994) provides an excellent review of this approach. He also provides a table that sets forth five different research strategies, including the case study approach, and discusses the appropriate usages of each.

Strategy	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary Events?
Experiment	how, why?	Yes	Yes
Survey	who, what, where, how many, how much?	No	Yes
Archival analysis	who, what, where, how many, how much?	No	Yes/No
History	how, why?	No	No
Case study	how, why?	No	Yes

Figure 3.1 Research Testing

Source: Yin 1994, Fig. 1.1

The primary focus of this research was to establish what the knowledge sharing behavioral traits/dimensions of a transnational organization are, and secondarily, to explore how and why they apply within workplace innovation. As the Figure 3.1 indicates, the survey analysis strategy offers an approach to answer the what (traits/dimensions) and the where (workplace innovation).

The next major question was whether to take a qualitative or quantitative approach with the survey.

Prior experience indicated that much of the social and managerial testing that was conducted began with qualitative data based on a Likert scale measurement (e.g. strongly agree to strongly disagree), and was then transferred into a quantitative statistical analysis.

Qualitative and quantitative methods are based on different research paradigms in social science research and are often seen as different extreme ends of the methodology continuum (Fielding & Schreier 2001; Hussey & Hussey 1997; Neuman 2009a; Subramaniam 2005; Suen & Ary 1989).

Neuman (2009b) argued that both methods have the same origin; that quantitative methods are a simplification of qualitative methods and can only be meaningfully applied when qualitative methods have shown that simplification is possible.

With such a broad multifaceted and multidisciplinary topic, the challenge for the research and testing was vigilance to scope creep; how to maintain research focus

when presented with a range of interesting and intriguing propositions that had the potential to distract from the main focus of this research.

3.5 Research design

This section articulates the methodological approach and research model used in this study. Underpinning the research approach and research framework of the study is flow (Figure 3.2) of the research process.

Research design activity is about making decisions regarding the different aspects of a research project. The first activity requires deciding on a research strategy, choosing between an inductive, deductive, retroductive or abductive approach. Following an inductive strategy approach requires establishing universal generalizations to be used as explanations. A deductive approach requires testing theories to eliminate the false ones and corroborate the others. Alternatively the goal of a retroductive strategy is to discover the underlying mechanisms explaining observed regularities, whereas taking the abductive approach is to describe and understand the social world (Blaikie 2010; Crowther 2012).

There are two different approaches to the strategy of scientific inquiry in terms of theory building and testing, namely those of deduction and inference or induction. While the purpose of deductive research is to test the validity of proposed theories in real world situations, there are references to the emergence of categories, themes, and patterns from empirical data in inductive analysis (Janesick 2000; Lancaster 2005).

Alternatively, inductive reasoning is applicable to many qualitative studies, as well as to a number of quantitative research works (McMurray, Pace & Scott 2004). As McMurray, Pace & Scott point out, decisions on the reasoning process/processes of a research study depend on the nature of the phenomenon under investigation.

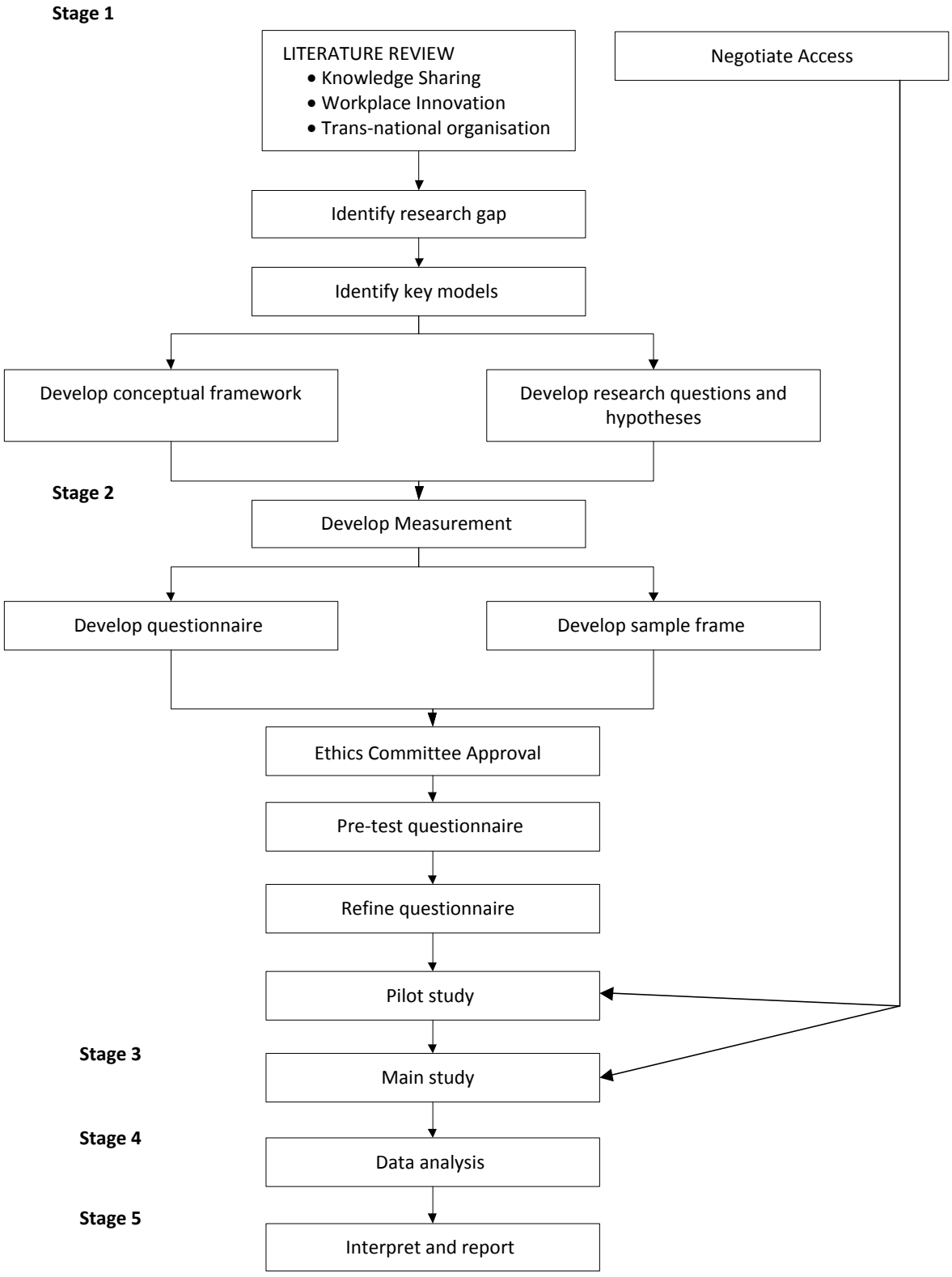


Figure 3.2 Research design flow

Source: author, (adapted from Satch 2014)

According to De Vaus (2002, 2003), in order to test a theory, theory is used to guide the researcher's observations, moving from the general to the particular. The first stage is to specify the theory to be tested. The second stage is to derive a set of conceptual propositions, i.e. the nature of the relationship between two factors.

The third stage involves the process of translating abstract concepts into something more concrete and observable. Operationalizing a concept results in clear and measurable indicators so that we have a very clear idea of what data to collect. Once collected (stage four), the data are analyzed (stage five) to see if the propositions are supportable, and therefore how much support there is for the theory. Finally, in stage six, an assessment of the results will usually show that the theory is partly supported but that there are results that are conflicting or confusing. Consequently, the initial theory is modified to take account of the observations made, and the modifications are tested rigorously.

The research in this thesis is framed in a quantitative tradition, therefore in the deductive stream of research. The research question is informed by the Theory of the Reasoned Action (TRA), the Theory of Planned Behavior (TPB) and by other theories, as explained in Chapter 2. These theories are quantitative in nature, therefore it was deemed appropriate to extend previous theory in a way that can be compared with previous research.

Thus the data was analyzed using quantitative and multivariate analysis techniques in accordance with Hair et al. (2010).

3.6 Quantitative Method

Quantitative research uses the language of variables, hypotheses, units of analysis and causal explanation.

3.6.1 Unit of analysis

Individual employees are the main element in the knowledge sharing activity. When employees get together and are involved in knowledge-based discussion, they share their personal knowledge with their colleagues and the common ground of both parties is increased. Thus knowledge, regardless of its nature e.g. tacit, explicit, formal or informal, must be circulated in order for the knowledge to be beneficial to the individual and to the organization. Knowledge sharing is therefore a dyadic activity.

For this reason, the role of the team or workgroup should also be considered but is measured as perceived by the individual responding to the survey.

Therefore, the unit of analysis is the *individual*.

3.6.2 Sample selection and size

According to Kelloway (1998), a sample size of at least 200 observations is generally required. Marsh, Balla and MacDonald (1988) also argued that parameter estimates may be inaccurate in samples of less than 200. Bentler and Chou (1987) suggested a different approach with the ratio of sample size to estimated parameters at between 5:1 and 10:1.

As there are thirteen factors in the KSIB construct and the survey response (after cleansing) was n=780, this sample is deemed to exceed these criteria.

3.6.3 Target population

The sample population frame setting for this thesis research is a global, employee-owned organization providing independent consulting, design and construction services in the specialist areas of earth, environment and energy. As such they are classed as a part of the knowledge intensive professional services sector.

They have been in existence for over 50 years and the 8000+ employees deliver services from more than 180 offices world-wide. Because of employee ownership and a strong internal culture, together with low staff turnover, they are faced with the retirement of 15% of senior staff in the next three years (private briefing), the corporation has recently increased their interest in the development of knowledge sharing practices in order to maximize the general efficiency and technical capabilities of the corporation. Since 2012, the corporation focused on innovation as the means of maximizing efficiency and technical capability and has initiated a number of programs to harvest ideas and to share their knowledge, but acknowledge that this initiative still remains a challenge.

The targeted population consisted of employees of seven regional subsidiaries in Africa, Asia, Australasia, Canada, Europe, South America and the USA. These employees resided in 29 countries.

3.6.3.1 Sampling process

The sample population invited to participate in this research study were randomly selected from each geographic region, using a stratified random sampling method. The strata used in this sampling are employee geographic work locations (see Table *3.1*) and 29% of the employee population was randomly selected. The sample was also selected to represent the gender balance of the corporation.

Table 3.1 *Population sample*

Geographic Location	*Total population*	*Random selection*
Africa	375	120
Asia	258	73
Australasia	1,326	373
Canada	3,762	1,153
Europe	880	281
South America	991	259
US	1,446	436
Totals	**9,149**	**2,695**

Source: author

A total of 2,695 questionnaires were administered to the random selected sample who were individually invited to the web-based survey. 28 members of the Corporate team were also invited to participate, giving a total of 2723). Of the 2,723 invited, 862 questionnaires were returned.

Note: the total population included a 'Corporate' cohort - the senior managers of the corporation across all geographies who supported this research and allowed access.

3.7 Instrument development

The instrument used in this thesis was developed by the researcher after an extensive review of theory and extant research related to the fields of knowledge sharing and workplace innovation behaviors.

The constructs and items used to operationalize the research were developed following the generally accepted guidelines of reliability and validity (Churchill 1979; Nunnally & Bernstein 1994) for multiple-item measures.

3.7.1 Extant research

A literature review was conducted for the concepts and definitions of the constructs, on the basis of which items of the constructs were developed, reliably tested and results published. Where applicable, measures tested in prior studies were adopted with changes in wording to suit the research sample population context.

To answer the research question and uncover the relationship between Knowledge Sharing Behavior and Workplace Innovation, the dimensions of each domain are explored, leading to the rephrasing of the research question as a series of hypotheses:

RQ1. *What is the relationship between Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

The prime research question is then deconstructed to support each of the dimension constructs proposed below.

H1. The dimensions of Knowledge Sharing Behavior have a significant effect on Workplace Innovation Climate.

H2. The dimensions of Knowledge Sharing Behavior have a significant effect on Individual Innovation.

H3. The dimensions of Knowledge Sharing Behavior have a significant effect on Team Innovation.

H4. The dimensions of Knowledge Sharing Behavior have a significant effect on Organization Innovation.

3.7.2 Instrument Dimensions

Considering Knowledge Sharing Behavior factors in terms of: Behavior; Intention; Attitude and Knowledge Sharing Activity. Additional factors of Subjective Norm, Perceived Behavioral Control, Sense of Self-Worth, OCB-Voice of work group members and Knowledge Absorptive Capability are included.

Considering Workplace Innovation, factors under examination are: Organization Innovation; Innovation Climate; Individual Innovation and Team Innovation.

Demographic factors are collected to provide moderation and comparative capabilities.

In the early literature, Sheppard et al. (1988) conducted a meta-analysis of 87 different studies, and found a frequency-weighted average correlation of 0.53 for the relationship between behavioral intention and actual behavior. In the recent IS literature, the positive relationship between individual's behavioral intention and actual behavior has received substantial empirical support by Lin and Lee (2004), Bock and Kim (2002), Millar and Shevlin (2003). Following these preceding studies, it is hypothesized that an individual's Knowledge Sharing Behavior is influenced by his or her behavioral intention to share knowledge.

These behavioral dimensions are explored using the following constructs:

3.7.2.1 Attitude

The KM literature reports the loss of power due to knowledge contribution as a barrier to knowledge sharing (Davenport & Prusak 1998; Orlikowski 1993). As knowledge is perceived as a source of power, knowledge contributors may fear losing their power or value if others know what they know (Gray 2001; Thibaut & Kelley 1986). Thus potential knowledge contributors may keep themselves out of a knowledge exchange if they feel they can benefit more by hoarding their knowledge rather by sharing it (Davenport & Prusak 1998; Kankanhalli, Tan & Wei 2005).

Ajzen's TPB defines attitude toward a behavior as 'the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question' (Ajzen 1991, p. 188). In a technology adoption context, the key behavior of interest is use of technology tools and systems; therefore, attitude toward behavior is an employee's affective evaluation of the costs and benefits of using the new technology. Within TPB, attitude toward a given behavior is determined by behavioral beliefs about the consequences of the behavior and the affective evaluation of the importance of those consequences on the part of the individual. This perspective is consistent with other models of technology acceptance, such as technology acceptance model (TAM), that conceptualize individual perceptions of usefulness based on instrumentality as being strongly related to attitude toward technology use.

3.7.2.2 Intention

Scholars in cross-cultural research argue that cultural factors such as group conformity and face saving in a Confucian society can directly affect intention (Bang et al. 2000; Tuten & Urban 1999).

Teh and Yong's (2011) research has proven that the individual's intention to share knowledge is an important factor influencing the actual knowledge sharing behavior among the IS personnel. Their result was consistent with the findings of Bock and Kim (2002), Millar and Shevlin (2003) and Lin and Lee (2004).

3.7.2.3 Behavior

In the early literature, Sheppard et al. (1988) conducted a meta-analysis of 87 different studies, and found a positive relationship between behavioral intention and actual behavior. In more recent information systems research literature, the

positive relationship has received substantial empirical support from Lin and Lee (2004), Bock and Kim (2002), Millar and Shevlin (2003). On the basis of these studies, it is apparent that an individual's Knowledge Sharing Behavior is influenced by his or her behavioral intention to share knowledge.

3.7.2.4 Subjective Norm

Within TPB, subjective norm is defined as 'the perceived social pressure to perform or not to perform the behavior' (Ajzen 1991, p. 188) and has received considerable empirical support as an important antecedent to behavioral intention (Bock et al. 2005; Mathieson 1991; Taylor & Todd 1995; Thompson, Higgins & Howell 1991).

Further, TPB views the role of the normative pressure to be more important when the motivation to comply with that pressure is higher (Morris, Venkatesh & Ackerman 2005; Venkatesh & Davis 2000; Venkatesh & Morris 2000).

Lee (1990) argues that the more individuals are motivated to conform to group norms, the more their attitudes tend to be group-determined than individual-determined. Thus, it can be posited that subjective norms regarding knowledge sharing will influence organizational members' attitudes toward knowledge sharing.

In the context of knowledge sharing, subjective norm has manifested itself as peer influence and the influence of superior members (Mathieson 1991; Taylor & Todd 1995). Similar arguments have been made (Lewis, Agarwal & Sambamurthy 2003; Venkatesh & Davis 2000) that subjective norms, through social influence processes (Fulk 1993; Schmitz & Fulk 1991), can have an important influence on knowledge sharing attitudes.

3.7.2.5 Perceived Behavioral Control

Ajzen's TPB is an extension of TRA (Ajzen & Fishbein 1980; Bock & Kim 2002). The main difference between TPB and TRA is the addition of Perceived Behavioral Control (PBC). According to Gentry and Calantone (2002), control beliefs are assessed in terms of opportunities and resources acquired (or not acquired) by the individual.

Items to measure behavioral Intention, Attitude, Subjective Norm and Perceived Behavioral Control were generated based on the procedures suggested by Ajzen and Fishbein (1980) and Ajzen (1985, 1991).

3.7.2.6 Sense of Self-worth

In an ongoing interaction setting such as knowledge sharing in an organization, appropriate feedback is very critical. When others respond in the way that has been anticipated, we conclude that our line of thinking and behavior are correct; at the same time, role taking improves as the exchange continues (Kinch 1963) according to role theory, which is the cornerstone of the symbolic interactionist perspective on self-concept formation (Gecas 1982; Kinch 1963). This process of reflected appraisal contributes to the formation of self-worth (Gecas 1971), which is strongly affected by sense of competence (Covington & Berry 1976) and closely tied to effective performance (Bandura 1978). Therefore, employees who get feedback on past instances of knowledge sharing are more likely to understand how such actions have contributed to the work of others and/or to improvements in organizational performance. This understanding would allow them to increase their sense of self-worth accordingly. That, in turn, would render these employees more likely to develop favorable attitudes toward knowledge sharing than employees who are unable to see such linkages.

Individuals characterized by a high sense of self-worth through their knowledge sharing are more likely to both be aware of the expectations of significant others regarding knowledge sharing behavior and to comply with these expectations.

In this regard, organizational members who receive feedback on previous knowledge sharing processes are more likely to recognize the value of the work of other members and the resulting enhancement of organizational performance (Bock et al. 2005; Teh & Yong 2011).

3.7.2.7 Knowledge Sharing Activity

The Knowledge Sharing Activity (KSA) factor has been developed based on work by Van den Hooff and van Weenen (2004), Van den Hooff, de Ridder & Aukema (2004) to reflect the behaviors of knowledge donating knowledge collecting, willingness and eagerness to share. The behavior of passion, identified by Sié and Yakhlef (2013) also informs the development of this factor. (See section 2.3.3.7 above).

3.7.2.8 Organization Citizenship Behavior

OCB refers to employee's discretionary behavior that is not formally rewarded by the organization's formal award system (Konovsky & Pugh 1994; Shore & Wayne 1993). OCB scholars proposed five main categories of OCB: altruism,

conscientiousness, sportsmanship, courtesy, and civic virtue (Organ 1988; Podsakoff et al. 1990). Later work by Organ and colleagues restructured the dimensions of OCB into seven overarching categories of OCB: helping (which includes altruism, courtesy, cheerleading, and peacemaking); sportsmanship; organizational loyalty; organizational compliance; individual initiative; civic virtue; and self-development (Organ, Podsakoff & MacKenzie 2006) in order to apply the OCB construct across a wider set of populations. One dimension identified in previous literature was the voice dimension as described (LePine & Van Dyne 1998; Moorman & Blakely 1995; Van Dyne, Cummings & McLean Parks 1995; Van Dyne & LePine 1998). This dimension is described as: participating in activities; making suggestions; or speaking out with the intent of improving the organization's products; or some aspect of individual, group, or organizational functioning. As such, this dimension is of interest to this thesis.

Recently Dekas et al. (2013) in studying the behaviors of knowledge workers, posited that a reconceptualized OCB (OCB-KW) could better explain worker behavior in this specific population and new organizational structure. Their research identified four new dimensions of employee sustainability: social participation; knowledge-sharing; and administrative behavior.

Dekas et al. (2013) defined their dimension of *knowledge sharing* as sharing what a person knows and distributing expertise to others, and included items such as 'teaching software to others' and 'participating in group meetings.' In finalizing their OCB-KW instrument, they excluded the knowledge sharing items as they were below their cut-off limit.

In a work environment, OCB helps to connect an interrelated work relationship between employees and develop altruistic motive with an organization (Bolino, Turnley & Bloodgood 2002). For example, altruism involves sharing knowledge with passion (Hsu & Lin 2008).

In other recent studies, Hsu and Lin (2008) and Teh and Sun (2012) postulated that individuals with higher OCB are more willing to share their knowledge and posit OCB to be positively related to Knowledge Sharing Behavior.

3.7.2.9 Knowledge Absorptive Capability

Organizational capability has been defined from multiple view points and new definitions are still being formulated (Jain 2007), among these are dynamic, integrative, absorptive, relational, multiplicative capability, etc. Cohen and

Levinthal (1990) outline that absorptive capacity of the firm is a specific organizational capability that allows the firm to absorb external knowledge and to manage it internally, creating value from its application. This can also apply to knowledge that is external to a workgroup, a department or a country subsidiary of a TNC.

In a changing business environment, the term 'capability' emphasizes the role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational resources and competencies to match the requirements of the changing environment (Teece, Pisano & Shuen 1997). Mowery, Oxley and Silverman (1996) say that a key factor in the 'dynamic capabilities' view of firm strategy is the acquisition of new capabilities through organizational knowledge creation and learning. Hence, knowledge is considered as a main resource which may create a long-term competitive advantage for an organization (Belkahla & Triki 2011).

Prior research has focused on absorptive capacity as an antecedent to knowledge transfer (Gupta & Govindarajan 2000; Lyles & Salk 1996; Minbaeva et al. 2003) but has not examined whether it moderates the relationship between knowledge sharing and workplace innovation.

3.7.2.10 Workplace Innovation

McMurray and Dorai (2003) and others (eg. Baxter 2004; Von Treuer 2006) have explored Workplace Innovation using the Workplace Innovation Scale (WIS). This scale measures, from a behavioral aspect, the support and practices for workplace innovation by individuals. This concept of innovation has linkages to knowledge and learning and is frequently viewed as an organization's capability, knowledge asset and resource. The WIS individualist perspective is based on the assumption that innovation originates within individuals (Amabile et al. 1996), and separately examines the four major factors of organization, climate, individual or team.

The factors that comprise McMurray and Dorai's Workplace Innovation Scale (WIS) are: Workplace Innovation Climate; Individual Innovation; Team Innovation; Organization Innovation.

3.7.2.11 Construct prior research summary

Table 3.2 *Knowledge Sharing Innovation Behavior Construct prior research*

Scale (items)	**Reference**	**Reported Cronbach alpha**
Subjective Norm (4)	(Cheng & Chen 2007)	0.875
	(Bock et al. 2005)	0.823
	(Teh & Yong 2011)	0.804
Attitude (3)	(Kankanhalli, Tan & Wei 2005)	0.95
	(Morris, Venkatesh & Ackerman 2005)	0.85
	(Bock et al. 2005)	0.85
	(Teh & Yong 2011)	0.933
Intention (4)	(Cheng & Chen 2007)	
	(Bock et al. 2005)	0.9237
	(Chennamaneni 2006)	0.924
	(Teh & Yong 2011)	0.897
Behavior (3)	(Cheng & Chen 2007)	0.816
	(Teh & Yong 2011)	
	(Teh & Sun 2012)	0.816
Perceived Behavioral Control (3)	(Chennamaneni 2006)	0.7
	(Taylor & Todd 1995)	0.7
Self-worth (4)	(Bock et al. 2005)	0.9114
	(Teh & Yong 2011)	0.945
Organizational citizenship behavior (3)	(Williams & Anderson 1991)	
	(Van Dyne & LePine 1998)	0.93
	(Teh & Yong 2011)	0.892
	(Teh & Sun 2012)	0.892
	(Cheng & Chen 2007)	0.892
Knowledge Sharing Activity (4)	(van den Hooff & de Ridder 2004)	donating = 0.85
	(Masrek et al. 2011)	0.77
	(de Vries, van den Hooff & de Ridder 2006)	eagerness = 0.76
Organizational Knowledge Absorptive Capability (4)	(Lee 2001)	0.898
Innovation Climate (5)	(McMurray & Dorai 2003)	0.89
	(Von Treuer 2006)	0.79
	(Baxter 2004)	0.89
Individual Innovation (6)	(McMurray & Dorai 2003)	0.77
	(Von Treuer 2006)	0.61
	(Baxter 2004)	
Team Innovation (5)	(McMurray & Dorai 2003)	0.76
	(Von Treuer 2006)	0.59
	(Baxter 2004)	
Organizational innovation (5)	(McMurray & Dorai 2003)	0.90
	(Von Treuer 2006)	0.73
	(Baxter 2004)	

3.7.2.12 Independent variables

As the study's theoretical model states, Workplace Innovation and Knowledge Sharing Behavior factors were measured as independent variables.

The first construct, 'Knowledge Sharing Behavior', was operationalized using nine factors comprising 32 items structured in nine factors (presented in the Table 3.2).

The second construct, 'Workplace Innovation' was operationalized using four factors and was based on the Workplace Innovation Scale (WIS) developed by McMurray and Dorai (2003) also presented in the Table 3.2.

3.7.2.13 Dependent variables

In the theoretical model, there are six latent variables (Behavior; Intention; Attitude; Knowledge Sharing Activity; Subjective Norm; Perceived Behavioral Control; Self-Worth) that represent the conditions of individual Knowledge Sharing Behavior.

Also, there are two latent variables (OCB-Voice; Knowledge Absorptive Capability) that represent the conditions of team or group Knowledge Sharing Behavior, a total of seven items.

In the questionnaire, 'Workplace Innovation' was operationalized with four factors (Organization Innovation, Innovation Climate, Individual Innovation, and Team Innovation) comprising twenty one items.

In this thesis, the analysis unit was the individual employee. The gathered data represents employee self-reports about their perceptions toward the measured constructs. All independent latent variables were measured using a five-point Likert-type scale with anchors ranging from one (strongly disagree) to five (strongly agree).

Multiple items and reverse coded items were used to increase the measurement accuracy.

3.7.3 Bias in instrument research

The potential for instrument bias exists in a number of areas when conducting survey research. These include:

Item bias:

Ambiguity: Questions should be specific and avoid questions that make the respondent uncomfortable in giving the answer to that particular question.

Unfamiliar terms and jargon: Respondents must be able to answer the questions easily, and they cannot do this if the survey uses unfamiliar words or jargon.

Poor grammatical format: Weak grammatical format can introduce bias.

Language differences: Items must have the same meaning when the questionnaire is given to populations speaking different languages.

Composite questions: Items should be singular and not include '*and / or*' which may cause confusion to the respondent.

Tarnai & Moore (2004), in reviewing experimental design noted that interviewers' greater familiarity with an established questionnaire may have contributed to their administering it more quickly. This, together with their relationship with the survey author, may lead to a 'familiarity bias' with expert panel feedback in pretesting.

3.8 Survey method

The first step of the quantitative research methodology was to design a survey instrument to collect data relating to the main constructs. Measurement for the constructs was developed on the basis of the literature review and similar scales (DeVellis 2011) used by current researchers in this field (see Appendix A. Definitions and Abbreviations).

To reach the sample population across multiple geographies within the research timeframe, it was decided to utilize a web-based survey.

The survey was developed and conducted using the Qualtrics 2013 web environment (http://www.qualtrics.com/).

3.8.1 Web based survey

The introduction of web-based online surveys has changed many aspects of questionnaires and expanded the researcher's ability to measure a range of phenomena more efficiently and with improved data quality (Couper et al. 1998) but also has presented many challenges for questionnaire design.

An implication is that web-based online survey instruments consist of much more than words, e.g., their layout and design, logical structure and architecture, and the technical aspects of using the Internet and related hardware and software to deliver them.

Web surveys require testing of aspects unique to that mode, such as respondents' monitor display properties, the presence of browser plug-ins, and features of the hosting platform that define the survey organization's server (Presser et al. 2004). In addition to testing methods used in other modes, Baker, Crawford and Swinehart (2004) recommend evaluations based on process data that are easily collected

during Web administration (e.g., response latencies, backups, entry errors, and break-offs).

The online web-based online survey method was chosen for this research because of its advantages including:

- Wide geographic reach i.e. reaching respondents from all over the world in less time, with low cost (Hewson et al. 2003; Neuman 2009a; Sue & Ritter 2007; Wright 2005).
- The ability to connect with a wide range of target audiences in one attempt (Hadley 2006).
- Easy administration of the survey and data (Perkins 2004).
- High web literacy and use among employee respondents.
- The high quality of data owing to lower non-response rates and more detailed, often more valid information from open-ended questions (Sue & Ritter 2007).
- Drawbacks to using this type of survey instrument include:
- Problems of non-observation (Lozar, Batagelj & Vehovar 2002), e.g. non-coverage when some members of the population of interest do not get the chance of being included in the sample (Sue & Ritter 2007).
- Unit non-response when the respondents to an online questionnaire have very different attitudes to those who choose not to participate in the survey (Madge 2006).

Selection bias: This includes the systematic bias of volunteer effect, because of the tendency of some individuals to respond to the survey as opposed to those who ignore it, which is regarded as a major factor in limiting the generalizability (external validity) of results. (Eysenbach 2004; Wright 2005).

Response rates: The calculation of response rates for online surveys is extremely difficult. It is recommended to use the recorded number of responses rather than attempting to calculate a response rate (Zhang 2000).

Technical problems: Various problems can occur with online questionnaires. A computer or server may crash, for example, especially if the questionnaire is very long (Madge 2006).

Because of the high web and technical literacy of employees within the target organization and their familiarity with prior web-based surveys, these drawbacks were minimal.

3.8.2 Scale used

The scales used in the questionnaire were non-metric scales, including nominal (including demographics such as age, sex, country of birth, country of residence, job role, education level and geographic operating entity) and ordinal scales (five point Likert scales).

While a majority of prior empirical studies (see Appendix D. Representative studies of knowledge sharing and behaviors – 2000 to 2014) used the five point Likert scale, a number used the seven point Likert Scale i.e. an odd-point scale.

In her research in western Asian countries, researcher Pei-Lee Teh advised that 'it is likely that the respondents might select mid-point (i.e., neither agree nor disagree, or neutral) of the scale because they are reluctant to make known their opinions on personal feelings' (personal correspondence 5 May 2012) and so she used an even point scale. Similarly, Chen et al. (1995) reported that Japanese and Chinese students are more likely than United States and Canadian students to select midpoints. Chen et al. (1995) further explained that the difference in response style between Western and Asians was consistent with the distinction often made between individualist and collectivist cultures. Therefore, odd-point response format will affect the quality of data collected in Asia countries.

The scale selected is dependent on the empirical setting for the research. Supporting this, Komorita and Graham (1965) reported that the reliability of a scale is independent of the number of scale points which are used to collect response to items. This finding is later supported by other studies (e.g. Elmore & Beggs 1975). Having said this, the number of scale points does not statistically affect the reliability of the ratings.

Based on discussions with the transnational corporation providing the sample population frame, a decision to use a five point Likert scale was made.

Additional open questions of corporate internal nature were asked. Reporting on these is outside the scope of this thesis.

3.8.3 Pre-test and Pilot test

The purpose of the pre-test is as an exploratory study in which researchers look for patterns, ideas or hypotheses, rather than to confirm or test a hypothesis. Thus the focus in exploratory research is to gain better understanding in order to satisfy the researcher's curiosity; develop insights into a new topic for research and to build familiarity with the subject area for more rigorous investigation at a later stage. While it rarely provides conclusive answer to problem, an exploratory study provides guidance on the direction of future research (Babbie 2007; Sapsford 2007).

Pretesting is the way to evaluate in advance whether a questionnaire causes problems for respondents and many experienced researchers declare pretesting indispensable. But research reports usually provide no or very limited information about 'whether questionnaires were pretested and, if so, how, and with what results' (Presser et al. 2004, p. 109).

Conventional pretesting is essentially a dress rehearsal, in which, for example, an expert panel reviews the survey for face and content validity then completes the questionnaire as they would during the survey proper. The panel members relate their experiences with the questionnaire and offer their views about the questionnaire's problems. Pretesting often reveal numerous problems, such as questions that contain unwarranted suppositions, awkward wordings, or missing response categories.

Sheatsley advises 'It usually takes no more than 12–25 cases to reveal the major difficulties and weaknesses in a pre-test questionnaire' (Sheatsley 1983, p. 226) and this is supported by Sudman, who maintained that '20–50 cases is usually sufficient to discover the major flaws in a questionnaire' (Sudman & Kalton 1986, p. 181).

Expert panel pretesting is classed as 'participating' in which respondents are informed of the pre-test's purpose (Converse & Presser 1986), and panel respondents are usually asked directly about their interpretations or other problems the questions may have caused.

Panel members typically rely on intuition and experience in judging the seriousness of problems and deciding how to revise questions that are thought to have flaws. Martin (2004) shows how reviewing panel feedback can reveal both the meanings of questions and the reactions respondents have to the questions.

In addition, the adoption of web-based online modes of administration poses special challenges for pretesting, as do surveys of single organizations, and those requiring questionnaires in more than one language (Presser et al. 2004).

Pretesting refers to all the essential steps involved in survey research before testing the final sample. According to Converse and Presser (1986), two pre-tests should be conducted before selecting the final sample, this included expert panel pre-testing (visual review followed by online test) and the pilot online test by a cohort from the final sample population. Presser and Blair (1994) and Willis (2004) identified where expert panel review was the most productive in identifying question problems. A study by Rothgeb, Willis and Forsyth (2007) produced contrasting results but was unable to account for the differences. Their study did find that there was a higher correlation between organizations in the same industry type.

The content validity of the instrument was based on careful selection of which items to include (Anastasi & Urbina 1997). These construct items were chosen so that they complied with the instrument specification based on a thorough examination of the subject domain in the literature review. Face validity is an estimate of whether an instrument appears to measure a certain criterion; this was also based on a thorough examination of the subject domain in the literature review. By pre-testing the survey instrument using an expert panel, the face validity of the instrument can be improved.

In this thesis, exploratory study; pre-test; pilot study will be conducted with a separate but similar population sample and the main research study will be conducted with the final sample population.

According to Sarantakos (2005) both an instrument pre-test and a pilot study are used by the researchers before the main study data collection begins. The purpose from these two instruments is to ensure that the planning of the main research study and its tools are correct, suitable, reliable and valid.

3.8.3.1 Pre-test

A pre-test was conducted in this research in order to check the mechanical structure of this research questionnaire and to ensure that the response categories to the questions were correct and there were no ambiguous, unclear or misleading questions (Babbie 2007; Sarantakos 2005). Babbie (2007) recommends that 10 people from the same group of the study or people to whom the questionnaire is

relevant are sufficient to do the pre-test. In this thesis a group of 32 people of similar work and experience profile external to the corporation are used for the pre-test.

3.8.3.1.1 Panel feedback

The researcher drafted a pool of 61 items based on 14 constructs and 15 demographic questions, which was submitted to an expert panel for review and to determine the face and content validity of the items. By using a panel of experts (56) to review the instrument specifications and the selection of construct items, the content validity of a test can be improved (Foxcroft et al. 2004).

This panel has expertise in the areas of research design, survey design, higher education, knowledge management, senior people management, commercial research and international management. The researcher instructed this panel to check the instrument items for clarity, length, time to complete, difficulty in understanding and answering questions, flow of questions, appropriateness of questions based on the research topic, any recommendations for revising the survey questions (e.g., add or delete), and overall utility of the instrument.

Based on their feedback, items are dropped and reworded where necessary. At this stage, the 61 items are reduced to 53 items and one multi-choice question added.

Apart from feedback re wording of item questions, three key issues are raised:

Question structure (constructs): five of the academic and three of the commercial researchers recommended that the construct items be given as sections with a brief explanation e.g. Section D: this section explores the individual's behavior in sharing knowledge.

Teams (demographic): four experts commented that employees could be members of multiple teams at the same time e.g. Project teams; virtual teams; communities of practice

Management structure (demographic): three experts raised the issue of matrix management and of outsourced management structures – traditional areas such as HR and Administration are separated from responsibilities such as quota achievement (sales); project management (time and outcome); technical support; and research and development.

Other comments re demographics are: relevance of marital status (dropped) and of parents' countries of birth – the suggestion is to replace these last two with 'language spoken at home'.

Table 3.3 *Panel demographic profile*

Panel Demographics	***No.***
Male / Female	42 / 14
Academic	16
Commercial Researcher	13
Senior Managers	22
Non Australian Cultural Background	19
International Experience	22

Based on panel feedback, items are reviewed and reworked to remove item bias discussed above. The before/after items are given in Statistical Analysis.

This modified questionnaire was then submitted for on-line response testing using the Qualtrics survey tool.

During this pre-test period, the panel returned 33 valid survey responses.

The responses times are evaluated and the following descriptive statistics resulted:

Table 3.4 *Pre-test descriptives*

Pre-Test Survey	Response Times
Mean	12.51
Standard Error	0.89
Median	11.60
Standard Deviation	4.46
Sample Variance	19.92
Kurtosis	-0.25
Skewness	0.60
Range	16.57
Minimum	6.00
Maximum	22.57
Sum	312.83
Count	25.00
Confidence Level (95.0%)	1.84

The reliability for each construct scale from the pretest panel response dataset (n=33) was checked using IBM SPSS vers 21 and Cronbach's alpha calculated. The resultant calculations showed that alpha exceeded .7 in each case (Robinson, Shaver & Wrightsman 1991b).

For the Attitude scale, the first question (q9) was reverse coded to reflect the negative nature of the question. This required reverse coding within SPSS (q9r).

3.8.3.2 Pilot test

Once a questionnaire has been developed, each question and questionnaire must be rigorously tested before final administration. De Vaus (2002) suggests that there are three stages to pilot-testing questions.

The first stage is question development; its purpose is to check that the questions are correctly phrased, that they evaluate respondents' interpretation and that the range of responses is sufficient. New questions have to be extensively tested and previously used questions must be considered in the context of their previous use compared to the anticipated sample. It is desirable that feedback from respondents is sought, however, because this is an intensive process, only a limited number of questions can be tested in this way. According to De Vaus (2003) the evaluation of the individual items should include six points: (1) responses should be varied, as it is of little use in the analysis if all respondents provide the same answer; (2) respondents should demonstrate the intended meaning of the question and their answers should be comprehensible; (3) redundancy, i.e. if two questions ask the same thing, there will be an inter-item correlation of more than 0.8; (4) inter-item co-efficiency should be above 0.3 and reliability should be above Cronbach alpha 0.7 ensuring that all items in a scale belong in that scale (De Vaus 2002); (5) non-response may occur for a variety of reasons, including too much effort to answer, intrusion, or similarity to other questions and can result in difficulties at the analysis stage because of serious reductions in sample size; (6) acquiescent responses mean that a respondent agrees with seemingly contradictory questions (De Vaus 2003).

The second stage is one in which the whole questionnaire is tested. Here not only comments from respondents are taken into account, but also their answers to the questions. This stage is usually undeclared, as respondents are not told that the questionnaire is still under development. In this stage there are four things that should be properly checked (De Vaus 2002). The first issue to be checked is flow; i.e. do the questions fit together and is there a smooth flow between sections. In this study each section is separated by a boxed instruction on how to complete the following section. The questionnaire then provides a continuity of assistance and narration, which ensures flow as well as brief pauses between sections. The second

issue is that where filler questions are used, the skip patterns must be appropriate. The third issue is that testing should include an estimation of the time needed to complete the questionnaire, so that respondents are prepared and have realistic expectations of their commitment of time. The fourth issue is that the respondent interest and attention should be noted and questions and/or sections recorded so that interest is maintained and answers are considered and reliable. De Vaus (2002) recommends that a pilot test should be conducted by the designer of the questionnaire and should involve a sample of between 75 to 100 respondents with similar characteristics as the main study sample so that feedback and corrections are relevant. In this research, completion times were estimated for the pre-test and pilot study (about 13 minutes). Respondents in the pre-test and pilot-study were asked by the researcher to provide feedback by making comments on a web form linked to the survey. Based on their feedback of the pre-test, minor changes to the wording of some questions were made to ensure that the questionnaire was easy to understand. Consequently, the researcher revised those questions before conducting the pilot study. Therefore, the pilot study feedback suggested that there was no need to further revise the questionnaire.

According to Sarantakos (2005) the pilot test is a very important stage in the research regarding the benefits that the researchers can obtain. The benefits that can be mentioned are that the researcher can estimate the cost and duration of this research phase, check the effectiveness of the survey's organization and the suitability of the research methods and instruments. In addition, the researcher can ensure that the sampling frame is sufficient, estimate the level of response and type of drop-outs, determine the degree of diversity of the survey population, familiarize with the research environment. It is also an opportunity to practice using the research instruments before the main field work begins, check the response of the subjects to the overall research design. This is a good opportunity for the researcher to discover the weakness, inadequacies, ambiguities and problems in all aspects of the research, so the research can be corrected before actual data collection takes place.

The final stage of a survey involves polishing the questionnaire by revising or shortening questions, ordering the questions and paying attention to the general layout and presentation of the questionnaire to ensure ease of use and clarity. Both the purpose of the questionnaire and the context in which the questions are being asked must be apparent (De Vaus 2002). This can be achieved by providing an

introductory or explanatory paragraph or covering letter and precise instructions about how to answer the questions (De Vaus 2003). For this thesis study, layout is improved through the use of an explanatory note at the beginning of the questionnaire which sets out the aim of the survey and thanks participants. Also, instructions at the beginning of each section guided respondents in how to answer questions with an example.

The resultant survey questionnaire was then pilot tested with a group selected randomly from a population similar to the target population – 170 responses were received of which 138 were useable. This stage led the researcher to drop three demographic questions and reword two construct items.

The instrument comprised 53 construct items and used a five-point Likert-type scale with values range as follow: 1 'Strongly Disagree', 2 'Disagree', 3 'Neutral', 4 'Agree', 5 'Strongly Agree'. Two items were one word responses and one item regarding work practices was a multi-choice question. There were 12 demographic questions.

The final instrument is named the 'Knowledge Sharing Innovation Behaviors Scale' (KSIB) and consists of two parts, one of which is a demographic part. The first part of the instrument consists of 53 items. Examples of instrument items include 'I intend to share knowledge with my co-workers if they ask'; 'For me sharing my knowledge is always possible '; and 'I am constantly thinking of new ideas to improve my workplace'.

Prior to the Main study 12 participants from the real sample population were selected in order to conduct the pilot. This group was excluded from the final sample but their responses were included in the analysis.

3.8.4 Survey translation

Surveys of organizations that require questionnaires in multiple languages pose special design problems. Thus, pretesting is still more vital in these cases than it is for surveys of adults interviewed with questionnaires in a single language. Remarkably, however, pretesting has been even further neglected for such surveys than for 'ordinary' ones. As a result, the methodological literature on pretesting is even sparser for these cases than for monolingual surveys of adults.

Willimack et al. (2004) outline various ways to improve the design and testing of single organization questionnaires. In addition to greater use of conventional

methods, they recommend consultation with subject area specialists and other stakeholders within the organization.

Questionnaire translation has always been basic to cross-national surveys, and recently it has become increasingly important for national surveys as well. Some countries (e.g., Canada, Switzerland, and Belgium) must administer surveys in multiple languages by law.

Triandis's (1972) 'back to back' translation method was utilized to guarantee clarity, accuracy and consistency of the information, and to ensure that the participants' comprehension would not be affected by the translation.

First, the questionnaire was developed in English Language. The second step was to use the translate feature provided by the Qualtrics Survey tool. This feature uses Google Translate to provide a basic translation.

The third step involved sending the translated and original English questionnaires to an expert in the languages of the population samples targeted, Spanish, French and Portuguese. The fourth step was that resultant translations were then back translated into English. In the final step, the resultant back translation and original English version compared. Where variations occurred, the variation was negotiated with a native language speaker. Respondents were able to choose their survey language, a Qualtrics feature.

3.8.5 Conducting the survey

This study used a self-administered computer-based Internet survey method in order to decrease the effect of social desirability and for ease in administration and analysis. Dwight and Feigelson (2000) found that testing by computer might reduce socially desirable responses as computer-administered questions may result in an increased sense of anonymity (Lautenschlager & Flaherty 1990). Several studies have found that participants identify the computer-based survey as being more anonymous than either paper-and-pencil or interview formats (Booth-Kewley, Edwards & Rosenfeld 1992; Lautenschlager & Flaherty 1990).

There are three benefits for Internet surveys: (a) there is no time limitation of accessibility by participants all over the world (Birnbaum 2004a); (b) it is flexible for design and implementation (Dillman, Smyth & Christian 2008); and (c) it is convenient for data coding and entry (Bartlett 2005). Negatively, Internet system

failure would potentially impact the response rate. Allowing re-entrant capability within the survey reduced the risk of internet connect failure.

The research data was collected in the form of a survey, with data being gathered via the Qualtrics online survey tool in third quarter of 2013.

At first, a formal invitation (See Appendix G. Survey Invitation, Reminder and Instrument) from the divisional executive was sent via the organization's internal email system. In this letter, all respondents were informed about the forthcoming study.

Two days later a personalized survey link invitation was sent to 2723 (2695 random + 28 non-random corporate) respondents via e-mail. From all the sent emails there were twelve delivery failures, resulting from staff turnover during the preparation period.

Three days before the close, a reminder e-mail (See Appendix F. Survey Invitation, Reminder) was sent to employees who had not answered the survey in the first two weeks. The survey was active for two weeks, plus the three day buffer.

As this was a voluntary anonymous survey, seven people formally declined to participate.

The respondents predominately chose the English language option (765) while 56 chose Spanish, 30 chose French and 11 chose Portuguese.

3.9 Issues of credibility

Credibility, according to Janesick (2000) has tended to revolve around the trinity of validity, reliability and generalizability. Janesick observes that for qualitative researchers, there is no need to use the terms validity, reliability and generalizability, because these are terms that more correctly apply to the quantitative paradigm. Pioneers of mixed-method studies on the other hand, proposed other terms to incorporate both quantitative and qualitative orientations. Validity and reliability are two aspects of credibility used for this purpose.

3.9.1 Validity and reliability

The reliability of an instrument refers to its ability to produce consistent and stable measurements (Carmines & Zeller 1979). Kumar (2005) explains that reliability can be seen from two sides: reliability (the extent of accuracy) and unreliability (the

extent of inaccuracy). To increase research reliability, research pioneers recommend using pre-tests, pilot studies and replication (Neuman 2009a).

Internal consistency is the degree to which the items of a scale measure the same underlying attribute (Pallant 2013) which indicates how free the scale is from random error (DeVellis 2011) and thus reliable for research purposes.

The most common reliability coefficient is the Cronbach's alpha which estimates internal consistency by determining how all items on a test relate to all other items and to the total test and internal coherence of data in a test containing items that are not scored dichotomously (Gall, Gall & Borg 2007). This reliability is expressed as a coefficient between 0 and 1.00. The higher the coefficient, the more reliable is the test. A measure should have a Cronbach's alpha of at least 0.6 or 0.7 and preferably closer to 0.9 to be considered useful (Aron, Aron & Aron 2001; Christmann & Van Aelst 2006; Sekaran 2003). Similarly Robinson, Shaver, and Wrightsman (1991a) suggest using the following Cronbach values to judge the quality of the instrument: .80-1.00 — exemplary reliability, .70-.79 — extensive reliability, .60-69 — moderate reliability, and < .60 — minimal reliability.

Reliability issues are more subjective when it comes to qualitative research. Some qualitative researchers have argued that if the research produces convincing results, then it will be reliable (Golden 1992; Maxwell 2002). Janesick (2000) confirms the possibility of different interpretations of an event and claims that there is no single 'correct' interpretation.

According to McMurray et al. (2004, p. 249) therefore, 'Regardless of what route you use in the analysis of your notes and observations, the accuracy with which they are interpreted is the measure of the quality of your research'.

Validity, as defined by Collis and Hussey (2003, p. 58), is 'The extent to which the research findings accurately represent what is really happening in the situation'.

Within the multi-method context Cresswell and Plano Clark (2007, p. 146), define validity as 'The ability of the researcher to draw meaningful and accurate conclusions from all of the data in the study'.

In this thesis, two steps were used to test the validity and reliability of the measurement items derived from the literature. Validity indicates the accuracy of measurement of a construct or to what extent the scale measures what it is supposed to measure (Pallant 2013). De Vaus (2003) demonstrated that validity can

be measured by the researchers in several ways. This thesis employed two validity checks for the measurement items, namely content validity and construct validity (Im 2003).

3.9.1.1 Construct validity

Construct validity is how well the measurement conforms to the theoretical expectations (Hair et al. 2010). It is used to check if a variable correlates with others in the thesis and to ensure the conceptual model is internally consistent (Im 2003; Tashakkori & Creswell 2007). Chi (2005, p. 102) proposed that 'researchers establish construct validity by correlating a measure of a construct with a number of other measures that should, theoretically, be associated with it'. Therefore, correlation coefficient was used to test the relationship between the constructs in this thesis.

Factor analysis provides an empirical basis for reducing all items to a few factors by combining variables that are moderately or highly correlated with each other (Gall, Gall & Borg 2007), this correlation coefficient is called a factor loading. The factor loadings of all items loaded on their respective subscales should be above the generally accepted minimum of .40 (Ott, Cashin & Altekruse 2005).

3.9.1.2 Content validity

Content validity is the extent to which the indicators measure different aspects of the concepts (Adams et al. 2007). Nunnally and Bernstein (1994) proposed that the standard of content validity is based on a representation of set items of an instrument and the employment of sensible methods of scale in constructs.

3.9.1.3 Generalizability (external validity)

External validity (synonyms: generalizability, relevance, transferability) is the extent to which results provide a correct basis for generalizations to other circumstances. Schofield (1993) comments on the importance of providing sufficient information about the components of a study, including the entity studied, the context in which the studies are conducted, and the setting to which one wishes to generalize, to enable one to search for the similarities and differences between the situations.

In mixed-method research, Teddlie and Tashakkori (2003, p. 42) suggest use of the term *inference transferability*, as an umbrella term incorporating both the concepts of external validity and transferability from the quantitative-qualitative

nomenclature. They argue that while all inferences have some degree of transferability, that transferability is relative and that no research inference is fully transferable to all settings, populations or times. In mixed-method studies, inferences generated are more transferable than the conclusions merely derived from their quantitative or qualitative components.

3.9.2 Reliability results of pre-test and pilot

The following table shows the reliability test results for the source constructs, the pre-testing and for the three pilot runs:

Table 3.5 *Source, Pre-test and pilot runs factor reliabilities*

Scale (items)	**Reference**	**Reported Cronbach alpha**	**Pre-test (n=33) Cronbach alpha**	**Pre-test + Pilot (n=94) Cronbach alpha**	**Pre-test + Pilot + sample (n=101) Cronbach alpha**	**Pre-test + Pilot + sample (n=138) Cronbach alpha**
Subjective Norm (4)	(Cheng & Chen 2007)	0.875	.746	.642	.641	.647
	(Bock et al. 2005)	0.823				
	(Teh & Yong 2011)	0.804				
Attitude (3)	(Kankanhalli, Tan & Wei 2005)	0.95	.747	.770	.749	.701
	(Morris, Venkatesh & Ackerman 2005)	0.85				
	(Bock et al. 2005)	0.85				
	(Teh & Yong 2011)	0.933				
Intention (4)	(Cheng & Chen 2007)		.826	.786	.773	.785
	(Bock et al. 2005)	0.9237				
	(Chennamaneni 2006)	0.924				
	(Teh & Yong 2011)	0.897				
Behavior (3)	(Cheng & Chen 2007)	0.816	.804	.759	.746	.778
	(Teh & Yong 2011)					
	(Teh & Sun 2012)	0.816				
Perceived Behavioral Control (3)	(Chennamaneni 2006)	0.7	.718	.594	.601	.605
	(Taylor & Todd 1995)	0.7				
Self-worth (4)	(Bock et al. 2005)	0.9114	.870	.869	.870	.904
	(Teh & Yong 2011)	0.945				
Organizational citizenship behavior (3)	(Williams & Anderson 1991)		.811	.835	.842	.810
	(Van Dyne & LePine 1998)	0.93				
	(Teh & Yong 2011)	0.892				
	(Teh & Sun 2012)	0.892				
	(Cheng & Chen 2007)	0.892				
Knowledge Sharing Activity (4)	(van den Hooff & de Ridder 2004)	donating = 0.85	.830	.773	.767	.731
	(Masrek et al. 2011)	0.77				
	(de Vries, van den Hooff	eagerness				

	& de Ridder 2006)	= 0.76				
Organizational Knowledge Absorptive Capability (4)	(Lee 2001)	0.898	.893	.886	.880	.867
Innovation Climate (5)	(McMurray & Dorai 2003)	0.89	.782	.784	.771	.748
	(Von Treuer 2006)	0.79				
	(Baxter 2004)	0.89				
Individual Innovation (6)	(McMurray & Dorai 2003)	0.77	.776	.703	.682	.716
	(Von Treuer 2006)	0.61				
	(Baxter 2004)					
Team Innovation (5)	(McMurray & Dorai 2003)	0.76	.754	.657	.647	.671
	(Von Treuer 2006)	0.59				
	(Baxter 2004)					
Organizational innovation (5)	(McMurray & Dorai 2003)	0.90	.701	.701	.683	.741
	(Von Treuer 2006)	0.73				

Correlation determinant= 0.015,

Kaiser-Meyer-Olkin Measure of Sampling Adequacy= 0.738

Bartlett's Test of Sphericity Approx. Chi-square= 492.87, with Df= 66 and Sig.= .00

Table 3.6 *Factor Collinearity Diagnostics*

Variable	***Collinearity Statistics***	
	Tolerance	***VIF***
Social Norm	.759	1.318
Attitude	.364	2.750
Intention	.364	2.745
Behavior	.568	1.761
Perceived Behavioral Control	.672	1.487
Self-Worth	.565	1.769
Org cit behavior	.564	1.772
K share activity	.496	2.018
Absopt. Capability	.420	2.381
Wplc innov climate	.586	1.707
Individ innovn	.619	1.616
Team innovn	.383	2.608
Org innovn	.493	2.028

Note: Knowledge Absorptive Capability was treated as the dependent variable in first pass and *Knowledge Sharing Activity* in the second pass.

3.10 Analysis techniques

Statistical methods, such as correlations, regressions, or difference of means tests (e.g., ANOVA or t-tests) are often described as first-generation techniques and can be used for simple modeling scenarios (Lowry & Gaskin 2014).

Correlations are used for exploratory research, for non-causal exploration of how constructs may be related, thus determining the basis for future causal modeling and helping to provide measurement model statistics for regression or SEM and determining that constructs in a model do not suffer from common methods bias

Regression analysis is used for simple models with few IVs and DVs are where the data is highly normalized. It tests those models for the existence of moderation and mediation and for repeated measures.

First-generation techniques have limited causal or complex modeling capabilities and are ill suited to modeling latent variables, indirect effects (mediation) and assessing the 'goodness' of the proposed model in comparison with the observed relationships contained in the data.
First-generation techniques, such as simple linear regression, suffer from three main limitations in modeling: (1) the tested model structure must be simple, (2) all variables must be observable (i.e., not latent), and (3) estimation of error is neglected (Lowry & Gaskin 2014). Hence, such multiple equations must be run separately in order to assess more complex models.

As a result, second-generation techniques, such as SEM do not have these limits as all variables are estimated co-dependently and simultaneously rather than separately and can be used for modeling causal networks of effects simultaneously—rather than the fragmented methods used by first-generation techniques.

SEM is used to examine the latent (unobserved) variables in the KSIB model constructs which includes thirteen factors (observed variables), each of which is a reflection or a dimension of the relevant latent construct. Additionally the complete causal KSIB network can be tested simultaneously.

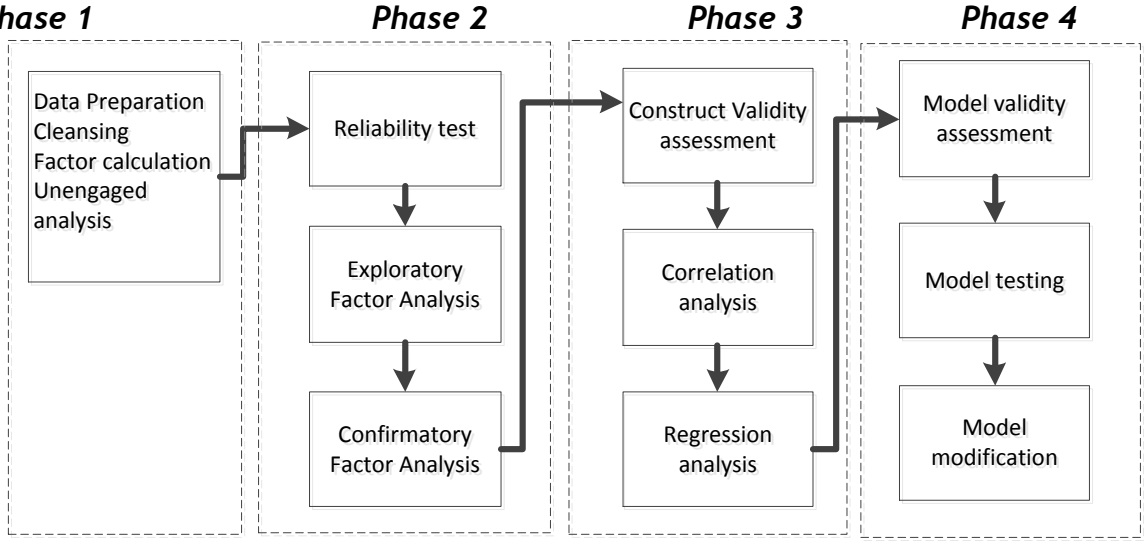
For example, the path effect of Attitude (AT) <- Knowledge Sharing Behavior (KSB) can be estimated while also estimating the effects of Attitude (AT) <- Workplace Innovation (INN) and Knowledge Sharing Behavior (KSB) <- Workplace Innovation (INN), as well as the indirect effect of AT on INN through KSB. Additionally, these effects can all be estimated across multiple groups (e.g., male vs. female employees), while controlling for potential confounds (e.g. operating entity).

Both first and second generation analysis techniques are used in this thesis.

3.10.1 Analysis process

The analysis process consisted of four main phases: first phase is preparation of data for analysis, cleaning, formatting and calculation of additional fields e.g. reverse coding of item; calculation of means; calculation of standard deviation for unengaged responses; phase two consisted on the examination of the items and the factors; confirmed of item reliability and performed factor analyses, the process went to the third phase; the third phase examines the hypothesized relations among constructs and contrasts them with the empirical findings; the fourth and final phase was correlation and regression analysis of the contract dimensions and the demographic variables.

Figure 3.3 Analysis Process



(Source: Author, after Satch, 2014)

3.10.1.1 Data Preparation

During the data preparation phase, a number of steps were performed which were critical for the validity of the results. These included: reverse coding of negatively worded items; handling missing data; checking for outliers; meeting the assumptions of multivariate analysis (normality, homoscedasticity, linearity and multicollinearity); and calculating response standard deviations to check for unengaged responses. Issues and treatment are commented with this section and summarized at the end of the chapter.

3.10.1.2 Reliability test

Reliability is the degree to which the observed variable measures the true value and is error free. If a measure consistently behaves in the same way after repeated

measurements, it is considered more reliable. Even though reliability and validity are different concepts, reliability is an indicator of convergent validity. Therefore, research literature recommends assessing variables and their measurement in order to choose the higher reliability (Hair et al. 2010).

Two methods of testing reliability, Cronbach Alpha and Composite Reliability were utilized by this research. The Cronbach Alpha reliability coefficient evaluated the complete scales within the KSIB construct. (see Table 3.5)

During this process step, a number of dimension items were eliminated in order to increase the factor reliability. These included sn3: *Because I am a team member, I have a duty to share knowledge with others.*

3.10.1.3 Exploratory factor analysis

To conduct research in organizational behavioral science, psychometrically sound measurement instruments, with good reliability and validity and appropriate for use across diverse sample populations, are needed.

While the KSIB construct instrument was based on existing, empirically tested scales, the combination of these scales within the KSIB construct is unique. To ensure the KSIB construct was reliability and validity and appropriate for the sample population, EFA testing was conducted to ensure factor validity and CFA tested was undertaken to ensure construct validity, appropriateness and preliminary model fit.

The exploratory factor analysis (EFA) technique is traditionally used to reduce a large number of measurement items to a smaller number of factors. The ultimate aim of this technique is to provide reliable and interpretable factors, as interpreted by the correlations between variables, as output. As this method is, by nature, exploratory, decisions about the number of factors and the rotation type usually are pragmatic rather than theoretical oriented. For this purpose, EFA was designed for situations where the link between observed and latent variables is unknown (Byrne 2010; Tabachnick, Fidell & Osterlind 2013).

This analysis calculated univariate descriptives, the initial solution, coefficients, determinant and KMO, as well as Bartlett's test of sphericity. Principal Axis Factoring was selected to analyze the correlation matrix together with the Promax Factor analysis rotation method with Kaiser Normalization (Leech & Onwuegbuzie

2009; Tabachnick, Fidell & Osterlind 2013). While there were no missing values in the dataset at the moment of the analysis, list-wise-case exclusion was selected.

As both the KSB construct and the WIS construct components of the KSIB instrument are based on empirically proven and theory based factors, EFA was used to ensure item validity within the large sized transnational dataset. This resulted in some items not meeting acceptance criteria (Gaskin 2012) and thus being dropped. During this phase, addition factor items were deleted because of low loadings and because of cross-loading on other factors. These included items: in1; wic5; ti1; & ti3; ii4 & ii6.

3.10.1.4 Confirmatory factor analysis

Confirmatory Factor Analysis (CFA) is a theory driven confirmatory technique and uses a hypostatized model to estimate a population covariance matrix which the algorithm compares with the observed covariance matrix. As Schreiber et al. (2006) explained, it is necessary to have the smallest reachable difference between the two matrices to achieve this. It is thus possible to derive the convergent and discriminant validity for the measurement of a construct (Hair et al. 2010) using CFA.

While the EFA analysis was treated as an exploratory exercise, the CFA analysis was run with items being retained (Gaskin 2012), as dictated by theory and past studies (Harrington 2009).

This thesis conducted a CFA for the models related to KSIB: the original conceptual model, modification models and a final model.

3.11 Validity assessment

3.11.1 Discriminant and Convergent Validity

The analysis in this thesis used AMOS to test the full latent variable model.

In order to evaluate convergent validity, the Composite Reliability (CR) should be larger than .70, CR should be higher than the Average Variance Explained (AVE), and AVE should be greater than .50 (Hair et al. 2010). Discriminant validity evaluation consists of comparing the Average Variance Explained (AVE) to Maximum Shared Variance (MSV) and to the Average Shared Variance (ASV).

For a factor to attain discriminant validity, the MSV and ASV should be greater than AVE (Hair et al. 2010). All factors in the original conceptual model exhibited discriminant validity.

Criterion-related Validity

Criterion-related validity reflects the association of a scale with some criterion and deals with the empirical relationship between two variables, rather than causal relationships. Criterion-related validity is commonly confused with construct validity as the former is a foundation for the latter.

Construct validity has a direct concern for the theoretical relationship of between variables. In contrast, criterion-related validity examines correlations, significances, and the direction and size of that relationship.

However, criterion-related validity maintains neutrality in those causal relations which cannot be assumed from it. Criterion-related validity only reports the fact that variables behave as expected in relation to other variables (DeVellis 2011). The correlation coefficient has been traditionally the index for Criterion-related validity (DeVellis 2011).

Model Fit indicators for CFA and CB-SEM

Confirmatory Factor Analysis and Structural Equation Modeling share a common set of indicators for model fit and thus support model determination to the degree that the fitted population covariance matrix corresponds to the observed sample covariance matrix (Marsh, Balla & MacDonald 1988). This statistically tests the entire model simultaneously to determine the fit of the model with the data (Byrne 2010).

If the minimum discrepancy chi-square (x^2) is large in relation to the degrees of freedom (df) (Marsh, Balla & MacDonald 1988) then it would be rejected. Literature provides appropriate guidance at three levels: $x^2/df < 2$ (Byrne 2010); $x^2/df < 3$ (Carmines & McIver 1981); and $x^2/df < 5$ (Wheaton et al. 1977). The minimum discrepancy (x^2) is usually associated with a probability (p) of getting an obtained value for $x^2$and the model is correct, as opposed to assuming that the null hypothesis is true. Therefore, values $p \geq .05$ are recommended as representing the likelihood of getting a x^2 value beyond the x^2 value when H_0 is true (Arbuckle 2010; Byrne 2010).

Browne and Cudeck (1993) endorse the 'root mean square error of approximation' (RMSEA) as one of the most regarded and informative criteria to assess model fit.

This measure is non-stochastic and does not depend on sample size and denotes how well the model would fit the population covariance matrix if it were available (Browne & Cudeck 1993). Their guidance suggests that values lower than .05 indicate a good fit, between .05 and .08 represent a reasonable errors approximation, .08 to .10 a marginal fit, while more than .10 indicates a poor fit.

PCLOSE indicates the probability of RMSEA to be good in the population. Extant literature recommends .50 as the minimal acceptable value for PCLOSE (Hair et al. 2010; Jöreskog & Sörbom 1996)

This thesis uses the chi-square ratio (x^2/df) and RMSEA as the main indicators of model fit, given they provide probability information.

3.11.2 Analysis software environment

The survey was conducted using the Qualtrics web-based survey environment.

The data collected during the pre-test, pilot and final survey runs was analyzed using IBM SPSS Statistics version 21, 64 bit edition. Confirmatory Factor Analysis was conducted using IBM SPSS Amos 21.0.0 (Build 1178). Based on the results of EFA and CFA, The Stats Tools Package version update 13/12/2012 (Gaskin 2013c; Hair et al. 2010) for Microsoft Excel and Parallel Analysis using O'Connor's (2000) algorithm for SPSS (p. 399) supporting the assessment of Discriminant and Convergent Validity.

3.11.3 Regression and correlation

The analyses undertaken in this thesis were primarily determined by two factors. First, the purpose of the thesis was to investigate relationships among two or more variables using univariate, bivariate and multivariate methods. For example, the level of Knowledge Sharing Behavior present within the organization under study was determined through univariate analysis, whereas the relationship between Knowledge Sharing Behavior and Workplace Innovation was undertaken through bivariate analysis. Multivariate analyses were employed to explore the relationships between knowledge sharing behavior and predicted antecedents. Second, the measurement of the variables required particular statistical procedures for each part of the analysis. However, not all the variables were subjected to regression and correlation analysis.

3.11.4 Structural equation modeling

Structural equation modeling (SEM) has two sub-techniques: variance-based SEM, also known as PLS-SEM or simply PLS (partial least squares); and covariance-based SEM, usually referred as CB-SEM or simply SEM.

Variance-based SEM, a causal modeling technique, focuses on maximizing the variance explained by the dependent variable, while covariance-based SEM focuses on estimating the statistical difference between the structure of the theoretical relationships and the data (Hair, Ringle & Sarstedt 2011).

Choosing which technique to use relies firstly on philosophic selection criteria. If the purpose is theory testing and confirmation, covariance-based SEM is appropriate. If the criteria are prediction and theory development, then variance-based SEM is the preferred option (Hair, Ringle & Sarstedt 2011). Secondly, both techniques have limitations: Covariance-based SEM is a confirmatory technique, sensitive to sample size and is not recommended for use as an exploratory technique. A minimum of 60 observations is required for analysis and, depending on the research objectives, more observations may be required. The 780 observations used in this thesis exceed this limitation. This technique also assumes normality, linearity, and absence of multicollinearity (Tabachnick, Fidell & Osterlind 2013).

Conversely, variance-based SEM is appropriate for prediction and exploratory research objectives. It is usually seen as less rigorous, and therefore not the best alternative for theory testing. Additionally, it can analyze small samples, and its assumptions are less restrictive. Thus, this technique can be used when convergent or discriminant validity has not been met during confirmatory factor analysis.

Johnstone (1990) argues that as the sample size varies in a given population Lindley's (1957) 'paradox' applies that a 'significant' result is more compelling if the sample size is small than large, which is the case with this sample (n=780). He cites Berger and Sellke, (1987) to say that as the sample size increases in testing precise hypotheses (such as H7), a given P value provides less and less real evidence against the null.

3.12 Ethics in conducting research

The term ethics in research denotes the study and practice of making good and right decisions while engaging in research (McMurray, Pace & Scott 2004).

‘Ideally, a survey will be technically correct, practically efficient and ethically sound’ (De Vaus 2002, p. 58). The principles underlying research ethics are universal and concern issues such as honesty and respect for the rights of the individual (Babbie 2007). In order to conduct this research, approval was sought from the Ethics Committee of the RMIT University by submitting an ethics application to BCHEAN sub-committee – project no. 1000351.

De Vaus (2002) defined five ethical responsibilities by researchers towards survey participants which were expressed as professional codes of conduct: voluntary participation, informed consent, no harm, confidentiality, anonymity and privacy. Voluntary participation means that people should not be required to participate or the participation should be optional for the volunteers.

The Plain Language Statement (PLS) (See Appendix H. Ethics Plain Language Statement) provided potential participants with a clear description of the project including: introductory information about the researcher and supervisor, with their affiliations, the title of the research work, the nature and objectives of the research and a brief background to it, the voluntary nature of participation, the rights of people involved, the extent of any participation sought, and the reason that they had been approached.

In this research web-based self-administered questionnaires were distributed, stated that participations in the survey was voluntary and anonymous. Moreover, the wording of the introductory paragraph of the survey included the words ‘asking for your help’, further reinforcing that participation was a matter of individual choice.

2695 self-administered web-based questionnaires were distributed. In the questionnaire the participants need to answer the questions which are related to their innovation climate, and knowledge sharing intentions then finally some demographic questions about the participants. Permission was sought from the participants by asking their consent as the first question and providing an online link to the PLS. If they agree to participate in this study, they will be aware of what is happening. The participants can examine the questionnaire before deciding whether they want to participate or not. Participation in this research is entirely voluntary and anonymous; the participants may withdraw from participation and any unprocessed data concerning them at any time, without prejudice.

Participants involved in this research were able to withdraw partially or completely at any time or refuse to answer any question. The privacy of participants and the confidentiality of data provided by them and their anonymity were maintained. The investigator was maintained objectively in the analysis stage to make sure not to misrepresent the data collected. All information collected was strictly confidential and can only be accessed by the researcher and his supervisor. There is no perceived risk outside the participants' normal day-to-day activities. All data will be kept securely at RMIT University for a period of five years before being destroyed.

3.13 Conclusion

A general concern of the sample size is that minimally the sample should have at least five times as many observations as the number of variables that are to be analyzed (Hair et al. 2010). This survey contained 52 item level question, 12 demographic questions, one multi-choice and two open ended questions, a total of 67, requiring a minimum sample size of 335. Thus, based on Hair et al.'s (2010) rule of thumb, the sample size of 2695 with an accepted response of 780 was sufficient for all multivariate techniques used in this study.

The research data was also gathered in one questionnaire, even though it is recommended not to do so. This may cause, for example, a common method variance in the sample. However, all items were carefully selected from previous knowledge sharing and Workplace Innovation research.

The common method bias was tested using SPSS Factor Analysis, Maximum Likelihood extraction and no rotation with the analysis constrained to one factor. This resulted in a 22% of the variance being explained. The test indicated that the data was not biased (Gaskin 2013a).

Chapter 4. Analysis and results

4.1 Objective

This chapter presents the data analysis of the survey and reports the results. It also tests the reliability of the two scales applied in this thesis, interprets the data using statistical techniques and illustrates the demographic profile of the employees of the transnational organization.

4.2 Introduction

Chapter Three introduced the research methodology for this thesis and Chapter Four presents the statistical analysis results from the questionnaire dataset. The aim of this chapter is to analyze the survey in response to an investigation into the relationship between Knowledge Sharing Behavior and Workplace Innovation within a transnational corporation.

For the majority of the analysis, the Data screening, Correlations, Regression and Exploratory Factor Analysis were conducted using IBM SPSS Statistics (version 21). IBM SPSS Amos (version 21) was used for the Confirmatory Factor Analysis and the Structural Equation Modeling.

4.3 Result of the Pilot Study

The pilot study was conducted with a group selected randomly from a population similar to the target population i.e. professional staff working with a transnational/multinational corporation in various overseas locations. A total of 170 surveys were distributed to these professionals and 138 useable surveys were considered for the pilot study. Thus, a response rate for the pilot study is 81%.

The pilot population frame consists of 99 males (76.2%) and 31 females (23.8%) within the age groups of 22–30 years (3.1%, n=4); 31–40 years (18.3%, n=24); 41–50 years (24.4%, n=32); 51–60 years (32.1%, n=42) and 61+ years (22.1%, n=29. The pilot study respondents hold PhDs (16.0%, n=21), Masters (38.2%, n=50), Bachelors (28.2%, n=37), Associate Degree/Diploma (8.4%, n=11) and High School Certificate (3.1%, n=3) qualifications. They have worked with their current organization for: under 2 years (22.1%, n=29), 2-5 years (13%, n=17), 6-10 years (14.5%, n=19), 11-20 years (26%, n=34), 21-30 years (16%, n=21) and more than 30 years (8.4%, n=11); 42% are managers and 48.8% have had expatriate experience; 65% were born outside Australia and represent 28 different countries.

In terms of the reliability score, the overall reliability for the WIS Scale is 0.740 and for the KSB Scale it is 0.741. However, while there is no lower limit to the coefficient, the closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the scale. It should also be noted that an alpha of 0.7 is considered an acceptable goal for a Likert-type scale (Muijs 2011). A high value for Cronbach's alpha indicates good internal consistency of the items in the scale. There were no further problems identified with the survey instrument and data analysis in the pilot study. Thus, this gave a positive indication as to whether to progress toward the main study. As van Teijlingen and Hundley (2001, p. 36) state: 'well-designed and well-conducted pilot studies can inform us about the best research process and occasionally about likely outcomes'.

4.4 Main Survey Samples and Procedures

The unit of analysis for this research is the individual, that is, a member of the professional staff.

The participants sampled are employees of a global, employee-owned organization providing independent consulting, design and construction services in the specialist areas of earth, environment and energy.

Stratified random sampling method is employed in this study. The strata used in this sampling are employee geographic work locations and 30% of the employee population was randomly selected.

An additional 28 members of the management group ("corporate" - across all geographies) were invited to participate to encourage management support and to inform them of the nature of the research.

4.5 Response Rate

The database provided to the researcher by the transnational corporation, comprised the population frame for this thesis. A total of 2723 (2695 random + 28 non-random corporate) web-based survey invitations were distributed to the population sample frame for the main study, and follow-up emails were also conducted to increase the response rate (See Appendix F. Survey Invitation, Reminder). A total of 862 completed surveys were returned. Of these, nine surveys were missing some demographic responses, giving a total of 853 responses.

Table 4.1 *Sample population survey response participation*

Operating entity	*Total population*	*Random selection*	*Sample %*	*Participation*	*Participation % of Responses*	*Participation % of Sample*	*Participation % of Population*
Corporate				28	3.28		
Africa	375	120	32%	36	4.22	30.00%	9.60%
Asia	258	73	28%	21	2.46	28.77%	8.14%
Australasia	1,326	373	28%	134	15.72	35.92%	10.11%
Canada	3,762	1,153	31%	373	43.73	32.35%	9.91%
Europe	880	281	32%	72	8.44	25.62%	8.18%
South America	991	259	26%	64	7.5	24.71%	6.46%
USA	1,446	436	30%	125	14.65	28.67%	8.64%
Totals	**9,038**	**2,695**	30%	**853**	100	31.65%	9.32%
						32%	

Summary: The main study observed the response rate at 32%, which is lower than the pilot study response rate of 81%, but acceptable to this researcher. The response rate in this survey is within the typical response rate in organizational research and when conducting web-based surveys (Baruch 1999; Baruch & Holtom 2008). As the data missing from the nine surveys above represented less that 5% (considered inconsequential by Schafer (1999)), these response could be included for non-demographic analysis.

4.6 Scale Reliability

Testing the reliability of scales used in this thesis is necessary because it has the capacity to influence the quality of data (Pallant 2013). This section informs the reliability of the two scales used in this thesis. The two scales are the Workplace Innovation Scale (WIS) and the Knowledge Sharing Behavior (KSB) scale.

The reliability of a scale indicates how free the scale is from random error, and can be illustrated using the most frequently used methods, i.e. an internal consistency score (Pallant 2013). Cronbach's alpha (α) is a popular index which informs the reliability and has been widely used in social and behavioral research for more than 50 years (Cronbach 1951). The higher the Cronbach's alpha is, the greater the reliability of the scale will be. Thus, measuring Cronbach's alpha value provides an indication of the average correlation among all the items that make up the scale (Nunnally & Bernstein 1994; Pallant 2013). The coefficient alphas for each of the scales used in this research were calculated using IBM SPSS v.21 and are shown in Table 4.1 below.

Table 4.1 *Survey scale reliability*

Name of the Scale	***Cronbach's alpha Value***	***No. of items***
Workplace Innovation Scale (WIS)	0.740	21
Knowledge Sharing Behavior Scale (KSB)	0.741	32
Knowledge Sharing Behavior - Individual Scale (KSB-I)	0.765	25
Knowledge Sharing and Innovation Behavior Scale (KSIB)	0.922	50

Summary: The Cronbach's alpha value for the Workplace Innovation Scale is 0.740 and for the Knowledge Sharing Behavior Scale (KSB), is 0.741. Thus, this confirms that the scales are reliable. If the two individual perceptions of group behaviors factors (KSB-G) i.e. Organization Citizenship Behavior - Voice (OCB) and Knowledge Absorptive Capability (KAC), are dropped from the Knowledge Sharing Behavior (KSB) Scale and only the individual behavior factors (KSB-I) are considered, then the Cronbach's alpha value increases to 0.765. When KSB and WIS are combined (KSIB), the full construct shows a Cronbach's alpha value of 0.922. These scale reliabilities were deemed acceptable for this research project.

4.6.1 Internal Consistency

Internal consistency reflects the coherence (or redundancy) of the components of a scale and is conceptually independent of re-test reliability, which reflects the extent to which similar scores are obtained when the scale is administered on different occasions separated by a relatively brief interval (McCrae et al. 2011). The internal consistency for the two scales used in this thesis is conducted to estimate intra-scale reliability. The results for the pre-test are listed below:

Table 4.2 *Internal Consistency of the Workplace Innovation Scale (WIS)*

Internal Consistency (WIS)	***Cronbach's Alpha (n=number of items)***
Factor 1 Workplace Innovation Climate (IC)	0.748 (n=5)
Factor 2: Individual Innovation (II)	0.716 (n=6)
Factor 3: Team Innovation (TI)	0.671 (n=5)
Factor 4: Organizational Innovation (OI)	0.741 (n=5)

Table 4.3 *Internal Consistency of the Knowledge Sharing Behavior (KSB) Scale*

Internal consistency (KSB)	***Cronbach's Alpha (n=number of items)***
Factor 1: Subjective Norm (SN)	0.647 (n=4)
Factor 2: Attitude (AT)	0.701 (n=3)
Factor 3: Intention (IN)	0.785 (n=4)
Factor 4: Behavior (BE)	0.778 (n=3)
Factor 5: Perceived Behavioral Control (PBC)	0.605(n=3)
Factor 6 : Self-Worth (SW)	0.904 (n=4)
Factor 7: Knowledge Sharing Activity (KSA)	0.731 (n=3)
Factor 8: Organizational Citizenship Behavior* (OCB)	0.810 (n=3)
Factor 9: Knowledge Absorptive Capability* (KAC)	0.867(n=4)

Note: *= individual perceptions of team behaviors

Summary: Thus, Table 4.2 and

Table 4.3 above confirm that the Cronbach's alpha values for the Workplace Innovation Scale (WIS; four dimensions) range from 0.671–0.748. Similarly, the Knowledge Sharing Behavior (KSB) scale has nine dimensions and alpha values range from 0.605 to 0.904.

4.7 Main study

As mentioned, the data was analyzed in five phases.

The first phase, 'Data screening', included the univariate tests (e.g. normality and outliers) and multivariate assumptions (e.g. linearity and multicollinearity) (Hair et al. 2010).

The second phase, 'Correlation and Regression' utilized a series of statistical tests such as multiple regression, t-tests, ANOVA to examine the relationships between the dimensions of Knowledge Sharing Behavior and Workplace Innovation and between the demographic characteristics, Knowledge Sharing Behavior and Workplace Innovation to determine the significance and effect of the relationships.

During the third phase, 'Exploratory Factor Analysis' (EFA) was used to identify the underlying relationships of the measured items (Hair et al. 2010) to make sure that the factor structure within this sample was as it was assumed in the theoretical research model.

The fourth phase was the 'Confirmatory Factor Analysis' (CFA). During this stage, several tests were conducted to see whether the gathered data fit the theory (Schreiber et al. 2006) by assessing model fit, reliability, and the validity of theoretically hypothesized measurement models.

In the last phase, Structural Equation Modeling (SEM) was used to examine the interrelated dependence relationships among latent variables in the structural models, which composed the KSIB results (Hair et al. 2010).

SEM results are the results of this study, thus, posited hypotheses were answered based on results from this phase.

4.7.1 Data Screening

The data analysis started with the univariate data screening that included the examination of unengaged responses, items normality, and the detection of possible outliers.

Of the responses received, 862 were deemed useable: these included nine responses with missing demographics sections but with completed WIS and KSB scale item responses.

Unengaged responses

At first, the standard deviation was tested on each respondent to identify responses with no variance.

A low standard deviation may indicate, for example, that the respondent has answered each question with the same value without reading the question (Gaskin 2013b).

There were 26 responses that showed a standard deviation of less than .5 on their answers for the factor questions and so were detected and deleted. Examination of the demographic characteristics of this excluded set showed no discernible pattern.

After deleting unengaged responses, the reverse coded item was recoded so that the higher scores could indicate higher levels of agreement.

Normality

The second step in the univariate data screening was the examination of the normality of the items.

To do this, the skewness and kurtosis values of the items were calculated and compared them with the 'rule of thumb values' of +/-1 and +/-2, respectively.

The skewness values ranged from -1.70 to 0.32 thus outside the threshold, which indicated that the respondents answered these questions quite similarly. The kurtosis values ranged from -.8 to +4.9, again outside the threshold.

Kolmogorov-Smirnov and Shapiro-Wilk tests for normality were used to calculate the probability that the sample was drawn from a normal population. For datasets smaller than 2000 elements, the Shapiro-Wilk test is usually used, otherwise, the Kolmogorov-Smirnov test is used.

The *p*-value in both tests was less than 0.05, so both tests reject the alternate hypothesis, meaning that according to these tests the distribution of responses of all items was significantly different from normal.

However, with larger sample sizes, normality parameters become more restrictive and it becomes harder to state that the items are normally distributed (Hair et al. 2010).

As Hair et al. (2010, p. 74) suggest 'the researcher should always use both the statistical tests and graphical plots to assess the actual degree of departure from normality.'

Other researchers in social science, for example, (Evans 1999) and (Osborne & Overbay 2004) suggest that with large samples of self-reports in this field, the likelihood of non-normality and outliers becomes greater.

Outliers

Outliers refer to scores that have a substantial difference between actual and predicted values of the observations (Hair et al. 2010).

It should be noted, that as all of these variables were measured on an ordinal Likert-type scale with five intervals, where extreme value outliers do not exist.

Multicollinearity

Multicollinearity between latent variables was examined using SPSS's collinearity statistics. If the Variable Inflation Factor (VIF) is higher than three, then there might be multicollinearity issues. This means that latent variables are too highly correlated with each other (Hair et al. 2010).

Multicollinearity testing was conducted on the 13 latent variables factors comprising the KSIB Scale and all exhibited a VIF score of less than 2, deeming them acceptable. Therefore it can be assumed that there are no multicollinearity issues among the latent variables.

After completing of data screening, a total of 780 survey responses were submitted for final analysis.

4.7.2 Demographic Profile of the Population Frame

This section presents the demographic profile of the population frame – transnational employee staff working in the earth sciences and services sector. The survey contains 13 demographic questions, however not all the questions were considered legitimate for the main study because unavailable or missing data were not included in the thesis. The demographic factors undertaken in this thesis are gender, age group, years of employment with the organization (org tenure), education qualification level (ed level), years since last graduation (ed tenure), current role, geographic subsidiary working location (operating entity) and expatriate experience.

Table 4.4. *Profile of sample population frame*

Profile	Frequency	Percentage
Gender	**(N=853)**	
Female	332	38.92%
Male	495	58.03%
Declined to respond	26	3.05%
Age	**(N=853)**	
18-21 years old	4	0.47%
22-30 years old	195	22.86%
31-40 years old	274	32.12%
41-50 years old	207	24.27%
51-60 years old	127	14.89%
>61 years old	46	5.39%
Highest level of education	**(N=850)**	
High School certificate	58	6.82%
Associate's Degree / Diploma	103	12.12%
Bachelor Degree	314	36.94%
Master's Degree	282	33.18%
Doctorate	55	6.47%
Other	38	4.47%
Years since most recent qualification	**(N=839)**	
0-5 years	288	34.33%
6 to 10 years	197	23.48%
>10 years	354	42.19%

Years with current organization	**(N=850)**	
<2 years	247	29.06%
2-5 years	234	27.53%
6-10 years	202	23.76%
11-20 years	116	13.65%
21-30 years	36	4.24%
>30 years	15	1.76%
Role	**(N=853)**	
Professional technical	419	49.12%
Technical	139	16.30%
Business support	147	17.23%
Managerial	106	12.43%
other	42	4.92%
Expatriate experience	**(N=844)**	
yes	305	36.14
No	539	63.86
Current expatriate	**(N=299)**	
yes	88	29.43%
No	211	70.57%
Country representation	**N**	**count**
Country of birth	842	58
Country of residence	838	27

Analyses of the demographic data suggested that the sample was a valid and representative sample of the staff.

The sample population represents a gender mix of 38% female and 58% male predominantly aged between 22 and 60 (94%) who have worked at this corporation for between one and 20 years (94%); 55% work in a professional technical or technical role and are well educated with 76.6% holding tertiary degrees (Bachelor or higher); 36% have worked aware from their home country and gained expatriate experience. The sample represented 58 countries of birth.

The general distribution of these variables approximated the distribution of the population from which they were drawn.

4.8 Exploratory Factor Analysis

As described earlier, all items in this study were defined based on previous research. However, some constructs are mixtures of items adapted from two different scholars (e.g. Knowledge Sharing Activity).

Therefore, in this study, EFA was conducted to see if the chosen variables loaded on the expected latent factors, were adequately correlated and met the criteria of reliability and validity within this sample.

The conceptual model was analyzed and was comprised of two independent latent constructs (*Knowledge Sharing Behavior (KSB)* and *Workplace Innovation (WIS)* and thirteen dependent latent constructs (*Subjective Norm, Attitude, Intention, Behavior, Perceived Behavioral Control, Self-worth, Knowledge Sharing Activity, OCB-Voice*, *Knowledge Absorptive Capability*, and together with *Workplace Innovation Climate, Individual Innovation, Team Innovation, Organization Innovation*).

As mentioned, the sample size (n = 780) was sufficient for EFA (Hair et al. 2010, p. 102).

The extraction method used in EFA was the 'maximum likelihood' based on eigenvalues (> 1). This estimation was chosen for several reasons. Firstly, the method is appropriate to determine the unique variance among items and the correlation between factors. Secondly, the subsequent confirmatory factor analysis was conducted using IBM SPSS Amos, which uses the maximum likelihood estimation method. Thirdly, maximum likelihood is the most commonly used estimation procedure in Structural Equation Modeling (Hair et al. 2010). Finally, Maximum likelihood estimation provides the goodness-of-fit test for the factor solution.

The EFA was conducted using the 'promax' factor rotation method because it consents the correlation between factors. This method, as with all oblique rotation methods, is useful when the goal is to obtain several theoretical and meaningful factors (Hair et al. 2010) as in this thesis.

During the EFA, adequacy, reliability, validity, and the normed chi-square of the model was examined and described as follows.

The original 53 items of the WIS and KSB scales were factor analyzed using Principal Component Analysis factoring and Promax with Kaiser Normalization rotation to reveal the KSIB factors as shown in Appendix E. Statistical Analysis.

The factor analysis showed that the Intention and Behavior items loaded on the same component and should be treated as one factor (*Be-In*). This analysis supports the development of the Knowledge Sharing Innovation Behavior (KSIB) instrument as a viable instrument for examining the relationship between Knowledge Sharing Behavior and Workplace Innovation, and thus supports **RQ1:** *What is the relationship between Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

4.8.1 Adequacy

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and the Bartlett's test of sphericity show how the data suits the EFA in general. In KMO, values over 0.8 indicate that included variables are 'meritoriously' predicted without error by other variables.

In turn, the Bartlett's test of sphericity indicates that there exist sufficient correlations among the variables to then proceed if the p-value is significant (< 0.05) (Hair et al. 2010).

Based on KMO and Bartlett's thresholds, the model was deemed adequate for the EFA with the KMO value of 0.883 and a Bartlett significance of p<.00.

The next values EFA provides are the communality values of measured variables.

The communality means the total amount of variance that the original item shares with all other items that are included in analysis (Hair et al. 2010).

In this thesis, the cut-off value for communalities was 0.4, that is, all items below it were dropped. This resulted in a total variance explained by the 12 components of 64.2%.

The Kaiser-Meyer-Olkin measure exceeded .7 and was deemed acceptable while the chi-squared and Significance, being sample size (n=780) dependent, were also acceptable.

Table 4.5. *KMO and Bartlett's test results*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Bartlett's Test of Sphericity	Approx. Chi-Square	13138.244
	df	903
	Sig.	.000

As a result of the factor analysis, the following items did not meet the guidance given by Gaskin (2013b): in1, wic5; ii4, at1r, sn3, ti1 and ti5. Also the original Knowledge Sharing Behavior factors of Behavior and Intention were consolidated into a single factor 'Behavior intent' for this analysis.

4.8.2 Validity

Convergent validity means that the variables within a single extracted factor are highly correlated. With a sample size of 350 or greater individuals, the minimum recommended factor loading required for significance is 0.30 (Hair et al. 2010).

In the analyzed models (KSB and WIS), the only items below this threshold (see pattern matrices in Appendix E. Statistical Analysis) were for WIS: *ii3; ii4; ti2; ti4* and for KSB: *at1r*. These items were dropped.

Discriminant validity refers to the extent to which factors are distinct and uncorrelated (Hair et al. 2010). For WIS, one item, *wic5* was dropped because it correlated strongly with another factor. For KSB, two items, *in1* and *sn3,* were dropped for the same reason.

Consequently, in the final models, single items did not have detrimental cross loadings with items in other factors and, thus there were no problematic correlations between the factors. Within the final models, the included variables loaded their factors as was theoretically expected. This demonstrates a good nomological validity (Hair et al. 2010), which means that all factors in the final EFA models work accordingly, as was theoretically assumed.

4.8.3 Goodness-of-fit

As mentioned, maximum likelihood estimation provides the goodness-of-fit statistics by calculating a chi-square value. It is argued that the chi-square test is sensitive for a sample size thus researchers often use the normed chi-square values ('chi-square' divided by 'degrees of freedom') to minimize the impact of the

sample size. According to Tabachnick et al. (2013), the value of the Normed chi-square should be lower than 2.

In the final models, the normed chi-square values were all above this threshold indicating poor fits. It should be noted, however, that all models failed the actual goodness-of-fit test.

The summaries of EFA results are shown in Table 4.6 below. The final model pattern matrices are presented in Appendix E. Statistical Analysis.

Table 4.6. *Summary of Exploratory Factor Analysis results.*

Measure	***WIS***	***KSB***	***KSIB***
KMO and Bartlett's	0.856 (0.000)	0.857 (0.000)	0.890 (0.000)
Communalities	0.335–0.838	0.314–0.812	0.305–0.830
Number of factors (eigenvalue >1)	4	8	12
Total variance explained	48.8%	52.5%	51.5%
Chi-square	153.263	574.340	1088.430
Degrees of freedom (df)	51	182	516
Goodness-of-fit test, *p*-value	0.000	0.000	0.000
Normed Goodness-of-fit	3.01	3.16	2.11

4.9 Reliability Analysis – Cronbach and Composite

Bagozzi and Yi (1988) proposed that CR values above 0.6 show a good measure of construct reliability and high internal consistency. To assess for convergent validity, the values for AVE should be higher than 0.4 (Bagozzi & Baumgartner 1994). Hair et al. (2010) suggested that the values for ASV should be lower than the values of AVE to established discriminant validity among constructs. These parameters were used to confirm the construct reliability, and the convergent and discriminant validity for each construct.

Table 4.7. *Reliability of the final scale constructs after EFA analyzed using Cronbach and Composite analysis (n=780)*

Factor	***AVE***	***CR***	***Alpha***
Attitude	0.636	0.777	0.771
Subjective Norm	0.640	0.780	0.717
Behavior	0.394	0.661	0.653
Intention	0.473	0.729	0.730
Perceived Behavioral Control	0.644	0.778	0.714
Knowledge Sharing Activity	0.349	0.678	0.670
Self-Worth	0.593	0.852	0.844
Org Cit Behavior	-	-	0.820
Knowledge Absorptive Capability	0.579	0.844	0.846
Knowledge Sharing Behavior Scale	0.528	0.867	0.890
Innovation Climate	0.553	0.830	0.831
Individual Innovation	-	-	0.708
Team Innovation	0.374	0.636	0.699
Organization Innovation	0.447	0.798	0.804
Workplace Innovation Scale	0.499	0.748	0.857
Knowledge Sharing Innovation Behavior Scale	0.464	0.968	0.922

While the literature deems that Cronbach Alpha values ranging between 0.60 and 0.70 are at the lower limit of acceptability (Hair et al. 2010), the alpha value of .653 for behavior, .670 for Knowledge Sharing Activity and .699 for Team Innovation were deemed acceptable. The overall Cronbach Alpha score for the KSIB was α = 0.92. Thus the results of Average Variance Explained (AVE), composite reliability and Cronbach alpha showed acceptable levels of reliability.

It can be assumed that all factors were reflective because their indicators were highly correlated and because the removal of an item would not change the underlying construct (Freeze & Raschke 2007).

4.10 Relationship between Knowledge Sharing Behavior and Workplace Innovation

The eight dimensions of Knowledge Sharing Behavior are the six individual dimensions: 'Subjective Norm', 'Attitude', 'Behavior Intent', 'Perceived Behavioral Control', 'Self-Worth', 'Knowledge Sharing Activity', the two individual perceptions of team behaviors dimensions of 'Organization Citizenship Behavior' and

'Knowledge Absorptive Capability' and the resulting overall 'Knowledge Sharing Behavior' factor. Similarly, the four dimensions of the Workplace Innovation Scale (WIS) are 'Workplace Innovation Climate', 'Individual Innovation', 'Team Innovation' and 'Organization Innovation'.

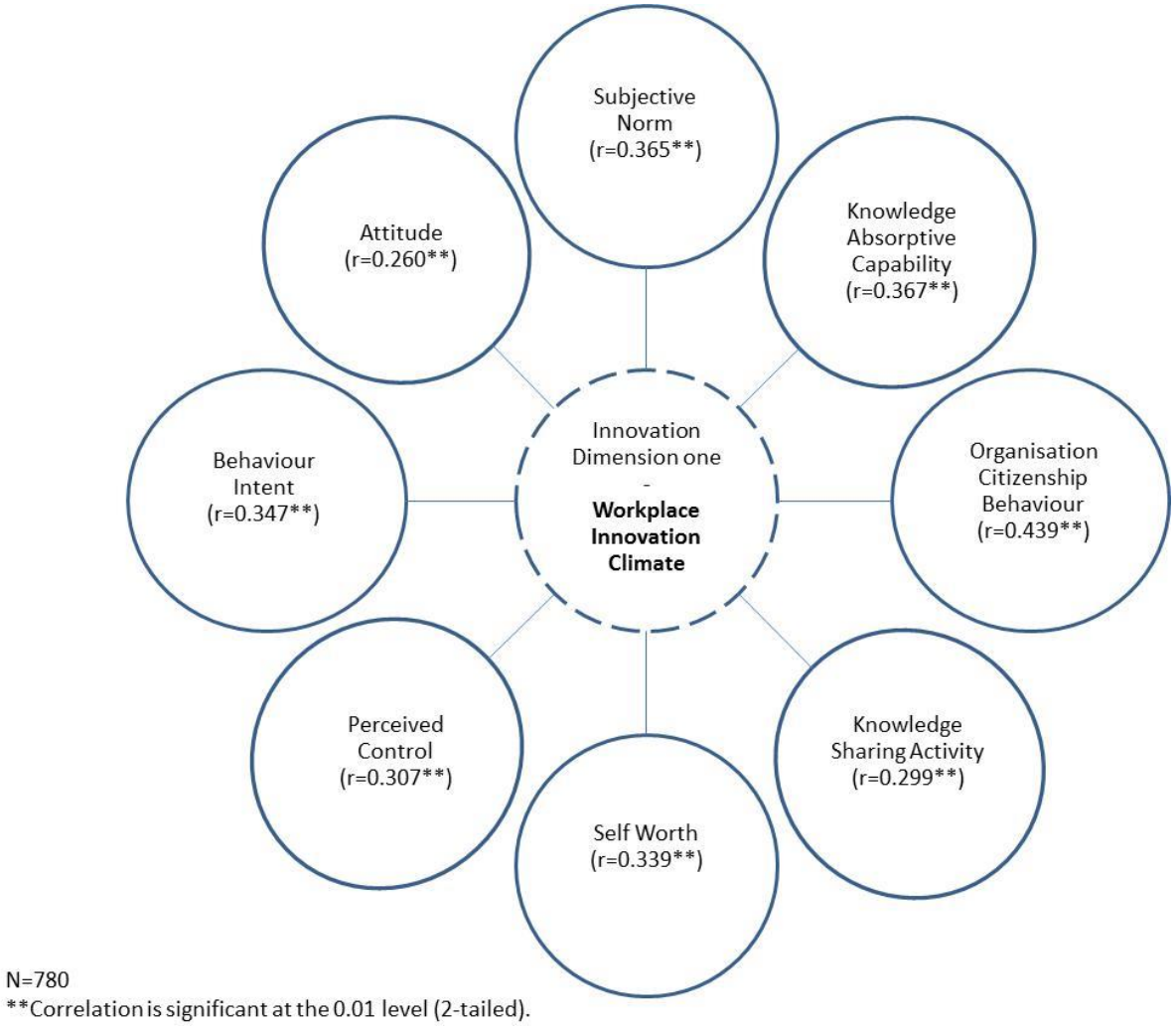
The relationship between the dimensions of Knowledge Sharing Behavior and the dimensions of Workplace Innovation is investigated using the Pearson product-moment correlation coefficient. Figures 4.1, 4.2, 4.3 and 4.4 below confirm the relationship between the dimensions of Workplace Innovation and dimensions of Knowledge Sharing Behavior. Correlation analysis confirms that all the relationships between the dimensions of Workplace Innovation and dimensions of Knowledge Sharing Behavior are positive and significant at the 0.01 level (2-tailed).

The strength of correlation is determined by the magnitude of the Pearson r: r=+-0.01 to +-0.30 *weak*; r=+-0.31 to +-0.70 *moderate*; r=0.71 to +-0.99 *strong*; r=+-1.00 *perfect*; and r=0 *no relationship* (Elifson, Runyon & Haber 1997, p. 194). Negative r values represent an inverse relationship.

4.10.1 Workplace Innovation Dimension One

Dimension one of WIS (Workplace Innovation Climate) is significantly correlated at the weak level Attitude ($r=0.260$, $p<0.000$); and at the moderate level with Subjective Norm ($r=0.365$, $p<0.000$); Behavior Intent ($r=0.347$, $p<0.000$); Perceived Behavioral Control ($r=0.307$, $p=0.000$); Self-Worth ($r=0.339$, $p=0.000$); Knowledge Sharing Activity ($r=0.299$, $p<0.000$); OCB ($r=0.439$, $p<0.000$); Knowledge Absorptive Capability ($r=0.367$, $p<0.000$) and overall Knowledge Sharing Behavior factor ($r=0.546$, $p<0.000$).

Figure 4.1 Relationships between the First WIS dimension of Workplace Innovation Climate (IC) with the Knowledge Sharing Behavior dimensions



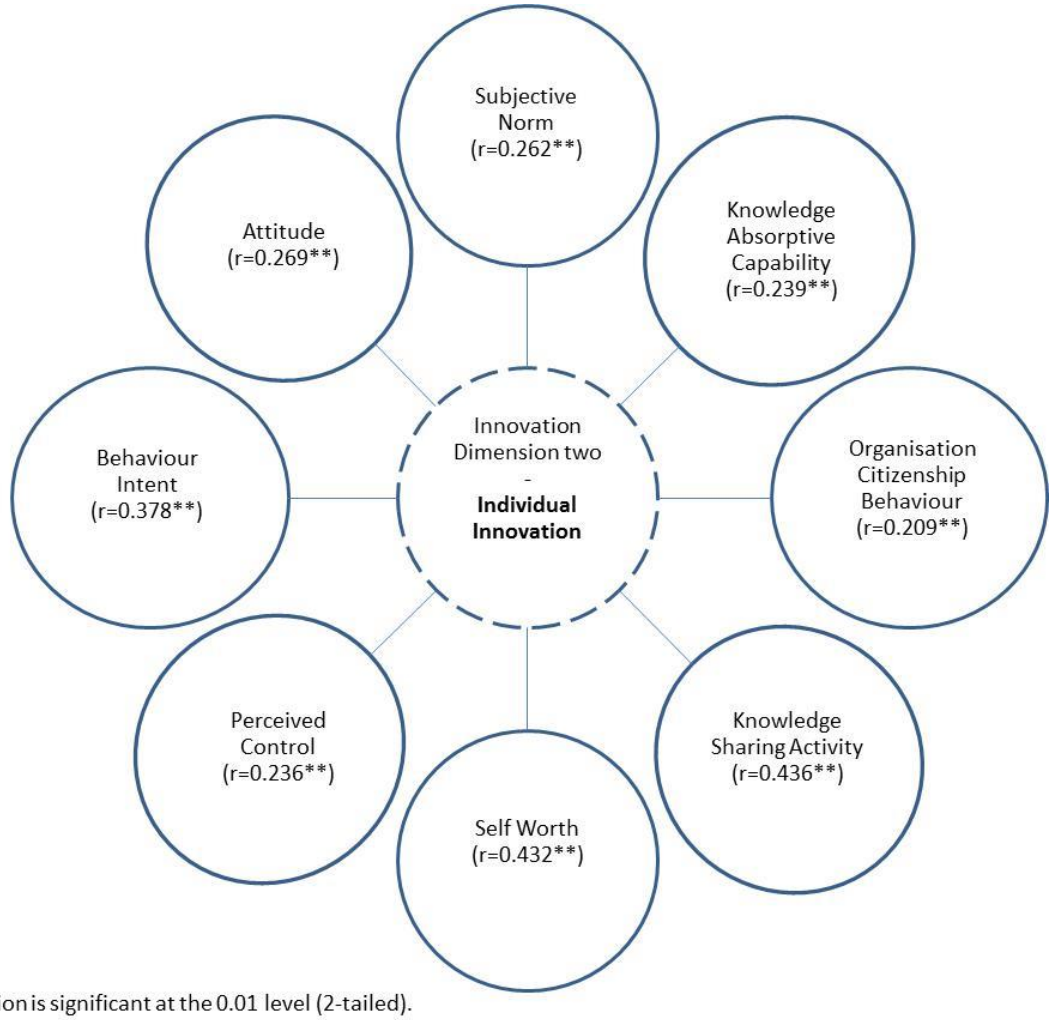
N=780
**Correlation is significant at the 0.01 level (2-tailed).

Source: Author

4.10.2 Workplace Innovation Dimension Two

Dimension two of WIS (Individual Innovation) is significantly correlated at the weak level with Subjective Norm (r=0.262, p<0.000); Attitude (r=0.269, p<0.000); Perceived Behavioral Control (r=0.236, p<0.000); OCB (r=0.209, p<0.000); KAC (r=0.239, p<0.000) and at the moderate level with Behavior Intent (r=0.378, p<0.000); Self-Worth (r=0.432, p<0.000); Knowledge Sharing Activity (r=0.436, p<0.000); and the overall Knowledge Sharing Behavior factor (r=0.513, p<0.000).

Figure 4.2 Relationship between the Second WIS dimension of Individual Innovation (II) with the Knowledge Sharing Behavior dimensions



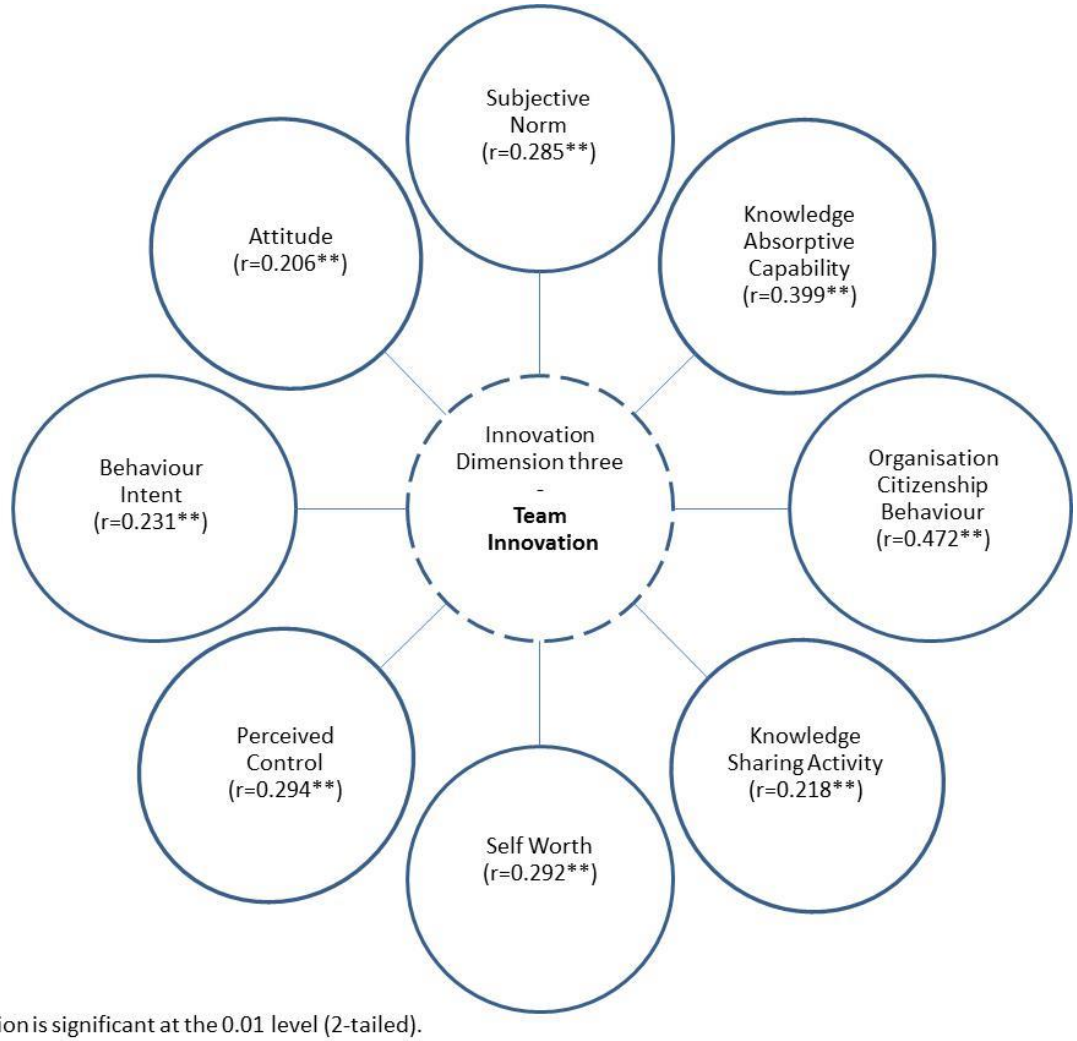
N=780
**Correlation is significant at the 0.01 level (2-tailed).

Source: Author

4.10.3 Workplace Innovation Dimension Three

Dimension three of WIS (Team Innovation) is significantly correlated at the weak level with Subjective Norm (r=0.285, p<0.000); Attitude (r=0.206, p<0.000); Behavior Intent (r=0.231, p<0.000); Perceived Behavioral Control (r=0.294, p<0.000); Self-Worth (r=0.292, p<0.000); Knowledge Sharing Activity (r=0.218, p<0.000); and at the moderate level with OCB (r=0.472, p<0.000); KAC (r=0.399, p<0.000) and the overall Knowledge Sharing Behavior factor (r=0.489, p<0.000).

Figure 4.3 Relationships between the Third WIS dimension of Team Innovation with Knowledge Sharing Behavior dimensions



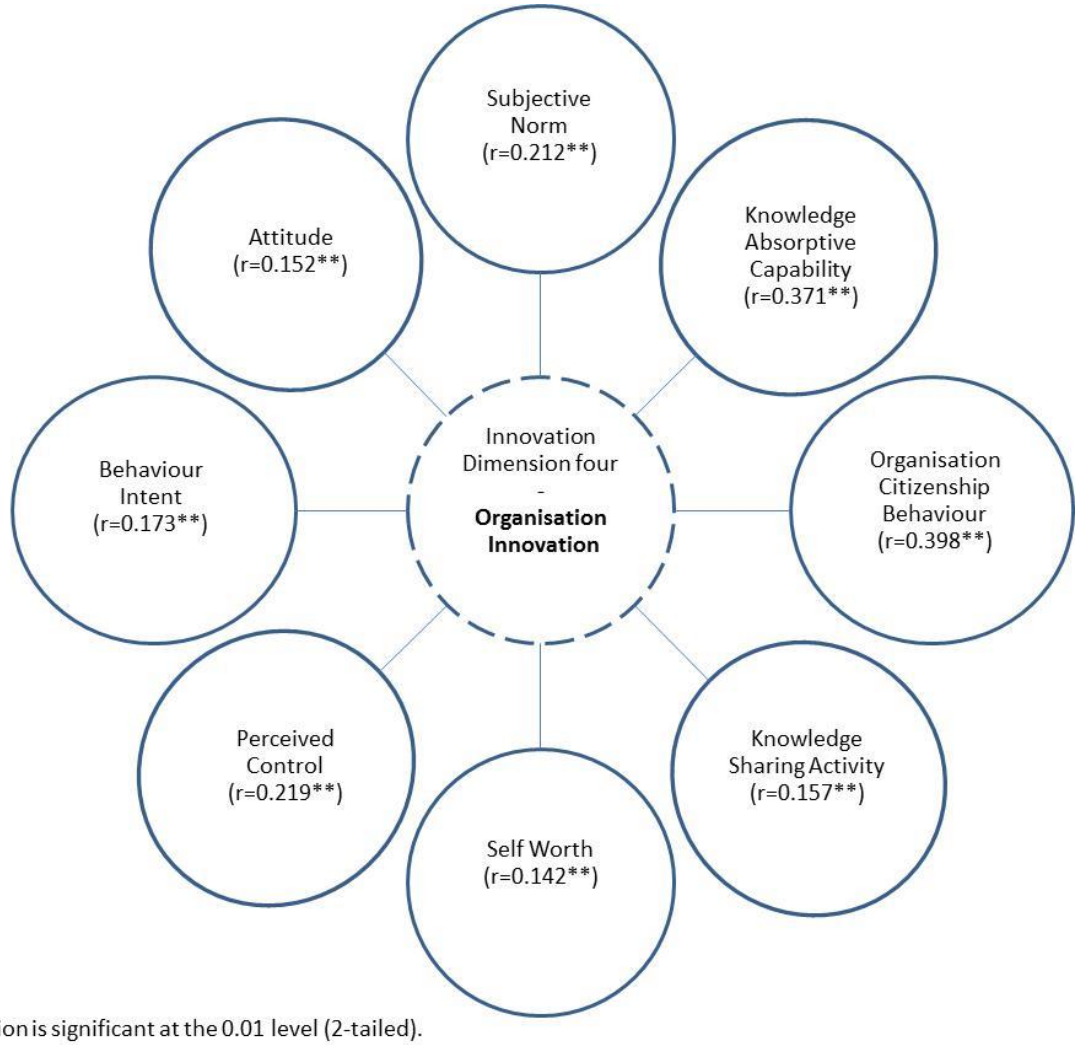
N=780
**Correlation is significant at the 0.01 level (2-tailed).

Source: Author

4.10.4 Workplace Innovation Dimension Four

Dimension four of WIS (Organization Innovation) is significantly correlated at the weak level with Subjective Norm (r=0.212, p<0.000); Attitude (r=0.152, p<0.000); Behavior Intent (r=0.173, p<0.000); Perceived Behavioral Control (r=0.219, p<0.000); Self-Worth (r=0.142, p<0.000); Knowledge Sharing Activity (r=0.157, p<0.000); and at the moderate level with OCB (r=0.398, p<0.000); KAC (r=0.371, p<0.000) and the overall Knowledge Sharing Behavior factor (r=0.388, p<0.000).

Figure 4.4 Relationships between the Fourth WIS dimension of Organization Innovation with Knowledge Sharing Behavior dimensions



N=780
**Correlation is significant at the 0.01 level (2-tailed).

Source: author

4.10.5 Summary

Negative relationship: There are no negative relationships.

Summary: This section presented the Pearson correlation for the relationship between the dimensions of Workplace Innovation and Knowledge Sharing Behavior. Two methods were used to explore and demonstrate the relationships between subscales.

Correlations were used as an exploratory method. Regression analysis was used to demonstrate the relationship between the variables (and hence the underlying constructs).

The correlations between the KSB (nine subscales) and the WIS (four subscales) are tabulated in Table 4.8. The correlation analysis confirms that all relationships

between the dimensions Knowledge Sharing Behavior and Workplace Innovation are positive and significant at the 0.01 level (2-tailed).**

Table 4.8. *Correlations between four WIS subscales and nine KSB subscales*

Variable	***Workplace Innovation Climate***	***Individual Innov.***	***Team Innov.***	***Organization Innov.***
SubjNorm	.365**	.262**	.285**	.212**
Attit	.260**	.269**	.206**	.152**
Intent	.303**	.378**	.231**	.173**
PerCtl	.307**	.236**	.294**	.219**
SelfWrth	.339**	.432**	.292**	.142**
Behav	.315**	.381**	.236**	.199**
KSharAct	.299**	.436**	.218**	.157**
OrgCitBe	.439**	.209**	.472**	.398**
AbsCap	.367**	.239**	.399**	.371**

** Correlation is significant at the 0.01 level (2-tailed).

All subscales between the two instruments demonstrated significant correlations, although a number were not strong correlations. WIS Workplace Innovation Climate correlated most highly with the KSB dimensions as would be expected.

OCB correlated most highly with most of the WIS subscales (WIC b=.439, TI b=.472, OI b=.398 all at p<=.000) as would be expected, with the exception of Individual Innovation which correlated most highly with Knowledge Sharing Activity (b=.436, p=.000).

A series of multiple linear regressions were performed to demonstrate the nature of the relationships between the Knowledge Sharing Behavior and Workplace Innovation constructs.

The independent variables were the nine KSB subscales, and four regressions were undertaken, each using one of the WIS subscales as the dependent variable.

The regression analysis results showed that the KSB significantly predicted Workplace Innovation and other factors of the Workplace Innovation Scale (WIS).

Table 4.9. *Regression analysis of KSB and WIS dimensions*

Variable	*N*	*Workplace Innovation Climate*		*Individual Innov.*		*Team Innov.*		*Organization Innov.*		*Workplace Innovation*	
		β	*s.e.*	*β*	*s.e.*	*β*	*s.e.*	*β*	*s.e.*	*β*	*s.e.*
SubjNorm	780	0.159	0.043	0.002	0.035	0.072	0.043	0.046	0.047	0.066	0.026
Attit	780	0.021	0.04	-0.005	0.033	0.009	0.04	0.012	0.044	0.009	0.024
Intent	780	0.02	0.051	0.089	0.042	0.002	0.052	0.024	0.056	0.038	0.031
Behav	780	0.059	0.047	0.097	0.039	0.005	0.048	0.074	0.052	0.063	0.029
PerCtl	780	0.109	0.028	0.048	0.023	0.116	0.028	0.08	0.031	0.085	0.017
SelfWrth	780	0.123	0.042	0.187	0.034	0.139	0.042	-0.046	0.046	0.103	0.026
KSharAct	780	0.124	0.051	0.295	0.042	0.027	0.052	0.016	0.056	0.129	0.031
AbsCap	780	0.126	0.033	0.043	0.027	0.179	0.034	0.22	0.036	0.135	0.02
OrgCitBe	780	0.237	0.03	0.038	0.024	0.286	0.03	0.235	0.032	0.187	0.018

Note: Correlation is significant at the 0.01 level and 0.05 level (2-tailed).

p= <.05
p= <.01

All regressions indicated significance for each level of dependent variable (four scales of WIS) and the Workplace Innovation Scale construct.

The finding is that Attitude is negatively associated with Individual Innovation as Self-worth is for Organization Innovation. Additionally it was shown that Attitude (*β=.009, p=.725)* and Intention (*β=.038, p=.222)* are not significantly associated with Workplace Innovation.

Taken all together these results were consistent, coherent and logical. This model accounts for 22% of the variance (adjusted R^2 = .216).

The results of the linear regressions revealed that, for Organization Innovation, a significant model emerged: F(9, 770) = 24.898, p < .000. For innovative climate, F(9, 770) = 43.367, p < .000 and accounts for 33% of the variance (adjusted R^2 = .329). Individual Innovation F(9, 770) = 37.382, p < .000, and accounts for 30% of the variance (adjusted R^2 = .296). Team Innovation was F(9, 770) = 40.633, p < .000 and accounts for 31% of variance (adjusted R^2 = .314). Thus, the models were well supported.

4.10.5.1 Correlation matrix

Table 4.10. *Correlation matrix between the dimensions of Knowledge Sharing Behavior and the dimensions of Workplace Innovation*

	Mean	Std. Dev	1	2	3	4	5	6	7	8	9	10	11	12	13
1	4.284	.537	***.717***												
2	4.317	.584	.358**	***.771***											
3	3.918	.519	.429**	.477**	***.730***										
4	3.639	.742	.249**	.208**	.248**	***.714***									
5	4.130	.590	.377**	.418**	.502**	.242**	***.844***								
6	3.811	.540	.396**	.420**	.571**	.228**	.479**	***.653***							
7	4.043	.439	.259**	.290**	.394**	.215**	.403**	.400**	***.670***						
8	3.622	.746	.290**	.163**	.191**	.228**	.169**	.206**	.192**	***.820***					
8	3.591	.668	.249**	.215**	.197**	.223**	.260**	.232**	.228**	.423**	***.846***				
10	3.586	.660	.365**	.260**	.303**	.307**	.339**	.315**	.299**	.439**	.367**	***.791***			
11	3.603	.533	.262**	.269**	.378**	.236**	.432**	.381**	.436**	.209**	.239**	.435**	***.708***		
12	3.468	.663	.285**	.206**	.231**	.294**	.292**	.236**	.218**	.472**	.399**	.495**	.399**	***.699***	
13	3.415	.670	.212**	.152**	.173**	.219**	.142**	.199**	.157**	.398**	.371**	.444**	.145**	.373**	***.804***
Items			***3***	***2***	***4***	***3***	***4***	***3***	***4***	***3***	***4***	***4***	***6***	***4***	***5***

Note: 1=Subjective Norm; 2=Attitude; 3=Intention; 4=Perceived Behavioral Control; 5=Self-Worth; 6=Behavior; 7=Knowledge Sharing Activity; 8=Organization Citizenship Behavior; 9=Knowledge Absorptive Capability; 10=Workplace Innovation Climate; 11=Individual Innovation; 12=Team Innovation; 13=Organization Innovation

Cronbach alpha reliability on the diagonal.

**. All Correlations are significant at the 0.01 level (2-tailed).

b. Listwise N=780

Source: Author

4.11 Mean Scores of the dimensions of Knowledge Sharing Behavior and Workplace Innovation

This section contains the mean score and standard deviation for the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

Table 4.11. *Mean Scores of the Dimensions of Knowledge Sharing Behavior and Workplace Innovation*

	Mean	*Std. Deviation*	*N*
SubjNorm	4.284	0.537	780
Attit	4.317	0.583	780
Be-In	3.872	0.469	780
PerCtl	3.639	0.742	780
SelfWrth	4.130	0.589	780
KSharAct	4.043	0.439	780
OrgCitBe	3.622	0.748	780
KAbsCap	3.591	0.668	780
WrkplClim	3.586	0.660	780
IndInov	3.603	0.533	780
TeamInov	3.468	0.663	780
OrgInnov	3.415	0.669	780
Workplace Innovation	3.525	0.457	780
KnowledgeSharing	3.914	0.364	780

Table 4.13 shows the mean scores of the four dimensions of WIS vary between 3.415 to 3.603, thus there is no significant difference between the dimensions of Workplace Innovation on the mean scores. The mean scores of the eight dimensions of KSB vary between 3.591 and 4.317 where Knowledge Sharing Activity, Self-Worth, Subjective Norm and Attitude have 4 and above mean scores. The mean scores for Knowledge Sharing Behavior and Workplace Innovation are 3.914 and 3.525 respectively. The average responses of all the dimensions have scores 3 and above. This reflects that these responses are rated as neutral.

The following section answers the thesis's research questions and further investigates the relationship between Knowledge Sharing Behavior and Workplace Innovation with the demographic factors of the transnational employees.

4.12 Results to answer RQ.1 and to test hypothesis 1, 2, 3 and 4

The aim of this section is to answer the research question:

RQ1. *What is the relationship between Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

This section of the analysis continues the examination of the hypotheses 1, 2, 3 and 4 which support research question 1. Multiple regression techniques were used for

analysis of the relationships between the dimensions of Knowledge Sharing Behavior and Workplace Innovation. Note: the original factors of behavior and intention are examined separately.

The construct ***Workplace Innovation*** is based on the *Workplace Innovation Scale* developed by McMurray and Dorai (2003) and consists of four subscale dimensions of: Workplace Innovation Climate, Individual Innovation, Team Innovation and Organization Innovation. The scale and each of these subscale dimensions will be examined to see if variations in the subscale dimensions can be accounted by the nine dimension of Knowledge Sharing Behavior: Subjective Norm; Attitude; Intention; Behavior; Perceived Behavioral Control; Self-Worth; Knowledge Sharing Activity; Organizational Citizenship Behavior and Knowledge Absorptive Capability.

4.12.1 Dimensions of Knowledge sharing

X1 Subjective Norm,

X2 Attitude,

X3 Intention,

X4 Behavior,

X5 Perceived Behavioral Control,

X6 Self-Worth,

X7 Knowledge Sharing Activity,

X8 Organizational Citizenship Behavior,

X9 Knowledge Absorptive Capability.

To address*: The dimensions of Knowledge Sharing Behavior are significant predictors of Workplace Innovation*, a series of multiple regression analyses was conducted. These examined the effect of each of the dimensions of Knowledge Sharing Behavior on each of the subscale dimensions of Workplace Innovation. A final multiple regression analysis was conducted with the main factor with Workplace Innovation as the dependent variable.

4.12.2 H.1 - Multiple regression analysis of Workplace Innovation Climate as a dependent variable

To address *H1: The dimensions of Knowledge Sharing Behavior are significant predictors of Workplace Innovation Climate*, multiple regression analysis of

Workplace Innovation Climate as a dependent variable was conducted against each of the subscale dimensions of Knowledge Sharing Behavior.

To test the extent to which the variance in Workplace Innovation Climate, as a dependent variable, can be explained by the nine dimensions of Knowledge Sharing Behavior, as the set of independent variables, a multiple regression analysis was conducted. The following multiple regression equation was adopted:

$$Ytf = ßo + B1X1 + B2X2 + B3X3 + B4X4 + B5X5 + B6X6 + B7X7 + B8X8 + B9X9,$$

Where *Y*tf = Workplace Innovation Climate

ßo = constant (coefficient of intercept)

*X*1, *X*2, *X*3, *X*4, *X5*, *X6*, *X7*, *X8, X9* = Subjective Norm, Attitude, Intention, Behavior, Perceived Behavioral Control, Self-Worth, Knowledge Sharing Activity, Organizational Citizenship Behavior, Knowledge Absorptive Capability.

*B*1,…,*B*9 = regression coefficients of *X*1 to *X*9.

To predict the goodness of fit of the regression model, the multiple correlation coefficient (R), R Square (R^2), and F ratio were examined (see Table 4.12). The Multiple R of .580 indicated that the set of Knowledge Sharing Behavior dimensions had positive relationships to Workplace Innovation Climate. The value of R^2 (.336) was the variance in Workplace Innovation Climate accounted by the Knowledge Sharing Behavior dimensions. The F ratio of 43.367 was statistically significant at the 0.001 level and therefore H1 was confirmed.

In effect, the model suggested that 33.6 percent of the variance in Workplace Innovation Climate was significantly explained by the eight independent dimensions. However, it should be noted that the variance explained was small, and 66.4 percent of the variance in Workplace Innovation Climate was explained by other independent variables which was not included in the multiple regression equation. To determine which independent variable/s in the multiple regression equation was a significant predictor of Workplace Innovation Climate, beta coefficients were examined. Table 4.12 reported that the Subjective Norm (X1), Perceived Behavioral Control (X5), Self-worth (X6), Organizational Citizenship Behavior (X8) and Knowledge Absorptive Capability (X9),i.e. five out of the nine dimensions were significant predictors of Workplace Innovation Climate (*B*1 = .16, B5 = .11, B6 = .12, B8=.24 and B9 = .13, $p < .01$). It also reported that Knowledge

Sharing Activity (X7) was a significant predictor of Workplace Innovation Climate (B7 = .12, p < .05).

Table 4.12. *The results of multiple regression analysis of Workplace Innovation Climate as a dependent variable*

Variables	***Beta***
Subjective Norm	.130**
Attitude	.019
Intention	.016
Behavior	.048
Perceived Behavioral Control	.122**
Self-Worth	.109**
Knowledge Sharing Activity	.083*
Organizational Citizenship Behavior	.269**
Knowledge Absorptive Capability	.128**
Multiple R	.580
R-square (R^2)	.336
Adjusted R^2	.329
F ratio	43.367
Significant F	.000*

*Note: *Significant level at the 0.05*
*Note: **Significant level at the 0.01*

Summary: Thus the hypothesis *H1: The dimensions of Knowledge Sharing Behavior are significant predictors of Workplace Innovation Climate,* is supported. Three dimensions were found not significant.

4.12.3 H.2 - Multiple regression analysis of Individual Innovation as a dependent variable

To address *H2: The dimensions of Knowledge Sharing Behavior are significant predictors of Individual Innovation,* a series of multiple regression analyses were conducted. These examined the effect of each of the dimensions of Knowledge Sharing Behavior on the subscale dimension of Individual Innovation.

Table 4.13 reported the results of the multiple regression analysis of the eight independent variables and the *Individual Innovation* dependent variable. The equation for *Individual Innovation* based on the eight independent dimensions was set similarly to the first equation above.

Again, to predict the goodness of fit of the regression model, the R, R^2, and F ratios were examined (see Table 4.13). The multiple R of .551 indicated a positive relationship between the set of Knowledge Sharing Behavior dimensions and Individual Innovation. The R^2 value of .304 and the F ratio of 37.382 at the

significant level ($p<0.01$) suggested that the set of independent variables had little but significant importance in contributing to the Individual Innovation dimension and that confirmed H2. When the beta coefficients were examined, it showed that five out of the nine Knowledge Sharing Behavior dimensions, Intention (X3) B3 = .087, Behavior (X4) B3 = .089 and Perceived Behavioral Control (X5) B5 = .067 were at the significant level ($p<0.05$) while the factors Self-worth (X6) B6=.206 and Knowledge Sharing Activity (X7) B7 = .244 were significant at $p<0.1$. One of the nine dimensions, Attitude (X2) was negative and non-significant when predicting the change of the Individual Innovation variable.

Table 4.13. *The results of multiple regression analysis of Individual Innovation as a dependent variable*

Variables	***Beta***
Subjective Norm	.002
Attitude	-.005
Intention	.087*
Behavior	.089*
Perceived Behavioral Control	.067*
Self-Worth	.206**
Knowledge Sharing Activity	.244**
Organizational Citizenship Behavior	.053
Knowledge Absorptive Capability	.054
Multiple R	.551
R-square (R^2)	.304
Adjusted R^2	.296
F ratio	37.382
Significant F	.000*

*Note: *Significant level at the 0.05*
*Note: **Significant level at the 0.01*

Summary: Thus the hypothesis *H2: The dimensions of Knowledge Sharing Behavior are significant predictors of Individual Innovation,* is supported. Four dimensions were found not significant.

4.12.4 H.3 - Multiple regression analysis of Team Innovation as a dependent variable

To address *H3: The dimensions of Knowledge Sharing are significant predictors of Team Innovation,* a series of multiple regression analyses was conducted. These examined the effect of each of the dimensions of Knowledge Sharing on the subscale dimension of Team Innovation.

For the Team Innovation regression model, the value of R^2 (.322) and the F ratio of 40.633 at a significant level ($p<0.01$) suggested that the variation in Team Innovation was significantly explained by the nine independent dimensions. Therefore, H3 was accepted. The beta coefficients also suggested that Perceived Behavioral Control (X5) B5 = .130, Self-worth (X6) B6 = .124, Organizational Citizenship Behavior (X8) B8 = .323 and Knowledge Absorptive Capability (X9) B9 = .180 at $p <.01$ were the only factors that significantly predict of the change of the Team Innovation variable (see Table 4.14). Therefore, four of the nine Knowledge Sharing Behavior subscale dimensions were significantly predictors.

Table 4.14. *The results of multiple regression analysis of Team Innovation as a dependent variable*

Variables	***Beta***
Subjective Norm	.058
Attitude	.008
Intention	.002
Behavior	.004
Perceived Behavioral Control	.130**
Self-Worth	.124**
Knowledge Sharing Activity	.018
Organizational Citizenship Behavior	.323**
Knowledge Absorptive Capability	.180**
Multiple R	.567
R-square (R^2)	.322
Adjusted R^2	.314
F ratio	40.633
Significant F	.000*

*Note: *Significant level at the 0.05*
*Note: **Significant level at the 0.01*

Summary: Thus the hypothesis *H3: The dimensions of Knowledge Sharing Behavior are significant predictors of Team Innovation,* is supported. Five dimensions were found not significant.

4.12.5 H.4 Multiple regression analysis of Organization Innovation as a dependent variable

To address *H4: The dimensions of Knowledge Sharing are significant predictors of Organization Innovation,* a series of multiple regression analyses was conducted. These examined the effect of each of the dimensions of Knowledge Sharing Behavior on the subscale dimension of Organization Innovation.

Table 4.16 reported the results of the multiple regression analysis of the eight independent variables and the Organization Innovation dependent variable. The multiple R of .475 indicated a positive relationship between the set of Knowledge Sharing Behavior dimensions and Organization Innovation. The R^2 value of .225 at the significant level ($p<0.01$) suggested that the set of independent variables had a small but significant effect on the Organization Innovation dimension. The results, therefore, confirmed H4. When the beta coefficients were examined, it showed Perceived Behavioral Control (X5) B5 = .089, Organizational Citizenship Behavior (X8) B8 = .262 and Knowledge Absorptive Capability (X9) B9 = .219 at $p < .01$ were the only factors that significantly predict of the change of the Organization Innovation variable (see Table 4.15). Therefore, three of the nine Knowledge Sharing Behavior subscale dimensions were significantly predictors. Self-worth (X6) was negative and non-significant when predicting the change of the Organization Innovation variable.

Table 4.15. *The results of multiple regression analysis of Organization Innovation as a dependent variable*

Variables	***Beta***
Subjective Norm	.037
Attitude	.010
Intention	.019
Behavior	.060
Perceived Behavioral Control	.089**
Self-Worth	-.041
Knowledge Sharing Activity	.011
Organizational Citizenship Behavior	.262**
Knowledge Absorptive Capability	.219**
Multiple R	.475
R-square (R^2)	.225
Adjusted R^2	.216
F ratio	24.898
Significant F	.000*

*Note: *Significant level at the 0.05*
*Note: **Significant level at the 0.01*

Summary: Thus the hypothesis *H4: The dimensions of Knowledge Sharing are significant predictors of Organization Innovation,* is supported. Six dimensions were found not significant.

4.12.6 Multiple regression analysis of Workplace Innovation as a dependent variable

To address the posit: *The dimensions of Knowledge Sharing Behavior are significant predictors of Workplace Innovation,* a series of multiple regression analyses was conducted. These examined the effect of each of the dimensions of Knowledge Sharing Behavior on the subscale dimension of Workplace Innovation.

To test the extent to which the variance in main factor Workplace Innovation, as a dependent variable, can be explained by the nine dimensions of Knowledge Sharing Behavior, as the set of independent variables, a multiple regression analysis was conducted.

To predict the goodness of fit of the regression model, the multiple correlation coefficient (R), R Square (R^2), and F ratio were examined (see Table 4.16). The Multiple R of .692 indicated that the set of Knowledge Sharing Behavior dimensions had positive relationships to Workplace Innovation. The value of R^2 (.479) was the variance in Workplace Innovation accounted by the Knowledge Sharing Behavior dimensions. The F ratio of 78.647 was statistically significant at the 0.01 level and therefore the posit was supported.

In effect, the model suggested that 47.9 percent of the variance in Workplace Innovation was significantly explained by the nine independent dimensions. However, it should be noted that the variance explained was small, and 52.1 percent of the variance in Workplace Innovation was explained by other independent variables which were not included in the multiple regression equation. To determine which independent variable/s in the multiple regression equation was a significant predictor of Workplace Innovation, beta coefficients were examined. Table 4.16 reported that the Subjective Norm (X1) B1=.078 and Behavior (X4), B4=.075, $p< .05$ and Perceived Behavioral Control, Self-Worth, Knowledge Sharing Activity, Organizational Citizenship Behavior and Knowledge Absorptive Capability dimensions (X5, X6, X7, X8 & X9) were significant predictors of Workplace Innovation (B5= .138, B6=.133, B7=.124, B8=.305, and B9=.197, $p<.01$). Therefore, five of the nine Knowledge Sharing subscale dimensions were significantly predictors with two, Subjective Norm and Behavior, predictors.

Table 4.16. *The results of multiple regression analysis of Workplace Innovation as a dependent variable*

Variables	***Beta***
Subjective Norm	.078*
Attitude	.011
Intention	.043
Behavior	.075*
Perceived Behavioral Control	.138**
Self-Worth	.133**
Knowledge Sharing Activity	.124**
Organizational Citizenship Behavior	.305**
Knowledge Absorptive Capability	.197**
Multiple R	.692
R-square (R^2)	.479
Adjusted R^2	.473
F ratio	78.647
Significant F	.000*

*Note: *Significant level at the 0.05*
*Note: **Significant level at the 0.01*

Summary: Thus the statement: *The dimensions of Knowledge Sharing Behavior are significant predictors of Workplace Innovation*, is supported. The factors Attitude and Intention, while supporting the hypothesis, are small and insignificant.

4.13 Results to answer RQ.2 and to test hypothesis 5

This section of the analysis examines research question 2 and its supporting hypothesis:

RQ2. Is there a difference in perception among demographic groups towards Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?

H5. There are differences in perceptions among demographic groups toward the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

To address this hypothesis, each of the demographic groups will be examined separately.

4.13.1 Compare Gender group

Table 4.17. *Independent Sample t-test: Difference between Male and Female Transnational Employees towards the Perception of Knowledge Sharing Behavior and Workplace Innovation*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Knowledge Sharing	Equal variances assumed	.049	.825	2.105	860	.036*	.05212	.02476	.00351	.10072
Workplace Innovation	Equal variances assumed	.426	.514	1.031	860	.303	.03219	.03121	-.02907	.09344

*Note: *Significant level at the 0.05*

Summary: As Levene is not significant, then the 'equal variance assumed' line is reported. There is a significant correlation between the perception of Knowledge Sharing Behavior and the gender of transnational employees. On the other hand, there is no correlation between the gender of transnational employees and Workplace Innovation. There is a highly significant correlation between Knowledge Sharing Behavior and Workplace Innovation within both the male and female transnational employees. Results also confirmed that there is a significant difference in the male and female transnational employees in their perceptions of Knowledge Sharing Behavior with male employees reporting a slightly higher KSB (Mean diff=.05, p=.036). However, there is no significant difference in the male and female transnational employees' perceptions of Workplace Innovation.

4.13.2 Compare Age groups

The aim of this section is to analyze the research question: 'Is there a difference in the perception of Knowledge Sharing Behavior and Workplace Innovation within the different age categories of transnational employees?'

One-way analysis of variance (ANOVA) is conducted to compare the variance between the mean score of Knowledge Sharing Behavior and Workplace Innovation across different age brackets of transnational employees.

The homogeneity of variance tests whether the variance within each of the

population groups is equal or not. If the variances are not homogeneous, they are said to be heterogeneous. In this test (table 4.20), it is noticed that the Sig. value for Knowledge Sharing Behavior is 0.005 and Workplace Innovation is 0.102. This means that Knowledge Sharing Behavior has violated the assumption of homogeneity of variance and that Workplace Innovation has not violated the assumption of homogeneity of variance (Pallant 2013). As the age group size comparison exceeds Stevens' (1996) guidance of largest / smallest of 1.5 for the 61+ group (6) and the 51-60 group, then the violation of the assumption of homogeneity of variance for those groups is not acceptable.

Table 4.18. *Test of Homogeneity of Variances between Age Categories*

	Levene Statistic	***df1***	***df2***	***Sig.***
Knowledge sharing	3.427	5	847	.005
Workplace Innovation	1.843	5	847	.102

Table 4.21 below contains an analysis of variance (ANOVA) that assesses the overall significance. As the value of F for Knowledge Sharing Behavior is >1 at 2.690 and the p-value is < 0.05 at .020, this predicts that there is a highly significant difference in the perception of Knowledge Sharing Behavior across different age brackets of transnational employees. Similarly, the F value for Workplace Innovation is <1 at .654 and the p-value is > than 0.05 which is 0.658 showing that there is no significant difference in the perception of Workplace Innovation across different age groups of transnational employees.

Table 4.19 *One-Way Analysis of Variance across Age Categories*

		Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Knowledge Sharing	Between groups	1.694	5	.339	2.690	.020
	Within groups	106.673	847	.126		
	Total	108.366	852			
Workplace Innovation	Between Groups	.664	5	.133	.654	.658
	Within groups	172.038	847	.203		
	Total	172.703	852			

Note: n=4 for age group 18-21 years.

Post-hoc tests (see

Table 6.1 Statistical Analysis) confirm that there is a significant difference

(p=0.021) in the perception of Knowledge Sharing Behavior between transnational employees within the age groups of 22-30 years and 51–60 years.

Summary: The Pearson R result confirms that there are significant relationships between the age group of transnational employees and Workplace Innovation. These range from r =0.669, p<0.000 for the '31-40 years' group to the '61 plus years' group with r =0.600, p<0.000). There is no negative correlation found between knowledge sharing and Workplace Innovation within five age brackets. Also, there is a significant difference in the perception of knowledge sharing across transnational employees within the age bracket of 51–60 years. As the age group size comparison exceeds Stevens' (1996) guidance of largest / smallest of 1.5 for the 61+ group (6) and the 51-60 group (2.2), then the violation of the assumption of homogeneity of variance for those groups means the analysis is not acceptable.

There is also no significant relationship or difference found in the perception of Workplace Innovation across different age brackets of transnational employees.

4.13.3 Compare Education groups

The aim of this section is to investigate the research question: 'Is there a difference in knowledge sharing and Workplace Innovation within the different levels of educational qualification of transnational employees relative to age group?'

One-way analysis of variance (ANOVA) is conducted to compare the variance between the mean score of knowledge sharing and Workplace Innovation across six different levels of educational level. The test of homogeneity of variance tests whether the variance within each of the populations is equal or not. If the variances are not homogeneous, they are said to be heterogeneous. Table 4.20 below informs that the Sig. value for knowledge sharing is 0.210 and the Sig. value for Workplace Innovation is 0.346. This means that both knowledge sharing and Workplace Innovation have not violated the assumption of homogeneity of variance and that Workplace Innovation has violated the assumption of homogeneity of variance (Pallant 2013).

Table 4.20. *Test of Homogeneity of Variances between Educational levels*

	Levene statistic	*df1*	*df2*	*Sig.*
Knowledge sharing	1.433	5	844	.210
Workplace Innovation	1.123	5	844	.346

Table 4.21 contains an analysis of variance (ANOVA) which assesses the overall significance. As the value of F for knowledge sharing is >1 at 2.661 and the p-value is <0.05 at 0.021 and the value of F for Workplace Innovation is >1 at 1.245 and the p-value is > 0.05 at 0.286, this predicts that there is a highly significant difference in the perception of knowledge sharing of transnational employees within the six different levels of educational level.

Furthermore, post-hoc comparisons using the Tukey HSD test indicated that (Table 6.2 Appendix E. Statistical Analysis) there is no significant difference (p>0.05) in the knowledge sharing of transnational employees with any qualification, and there is no difference in the perception of Workplace Innovation.

Table 4.21. *One-Way Analysis of Variance across Different Categories of Educational level*

		Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Knowledge sharing	Between groups	1.681	5	.336	2.661	.021
	Within groups	106.641	844	.126		
	Total	108.322	849			
Workplace Innovation	Between groups	1.259	5	.252	1.245	.286
	Within groups	107.698	844	.202		
	TOTAL	171.957	849			

Summary: Results confirm that there is not a significant correlation found between the educational level of transnational employees and knowledge sharing and Workplace Innovation for most categories with the exception of knowledge sharing between associate degree and master's degree holders.

4.13.4 Compare Education tenure

The aim of this section is to investigate the research question: 'Is there a difference in the perception of knowledge sharing and Workplace Innovation within the educational tenure of transnational employees?' Education tenure is the time in years since gaining the last qualification.

One-way analysis of variance (ANOVA) is conducted to compare the variance between the mean score of knowledge sharing and Workplace Innovation across three different levels of educational tenure. The test of homogeneity of variance tests whether the variance within each of the populations is equal or not. If the variances are not homogeneous, they are said to be heterogeneous. Table 4.22 below informs that the Sig. value for knowledge sharing is 0.126 and the Sig. value

for Workplace Innovation is 0.723. This means that both knowledge sharing and Workplace Innovation have not violated the assumption of homogeneity of variance and that Workplace Innovation has violated the assumption of homogeneity of variance (Pallant 2013).

Table 4.27 below contains an analysis of variance (ANOVA) which assesses the overall significance. As the value of F for knowledge sharing is >1 at 2.654 and the p-value is >0.05 at 0.071 and the value of F for Workplace Innovation is <1 at .598 and the p-value is > 0.05 at 0.550, this predicts that there is not a significant difference in the perception of knowledge sharing and Workplace Innovation of transnational employees within the three different levels of educational tenure. Furthermore, post-hoc comparisons using the Tukey HSD test indicated that (Table 4.28) there is no significant difference (p>.05) in the perception of knowledge sharing or perception of Workplace Innovation of transnational because of education tenure.

Table 4.22 *Test of Homogeneity of Variances between Educational tenure*

	Levene statistic	***df1***	***df2***	***Sig.***
Knowledge sharing	2.078	2	836	.126
Workplace Innovation	0.325	2	836	.723

Table 4.23: One-Way Analysis of Variance across Different Categories of Educational tenure

		Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Knowledge sharing	Between groups	.671	2	.336	2.654	.071
	Within groups	105.693	836	.126		
	Total	106.364	838			
Workplace Innovation	Between groups	.242	2	.121	.598	.550
	Within groups	168.918	836	.202		
	TOTAL	169.160	838			

Table 4.24. *Post-Hoc Test between Different Categories of Educational tenure*

Dependent Variable: Knowledge Sharing Behavior
Tukey HSD

(I) I completed my most recent qualification ... years ago:	(J) I completed my most recent qualification ... years ago:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0 to 5 years	6 to 10 years	.02324	.03287	.759	-.0539	.1004
	11 years or greater	-.04506	.02822	.247	-.1113	.0212
6 to 10 years	0 to 5 years	-.02324	.03287	.759	-.1004	.0539
	11 years or greater	-.06830	.03161	.079	-.1425	.0059
11 years or greater	0 to 5 years	.04506	.02822	.247	-.0212	.1113
	6 to 10 years	.06830	.03161	.079	-.0059	.1425

Dependent Variable: Workplace Innovation
Tukey HSD

(I) I completed my most recent qualification ... years ago:	(J) I completed my most recent qualification ... years ago:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
0 to 5 years	6 to 10 years	.02475	.04156	.823	-.0728	.1223
	11 years or greater	-.01876	.03567	.859	-.1025	.0650
6 to 10 years	0 to 5 years	-.02475	.04156	.823	-.1223	.0728
	11 years or greater	-.04352	.03996	.521	-.1373	.0503
11 years or greater	0 to 5 years	.01876	.03567	.859	-.0650	.1025
	6 to 10 years	.04352	.03996	.521	-.0503	.1373

Summary: Results confirm that there is not a significant correlation found between the educational tenure of transnational employees and Knowledge Sharing Behavior and Workplace Innovation.

4.13.5 Compare Organization tenure

This section investigates whether the years of employment with the same corporation i.e. organization tenure of transnational employees has any correlation with knowledge sharing and Workplace Innovation. It investigates the question: 'Is there a difference in knowledge sharing and Workplace Innovation within the different group's organization tenure of transnational employees?'

One-way analysis of variance (ANOVA) is conducted in Table 4.26 below to compare the variance between the mean score of knowledge sharing and Workplace Innovation across the six categories of organization tenure. The six different categories of organization tenure (years with the transnational corporation) are 'under 2 years; 2 to 5 years; 6 to 10 years; 11 to 20 years; 21 to 30 years ; and more than 30 years' . The test of homogeneity of variance tests

whether the variance within each of the populations is equal or not. If the variances are not homogeneous, they are said to be heterogeneous. In the Levene's test (Table 4.25), it is shown that the Sig. value for knowledge sharing is 0.112 and Workplace Innovation is 0.304 which means that there is no violation of homogeneity of variance between knowledge sharing and Workplace Innovation (Pallant 2009).

Table 4.25. *Test of Homogeneity of Variances between Organization Tenure*

	Levene	df1	df2	Sig.
Knowledge sharing	1.567	10	839	.112
Workplace Innovation	1.176	10	839	.304

Table 4.26 below contains an analysis of variance (ANOVA) which assesses the overall significance. As the value of F for knowledge sharing is <1 at 0.810 and the p-value is > 0.05 at 0.543, there is no significant difference in knowledge sharing of transnational employees across six different categories of organization tenure. The F value for Workplace Innovation is <1 at 2.315 and the p-value is <0.05 at 0.045 which shows that there is a difference in the Workplace Innovation among transnational employees across different categories of organization tenure. However, Post-hoc comparisons using the Tukey HSD (Table 4.27) test did not indicate the difference between the groups.

Table 4.26. *One-Way Analysis of Variance across Organization Tenure*

		Sum of Squares	df	Mean Square	F	Sig.
Knowledge Sharing	Between groups	277.848	177	1.570	1.004	.478
	Within groups	1050.887	672	1.564		
	Total	1328.735	849			
Workplace Innovation	Between groups	344.262	249	1.383	.843	.942
	Within groups	984.473	600	1.641		
	Total	1328.735	849			

Table 4.27. *Relationship between Knowledge sharing and Workplace Innovation within Different Categories of Organization Tenure*

Organization tenure			**Knowledge sharing**
Under 2 years	Workplace Innovation	Pearson correlation	.624**
		Sig. (2-tailed)	.000
		N	247
2 to 5 years	Workplace Innovation	Pearson correlation	.682**
		Sig. (2-tailed)	.000
		N	234
6 to 10 years	Workplace Innovation	Pearson correlation	.661**
		Sig. (2-tailed)	.000
		N	202
11 to 20 years	Workplace Innovation	Pearson correlation	.768**
		Sig. (2-tailed)	.000
		N	116
21 to 30 years	Workplace Innovation	Pearson correlation	.302
		Sig. (2-tailed)	.073
		N	36
More than 30 years	Workplace Innovation	Pearson correlation	.797**
		Sig. (2-tailed)	.000
		N	15

**. Correlation is significant at the 0.01 level (2-tailed).

Summary: The result confirms that there is a significant relationship between organization tenure, knowledge sharing and Workplace Innovation in all categories except the 21-30 year group.

There is no significant difference found in the perception of knowledge sharing and Workplace Innovation of transnational employees working across five of the six different categories of organization tenure.

4.13.6 Compare Roles

One-way analysis of variance (ANOVA) is conducted in Table 4.29 below to compare the variance between the mean score of knowledge sharing and Workplace Innovation across the five different roles. The five different roles are 'Professional technical; Technical; Business support; Managerial and Other'. The test of homogeneity of variance tests whether the variance within each of the populations is equal or not. If the variances are not homogeneous, they are said to be heterogeneous. In the Levene's test (Table 4.28), it is shown that the Sig. value for knowledge sharing is 0.803 and Workplace Innovation is 0.422 which means that there is no violation of homogeneity of variance between knowledge sharing and Workplace Innovation (Pallant 2013).

Table 4.29 below contains an analysis of variance (ANOVA) which assesses the

overall significance. As the value of F for knowledge sharing is >1 at 6.308 and the p-value is < 0.05 at 0.000, there is a significant difference in the perception of knowledge sharing of transnational employee staff working in the five different roles. The F value for Workplace Innovation is <1 at 4.910 and the p-value is <0.05 at 0.001 which shows that there is a significant difference in the perception of Workplace Innovation among transnational employee staff across five different roles. However, Post-hoc comparisons using the Tukey HSD (Table 6.3 Appendix E. Statistical Analysis) test did not indicate the difference between the groups.

Table 4.28. *Test of Homogeneity of Variances between Roles*

	Levene statistic	***df1***	***df2***	***Sig.***
Knowledge sharing	.408	4	848	.803
Workplace Innovation	.972	4	848	.422

Table 4.29. *One-Way Analysis of Variance across Role*

		Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Knowledge sharing	Between groups	3.133	4	.783	6.308	.000
	Within groups	105.287	848	.124		
	Total	107.288	852			
Workplace Innovation	Between groups	3.908	4	.977	4.910	.001
	Within groups	168.727	848	.199		
	TOTAL	172.635	852			

Summary: There are significant relationships between the title/position level of transnational employees and knowledge sharing and Workplace Innovation. The results confirm that the relationship between knowledge sharing and Workplace Innovation is highly significant between the transnational employees who are in many roles.

4.13.7 Compare Operating Entity

This section investigates the research question: 'Is there a difference in the perception of knowledge sharing and Workplace Innovation within the different regional Operating Entities of transnational employees?'

One-way analysis of variance (ANOVA) is conducted in Table 4.31 below to compare the variance between the mean score of knowledge sharing and Workplace Innovation across the eight different Operating Entities. The eight different Operating Entities are 'Corporate; Africa; Asia; Australasia; Canada; Europe; South America and USA'. The test of homogeneity of variance tests whether the variance within each of the populations is equal or not. If the

variances are not homogeneous, they are said to be heterogeneous. In the Levene's test (Table 4.30), it is shown that the Sig. value for knowledge sharing is 0.740 and Workplace Innovation is 0.487 which means that there is no violation of homogeneity of variance between knowledge sharing and Workplace Innovation (Pallant 2013).

Table 4.36 below contains an analysis of variance (ANOVA) which assesses the overall significance. As the value of F for knowledge sharing is >1 at 1.301 and the p-value is > 0.05 at 0.247, there is no significant difference in the perception of knowledge sharing of transnational employee staff working in the eight different operating entities. The F value for Workplace Innovation is <1 at 3.465 and the p-value is <0.05 at 0.001 which shows that there is a difference in the perception of Workplace Innovation among transnational employee staff across the eight different operating entities. However, Post-hoc comparisons using the Tukey HSD (Table 6.4 Appendix E. Statistical Analysis) test did not indicate the difference between the groups.

Table 4.30. *Test of Homogeneity of Variances between Operating Entity*

	Levene statistic	***df1***	***df2***	***Sig.***
Knowledge sharing	.662	7	845	.740
Workplace Innovation	.924	7	845	.487

Table 4.31. *One-Way Analysis of Variance across Different Operating Entities*

		Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Knowledge sharing	Between groups	1.144	7	.163	1.301	.247
	Within groups	106.144	845	.126		
	Total	107.288	852			
Workplace Innovation	Between groups	4.756	7	.681	3.465	.001
	Within groups	165.995	845	.196		
	TOTAL	170.759	852			

Summary: The result confirms that there is no relationship between operating entity and knowledge sharing. There is a significant relationship between corporate and Europe p<.05 at p=.043 for Workplace Innovation. There is a significant relationship between operating entity and Workplace Innovation with F= 3.465 and p<.05 at p=.001.

4.13.8 Compare Expatiate experience

This section investigates the research question: 'Is there a difference in the perception of knowledge sharing and Workplace Innovation of Transnational Employees based on Expatriate Experience?'

An independent sample t-test was conducted to compare the difference in the perception of knowledge sharing and Workplace Innovation of transnational employees based on Expatriate Experience. If the Sig. value is larger than or equal to 0.05, then the first line in the table is referred to, which is 'Equal variance assumed'. If the Sig. value is less than or equal to 0.05, then the second line is assumed 'Equal variance not assumed'.

In this case, as shown in Table 4.32 below, the Sig. value for knowledge sharing is 0.307 and for Workplace Innovation is 0.153. This means that the variance for two groups is not the same. Therefore, the data violates the assumption of equal variance. The Sig (2-tailed) value for knowledge sharing is 0.074 which is greater than 0.05. This means that there is no significant difference in the mean scores of transnational employees based on Expatriate Experience. The Sig (2 tailed) value for Workplace Innovation is 0.080, which is above 0.05. This means that there is no significant difference between the transnational employees based on Expatriate Experience.

Table 4.32. *Independent Sample t-test: Difference Transnational Employees towards the Perception of Knowledge sharing based on Expatriate Experience*

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Knowledge Sharing	Equal variances assumed	1.046	.307	1.786	842	.074	.04541	.02542	-.00449	.09531
Workplace Innovation	Equal variances assumed	2.041	.153	1.712	842	.087	.05515	.03222	-.00809	.11840

Summary: There is not a significant correlation between the perception of knowledge sharing and the expatriate experience of transnational employees. Additionally, there is no significant correlation between the expatriate experience of transnational employees and Workplace Innovation.

These findings support hypothesis 5 and confirm that there are significant differences among demographic groups towards Knowledge Sharing Behavior and Workplace Innovation.

4.14 Results to answer RQ.3 and to test hypothesis 6

This section examines the research question 3 and its supporting hypothesis:

RQ3. *To what extent do demographic group characteristics affect Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*

H6. Demographics characteristics will significantly affect the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

4.14.1 Workplace Innovation Scale (WIS)

The aim of this section is to analyze the research question: *Do demographic variables significantly predict Workplace Innovation dimensions?*

To examine whether demographics significantly predicted the dimensions of the Workplace Innovation Scale a regression analysis was performed. As a result, the following significant relationships were found:

Table 4.33. *Demographics and WIS dimensions*

	ANOVA		-ve	***Regress Coefficients***
	f(1,778)			*t* (780)
Gender - Individual Innovn	f=20.82, p<0.000)	p <.01		[ß = -.161, *t* = -4.563, *p* < .000]
Gender - Team Innovation	f=9.672, p<0.002)	p <.01		[ß = -.111, *t* = -3.110, *p* < .002]
Gender - Org Workplace Innovation	f=8.493, p<0.004)	p <.01		[ß = .104, *t* = 2.914, *p* < .004]
Age group - Individ Innovn	f=15.985, p<0.000)	p <.01		[ß = .142, *t* = 3.998, *p* < .000]
Age group - Org Workplace Innovation	f=7.332, p<0.007)	p <.01		[ß = -.097, *t* = -2.708, *p* < .007]
Education level - all WIS dimensions		no		
Ed tenure - Individual Innovn	f=12.602, p<0.000)	p <.01		[ß = .126, *t* = 3.550, *p* < .000]
Ed tenure - Org Workplace Innovation	f=4.384, p<0.037)	p <.05		[ß = -.075, *t* = -2.094, *p* < .037]
Org tenure - Team Innovn	f=10.765, p<0.001)	p <.01		[ß = .117, *t* = 3.281, *p* < .001]
Org tenure - Org Workplace Innovation	f=12.954, p<0.000)	p <.01		[ß = -.128, *t* = -3.599, *p* < .000]
Op entity - Innovn climate	f=4.907, p<0.027)	p <.05		[ß = -.079, *t* = -2.215, *p* < .027]
Op entity - Org Workplace Innovation	f=11.569, p<0.001)	p <.01		[ß = -.121, *t* = -3.401, *p* < .001]
Role - all WIS dimensions		no		
Expat exper - Individ Innovn	f=10.692, p<0.001)	p <.01		[ß = -.116, *t* = -3.270, *p* < .001]

When considering the demographic variables and the dimensions of the Workplace Innovation Scale (WIS), the analysis shows that some of the variables influence selected dimensions of the WIS scale. Gender has a significant relationship with the Organization Innovation dimension (p<.05), but a highly significant negative relationship with Individual Innovation (p<.01) and also a highly significant negative relationship with Team Innovation (p<.01). Similarly age group has a highly significant negative relationship with Team Innovation (p<.01). Education tenure has a significant negative relationship with the Organization Innovation dimension (p<.05) but a highly significant positive relationship with Team Innovation (p<.01). Operating entity has a significant negative relationship with Workplace Innovation Climate (p<.05) and a highly significant negative relationship with Organization Innovation (p<.01). The variable expatriate experience has a highly significant negative relationship with Individual Innovation (p<.05).

The variables, education level and role, do not exhibit any significant relationship with the dimensions of the Knowledge Sharing Behavior scale.

4.14.2 Knowledge Sharing Behavior scale (KSB)

The aim of this section is to analyze the research question: Do demographic variables significantly predict Knowledge Sharing Behavior dimensions?

The relationships between demographics and the dimensions of the Knowledge Sharing Behavior (KSB) scale were tested by regression analysis to determine if demographics significantly predicted the KSB dimensions.

Analysis of the demographic variables and the dimensions of the Knowledge Sharing Behavior scale (KSB) shows that some of the variables influence selected dimensions of the KSB scale. Gender has a significant negative relationship with attitude, Intentions and Perceived Behavioral Control ($p<.05$) and a highly significant negative relationship with self-worth ($p<.01$). Similarly age group has a highly significant relationship with Subjective Norm, intention and behavior intention ($p<.01$). Education level only has a highly significant relationship with self-worth ($p<.01$). Education tenure has a significant positive relationship with Subjective Norm ($p<.05$) and a highly significant positive relationship with intention and behavior intention ($p<.01$). Organization tenure has a highly significant positive relationship with Subjective Norm ($p<.01$). The expatriate experience variable has a significant negative relationship with OCB ($p<.05$). The variable expatriate experience has a significant negative relationship with behavior ($p<.05$), and has a significant negative relationship with self-worth ($p<.05$) and a highly significant negative relationship with self-worth ($p<.01$).

The variable role does not exhibit any significant relationship with the dimensions of the Knowledge Sharing Behavior scale in this population sample.

As a result, the following significant relationships were found:

Table 4.34. *Demographics and KSB dimensions*

	ANOVA		-ve	***Regress Coefficients***
	f(1,778)			*t (780)*
Gender - Attitude	f=5.004, p<0.026	p <.05		[ß = -.080, *t* = -2.237, *p* < .026]
Gender - Intention	f =5.480, p<0.019	p <.05		[ß = -.084, *t* = -2.341, *p* < .019]
Gender – Perceived Behavioral Control	f =5.798, p<0.016	p <.05		[ß = -.086, *t* = -2.408, *p* < .016]
Gender – Self-worth	f =16.276, p<0.000	p <.01		[ß = -.143, *t* = -4.034, *p* < .000]
Gender –KS Behavior scale	f =9.279, p<0.002	p <.01		[ß = -.109, *t* = -3.046, *p* < .002]
Age group - Subjective Norm	f =9.225, p<0.002	p <.01		[ß = .109, *t* = 3.037, *p* < .002]
Age group - Intention	f =19.797, p<0.000	p <.01		[ß = .158, *t* = 4.449, *p* < .000]
Age group – Behav Intention	f =19.797, p<0.000	p <.01		[ß = .158, *t* = 4.449, *p* < .000]
Age group –KS Behavior scale	f =3.900, p<0.049	p <.05		[ß = .071, *t* = 1.975, *p* < .049]
Educ level – Self-worth	f =8.736, p<0.003	p <.01		[ß = .105, *t* = 2.956, *p* < .003]
Educ tenure - Subjective Norm	f =6.484, p<0.011	p <.05		[ß = .091, *t* = 2.546, *p* < .011]
Educ tenure - Intention	f =13.146, p<0.000	p <.01		[ß = .129, *t* = 3.626, *p* < .000]
Educ tenure – Behav Intention	f =9.733, p<0.000	p <.01		[ß = .111, *t* = 3.120, *p* < .000]
Org tenure - Subjective norm	f =15.507, p<0.000	p <.01		[ß = .140, *t* = 3.938, *p* < .000]
Role - all KSB dimensions		no		
Op entity - OCB	f =5.952, p<0.015	p <.05		[ß = -.087, *t* = -2.440, *p* < .015]
Expat experience – Behavior	f =5.097, p<0.024	p <.05		[ß = -.081, *t* = -2.258, *p* < .024]
Expat experience – Self-worth	f =8.638, p<0.003	p <.01		[ß = -.105, *t* = -2.939, *p* < .003]

4.14.3 Summary

The analyses above examined the demographic independent variables: gender, age group, education level, education tenure, organization tenure, role, operating entity and expatriate experience; to determine if they addressed *H5* and *H6*.

The hypothesis H6: Demographics characteristics will significantly affect the dimensions of Knowledge Sharing Behavior and Workplace Innovation was posited to address research question 3. This analysis determined that all demographics, with the exception of role, were predicators of one or more of the dimensions of Workplace Innovation and of Knowledge Sharing Behavior. Some predicted a negative relationship and a significance at either the p<.05 or p<.01 levels.

Thus, within the population frame sampled, hypothesis 6 was supported.

4.15 Results to test RQ.4

The purpose of this section is to examine research question 4 and its supporting hypothesis:

RQ4: *To what extent does the measurement model, representing the effect of Knowledge Sharing Behavior (KSH) on Workplace Innovation (INNOV), fit the data gathered from within the transnational corporation sample population?*

H7: The measurement model representing the effect of KSH on INNOV, significantly fits the data gathered from the transnational corporation.

4.15.1 Model analysis

The next step in data analysis process was Confirmatory Factor Analysis (CFA).

The main difference in CFA to EFA is that in EFA all the items are allowed to correlate freely with all the other items whereas in CFA the items are forced to belong to the theoretically assumed latent constructs. Basically, the factor structure of each model was the same as it was theoretically assumed and subsequently confirmed during EFA.

Measuring model fit

Hair et al. (2010) categorizes these 'fit measures' in three categories: absolute fit indices, incremental fit indices, and parsimonious fit indices. Accordingly absolute fit indices measure the overall fit of the measurement model whereas incremental fit indices indicate how well the current model fits relative to a null model (null model is a comparison standard that is used most commonly).

Following on, parsimonious fit measures, are measures of overall goodness-of-fit representing the degree of model fit per estimated coefficient. These parsimonious fit indices are considered appropriate when comparing several developed models for a sample data, in order to choose which model represents best fits that data (Hair et al. 2010). Hair et al. suggest that the measurement model's fit should be evaluated by using at least one absolute and one incremental fit index. Normed chi-square, RMSEA, and PCLOSE were used as absolute indices and incremental fit measure used was CFI. The Hoelter absolute fit index was also calculated because N > 200 and the chi-square was statistically significant $p<0.00$ (Kenny 2014). With large sample size, the chi-square values will be inflated (statistically significant), thus might erroneously implying a poor data-to-model fit (Schumacker & Lomax

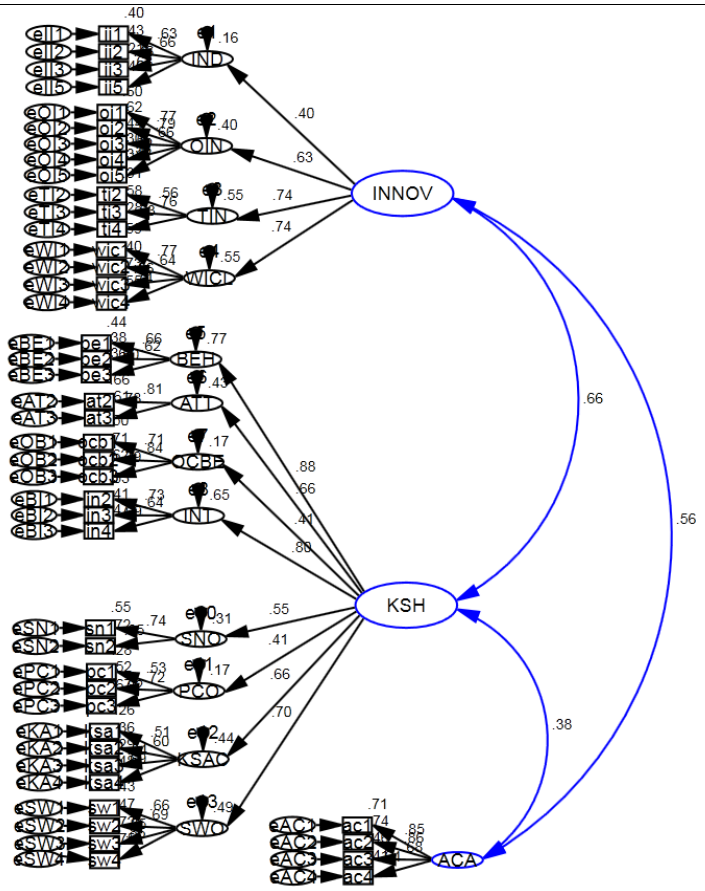
2010)). For Normed Chi-square, different researchers have recommended using ratio as low as 2 or as high as 5 to indicate a reasonable fit (Marsh & Hocevar 1985). This is a commonly used test in knowledge sharing studies using SEM techniques with widely ranging sample sizes. See e.g. (Lin 2007b) (n = 172); (Tohidinia & Mosakhani 2010), (n = 502); (Chatzoglou & Vraimaki 2009), (n = 1276); (Seba, Rowley & Delbridge 2012), (n = 319) and (Kuo 2013) (n = 563).

This analysis examined the conceptual model as represented by a structural equation model. The conceptual model was tested using IBM SPSS Amos and the output results displayed using Gaskin's (2013c) Stats Tools package.

The model, as originally conceived, displayed a number of validity concerns and these were examined and given below.

4.15.2 Iteration 1 - Proposed model

Figure 4.5 Iteration 1 - Proposed model



	CR	AVE	MSV	ASV	INNOV	ACA	KSH
INNOV	0.729	0.414	0.433	0.372	0.643		
ACA	0.845	0.582	0.311	0.228	0.558	0.763	
KSH	0.849	0.428	0.433	0.289	0.658	0.381	0.654

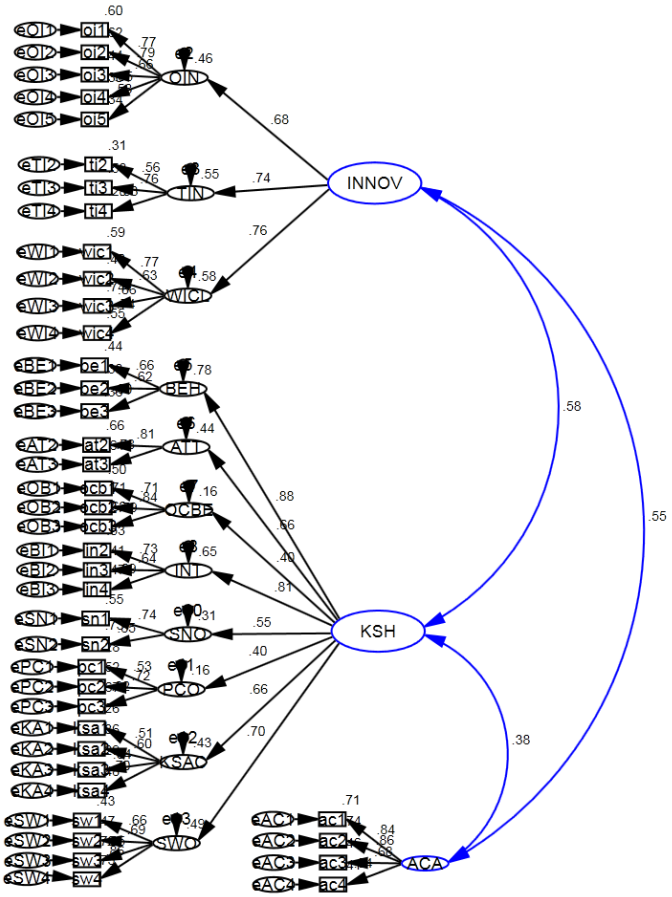
VALIDITY CONCERNS

Discriminant Validity: the square root of the AVE for INNOV is less than one the absolute value of the correlations with another factor.
Discriminant Validity: the square root of the AVE for KSH is less than one the absolute value of the correlations with another factor.
Convergent Validity: the AVE for INNOV is less than 0.50.
Discriminant Validity: the AVE for INNOV is less than the MSV.
Convergent Validity: the AVE for KSH is less than 0.50.
Discriminant Validity: the AVE for KSH is less than the MSV.

4.15.3 Iteration 2 – Modified model

The Individual Innovation factor (INO) showed a convergent validity issue with a low path value of .40. The model was re-run (iteration 2) with this factor deleted, resolving the validity concerns with the Workplace Innovation Scale and reducing the issues with the Knowledge Sharing Behavior scale (KSH).

Figure 4.6 Iteration 2 – Modified model (Individual Innovation removed)



	CR	AVE	MSV	ASV	INNOV	ACA	KSH
INNOV	0.771	0.529	0.335	0.319	0.727		
ACA	0.845	0.581	0.303	0.223	0.550	0.763	
KSH	0.849	0.428	0.335	0.240	0.579	0.380	0.654

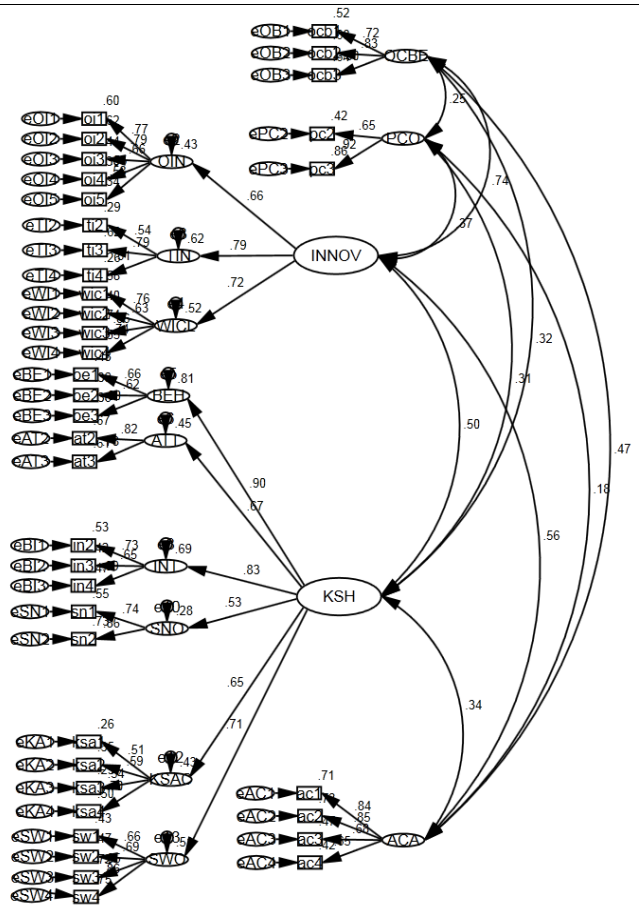
VALIDITY CONCERNS

Convergent Validity: the AVE for KSH is less than 0.50.

4.15.4 Iteration 3 – Modified model 2

The path coefficients of the Knowledge Sharing Behavior scale (KSH) factors of OCB (.40) and PCO (.40) displayed were below the recommended (Hooper, Coughlan & Mullen 2008) guidelines and tested by loading them against Workplace Innovation (as found by Julien et al. (2004) and Liao et al. (2010b)) to examine their influence on the model (iteration 3).

Figure 4.7 Iteration 3 – Modified model (Perceived Behavioral Control and OCB moved to load on Innov and KSH)



	CR	AVE	MSV	ASV	INNOV	OCBE	ACA	PCO	KSH
INNOV	0.767	0.525	0.546	0.313	0.725				
OCBE	0.825	0.612	0.546	0.233	0.739	0.782			
ACA	0.846	0.583	0.317	0.172	0.563	0.474	0.763		
PCO	0.775	0.640	0.134	0.081	0.366	0.249	0.182	0.800	
KSH	0.868	0.529	0.255	0.141	0.505	0.315	0.337	0.309	0.728

VALIDITY CONCERNS:
Discriminant Validity: the square root of the AVE for INNOV is less than one the absolute value of the correlations with another factor.
Discriminant Validity: the AVE for INNOV is less than the MSV.

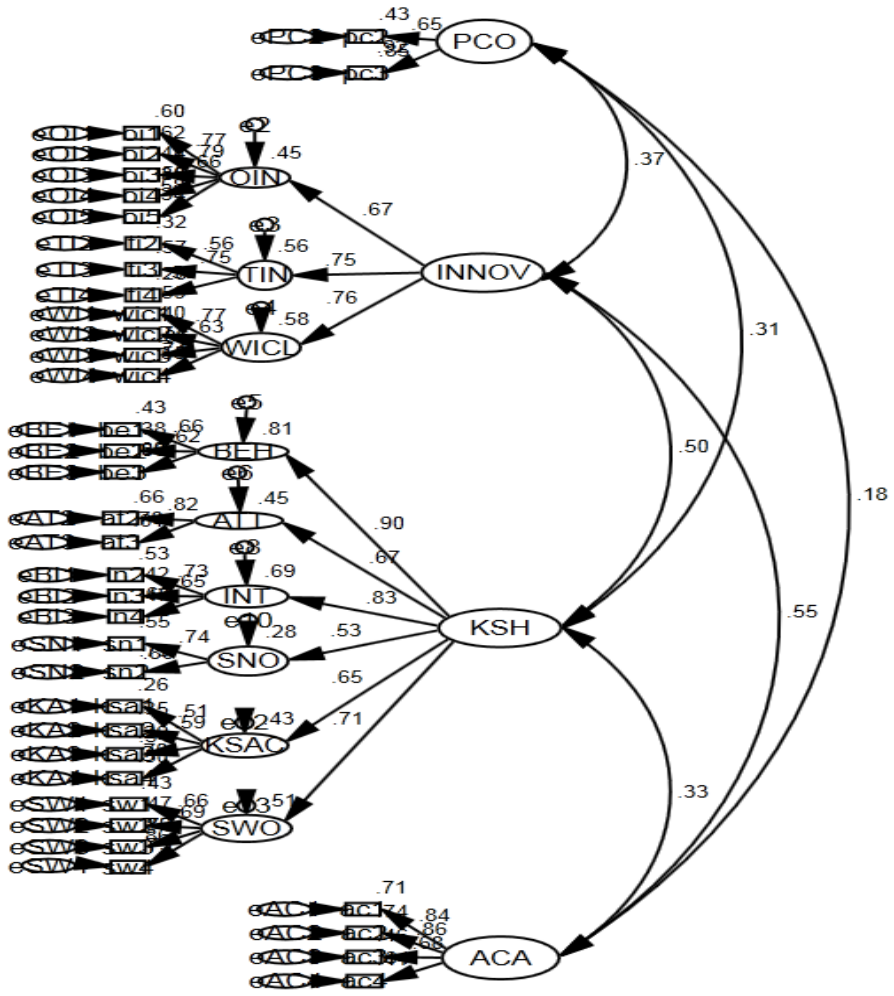
This move, while correcting the validity concerns with Knowledge Sharing Behavior, re-awoke the concerns with Workplace Innovation as OCB was found to have an unacceptable covariance with Perceived Behavioral Control (PCO, .25), with

Workplace Innovation (Innov, .37), with Knowledge Sharing Behavior (KSH, .32) and with Knowledge Absorptive Capability (ACA, .47).

4.15.5 Final measurement model

The measurement model has OCB removed because of discriminant validity issues. OCB was found to have an unacceptable covariance with Perceived Behavioral Control (PCO, .25), with Workplace Innovation (Innov, .37) and with Knowledge Sharing Behavior (KSH, .32).

Figure 4.8 Measurement model



$x^2/df = 2.577, RMSEA = .045, PCLOSE = .998$

	CR	AVE	MSV	ASV	INNOV	ACA	PCO	KSH
INNOV	0.771	0.530	0.303	0.230	0.728			
ACA	0.845	0.581	0.303	0.149	0.550	0.762		
PCO	0.774	0.638	0.133	0.087	0.365	0.182	0.799	
KSH	0.868	0.529	0.255	0.154	0.505	0.334	0.309	0.727

No Validity Concerns – model fit.
The model fits at $x^2/df < 3$
Legend: be=BEH(behavior), at=ATT(attitude), in=INT(intention), sn=SNO(Subjective Norm), ksa=KSAC(Knowledge Sharing Activity), sw=SWO(self-worth), KSH(Knowledge Sharing Behavior), ps=PCO(Perceived Behavioral Control), ac=ACA(Knowledge Absorptive Capability), INNOV(Workplace Innovation)

While the covariance path coefficients for PCO were still below acceptable levels, PCO was retained to maintain the theoretical basis of the original model. The resultant model showed no validity concerns and an acceptable level of values for the model fit indices (Hooper, Coughlan & Mullen 2008). While the *p* was lower than normally acceptable, this was assumed to be due to the large sample size of n=780 where the chi-squared and p values have been shown to be of concern (Hooper, Coughlan & Mullen 2008; Kenny 2014). Johnstone (1990) says that as the sample size increases in testing precise hypotheses (such as H7), a given *p* value provides less and less real evidence against the null.

4.15.6 Structural Equation Modeling

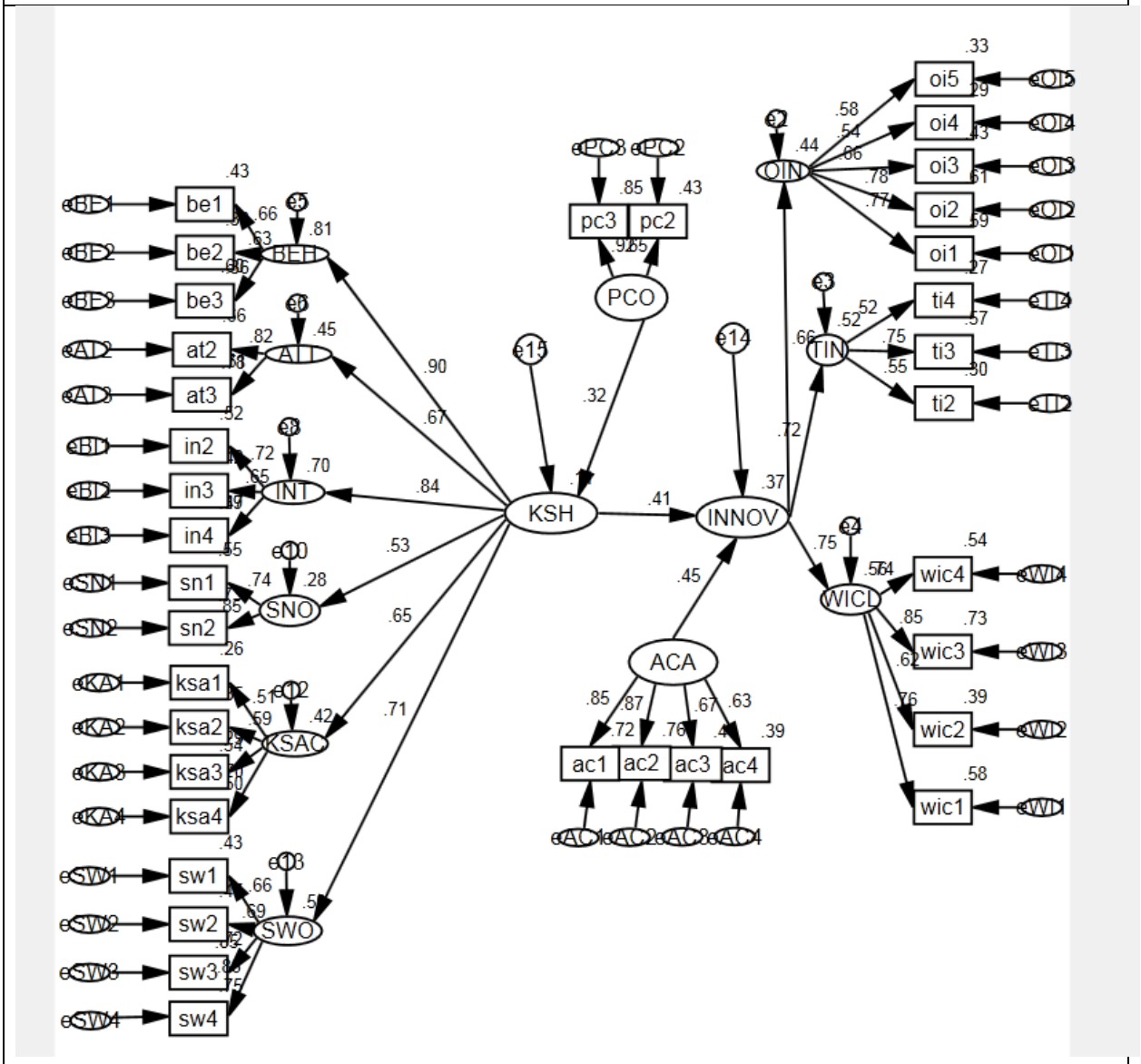
The last phase of the data analysis process was the Structural Equation Modeling (SEM).

In CFA's measurement models, there are no distinctions concerning the casual relationships of latent factors whereas in SEM the distinction between independent latent variables and dependent latent variables must be made. All independent variables were covaried as it is suggested (Hair et al. 2010).

4.15.7 Final Structural Model

The final structural model, showed an acceptable good model fit, based on the indices.

Figure 4.9 Final Model – all Operating Entities (ACA loading on Workplace Innovation)



$x^2/df = 2.721,\ CFI = .904, RMSEA = .047, PCLOSE = .962$, HOELTER (.05)&(.01) = 315 & 327 Good fit

Legend: be=BEH(behavior), at=ATT(attitude), in=INT(intention), sn=SNO(Subjective Norm), ksa=KSAC(Knowledge Sharing Activity), sw=SWO(self-worth), KSH(Knowledge Sharing Behavior), ps=PCO(Perceived Behavioral Control), ac=ACA(Knowledge Absorptive Capability), INNOV(Workplace Innovation), oi=OIN(Organization Innovation), ti=TIM(Team Innovation), wic=WICL(Workplace Innovation Climate), in=INN(Individual Innovation)
H1 = KSH -> INNOV

While CFI is still lower than the current accepted level of <=.95, it is still acceptable at <.90 due to the large sample size (Hu, L & Bentler 1998).

4.15.8 Dropped items

During the EFA and CFA a total of seven items were dropped (see Table 4.35) because of the previously mentioned reasons. It is notable, that even though the seven items were dropped, the factors did not change their definitions.

Table 4.35. *The dropped items during EFA and CFA.*

Item ID	*Item*
WIC5	The people I work with perceive me to be a creative problem solver.
II3	I express myself frankly in staff meetings.
II4	My performance appraisal is related to my own creativity in the workplace.
TI5	Amongst my colleagues I am the first one to try new ideas.
SN3	Because I am a team member, I have a duty to share knowledge with others.
AT1R (reverse coded)	If I were to share my knowledge with others, I feel I would lose power.
IN1	I always intend to share knowledge with others if they ask.

4.16 Hypotheses Conclusions

H1. The dimensions of Knowledge Sharing Behavior have a significant effect on Workplace Innovation Climate. – *supported*

H2. The dimensions of Knowledge Sharing Behavior have a significant effect on Individual Innovation. – *supported*

H3. The dimensions of Knowledge Sharing Behavior have a significant effect on Team Innovation. – *supported*

H4. The dimensions of Knowledge Sharing Behavior have a significant effect on Organization Innovation. – *supported*

H5. There are differences in perceptions among demographic groups toward the dimensions of Knowledge Sharing Behavior and Workplace Innovation. – *supported*

H6. Demographics characteristics will significantly affect the dimensions Knowledge Sharing Behavior and Workplace Innovation. – *supported*

H7: The measurement model representing the effect of KSH on INNOV significantly fits the data gathered from transnational corporation. – *supported after modification.*

Note: within each hypothesis some dimensions were not significant.

4.17 Conclusion

This chapter presented the quantitative data analysis and answered the research questions that investigate the correlation between Knowledge Sharing Behavior and Workplace Innovation within a transnational corporation. It described the procedures used in the quantitative data analysis, presented the results which include testing the reliability of the scale used, and reported the correlation analysis, ANOVA, independent t-test. Furthermore, the correlation analysis, ANOVA and independent t-test uncovered some significant relationships between the dimensions of Knowledge Sharing Behavior and the dimensions of Workplace Innovation in this sector.

The results of the descriptive analysis presented a background of the population frame who are employees working in seven regional entities of a transnational corporation. The research questions address the gap within business and management literature which omits to address the relationship between Knowledge Sharing Behavior and Workplace Innovation and the analysis of this thesis confirms some significant relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation. The following chapter discusses the findings of the data analysis and compares it with the existing literature.

Chapter 5. Findings and discussion

5.1 Objective

The purpose of this chapter is to discuss the findings generated by the analysis of the transnational corporation survey data and the review of literature. It will examine how the analysis relates to existing research findings through the testing of new hypotheses and to the comparison with previous empirical studies in this thesis. The chapter is structured into sections corresponding to the major concepts and themes identified in the research questions of this thesis, and within each section the relevant hypotheses are listed and discussed.

5.2 Knowledge Sharing Behavior and Workplace Innovation

This study, for the first time, brought together two context specific multi-dimensional psychological constructs to investigate the relationship between Knowledge Sharing Behavior and Workplace Innovation.

The findings in this thesis have extended the TPB model (Ajzen 1991) by establishing the nature and strength of the relationship between Knowledge Sharing Behavior, Workplace Innovation, and their dimensions.

This study used the Ajzen's (1991) TPB as a theoretical underpinning. It employed the TPB items operationalized by Bock et al. (2005), Chennamaneni (2006), Cheng and Chen (2007), van den Hooff and van Weenen (2004) and Masrek et al. (2011) for Knowledge Sharing Behavior and research that developed the Workplace Innovation Scale (WIS) as an operationalization of Workplace Innovation (McMurray & Dorai 2003).

5.3 RQ1 - Relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation

This analysis supports **RQ1**. What is the relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?

The dimensions of Knowledge Sharing Behavior are positively and significantly related to those of the Workplace Innovation Scale.

5.3.1 H1 - Knowledge Sharing Behavior and Workplace Innovation Climate

The first hypothesis tested in this study was H1. The dimensions of Knowledge Sharing Behavior have a significant effect on Workplace Innovation Climate.

To test the hypothesis, correlation ($r = .550$, $n = 780$, $p<.001$) and regression analyses ($f(1,779)=336.37$, $t=24.551$) were conducted, which showed that the hypothesis was supported

The individual dimensions of Knowledge Sharing Behavior: Subjective Norm; Perceived Behavioral Control; Self-Worth; Knowledge Sharing Activity; Organizational Citizenship Behavior and Knowledge Absorptive Capability were positively and significantly related to Workplace Innovation Climate.

The dimensions Attitude, Intention and Behavior were found to be not significantly related to Workplace Innovation Climate. This finding is influenced by the level of analysis of these dimensional factors: Attitude, Intention and Behavior as these are all individual psychological measures, while Workplace Innovation Climate, being a subculture within organizational culture (Von Treuer 2006), is a group/organization level measure. The high predominance of mixed (national) culture teams has been suggested as influencing this finding (Michailova & Minbaeva 2012).

The significance of the relationship which was a finding of this thesis, supports de Long and Fahey (2000) who identified subcultures as creating the context for the social sharing and use of knowledge, with Workplace Innovation Climate being an example of a subculture.

This hypothesis supports the two findings of Liu et al. (2012) in their analysis of 212 healthcare workers in a medical center in Taiwan, where they found a strong and significant relationship between Knowledge Sharing Behavior and Workplace Innovation Climate. They also found the altruistic behavior (measured in the thesis by OCB) had a strong mediating effect on the relationship between Knowledge Sharing Behavior and Workplace Innovation Climate.

Sveiby and Simon (2002) in their extensive review based on data from 8277 respondents in a wide variety of public and private sector organizations, described climate as the 'the bandwidth' of the human infrastructure for knowledge sharing (p. 18).

5.3.2 H2 - Knowledge Sharing Behavior and Individual Innovation

The second hypothesis tested was H2 - *The dimensions of Knowledge Sharing Behavior have a significant effect on Individual Innovation.*

To test the hypothesis, correlation ($r = .509$, $n = 780$, $p<.001$) and regression analyses ($f(1,779)=271.66$, $t=16.482$) were conducted, and which showed that the hypothesis was supported.

The individual dimensions of Knowledge Sharing Behavior: Intention; Behavior; Perceived Behavioral Control; Self-worth and Knowledge Sharing Activity were positively and significantly related to Individual Innovation.

The dimensions of: Subjective Norm; Attitude; Organizational Citizenship Behavior and Knowledge Absorptive Capability were found to be not significantly related to Individual Innovation.

In their analysis of the Knowledge Sharing Behavior and Individual Innovation capability of 125 employees of an Indonesian telecommunications company, Aulawi et al. (2009) found that the TPB factors of Subjective Norm, Attitude, Intention and had a significant effect on Individual Innovation capability.

The findings of this thesis regarding Subjective Norm and Attitude contradict those of Aulawi et al. (2009). These factors are more dominant in collectivist cultures such as Indonesia (Tharan & Bahmannia 2013). While Aulawi et al.'s instrument was based on TPB, they included both trust and rewards as antecedents for their attitude factor, and senior management support as an antecedent for their Subjective Norm factor. Their use of these antecedents indicate that their level of analysis was more aligned to a group level analysis than a strict individual level. Additionally product Workplace Innovation capability and process was used to measure Individual Innovation capability.

The contradiction between the OCB dimension used in this thesis and Aulawi et al.'s (2009) teamwork dimension is due to variance in definition of this dimension, which they specify as 'team is a unit' and 'affiliation' and 'climate of togetherness' enabling the 'development of understanding about the need and their colleagues' techniques of work'(p. 2240).

Aulawi et al. (2009) also found that an employee's KS intensity (synergy and combining ideas by considering all ideas simultaneously) supported Individual Innovation capability. The finding in this thesis supports Aulawi et al.'s finding that

Knowledge Sharing is positively and significantly related to Individual Innovation, thus adding to the body of theory in this domain.

5.3.3 H3 - Knowledge Sharing Behavior and Team Innovation

The third hypothesis tested was H3 - *The dimensions of Knowledge Sharing Behavior have a significant effect on Team Innovation.*

To test the hypothesis, correlation ($r = .496$, $n = 780$, $p<.001$) and regression analyses ($f(1,779)=253.66$, $t=15.927$) were conducted, which showed that the hypothesis was supported.

The individual of dimensions of Knowledge Sharing Behavior: Perceived Behavioral Control; Self-Worth; Organizational Citizenship Behavior and Knowledge Absorptive Capability were positively and significantly related to Team Innovation.

The dimensions of: Subjective Norm; Attitude; Intention; Behavior and Knowledge Sharing Activity were found to be not significantly related to Team Innovation.

Hülsheger et al. (2009) reported that team-level predictors of Workplace Innovation at work had been largely overlooked in their meta-analysis of 104 independent studies. They posited that the ability to discuss opposing ideas, integrate divergent viewpoints, and reach consensus is vital for the creation and implementation of Workplace Innovation. They also posited that team size and diversity enables the sharing of information and ideas, a viable source of Workplace Innovation. While team size and diversity displayed a positive significant relationship with Team Innovation, they found a slight negative relationship with Individual Innovation. Their finding could imply that the five factors above were found insignificant because of the level of analysis for these factors and because of self-reporting.

Similarly Koch (2011) in her analysis posits that team composition and diversity and their access to internal and external knowledge is essential to effective and sustained Workplace Innovation.

The finding in this thesis supports the body of evidence that the dyadic nature of knowledge sharing is significant when considering Team Innovation. The inclusion of the Knowledge Absorptive Capability dimension in the KSIB scale strengthens the scale's uniqueness and future research potential, thus adding to knowledge sharing and Workplace Innovation theory.

5.3.4 H4 - Knowledge Sharing Behavior and Organization Innovation

The third hypothesis tested was H4 - *The dimensions of Knowledge Sharing Behavior have a significant effect on Organization Innovation*.

To test the hypothesis, correlation ($r = .383$, $n = 780$, $p<.001$) and regression analyses ($f(1,779)=133.89$, $t=11.571$) were conducted, and which showed that the hypothesis was supported.

The individual dimensions of Knowledge Sharing Behavior: Perceived Behavioral Control; Organizational Citizenship Behavior and Knowledge Absorptive Capability were positively and significantly related to Organization Innovation.

The dimensions of: Subjective Norm; Attitude; Intention; Behavior; Self-worth and Knowledge Sharing Activity were found to be not significantly related to Organization Innovation.

The dimensions of: Attitude and Intention were found to be not significantly related to Workplace Innovation. Therefore the hypothesis was partially supported.

These findings support Sliat and Alnsour (2013) in their analysis of 95 members of the managerial and development levels of mobile telecommunication companies in Jordan, which focused on the relationship between knowledge sharing behavior and Workplace Innovation capability at the organizational level. They defined organizational Workplace Innovation capability as the 'ability that formed as a result of knowledge sharing behavior among individuals in a firm, organization or company' (p. 11). They also defined knowledge sharing behavior as having 'two dimensions namely knowledge donation and knowledge collecting, these two behaviors recognized as intermediate factors that are linked' (p. 12) to the organization's Workplace Innovation capability.

The Knowledge Sharing Activity dimension represented in this thesis, is based on the original work by Van den Hooff, de Ridder and Aukema (2004) and Van den Hooff and Hendrix (2004). As Sliat and Alnsour (2013) also base their KSB dimension of Van den Hooff et al.'s work, there is a high correlation between the two. Similarly, Sliat and Alnsour's factor 'enjoyment in helping others' (p. 9) is represented as OCB in this thesis.

Sliat and Alnsour (2013) found that these factors supported knowledge sharing behavior and that there was a positive significant relationship between them with organizational Workplace Innovation capability. They also posited that knowledge

sharing activities affect Organization Innovation capability. While there are variations in the items within the constructs and with samples sizes between the two studies, this thesis support's Sliat and Alnsour (2013) finding that 'Knowledge sharing is directly linked to Workplace Innovation' (p. 14).

This thesis adds to the body of knowledge regarding knowledge sharing behavior and Workplace Innovation in its support for this finding, based on empirical evidence from a large sample of 780 transnational employees.

5.3.5 Alternate Hypothesis- Knowledge Sharing Behavior and Workplace Innovation

The alternate hypothesis tested was - *The dimensions of Knowledge Sharing Behavior have a significant effect on Workplace Innovation.*

To test the hypothesis, correlation ($r = .661$, $n = 780$, $p<.001$) and regression analyses ($f(1,779)=620.77.89$, $t=24.551$) were conducted, and which showed that the hypothesis was supported and that the dimensions of dimensions of Knowledge Sharing Behavior: Subjective Norm; Behavior; Perceived Behavioral Control; Self-Worth; Knowledge Sharing Activity; Organizational Citizenship Behavior and Knowledge Absorptive Capability were positively and significantly related to Workplace Innovation.

The dimensions Attitude and Intention were found to be not related to Workplace Innovation. When the dimensions of Intention and Behavior were joined, the resultant dimension was positively and significantly related ($\beta=.103$, $p<.004$) to Workplace Innovation.

This thesis adds to the body of knowledge regarding knowledge sharing behavior and Workplace Innovation in its support for this finding, based on empirical evidence from a large sample of 780 transnational employees.

5.3.6 Summary

Based on the literature review and the empirical studies discovered, these hypotheses support '***RQ1***. *What is the relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?*' were found to have previously been untested. Thus the findings relating to this research question add to theory and literature in this domain.

5.4 RQ2 - Is there a difference in perception among demographic groups towards Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?

H5. There are differences in perceptions among demographic groups toward the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

Analysis found that significant differences existed in the demographic groups when examining their relationships with the Knowledge Sharing Behavior scale and the Workplace Innovation Scale.

Table 5.1. *Analysis of demographic groups' perception of Knowledge Sharing Behavior and Workplace Innovation*

KSB & WIS Scales (n=780)		Gender	Age group	Educ Level	Educ tenure	Orgn tenure	Role	Op ent	Expat exp	
Pearson Correln	KnowledgeSharing	-.109	.071	.069	.055	.060	-.017	-.038	-.061	f=2.173, p<0.028[a]
	Workplace Innovn	-.052	-.016	.018	.011	.010	.016	-.098	-.065	f1.701, p<0.095[a]
Sig. (1-tailed)	KnowledgeSharing	.001	.024	.027	.061	.046	.322	.142	.044	
	Workplace Innovn	.073	.327	.307	.375	.395	.325	.003	.035	

Note[a] f(8,771)

neg	
p= <.01	p= <.05

At a scale level, Knowledge Sharing Behavior showed significant differences across the demographic groups with only education tenure, role and operating entity not showing a significant relationship. Apart from age group and education level, these relationships were negative.

For Workplace Innovation, a different result was apparent with only operating entity and expatriate experience showing a significant negative relationship.

No other relevant literature was discovered that had empirically investigated the difference among demographic groups towards Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation. Thus comparison with the literature was not possible for this research question.

5.5 RQ3 - To what extent do demographic group characteristics affect Knowledge Sharing Behavior and Workplace Innovation in the context of a transnational corporation?

H6. Demographics characteristics will significantly affect the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

The finding that gender has a significant effect on Knowledge Sharing Behavior and Workplace Innovation supports Miller and Karakowsky (2005) and Xue, Bradley and Liang (2011) who showed that team members' gender has a significant negative impact on their feedback seeking from other team members, given that feedback seeking is related to both knowledge sharing through the self-worth, Knowledge Sharing Activity and OCB factors and through the Workplace Innovation factor.

Research by Sveiby and Simon (2002) found that certain demographic factors can indicate a higher level of knowledge sharing tends to improve with employee age, education level and managerial role, in a business organization.

Basic TPB theory did not suggest a relation between Workplace Innovation and age, but this research showed there is. It posits the older people become, the more innovative they are in their work. Reader and Laland (2000) explained this by the fact that Workplace Innovation is an accumulation of different skills, which asks for certain experience. In general more mature employees possess these skills and experiences to a greater extent compared to younger people. This finding regarding age also supported Sveiby and Simon (2002), with age greater than 21 years showing a highly significant relationship between Knowledge Sharing Behavior and Workplace Innovation, while those employees 21 or younger had not yet established internal networks and had little experience in navigating the internal processes and procedures. The low sample size of this cohort group would also influence analysis.

Regarding education level, this thesis found no significant relationship Knowledge Sharing Behavior and Workplace Innovation which differs from the findings of Sveiby and Simon (2002) who had noted that a higher educational level also predicts a tendency to favor collaboration. One could also expect that education would have a significant effect on innovative behavior, as is suggested by Scott and Bruce (1994), however the results of this research did not find support for this. Sveiby and Simon's sample was predominantly selected from research groups within private and public sector organizations and collaboration is critical for work

performance. The population sample used in this thesis was selected from a project oriented workplace where task performance and contract scope conformity is the critical outcome measure.

Sveiby and Simon (2002) also found that employees with longer organizational tenure tended to foster a more collaborative culture thus enabling knowledge sharing and Workplace Innovation. Employees tend to experience a U-formed propensity for knowledge sharing; very positive at recruitment, then deteriorating and later improving again. This thesis also found the relationship was non-linear, since significant differences were revealed between those with 21 to 30 years employment and those with less than 21 and more than 30 years employment were revealed.

This thesis found that role was a highly significant antecedent of Knowledge Sharing Behavior and Workplace Innovation. This agreed with Sveiby and Simon (2002) and Baxter (2004) although this thesis used a wider range of roles compared to their analyses of manager and non-manager effects. When this thesis compared manager vs non-manager (coded from the survey roles), there was only a small but significant Partial Eta squared effect size difference for Knowledge Sharing Behavior $F(1:778)=14.69$, $p=0.000$, $Eta=0.019$ and adjusted R squared of 0.017, similarly for Workplace Innovation with $F(1:778)=11.67$, $p=0.001$, $Eta=0.015$ and adjusted R squared of 0.014.

The demographics of operating entity and expatriate experience showed no significant relationships between Knowledge Sharing Behavior and Workplace Innovation. This finding regarding operating entity, offers support for Bakx (2007) who found that the level of innovativeness is not dependent on the organization where the person works.

These two areas offer potential for future research.

5.6 RQ4 - To what extent does the measurement model representing the effect of Knowledge Sharing Behavior (KSH) on Workplace Innovation (INNOV), fit the data gathered from within the transnational corporation sample population.

H7: The measurement model representing the effect of Knowledge Sharing Behavior on Workplace Innovation significantly fits the data gathered from a transnational corporation.

This thesis hypothesized that the original model's internal hypotheses would achieve criterion-related validity (Hypothesis 7). This hypothesis encapsulates all the internal hypotheses of TPB in one. The internal hypotheses were tested individually, but they are treated as a complete structure rather than single relationships. The reason this thesis aims to maintain the attention on the objective of this research, which is the relationship between Knowledge Sharing Behavior and Workplace Innovation.

The results of this thesis showed that not all the original relationships in Ajzen (1991) obey the theoretical criteria suggested by the TPB as applied in this analysis. The key independent variables of the TPB model — Attitude, Subjective Norm, Intention, Perceived Behavioral Control and Self-Worth — held a positive and significant relationship with Knowledge Sharing Behavior. There was also a positive and significant relationship between Knowledge Sharing Activity, OCB and Knowledge Absorptive Capability with Knowledge Sharing Behavior. Similarly there was also a positive and significant relationship between Knowledge Sharing Behavior and Workplace Innovation. However, while OCB and Individual Innovation did not achieve criterion-related validity, there was support for the Hypothesis Seven.

Attitude, Subjective Norm, Intention, Perceived Behavioral Control and Self-Worth

In regards to Attitude, Subjective Norm, Intention, Perceived Behavioral Control and Self-Worth, these findings confirm the work of the original author of TRA and TPB (Ajzen 1991; Ajzen & Fishbein 1977) where the original model was tested, and (Ajzen 2005) where an extended model is tested. Similar findings were present in numerous studies where all the key determinants are all significant: e.g. in Kennedy and Priyadarshini's (2013) research on knowledge sharing and Workplace Innovation and learning of IT professionals, in Tangaraja and Rasdi's (2013) paper on the knowledge sharing behavior of Malaysian Public Sector managers; in Chennamanenia et al.'s (2012) study of U.S. knowledge workers and Zhang's (2011) thesis on the knowledge sharing behavior of Hong Kong construction teams.

This thesis hypothesized that the original model will have an acceptable fit with the data and will be statistically significant (Hypothesis 7). This hypothesis refers to the fit of the theoretical model and empirical data, and the probability for the model specification to be a good fit in other samples of the same population.

Analyzed with covariance based Structural Equation Modeling, the results suggest that the empirical data of this study fit the theoretical structure of KSIB as a model. However, the probabilistic value was extremely low (p.< 0.000) while the indicators of fit chi-square ratio (x^2/df=2.721), CFI=.904. PCLOSE=.962 and Root Mean Squared Error Approximation, RMSEA (RMSEA=.047) — were acceptable (Hooper, Coughlan & Mullen 2008). This indicates that it is very unlikely to find the same or better model fit in other samples of the same population. This hypothesis was in consequence, partially supported.

Sound theory is expected to consistently be a good match between the structural specified relationships and data from empirical observations. Covariance based SEM is appropriate to confirm theoretical models, testing unique structures of theoretical relationships as a whole. Two indicators in covariance based SEM provide probabilistic information about the fit of the model chi-square ratio's p value and RMSEA's PCLOSE (Byrne 2010; Marsh, Balla & MacDonald 1988). These indicators are frequently overlooked, and sometimes considered unrealistic to achieve. But, they are as important as the p value that indicates the significance of a correlation weight when it comes to evaluate complete models. Additionally, both the p value and chi-squared are influenced by larger sample sizes (Hu & Bentler 1998).

An original contribution of this thesis to the literature of knowledge sharing behavior and Workplace Innovation may derive from the analysis of KSIB using covariance based SEM and reporting probabilistic values for the model fit. TRA/TPB based models have been analyzed with variance based Structural Equation Modeling, e.g. (Behjati, Pandya & Kumar 2012; Cheng & Chen 2007; Kennedy & Priyadarshini 2013; Lin 2006; Lin & Lee 2004; Zhang, P 2011) for prediction and exploratory analysis (Hair, Ringle & Sarstedt 2011).

The study of IT professionals (Kennedy & Priyadarshini 2013) extended the TPB model by including innovativeness and learning and development. They found that knowledge sharing behavior explained 56% of the variation in innovativeness by using SEM path analysis.

While these studies used SEM in their analysis, and they provide some evidence of the validity of TPB, their results are not fully comparable because they include other factors in the structural specification. Comparison would require studies testing KSIB before extending or modifying it. Partial and modified versions of TPB

would not allow accurate comparisons, because when using covariance based SEM a single variable can alter the model fit radically.

Final structural model

One of the objectives of this thesis was to conduct post-hoc model modification in order to achieve the best model specification and best fits with the data (x^2/df = 2.721, p = 0.000, RMSEA = 0.047, PCLOSE = 0.962). This thesis found that the best model specification included Knowledge Absorptive Capability (ACA) acting the role of determinant of Workplace Innovation (INNOV).

5.7 Summary

In this section the main findings of this research have been discussed. The findings have been related to the literature and theory, remarking the contributions of this research. The following section provides conclusion to this thesis.

Chapter 6. Conclusions

6.1 Objective

The aim of this chapter is to provide an overview of the key empirical findings and the additional findings of this research on Knowledge Sharing Behavior and Workplace Innovation. Implications of methodological issues for researchers conducting studies in the area of organizational behavioral science are detailed. This chapter also articulates how this thesis has contributed to literature and practice. It notes the limitations of this study and makes recommendations for future research.

6.2 Contribution to the Literature

The literature review suggested that both the Workplace Innovation and the knowledge sharing behavior literature is developing in various directions such as measurement development, concept definition and specification, describing the structures of organizations that facilitate Workplace Innovation and the knowledge sharing behavior and the assessment of the those behaviors; it is limited with respect to addressing empirically-based research and analysis of the relationship between Knowledge Sharing Behavior and Workplace Innovation.

The literature has concentrated on investigating the outcomes of Workplace Innovation and the knowledge sharing at an organizational level using 'knowledge as an asset object' measures such as patent counts, new products released to market and knowledge objects submitted to repositories. Similarly, the empirical studies analysis shows very limited research has been conducted in Australia and multi-country. Thus, there is a dearth of theoretical and empirical work that extends the knowledge sharing domain to areas, such as Workplace Innovation, even while the importance of one to another is well cited. This thesis confirms an explicit relationship between Knowledge Sharing Behavior and Workplace Innovation — a relationship that, to date, has had very limited focus in the literature.

This thesis accomplished its three main objectives. First, it conducted an extensive literature review and analysis of the knowledge sharing behavior and Workplace Innovation literature. Second, it empirically investigated and confirmed the relationship between Knowledge Sharing Behavior and Workplace Innovation, thus answering the four research questions. Third, it is the first study to investigate

demographic characteristics such as gender, age, education level, education tenure, organization tenure, role, operating entity and expatriate experience and their relationship with Knowledge Sharing Behavior and Workplace Innovation of the 780 employees of a transnational corporation in the knowledge-intensive services sector. The findings confirmed the relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation.

The identification of demographic characteristics of transnational employees is an important research area because demographic characteristics also include age, educational level, organization tenure, role and operating entity, which further guides an organization's strategy for engagement project team composition and workforce structuring. Although, in this thesis, the demographic characteristics are not studied in detail, future studies can build upon these demographic data and extend the research to a new level.

The findings of this thesis confirm that knowledge sharing influences Workplace Innovation, thus reconfirming the extended Theory of Planned Behavior. This thesis notes inconsistencies in the definition and use of terms such as knowledge and knowledge sharing. These inconsistencies have the potential to limit academic inter-study comparison and the effectivity of research in this domain.

The four research questions driving this thesis systematically contribute to the literature by investigating the detailed relationship between the dimensions of Knowledge Sharing Behavior and those of Workplace Innovation and its association with eight demographic factors, representing new knowledge and an extension of the literature.

This thesis developed the KSIB construct, based on linking known and tested scales based on the Theory of Planned Behavior and the Workplace Innovation Scale into one construct (KSIB).

The findings extended the literature in regard to gaps identified by the literature review phase, thus determining the relationship between Knowledge Sharing Behavior and Workplace Innovation. These findings were developed by collecting then analyzing a large (n=780) global sample of transnational knowledge-intensive professional employees.

It identified Knowledge Sharing Behavior (KSB) of individuals to be significant determinants of Workplace Innovation within this sample population context

Demographic characteristics of the sample population members were shown to affect the relationship between Knowledge Sharing Behavior and Workplace Innovation dimensions.

6.3 Methodological Contribution

The business and management literature has attracted an increasing number of conceptual and theory building workplace knowledge sharing behavior studies. In contrast, this thesis collected primary data from 780 employees of a transnational corporation and is one of the first empirically based studies undertaken to investigate the relatively new phenomenon of knowledge sharing behavior and its relationship with Workplace Innovation in a transnational context.

The thesis utilized two highly-reputed, reliable and robust scales (Knowledge Sharing Behavior Scale and Workplace Innovation Scale) to measure Knowledge Sharing Behavior and Workplace Innovation. The reliability and internal consistency of the scales are reported in this thesis which confirmed that both the scales were highly reliable. This thesis stands on pretest, pilot study and main study and adopts a quantitative research framework. It employs a survey for collecting quantitative data; and the response rate for the main study is considerably high, with a total of 780 employees of a transnational corporation surveyed. Thus, the adoption of the survey was considered appropriate because the main study observed the response rate of 32%, which is above the accepted 20% for postal surveys.

The lack of studies using quantitative techniques, particularly in the workplace knowledge sharing behavior and Workplace Innovation literature, positions this quantitative thesis uniquely within the literature, thereby strengthening its contributions to the field of knowledge sharing behavior and Workplace Innovation. The workplace knowledge sharing behavior literature, particularly in the business and management disciplines from 2000–2014, outlined the reasons why workplace knowledge sharing behavior should be empirically tested. Consequently, this thesis undertook this challenge by empirically investigating the relationship between Knowledge Sharing Behavior and Workplace Innovation, while also noting the limitations of this methodology.

6.4 Key findings

This thesis examined and confirmed the relationships between the dimensions of Knowledge Sharing Behavior (nine dimensions) and Workplace Innovation (four dimensions).

For the first time in the literature, this thesis uncovered the variance in the perception of Knowledge Sharing Behavior and Workplace Innovation between different demographic characteristics of transnational employees. The demographic findings confirm that employees of knowledge-intensive service organizations are more highly qualified and are more mobile, often working away from the home offices. This new finding provides insights into the characteristics of a transnational employee workforce as well as the academic literature.

While much research in KSB has focused on the sharing of organizational knowledge, the behaviors investigated in this thesis were not constrained to organization specific knowledge and include the sharing of knowledge gained outside the organization of employment, either through continued education, participation in professional bodies/Communities of Practice (CoP) or Communities of Interest (CoI), or in boundary spanning activities.

In this way, this thesis addressed the gap in the literature and extended the practical application of workplace knowledge sharing behavior by investigating its relationship with Workplace Innovation along the dimensions of individual behavior, Knowledge Sharing Activity, altruism (OCB) and Knowledge Absorptive Capabilities.

6.5 Implications

Knowledge sharing and Workplace Innovation are an increasingly popular area of interest to managers in many industries, especially when the organizational dynamic sustained competitive advantage is emphasized. Knowledge sharing links individual, team and organization by sharing knowledge and expertise from an individual to an organizational level where it is converted to competitive value and advantage for the organization. The assessment tool developed in this thesis can be flexibly used by managers to gain insights into their employees' knowledge sharing behavior. This thesis has managerial implications for knowledge managers going beyond the data and conclusions.

First, an implication of scale multi-dimensionality is that a differentiated KSIB change management strategy may be necessary. The nine dimensions of the KSB

scale represent key behavioral traits: Subjective Norm (SN), Attitude (AT), Intention (IN), Behavior (BE), Perceived Behavioral Control (PBC) and Knowledge Sharing Activity (KA) together with the voice component of organizational citizenship behavior (OCB) and Knowledge Absorptive Capability (KAC).

These traits have more focus on tacit knowledge but also address explicit knowledge sharing. Compared to explicit knowledge sharing, tacit knowledge sharing is more difficult to identify and evaluate since it usually takes place in social interactions (like face-to-face conversation) that cannot be easily recorded. While individual explicit knowledge sharing activities can be facilitated by the use of information technology such as organizational repositories, attention should also be paid to knowledge sharing through social interactions because it ensures effective sharing of tacit knowledge.

From the managerial perspective, the managers and chief knowledge officers may create a knowledge-friendly environment through the encouragement and facilitation of teamwork, communities of practice, personal networks, strong and weak ties, and boundary-spanning.

Second, the scale multi-dimensionality implicates different evaluation and intervention strategies for each dimension: KSB and WI. Thus the management implications of this thesis are in the areas of: *Team composition / diversity; Team performance indicators; Workplace Innovation output; Knowledge retention/resilience; Cross-border knowledge sharing.*

In line with the difficulties of cross-national knowledge sharing, the global nature of the corporation and the results obtained when dealing with foreign countries and people from different cultures and, in particular, during the implementation of project related processes across the different operating entities of the corporation, has highlighted the necessity of understanding the influence of knowledge sharing behavior and its relationship to the adoption and implementation of Workplace Innovation processes and practices.

By exploring the demographic characteristics of employees relative to the Workplace Innovation Climate, change initiatives to encourage a Workplace Innovation mindset can be developed and implemented.

With the pending retirement of a significant number of senior executives, the issue of organizational knowledge resilience and retention needs to be addressed. The findings of this thesis show that encouraging a knowledge sharing culture within the

organization should focus on the behavioral aspects while implementing a technology based support structure.

Cross-border knowledge sharing recognizes that Workplace Innovation can benefit both the donator and the collector but should be mediated by local contextual requirements and by national cultural variations.

Individual development activities provide the foundations for encouraging a knowledge sharing and Workplace Innovation mindset where employees can identify the knowledge they need to improve their capabilities, expertise and skills to create current and future value for them and for their organizational unit.

Team composition / diversity in a transnational knowledge-intensive services environment provides the foundation for organizational performance improvement. By understanding the behavioral traits that contribute to team/workgroup performance, team structures can be tuned to improve performance.

Team performance indicators can be adjusted to better emphasize the behavioral traits that encourage knowledge sharing and Workplace Innovation.

Expatriate policy can be developed to encourage a learning orientation where the local subsidiary develops skills and expertise in addition to the immediate assignment outcomes. Additionally the expatriate can scan organizational boundaries for potential local knowledge and Workplace Innovation that can benefit the parent organization and contextualized to suit other geographic subsidiaries.

Management policy is informed by these findings and can be further developed to encourage a sharing, learning and innovative growth mindset, based on these findings. Mentoring across organizational boundaries, age groups and roles has the potential to contribute to knowledge resilience and retention as senior staff approach retirement. Technology initiatives can be supported by change initiatives with both behavioral, individual and organizational learning focus, all contributing to future operational and financial performance improvements.

6.6 Limitations

This thesis has these important limitations.

First, there are some weaknesses of the sampling methods used in this thesis due to difficulties of large survey data collection across multiple geographic locations and

languages. For the pilot survey, the KSIB scale was pre-tested using a convenience sample of 138 subjects. Because there was a lack of randomization for the pilot convenience sample, the characteristics of the sample pool were less defined. There might be some unobserved variables that may influence the results. For the final survey, the sample is limited to only one company of one particular industry—knowledge intensive services. Thus, the findings and implications drawn from this thesis might not be readily generalized to other industries. However, the results of the pilot survey and the final survey were very similar which strongly argues for the reliability and validity of the KSIB scale.

Second, since all of the constructs are measured by single-source self-report data, common method variance (CMV) may bias the construct relationships (Podsakoff & Organ 1986). A Harmon's one factor test (Podsakoff & Organ 1986) was used to show CMV was not a serious concern. Also the use of reverse coded questions and item wording has potential to reduce this bias.

Third, as with any quantitative study utilizing statistical methods, the researcher acknowledges the shortcoming of Pearson correlation, ANOVA and t-test utilized in this thesis. Whilst, the relationship is confirmed between the dimensions of Knowledge Sharing Behavior and Workplace Innovation, it does not inform the reasons influencing the relationship. Although a significant relationship was confirmed between the dimensions of Knowledge Sharing Behavior and Workplace Innovation within a transnational context, this thesis is subject to the typical limitations of quantitative research, cross-sectional research, and surveys.

The other limitation of this thesis is that it employed quantitative methodology based on research questions supporting hypotheses. Consequently, its findings are limited to quantitative analysis, particularly regression and correlation analysis, analysis of variance, t-test, EFA and EFA, and limited structural equation modeling. Although, the thesis used two highly-reputed and reliable scales, there were no extra questions that enquired about Knowledge Sharing Behavior and Workplace Innovation. It is possible that the population frame would have found it difficult to differentiate between 'Strongly Agree' and 'Agree' and a response could mark neutrality; but there were no comments and remarks of this kind. There is also a potential limitation of biased survey answers which may not reflect the accurate perception of the participant although using an 'unengaged response' analysis was used to minimize this bias. However, future studies can use mixed-method research

to conduct Knowledge Sharing Behavior and Workplace Innovation research to investigate this further.

The quantitative results of this thesis are limited in nature as they provide numerical descriptions of the relationship between Knowledge Sharing Behavior and Workplace Innovation. It does not provide narrative information of transnational employees' perceptions of the Knowledge Sharing Behavior and Workplace Innovation relationship. The quantitative results can be too abstract, although they are independent of the researcher's bias. The researcher believes that the limitations of statistical techniques do exist; but the contribution of this thesis lies in the successful confirmation of the relationship between Knowledge Sharing Behavior and Workplace Innovation and the disclosure of the demographic characteristics of transnational employees. The empirical investigation of this relationship is the overarching requirement of the literature so that future studies can explore this in a clear and comprehensive manner that would benefit the understanding of the relationship between Knowledge Sharing Behavior and Workplace Innovation.

The situation was that the KSIB designed in this thesis is the first scale which tried to measure the construct of KSB and WI reliably and validly. Currently there no other available valid scale or method to compare in order to calculate convergent validity of the KSIB.

6.7 Future research

This thesis suggests several avenues for future research. The research could be extended in the public and private sector. This thesis primarily focused on transnational employees, but future studies can study Knowledge Sharing Behavior within other groups, such as blue-collar workers, government employees and employees within the manufacturing or agricultural sectors, for example. Further research can also investigate the Knowledge Sharing Behavior and Workplace Innovation relationship using qualitative and mixed methodology. Alternatively, it could also focus on a range of workplace knowledge sharing behavioral perspectives based on specific knowledge types. Future studies could also explore the ways in which employees of one nationality differ in their perceptions of knowledge sharing behavior from employees of a different nationality.

To the extent this thesis was limited more extensive studies might overcome the limitations of the present thesis. For instance, random sampling across several

industries can be used to increase the reliability and generality of the results. The initial validation process in this thesis provided support for a promising new measure of KSB to support the established Workplace Innovation Scale (WIS).

Knowledge sharing behavior has a considerable scope for developing a rigorous instrument that measures that behavior for different organizational settings. The literature notes that confusion exists in relation to knowledge type and the different types of knowledge sharing behavior, such as personal knowledge sharing behavior, organizational knowledge sharing behavior and knowledge sharing behavior in mixed organization teams, are not addressed. It would be interesting to note how workplace employees differ or agree in their perceptions of the range of knowledge sharing behavior types.

Another KSIB topic in regard to correlations with personal information like age, gender, education level, work experience and role types is a possibility for more detailed research in the future. In this thesis, regression analysis showed a significant relationship between KSIB dimensions and the demographic data. Thus, correlation studies can be designed and conducted to examine the relationship between KSIB dimensions and demographic information.

One more research possibility is to use the reliable and valid KSIB scale developed in this thesis as an instrument in hypothesized relationships research related to Knowledge Sharing Behavior and Workplace Innovation behaviors in future field studies.

It is, in fact, the major theoretical contribution and one of the ultimate goals of this thesis.

6.8 Conclusions

To date, the dimensional factors that influence the dynamics of knowledge sharing and Workplace Innovation in transnational knowledge-intensive teams have received little empirical attention. These results suggest that Workplace Innovation can be maximized by encouraging the appropriate traits of knowledge sharing behavior.

Performing knowledge-intensive projects requires persistence and collaboration over a period of time, so workplace climate and organization tenure may also deepen team members' understandings of each other's working styles and unique knowledge or expertise.

This thesis studied knowledge-intensive work teams in a single transnational organization, and the type of work these teams engaged in was project intensive. These results suggest that the Workplace Innovation performance of knowledge-intensive teams is likely influenced by the complex interplay of knowledge sharing behaviors and transnational work requirements.

Despite the limitations of this study, the results clearly suggest that continued research on these topics has the potential to yield useful practical suggestions for organizations whose effectiveness depends on the performance of transnational knowledge-intensive teams.

This thesis achieved its objectives by investigating the relationship between the dimensions of Knowledge Sharing Behavior and those of Workplace Innovation within a transnational context. A quantitative approach was undertaken to investigate the research questions, and the findings of the data analysis showed that demographic characteristics of transnational employees share a significant relationship between the dimensions of Knowledge Sharing Behavior and Workplace Innovation. This thesis introduced a new in-depth understanding about the relationship between Knowledge Sharing Behavior and Workplace Innovation and can be seen as a pioneer in its exploration of this new focus in the literature. With this, the thesis provides a major contribution to extending the conceptual studies in the knowledge sharing behavior and Workplace Innovation fields and provides significant evidence that the dimensions of Knowledge Sharing Behavior are related with Workplace Innovation.

Thus, this research integrates discrete findings of prior research and should deepen the understanding of the dynamics of knowledge sharing and Workplace Innovation behaviors within the context of a transnational corporation. In this thesis, the focus is individual perceptions, attitude, and behavior in the transnational context, and falls in the domain of organizational behavior research.

This thesis extends current theory and research by addressing the complex dynamics that contribute to Workplace Innovation in several ways. It enhances the understanding of the relationship between knowledge sharing behavior and Workplace Innovation, especially in knowledge-intensive transnational settings.

Prior findings have postulated relationships between behavioral traits, knowledge sharing and Workplace Innovation (see Appendix A. Definitions and Abbreviations) but the empirical results have been mixed and inconclusive.

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Appendices

Appendix A. Definitions and Abbreviations

Definitions used in this thesis

Factor	*Definition*	*Source*
Attitude	The degree to which an individual is willing to share knowledge.	Ajzen 1985
Subjective Norm	The degree to which an individual perceives sharing knowledge as a norm among people who are important to him or her.	Ajzen 1985
Behavior (in a knowledge sharing context)	One or more observable actions performed by the individual and able to be recorded in some by an observer.	Ajzen 1985
Intention	A function of his/her attitude toward performing the behavior and of his subjective norm. It follows that a single act is predictable from the attitude toward that act, provided that there is a high correlation between intention and behavior.	Ajzen 1985
Perceived behavioral control	The degree of ease or difficulty perceived by an individual with respect to their ability to share their knowledge.	Ajzen 1991
Self-worth	The individual's reflective emotive reaction when others respond in the way that has been anticipated, and the individual concludes that their line of thinking and behavior are correct.	Bock et al. 2005
Willingness to share knowledge; eagerness to share	The extent to which an individual has a strong internal drive to communicate their individual knowledge to others.	Van den Hooff & Hendrix 2004
Organizational citizenship behavior – voice dimension	Participating in activities, making suggestions, or speaking out with the intent of improving the organization's products, or some aspect of individual, group, or organizational functioning.	LePine & Van Dyne 1998; Van Dyne & LePine 1998
Knowledge (tacit)	A shifting, 'composite construct' (Malhotra 2002, p. 583) that emerges from the dynamic interplay of personal judgments, habits of thinking, mental patterns of perception, pre-suppositions, framed experience, values, information, expert insights, intuitions, interpretations, traits such as creativity and commitment, and so forth**.**	Tsoukas 2005; Davenport & Prusak 1998; Malhotra 2002; Zack 1999; Polanyi 1983
Knowledge sharing	The process where individuals mutually exchange their knowledge and jointly create new knowledge	van den Hooff & de Ridder 2004
	A two-way exchange leading to mutual understanding, common sense and insight providing the capability for collective decision-making and action.	Hasan 2009
Knowledge Absorptive Capability	A dynamic capability pertaining to knowledge creation and utilization that enhances a firm's ability to gain and sustain a competitive advantage.	Zahra & George 2002
Knowledge Management	A trans-disciplinary approach to improving organizational outcomes and learning, through maximizing the use of knowledge. It involves the design, implementation and review of social and technological activities and processes to improve the creating, sharing, and applying or using of knowledge. Knowledge management is concerned with Workplace Innovation and sharing behaviors,	AS5037 2005

	managing complexity and ambiguity through knowledge networks and connections, exploring smart processes, and deploying people-centric technologies.	
Knowledge intensive business	Provides knowledge intensive input activities such as human capital/social capital to operations of other sectors and organizations.	
Transnational corporation	A globally distributed network of differentiated, more of less integrated local units whose competitive capability depends on sharing resources and knowledge both inside the network and outside the network with alliance partners.	Gupta & Govindarajan 2000; Gupta, Govindarajan & Malhotra 1999
Workplace Innovation	Something that is new or improved, done by a workgroup or enterprise to create significantly added value (commercial or social).	Carnegie et al. 1993
Workplace Innovation	Workplace Innovation is a process of practices occurring at the individual, team, and organizational level within a supportive climate. This views Workplace Innovation as a process rather than an outcome and may be defined as a psychological construct, and is a process of idea generation created by an individual, or a team within the workplace and is fostered through a supportive climate.	McMurray & Dorai 2003
	Note: the Workplace Innovation Scale (WIS) includes the subscales: Workplace Innovation Climate (WIC) Individual Innovation (II) Team Innovation (TI) Organizational Workplace Innovation (OI)	McMurray & Dorai 2003

Source: author and as noted

Abbreviations used in this thesis

Absorptive Capacity	AC
Attitude	AT, ATT
Average Shared Squared Variance	ASV
Average Variance Extracted	AVE
Behavior	BE, BEH
Perceived Behavioral Control	PBC, PC, PCO
Composite Reliability	CR
Confirmatory Factor Analysis	CFA
Exploratory Factor Analysis	EFA
Individual Innovation	II, IND
Information and Communications Technology	ICT
Intention	IN, INT
Knowledge Absorptive Capability	KAC, ACA
Knowledge as a Subjective Contextual Construction	K-SCC
Knowledge as an Object view	K-O
Knowledge Intensive Corporation	KIC
Knowledge Sharing Activity	KSA, KSAC
Knowledge Sharing Behavior Scale	KSB, KSH
Knowledge Sharing Innovation Behavior Scale	KSIB
Knowledge-based View of the Firm Theory	KBV
Multi-national Corporation	MNC
Organization Innovation	OI, OIN
Organizational Citizenship Behavior	OCB, OCBE
Organizational Citizenship Behavior- Knowledge work	OCB-KW
Organizational Climate Theory	OCT
Organizational Climate	OC
Organizational Culture Theory	OCT
Organizational Workplace Climate	OWC
Resource-based View of the Firm Theory	RBV
Self-worth	SW, SWO
Social Capital Theory	SCT
Social Exchange Theory	SET
Structural Equation Model/ Modeling	SEM
Subjective Norm	SN, SNO
Team Innovation	TI, TIN
Theory of Planned Behavior	TPB
Theory of Reasoned Action	TRA
Trans-national Corporation	TNC
Workplace Innovation Climate	WIC, WICL
Workplace Innovation Scale	WI, WIS, INNOV
Variance-based SEM	PLS-SEM
Partial Least Squares	PLS
Covariance-based SEM	CB-SEM or simply SEM.

Definitions and use of behavioral constructs in knowledge sharing studies.

Constructs	*Definitions*	*Key References*
Anticipated Intrinsic/Extrinsic Rewards	The degree to which one believes that one will receive intrinsic/extrinsic incentives for one's knowledge sharing	Jauch 1970, 1976 ; Gomez-Mejia and Balkin 1990; Koning 1993; Amabile 1996; Malhotra and Galletta 1999; Osterloh and Frey 2000; Ba et al 2001a,b; Hall 2001a,b; Menon and Pfeffer 2003
Anticipated Reciprocal Relationships / Expected Associations	The degree to which one believes one can improve mutual relationships with others through one's knowledge sharing	Major et al. 1995; Parkhe 1993; Seers et al. 1995; Sparrowe and Linden 1997; Davenport and Prusak 1998; Deluga 1998; Connolly and Thorn 1999; Kollock 1999; Bock et al. 2005; Wasko and Faraj 2005; Schultz 2006, Heineck and Anger 2010
Sense of Self-Worth	The degree of one's positive cognition based on one's feeling of personal contribution to the organization (through one's knowledge-sharing behavior)	Brockner 1988; Gardner and Pierce 1998; Gecas 1989; Schaubroeck and Merritt 1997; Stajkovic and Luthans 1998
Affiliation	The perception of togetherness	Kim and Lee 1995; Koys and Decotiis 1991
Innovativeness	The perception that change and creativity are encouraged, including risk-taking in new areas where one has little or no prior experience	Kim and Lee 1995; Koys and Decotiis 1991
Fairness	The perception that organizational practices are equitable and non-arbitrary or capricious	Kim and Lee 1995; Koys and Decotiis 1991
Attitude toward Knowledge Sharing	The degree of one's positive feelings about sharing one's knowledge	Fishbein and Ajzen 1975, 1981; Price and Mueller 1986; Robinson and Shaver 1973
Subjective Norm	The degree to which one believes that people who bear pressure on one's actions expect one to perform the behavior in question multiplied by the degree of one's compliance with each of one's referents	Fishbein and Ajzen 1975, 1981 Nahapiet and Ghoshal 1998; Orlikowski 1993
Intention to Share Knowledge	The degree to which one believes that one will engage in an explicit knowledge-sharing act (both explicit and tacit)	Constant et al. 1994; Dennis 1996; Feldman and March 1981; Fishbein and Ajzen 1981
Agreeableness	The propensity to be altruistic, trusting, modest and warm and as a 'prosocial and communal orientation	John and Srivastava,1999; Digman,1990; Costa and McCrae,1992
Generalized trust	The belief in the good intent, competence, and reliability of employees with respect to sharing and reusing knowledge	Mishra 1996; Putnam 1993
Propensity to Trust	A tendency to make attributions of people's actions in either an optimistic or pessimistic fashion'	DeNeve and Cooper,1998; Mayer et al.,1995; Couch et al. 1996
Loss of knowledge	The perception of power and unique value lost due to knowledge donated / shared.	Gray 2001
Codification effort	The time and effort required to codify and input knowledge into explicit form	Markus 2001
Image / reputation feedback	The perception of increase in reputation due to contributing / sharing knowledge	Constant et al. 1996; Jones et al. 1997; Kollock 1999; Donath 1999; Carrillo et al. 2004; Stewart 2005; Wasko and Faraj 2005; Marett and Joshi 2009
Knowledge self-efficacy	The confidence in one's ability to provide knowledge that is valuable to the organization	Bandura 1982, 1986a, 1997; Ericsson and Lehmann 1996; Constant et al. 1996; Kalman 1999; Sternberg and Horvath 1999; Hinds et al. 2001; Bock

		and Kim 2002
Enjoyment in helping others	The perception of pleasure obtained from helping others through knowledge donated / shared.	Wasko and Faraj 2000
Passion / Knowledge Sharing Activity	a constant search for the unknown and a determination to explore uncharted intellectual territories and probe for new perspectives, driven by curiosity about discovering new ways of learning, doing, and sharing	Durkheim 1884 as cited in Schmaus 2003; Van den Hooff and van Weenen 2004; Sie and Yakhlef 2009
Expected Contribution	The degree to which one believes that one can improve the organization's performance through one's knowledge sharing.	Stajkovic & Luthans 1998; Gardner & Pierce 1998; Schaubroeck & Merritt 1997; Gecas et al. 1989;
Altruism	a form of unconditional kindness without the expectation of a return	Constant et al. 1994; Davenport and Prusak 1998; Kollock 1999; Fehr and Gachter 2000; Wasko and Faraj 2000, 2005; He and Wei 2008, Hung et al. 2011a,b
Job involvement	degree to which a person is identified psychologically with his work, or the importance of work in his total self-image.	Lodahl and Kejner,1965; Allport 1945; Paullay et al.,1994; Kanungo,1982; Keller 1997; Blau 1986; Probst 2000; Reeve and Smith 2001; Teh and Sun 2012
Job satisfaction	the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values.	Locke 1969, 1970; Organ 1977; Golbasi et al. 2008; Teh and Sun 2012
Organizational commitment	Organizational commitment is a composite of three elements namely, affective, continuance and normative commitment.	Becker 1960; Meyer and Allen 1991; Shore and Wayne 1993; Teh and Sun 2012
Organizational citizenship behavior	Employee's discretionary behavior that is not formally rewarded by the organization's formal award system. Initial five main categories of OCBs: altruism, conscientiousness, sportsmanship, courtesy, and civic virtue. Now seven overarching categories of OCB: helping (which includes altruism, courtesy, cheerleading, and peacemaking); sportsmanship; organizational loyalty; organizational compliance; individual initiative; civic virtue; and self-development.	Bateman and Organ 1983; Shore and Wayne 1993; Konovsky and Pugh 1994; MacKenzie et al. 1998; Podsakoff et al. 2000; Bolino et al. 2002; Organ et al. 2006; Manrique de Lara and Rodriguez 2007; Hsu and Lin 2008; Teh and Sun 2012; Dekas et al. 2013
OCB extensions: employee sustainability, social participation, knowledge-sharing, and administrative behavior	Knowledge-sharing: Sharing knowledge or expertise with co-workers; Administrative behavior: Planning, organizing, controlling, or supervising any aspect of the organization's operations and mission; maintaining work-related resources.	Dekas et al. 2013

Source: author and as noted

Appendix B. Literature Review Search Strategy Method

An analytical review scheme is necessary for systematically evaluating the contribution of a given body of literature (Ginsberg & Venkatraman 1985). Systematic reviews improve the quality of the review process and outcome by employing a transparent and reproducible procedure (Crossan & Apaydin 2010; Tranfield, Denyer & Smart 2003).

This analysis of the relevant literature was conducted using a three-step process.

The first contained Boolean searches within four leading reference databases: the ISI Web of Knowledge (Social Science Citations Index); Proquest; Scopus; and Google Scholar. A search of each database was made using a set of key phrases relevant to the topics of interest to this research, namely: 'behavior'; 'Behavior'; (to allow for national spelling variations); 'Workplace Innovation'; 'transnational'; and 'Knowledge sharing'; 'Knowledge sharing behavior'; 'Transnational corporation'; 'Transnational organization'; and 'Transnational organization' (again to allow for national spelling variations); 'Workplace Innovation' and 'Workplace Innovation Behavior' in the title, abstract, or keywords.

The ISI Web of Knowledge's Social Sciences Citation Index (SSCI) database was chosen as it is one of the most comprehensive databases of peer-reviewed journals in the social sciences. Its unique feature of citation counts allows a triage of a large pool of articles based on this objective measure of influence.

Second, another pass of the databases was made where the above phases were combined e.g. for 'Workplace Innovation' and 'Knowledge sharing' in the title, abstract, or keywords. These Boolean search sets are given below.

This allowed the capture of references on various terms of knowledge sharing, Workplace Innovation and transnational to be combined. This was to ensure that this specification allowed narrowing down of the results. Step resulted in a much reduced number of papers relevant to the review. These initial search strategies were conducted using the English language. Some non-English papers were dropped after their abstracts were checked using Google Translate.

A Boolean search on Google Scholar combining 'Workplace Innovation' AND 'knowledge sharing' AND transnational reduced a very high initial number of results (due to the way Google sorts results) to consider to limit search results. It was also specified for searching to be limited to the academic fields of business,

administration, and economics as well as social sciences, behavioral science, and humanities. This search provided eight further papers for review.

The third step entailed manually examining references in work identified through the two previous steps, and the collection of relevant articles known to the author before the review process.

The limitations to this approach are that the filtering process employed may have also omitted some relevant research. However, it is believed that the rigorous procedure of this review has reduced the probability that the omitted research would have contained information that would critically alter the conclusions.

B 1. Literature search results

Search term(s)	**Google Scholar** 24 June 2014 • Bus, Admin, Finance, economics • Social Sciences, Arts & Humanities	**Scopus** (Cit+abstr) 24 June 2014 Soc Sci & Human all	**Proquest** (Cit+abstr) 24 June 2014 Conf papers & proceedings articles	**Web of Science** 24 June 2014
Behavior	3,550,000	496,691	36,604	2,199,585
Behavior	3,510,000	496,691	36,604	2,199,585
Workplace Innovation	2,790,000	86,407	2,137	131,426
'Workplace Innovation'	2,660	44	0	39
'Workplace Innovation behavior'	0	0	0	163
Transnational	864,000	15,013	75	14,678
'Transnational corporation'	14,100	2,289	0	1,285
'Transnational organization'	3,570	128	0	770
'Transnational organization'	882	128	0	
'knowledge sharing'	208,000	3,924	13	30,045
'knowledge sharing behavior'	3,380	239	0	3,587
'knowledge sharing behavior'	1,180	239	1	
Workplace Innovation AND 'knowledge sharing'	124,000	615	2	2,249
Workplace Innovation AND 'knowledge sharing behavior'	2,360	24	0	254
Workplace Innovation AND 'knowledge sharing behavior'	948	24	0	254
'Workplace Innovation' AND 'knowledge sharing'	226	0	0	25
'Workplace Innovation' AND 'knowledge sharing behavior'	4	0	0	6
Workplace Innovation AND 'knowledge sharing' AND transnational	9,510	0	0	0
Workplace Innovation AND 'knowledge sharing' AND 'transnational corporation'	320	0	0	0
Workplace Innovation AND 'knowledge sharing' AND 'transnational organization'	215	0	0	0
Workplace Innovation AND 'knowledge sharing behavior' AND 'transnational corporation'	4	0	0	0
'Workplace Innovation' AND 'knowledge sharing' AND 'transnational corporation'	0	0	0	0
'Workplace Innovation' AND 'knowledge sharing' AND 'transnational organization'	0	0	0	0

Appendix C. Representative studies of knowledge sharing and behaviors – 2000 to 2014

Authors and theory	*Focus*	*Indentified*	*Method*
Social capital theory (Wasko & Faraj 2000)	Three perspectives of knowledge (knowledge as object, knowledge embedded in individuals, and knowledge embedded in a community) with respect to the definitions of knowledge and organizational knowledge Tangible returns, intangible returns, community interests. Knowledge as a public good versus private good for knowledge exchange.	Desire to share for the benefit of the community has positive effect on knowledge sharing. Tangible benefits does not affect knowledge sharing. Reputation enhancing. Analysis categories: Tangible returns; Intangible returns; Community interest; Barriers to community.	Survey: Sample: 342 people participating in three electronic communities of practice. Type: Open-ended responses Analysis: content analysis on the open-ended responses to develop categories.
(Bartol & Srivastava 2002)	Knowledge sharing motivator: extrinsic rewards (monetary); intrinsic rewards (development, recognition.) First mechanism is employees contributing their ideas, information, and expertise to a database. Second mechanism is formal interactions. Third mechanism is informal interactions (social exchange).	Team based rewards will motivate. Company wide rewards will motive knowledge sharing across teams. Contributing knowledge to databases is the most amendable to rewards. Allows reward allocator to measure behavior. Rewards based on collective performance effective in promoting group commitment. For informal interaction, key enabling factor is trust between individual and organization. For CoPs, intrinsic rewards and recognition are most appropriate.	Literature review; theory.
Economic Exchange Theory, social exchange theory, self-efficacy, theory of reasoned action. (Bock & Kim 2002)	To develop an understanding of the factors affecting the individual's knowledge sharing behavior in the organizational context . Expected rewards Expected associations Expected contribution	Expected rewards, believed by many as the most important motivating factor for knowledge sharing, were not significantly related to the attitude toward knowledge sharing. As expected, positive attitude toward knowledge sharing was found to lead to positive intention to share knowledge and, finally, to actual knowledge sharing behaviors.	Survey: Sample: n=467 (51.9%); four large, public organizations; Korea
(Levin et al. 2002)	Benevolence-based & Competence	Competence & benevolence based trust has a	Survey: n=138

	based trust	positive effect on knowledge sharing; tie strength not relevant.	3 MNCs (US based divs) US Pharma; UK Bank, Canadian oil & Gas
(Politis 2003)	Effect of interpersonal trust and knowledge acquisition variables on knowledge sharing and team performance	Trust has positive effect on knowledge sharing H2. Faith in management will be positively related to knowledge acquisition variables (i.e. behavioral skills and traits of KWs). Failed CFA – not tested.	Survey: Sample: drawn from a large high-technology, aerospace, manufacturing organization operating in Sydney, Australia. The sample consisted of members of self-managing teams from 49 teams, together with 36 team leaders from 36 of these 49 teams. N=239 (85.4%) responses. Analysis: SEM
Social capital / social network (Levin & Cross 2004)	Competence based trust, benevolence based trust Model: two-party (dyadic) knowledge exchange, with strong support in each of the three companies surveyed. Tie Strength and Receipt of Useful Knowledge. Trust Mediates between Strong Ties and Receipt of Useful Knowledge. Trust Plus Weak Ties Leads to Receipt of Useful Knowledge. Type of Knowledge as a Contingency	Competence and benevolence mediates trust and knowledge sharing. Findings: 1) the link between strong ties and receipt of useful knowledge (as reported by the knowledge seeker) was mediated by competence- and benevolence-based trust. 2) once we controlled for these two trust dimensions, the structural benefit of weak ties became visible. This latter finding is consistent with prior research suggesting that weak ties provide access to non-redundant information. 3) we found that competence-based trust was especially important for the receipt of tacit knowledge.	Survey: Sample: n=127 (48%) 3 MNCs (US based divs) US Pharma; UK Bank, Canadian oil & Gas. adapted the survey items (see Appendix) from pre-existing scales in the literature. Analysis: hierarchical linear modeling; one-way ANOVA with random effects Model;
(Van den Hooff & Van Weenen 2004)	The influence of organizational commitment and the use of computer-mediated communication (CMC) on knowledge sharing. In knowledge sharing, an important distinction is made between knowledge donating and knowledge collecting. -Knowledge sharing processes -Commitment and knowledge sharing -use of CMC and knowledge sharing -CMC and commitment	Commitment is an important influence on knowledge sharing—this variable positively influences the extent to which people both donate and collect knowledge in relation to their coworkers. This relationship is, however, not recursive—contrary to what was expected. CMC use positively influences the extent to which people collect knowledge. CMC use is, however, not related to donating knowledge. CMC use positively influences affective commitment to the organization. The extent to which people collect knowledge from others positively influences the extent to	Case studies (2): specialty staffing agency; consultancy firm Sample: respondents from the two different organizations are considered as a sample of one case. Method: knowledge management scan' was conducted - interviews and a questionnaire. Knowledge donating – 6 items Knowledge collecting – 8 items Commitment was measured with five (translated) items of the OCQ scale (Porter et al. 1974; Mowday et al. 1979)

		which they also donate knowledge to others. Successful knowledge collecting, it would seem, is a condition for the willingness to donate one's own knowledge.	Analysis: SEM – Chi squared; Tucker-Lewis Index; RMSEA
Theory of reasoned action (Bock et al. 2005)	Motivators of knowledge sharing: extrinsic rewards, reciprocal relationship, sense of self-worth, sociological	Extrinsic rewards (negatively) Reciprocal relationship (Positive) Organization climate (Positive) Attitudes toward and subjective norms with regard to knowledge sharing as well as organizational climate affect individuals' intentions to share knowledge. Anticipated reciprocal relationships affect individuals' attitudes toward knowledge sharing while both sense of self-worth and organizational climate affect subjective norms. Institutional structures within which a focal behavior is situated also influence behavioral intentions. Organizational climate influences behavior directly and indirectly through subjective norms. Behaviors largely constituted through collective action. Identified three aspects of organizational climate as being particularly conducive to knowledge sharing: fairness, innovativeness, and affiliation.	154 managers from 27 Korean organizations. Thematic analysis of the interview scripts with 5 senior managers. Survey: pretest n=61; final n=259 (86%). Analysis: partial least squares (PLS) – CFA then structural Limits: Data are cross-sectional and not longitudinal, the posited causal relationships (although firmly based in generally accepted theories) could only be inferred rather than proven. Data collection was limited to organizations in a highly collectivist national culture (Hofstede 1991). Possible single-source bias
(Kankanhalli, Tan & Wei 2005) This study uses the social exchange theory and the social capital theory as its theoretical bases.	Motivators to contribute to electronic knowledge repositories: rewards, reciprocity, knowledge self efficacy, enjoyment in helping others, pro-sharing norms, degree of usage of the repository	Self-efficacy, enjoyment in helping others motivates knowledge sharing. *First*, it simultaneously investigates both cost and benefit factors affecting EKR usage. *Second*, it incorporates contextual factors to illustrate how these may moderate the relationships between cost and benefit factors and EKR usage. The results suggest organizational interventions and technology design considerations that can promote knowledge contribution to EKRs, thereby facilitating reuse of organizational knowledge.	Literature review: theoretical model Survey: Singapore; 10 organizations over 7 industries; Sample: KM practitioners; 150 responses (37.5%) Analysis: moderated multiple regression analysis.
Social dilemma (Cabrera, Collins & Salgado 2006)	Knowledge sharing: Personality traits; agreeableness; conscientiousness,	Rewards, sense of group identity, responsibility. Self-efficacy, openness to experience, perceived support from colleagues and supervisors and, to a	Survey response of 372 Spanish employees from a large multinational (48%); 42-items plus six demographic

	openness to experience, organizational commitment, self-efficacy, job autonomy, rewards. Organizational commitment Role breadth self-efficacy Organizational environment: Job autonomy; Rewards; Perceived supervisory and peer support; Knowledge management system tools	lesser extent, organizational commitment, job autonomy, perceptions about the availability and quality of knowledge management systems, and perceptions of rewards associated with sharing Knowledge. Agreeableness, conscientiousness, openness to experience, All three has positive effect on knowledge sharing. The demographic variables accounted for 5 per cent of the variance of knowledge sharing ($p < .01$). Results showed a strong relationship between role-breadth self-efficacy and self-reports of knowledge management behavior, even after controlling for every variable under study. Funded by IBM and Vodafone and supported by IBM's Research Center.	questions. A five-point Likert-type scale Organizational commitment - four items from the internalization factor of O'Reilly and Chatman's (1986) organizational commitment scale. RBSE, - a five-item scale from Parker (1998). Three personality dimensions (4 items each) using Golderg's (1990, 1992) big five adjective markers. Perceived support - a three Likert-type item scale adapted from Maurer and Tarulli (1994). Perceptions of rewards - Three items (also adapted from Maurer and Tarulli 1994) were employed for each of the reward types. Job autonomy was measured with the three items from the job diagnostic survey (Hackman and Oldham 1976), Limits: may be limited by the common method variance problem; one country and one sector;
(Lu, Leung & Koch 2006)	Knowledge sharing among managers. Factors: Greed; self-efficacy; co-worker collegiality; Organizational support Culture. Technology use.	Study 1 found evidence for the role of two individual factors: greed which reduced knowledge sharing, and self-efficacy which increased it. In addition, co-worker collegiality has an indirect influence on knowledge sharing by lowering greed and raising self-efficacy. Study 2 replicated the key findings of Study 1 and also identified the influence of organizational support on knowledge sharing. Organizational support led to higher utilization of information and communication technologies, resulting in more knowledge sharing, especially for explicit as opposed to implicit knowledge. Greed was negatively related to knowledge sharing, while self-efficacy was positively related. Co-worker collegiality having a negative relationship with greed and a positive relationship	Empirical Survey: 119 factor items, plus 9 demographic items; 7 point Likert scale; Population: managers; China Study 1: 350 part-time MBA students in Shanghai and Shenzhen, and 80 middle-level employees from five firms (three in high-tech industries, one in insurance, and one in biotechnology) in Guangzhou, Shenzhen, and Beijing. Analysis: SEM to compare the fit of a single-factor model to the fit of a five-factor model (number of latent variables in the model) and that of an eight-factor model (number of scales). N=208 (48.4%) Study 2: 277 part-time MBA students.

		with self-efficacy. Organizational context was related to neither greed nor self-efficacy. Co-worker collegiality and organizational support showed no significant direct effect on knowledge sharing. Study 2 was designed to examine the relationship between information technologies, knowledge type, and knowledge sharing. Results of Study 1 were confirmed: Information technologies utilization increased the sharing of both explicit and implicit knowledge. Organizational support for knowledge sharing increased information technologies utilization.	N=262 (94.6%); Experienced; China; Reduced items from Study 1 survey plus three new scales were developed for this study to measure explicit knowledge-sharing behaviors, tacit knowledge-sharing behaviors, and information technology utilization.
Five-factor Model (Mooradian, Renzl & Matzler 2006)	Agreeableness interpersonal trust	Positive effect on knowledge sharing. Linked the personality domain agreeableness and the facet propensity to trust to interpersonal trust, 'downstream' in a causal chain to reports of knowledge sharing behaviors.	Survey: 100 employees of an enterprise resource planning (ERP) software and consulting firm. 64 responses (64%) Knowledge sharing within and across teams were measured using Cumming's (2004) Intragroup Sharing and External Sharing Scales, which gauge five types of knowledge sharing. PLS analysis. Limit: relatively small sample size.
Five-factor Model (Cho, Li & Su 2007)	Motivators of knowledge sharing: agreeableness, conscientiousness, expertise, extrinsic motivation, Individual level variables and their effects on the level of intension to share knowledge and the intention to use knowledge sharing mechanisms. Model: *Personality Trait; Personal Ability; Perceived Extrinsic Motivation; Intrinsic Motivation; Knowledge Types*	Agreeableness does not affect knowledge sharing Expertise has positive effect on knowledge sharing intention	Survey: 5 point Likert scale. Personality trait: Knowledge type: (Parikh 2001). knowledge in two dimensions - tacit/explicit and internal/external. Knowledge sharing: Based on Bartol and Srivastava's (2002)- four mechanisms. Dependent variable, intention to share knowledge, is measured using a single item five-point Likert-type question asking how strongly the respondents agree to share their knowledge with other member in the company. Sample: Korea. (1)Working adults taking evening classes in the part-time MBA

			program of Hanyang University. N=141 (78%) (2) n=66 employee from three of Samsung subsidiary companies' employees. Total n=207 Analysis: multiple regression analyses
Five-Factor Model (Matzler et al. 2008)	Agreeableness, conscientiousness, openness to experience Knowledge types: (1) embodied knowledge (e.g., experience-based, learning by doing, etc.), (2) embrained knowledge (e.g., conceptual skills and cognitive abilities), (3) encultured knowledge (e.g., shared understandings, incidents, etc.), (4) embedded knowledge (e.g., firm specific routines and procedures, etc.), and (5) encoded knowledge (e.g., manuals and job descriptions, etc.)	All three has positive effect on knowledge sharing	empirical study structural equation modeling with PLS Sample: leading independent engineering consultants, particularly concerning tunneling, underground construction and pipeline construction; staff, mostly civil, mechanical, or electrical engineers; headquarters are in Germany and Austria; however, employees are globally dispersed and include various nationalities. N=124 (20%). Survey: German and English; Personality traits were assessed by German version of the NEO five-factor inventory (NEO-FFI); Knowledge sharing was assessed based on Blackler (1995) knowledge sharing scale with adapted wording according to the company context. Analysis: structural equation modeling using the partial least squares (PLS) approach.
Theory of planned behavior (TPB) socio-technical theory (Aulawi et al. 2009)	To investigate the relationship among knowledge enablers, KS behavior and Individual Innovation capability.	Research result shows that the intensity of KS behavior influences positively to the Individual Innovation capability. The result shows that trust, teamwork, senior management support and self-efficacy influence positively in developing employees' KS behavior in a company. ***H1.*** The higher the level of the teamwork is between somebody with his colleagues, the higher the subjective norm is towards KS. ***H2.*** The higher the level of trust to his colleagues, the higher the positive attitude towards KS is. ***H3.*** The higher the level of senior management support felt by somebody towards Ks activity, the	Survey: 6 point Likert scale N=125 (50% of 250) Population: employees, telecommunications, Indonesia Analysis: structural equation modeling

		higher the positive attitude towards KS is. ***H4.*** The higher the level of centralization is, the lower the positive attitude towards KS is. ***H5.*** The higher knowledge-based system is, the higher the positive attitude of somebody towards KS. ***H6.*** The higher technological condition felt by someone, the higher his intention to share. ***H7.*** The higher the level of one's self-efficacy, the higher his intention to share. ***H8.*** The higher one's subjective norm towards KS, the higher his intention to share. ***H9.*** The higher one's positive attitude towards KS, the higher his intention to share. ***H10.*** The higher one's intention to share, the higher his KS behavior intensity. ***H11.*** The higher one's KS intensity, the higher his Workplace Innovation capability.	
(Lin, Lee & Wang 2009)	to propose an evolution model that integrates triangular fuzzy numbers and the analytic hierarchy process (AHP) to develop a fuzzy evaluation model which prioritizes the relative weights of the factors influencing knowledge sharing.	16 attributes related to four dimensions affecting knowledge sharing. Fuzzy evaluation model for calculation of the relative importance of these influences on knowledge sharing. The attributes 'interpersonal trust' (0.079), 'knowledge self-efficacy' (0.075), and 'knowledge networks' (0.071) have the highest rankings.	literature review; Survey: 7 point likert Sample: n=172 (34.4%) Taiwan; shipping industry; 50 organizations Analysis: reliability test; factor analysis; principal component factor analysis with varimax rotation;
Social cognitive theory (SCT) (Bandura 1982, 1986a, 1997) (Lin, Hung & Chen 2009)	to investigate and explain the relationships between contextual factors, personal perceptions of knowledge sharing, knowledge sharing behavior, and community loyalty, within professional virtual communities (PVC).	-Contextual factors and knowledge sharing behavior. - Contextual factors and personal perceptions of knowledge sharing. - Personal perceptions of knowledge sharing and knowledge sharing behavior. - Knowledge sharing behavior and community loyalty.	Empirical Survey: Sample: 3 PVCs Analysis: structural equation modeling (SEM)
(Sié & Yakhlef 2009)	Knowledge transfer process.	The more passionate an expert is the more intent they will on seeing thrive and diffuse to others. Assuming that expertise is dialogical, that is, the process of transferring is at the same a process of acquiring it. The two processes are conflated	Case study

Social capital (Kang, Kim & Bock 2010)	Interaction ties of knowledge sharing among the departments in a firm; perceived trustworthiness; shared vision. Control variable: length of time working there; language fluency; qualification level.	Greater extent of intra organizational ties leads to higher perceived trustworthiness. Greater extent of intra organizational ties leads to higher shared vision. Control vars: trustworthiness-language fluency significant p@5%; trustworthiness-shared values significant p@5%	Sample: international industry firm, financial accounting dept. Survey: n=97 52 responses (53.6%), 18 questions; English; 5 point Likert scale Analysis: linear correlation; hierarchical multiple regression.
knowledge management process (Liao et al. 2010a)	the roles of knowledge acquisition, absorptive capacity, and Workplace Innovation capability in finance and manufacturing industries.	results indicate that absorptive capacity is the mediator between knowledge acquisition and Workplace Innovation capability, and that knowledge acquisition has a positive effect on absorptive capacity.	Survey: 362 responses (27.8%); 5 point Likert scale. Knowledge acquisition: 7 items Absorptive capacity: 14 items Workplace Innovation capability: 16 items Sample: finance and manufacturing industries.; Taiwan Analysis: structural equation model
theory of reasoned action theory of planned behavior (Reychav & Weisberg 2010)	Development of a scale to measure intensions to share explicit and tacit knowledge and their impact on actual knowledge sharing behavior.	The intention to share explicit knowledge influences explicit knowledge-sharing behavior to an equal extent both directly and indirectly. By contrast tacit knowledge-sharing behavior is influenced directly to a greater extent by the intention to share tacit knowledge and less indirectly by the intention to share explicit knowledge.	Sample: 2 hi-tech cos in Israel in the telecoms cellular networks field. Data collection: 1) contact; 2) interviews; 3) pilot survey n=58; 4) survey Survey: n=278 (98%); 20 items; 5 point Likert scale Analysis: CFA; SEM Limits: single industry
(Liao et al. 2010b) Theory ?	investigates the roles of knowledge acquisition, absorptive capacity, and Workplace Innovation capability in finance and manufacturing industries in Taiwan.	First, Knowledge acquisition is positively related to absorptive capabilities. According to this, organizations can acquire knowledge and information to increase their absorptive capacity. Second, Absorptive capacity is positively related to a firm's Workplace Innovation capability. Among the four dimensions of absorptive capacity, only the level of knowledge and experience of the organization have no positive influence on product Workplace Innovation. Third, Knowledge acquisition is positively related to a firm's Workplace Innovation capability. Fourth, Absorptive capacity indeed plays a mediator role between knowledge acquisition and Workplace Innovation capability.	Survey: 39 items Sample: n=362 (27.8%) 5 point Likert scale Population: mfg and in firms in Taiwan Analysis: structural equation model.

		Finally, Models in financial and manufacturing sectors yield different results, showing that industry structure moderates the relationship between knowledge acquisition, absorptive capacity, and Workplace Innovation capability.	
(Abili et al. 2011)	factors of (1) organizational structure (including complexity, officialism, centralization), (2) organizational culture (including bureaucratic, creative, innovative and supportive culture) and (3) interaction among departments, have effect on knowledge sharing.	The findings show that 1) the situation of knowledge sharing is rather desirable; 2) age, work experience, field of study, educational level and organizational position don't have effect on knowledge sharing; 3) knowledge sharing has a positive relation with human factors (commitment and trust) and negative relation with structural factors (officialism, centralization and complexity); 4) there is positive relation among knowledge sharing, creative and supportive culture (elements of cultural factors), and negative relation between knowledge sharing and bureaucratic culture (the third element of cultural factors); 5) deterrent factors of knowledge sharing (bureaucratic culture and structural factors) have no meaningful difference in ranks , however in the facilitative factors (human factors (commitment and trust), organizational culture (creative, innovative and supportive culture), the creative and innovative culture has the highest rank and after that, other ranks are related to trust, supportive culture and commitment. In this research, bureaucratic culture, formality, complexity, and centralization were recognized as deterrent factors, and trust, commitment, creative and innovative culture, and supportive culture were considered as facilitating factors. Results show no significant difference between different harming factors (bureaucratic culture, formality, complexity, and centralization) and rankings was identical. Results show no significant difference between facilitating factors (trust, commitment, creative	Survey: questionnaire which was used by Lin (2008) to measure knowledge sharing and its effective factors. Sample: n=50 - purposive sample of 50 managers and experts working in the Institute for International Energy Studies Analysis: correlation; Spearman Correlation Coefficient, U-man witny, Wilkakson and Freadman.

		and innovative culture, and supportive culture). The above mentioned information shows that creative and innovative culture possessed the highest rating amongst other factors, followed by trust, supportive culture, and commitment, respectively.	
Theory of Planned Behavior ERG theory (''existence,'' ''relatedness,'' and ''growth''.) (Hau & Kim 2011)	Investigates what drives community users to freely share their Workplace Innovation-conducive knowledge. H1. The more favorable attitude toward Workplace Innovation-conducive knowledge sharing is, the higher behavioral intention to share Workplace Innovation-conducive knowledge is. H2. The higher behavioral intention to share Workplace Innovation-conducive knowledge is, the more frequent the actual behavior of sharing Workplace Innovation-conducive knowledge is. H1. The more favorable attitude toward Workplace Innovation-conducive knowledge sharing is, the higher behavioral intention to share Workplace Innovation-conducive knowledge is. H2. The higher behavioral intention to share Workplace Innovation-conducive knowledge is, the more frequent the actual behavior of sharing Workplace Innovation-conducive knowledge is. H4. The higher subjective norm toward Workplace Innovation-conducive knowledge sharing is, the higher behavioral intention to share Workplace Innovation-conducive knowledge is. H5. The higher self-efficacy of	Intrinsic motivation, shared goals, and social trust are salient factors in promoting users' Workplace Innovation-conducive knowledge sharing. Extrinsic motivation and social tie, however, were found to affect such sharing adversely, contingent upon whether a user is an innovator or a non-innovator. The study illustrates how social capital, in addition to individual motivations, forms and influences users' Workplace Innovation-conducive knowledge sharing in the online gaming context. TPB is limited, in that it can hardly explain what antecedents can significantly affect the attitude, subjective norm, and intention formation toward sharing such knowledge.	Survey: 7 point Likert, 50 items Sample: 1244 (11.3%rr) members of a South Korean online game user community. Used incentives. Analysis: PLS, SPSS, CFA

	Workplace Innovation-conducive knowledge sharing is, the higher behavioral intention to share Workplace Innovation-conducive knowledge is. H6. The higher self-efficacy of Workplace Innovation-conducive knowledge sharing is, the more frequent the actual behavior of sharing Workplace Innovation-conducive knowledge is. H7. The more extrinsic benefits are expected from sharing Workplace Innovation-conducive knowledge, the more favorable attitude toward Workplace Innovation-conducive knowledge sharing is. H8. The more intrinsic benefits are expected from sharing Workplace Innovation-conducive knowledge, the more favorable attitude toward Workplace Innovation-conducive knowledge sharing is. H9. The more relational benefits are expected from sharing Workplace Innovation-conducive knowledge is, the more favorable attitude toward Workplace Innovation-conducive knowledge sharing is. H10. The stronger social ties are, the higher social trust is. H11. The stronger social ties are, the more favorable attitude toward Workplace Innovation-conducive knowledge sharing is. H12. The stronger social ties are, the higher subjective norm toward Workplace Innovation-conducive knowledge sharing is. H13. The stronger shared goals are,		

	the higher social trust is. H14. The stronger shared goals are, the more favorable attitude toward Workplace Innovation-conducive knowledge sharing is. H15. The stronger shared goals are, the higher subjective norm toward Workplace Innovation-conducive knowledge sharing is. H16. The higher social trust is, the higher behavioral intention to share Workplace Innovation-conducive knowledge is.		
Economic exchange theory Knowledge market perspective Social exchange theory Social capital theory (Hung et al. 2011a)	An individual's tendency to engage in knowledge sharing behavior in a team setting. The effects of intrinsic motivation (altruism) and extrinsic motivation (economic reward, reputation feedback and reciprocity) on knowledge sharing (number of ideas generated, idea usefulness, idea creativity and meeting satisfaction) in a group meeting.	A knowledge management system with built-in reputation feedback is crucial to support successful knowledge sharing. Effect of economic reward on number of ideas generated, idea usefulness, and idea creativity are not statistically significant at the 0.05 level. Effect of reputation feedback on number of ideas generated, idea usefulness, and idea creativity are statistically significant (p=0.000 for all). The effect of reciprocity on number of ideas generated, idea usefulness, and idea creativity is not statistically significant (p=0.546, 0.777, and 0.799, respectively). The effect of altruism on number of ideas generated, idea usefulness, and idea creativity is not statistically. But altruism significantly increases meeting satisfaction.	Experiment Sample: Taiwan; 20 (pilot)+120 upper division undergraduate and MBA students; Post experiment Survey: n=118 (98.5%); 5 point Likert Analysis: Multivariate Analysis of Variance (MANOVA) with four categorical independent variables (economic reward, reputation feedback, reciprocity, and altruism) and four continuous dependent variables (number of ideas, idea usefulness, idea creativity, and meeting satisfaction) was performed. Subjects were assigned to high and low levels of reciprocity and altruism based on median split. Limit: experiment design; one factor-altruism; theory of conformity (group think)
Big Five model / Theory of Reasoned Action (Teh et al. 2011)	Big Five Personality (BFP) factors supporting or inhibiting individuals' online entertainment knowledge sharing behaviors. Scales: *extraversion; neuroticis; attitude towards knowledge sharing;*	Extraversion and neuroticism are positively related to the attitude towards knowledge sharing. Openness to experience is found to have an inverse relationship with the attitude towards knowledge sharing. Subjective norm is positively related to the attitude towards knowledge sharing.	Survey: six-point Likert scale; . Stratified random sampling method. Sample: n=255 (63.75%) university students from two Malaysian universities. Analysis: structural equation modeling;

	Subjective norm; Openness to experience; intention to share knowledge; agreeableness; conscientiousness; *knowledge sharing behavior*	Both attitude towards knowledge sharing and subjective norm are found to be independently and significantly related to the intention to share knowledge, which significantly influences the knowledge sharing behavior.	CFA; unit of analysis for this research is the individual
Theory ? (Liu et al. 2012)	To provide empirical evidence concerning the impact of team climate on knowledge sharing behavior and the mediating effects of individuals' altruistic intentions in the context of healthcare settings.	The influence of the Team Innovation climate on knowledge sharing behavior was evident. Furthermore, individuals' altruistic intentions played a full mediating role in the relationship between Team Innovation climate and knowledge sharing behavior. ***H1:*** The greater the extent to which the team climate is perceived as being characterized by collective norms (i.e. vision and task orientation), innovativeness (i.e. support for Workplace Innovation), and free-flow information exchange (i.e. participative safety), the greater will be the behavioral intention to share knowledge. **H2**: An employee's altruistic intentions mediate the relationship between the Team Innovation climate and knowledge sharing behavior. *Demographics*: gender, age, education, job tenure	Survey: 5 point Likert scale KS Behavior (Cheng & Lee 2001) Team Climate Inventory composed of four factors, participative safety, support for Workplace Innovation, vision, and task orientation. – 38 items Altruism scale: Podsakoff, MacKenzie, Moorman and Fetter 1990 – 4 items Population: n=212 (58.2% rr) administrators employed at a medical center in Taiwan. Analysis: structural equation modeling For mediated effects: Sobel's test & Bootstrapping.
OCB (Teh & Sun 2012)	Focus: employees' job attitudes- four variables (i.e. job involvement, job satisfaction, organizational commitment and OCB)	Findings: IS employees are motivated to share knowledge when they experience higher job involvement and job satisfaction, and not to be influenced by the mediating effect of OCB.	Survey: n=116 (43.3%) Sample: Information Systems personnel; three multinational companies; Malaysia; stratified random sampling - strata are work division and length of service. Analysis: Structural equation modeling
Self determination theory Theory of reasoned action (Welschen, Todorova & Mills 2012)		Self-efficacy, meaningfulness and impact are important motivators of attitude towards knowledge sharing, which in turn impacts intention to share knowledge.	Survey: Analysis: Partial least squares
Organizational citizenship behavior – extended (Dekas et al. 2013)	Findings from this study make two main contributions that advance the study of OCB. First, our research revealed that some commonly used operationalizations of OCB are	Knowledge-sharing, and administrative behavior showed low EFA loading and were eliminated. **Social participation behavior** was measured using a four-item scale developed inductively for this study based on the results of the focus groups, as	Theory: organizational citizenship behavior – extended with new factors: employee sustainability, social participation, knowledge-sharing, and administrative behavior.

	outdated in industries that employ knowledge workers. Second, the research surfaced new types of OCB that exist and apply specifically to knowledge workers. In response to these findings, we offer a new scale for researchers to use with knowledge worker samples (the OCB-KW instrument) to support the field's ongoing study of citizenship behavior in the current workplace.	well as theoretical guidelines from previous scholarship (e.g., Wrzesniewski, Rozin & Bennett 2002). Items included 'Gets to know his/her coworkers on a personal basis,' 'Celebrates coworkers' life events (e.g., birthdays, weddings, etc.),' 'Participates in informal social activities with coworkers during the workday,' and 'Is playful in workplace interactions.' **Employee sustainability behavior** was assessed using a four-item scale, also developed inductively for this study based on results of the focus groups as well as theoretical guidelines from existing scholarship (e.g., Fritz & Sonnentag 2005; Kuhnel, Sonnentag & Westman 2009; Ryff & Keyes 1995). Items included 'Makes others feel comfortable 'being themselves' at work,' 'Expresses his/her own authentic personality at work,' 'Supports others' efforts to make their personal health and well-being a priority,' and 'Praises others when they are successful.' respond to each of the OCB-KW items as well as the most widely used OCB measures (Podsakoff et al. 1990), job satisfaction (Camman, Fichman, Jenkins & Klesh 1983), stress (Parker & Decotiis 1983), in-role behavior (Williams & Anderson 1991), and fit (Cable & Judge 1996), as well as measures of job complexity (Dean & Snell 1991) and cognitive demands of the job (Jackson, Wall, Martin & Davids 1993) to indicate characteristics of knowledge work.	Focus: Preparation: strata focus groups n=75 (46%); across USA/Middle East/Asia Pacific; different work areas Survey:n=300 (USA) Sample: knowledge intensive industry; Google; Analysis: multistage qualitative study; content analysis/Sorting; correlation; factor analysis. Findings: introduce an initial scale for measuring OCBs for knowledge workers, the OCB-KW (OCB-Knowledge Workers) Scale
(Dervishi, Edrisi & Khalili 2013)	Knowledge sharing within and between departments.	Trust in knowledge management by documenting knowledge-sharing within and between groups is affected. Technological capabilities and perceived organizational support were the factors on knowledge-sharing among the group. Motivational techniques, as well as material and non-material impact on knowledge-sharing within the group have.	Survey: Sample: stratified random sample of 148 university faculty members. Analysis: Single-sample t-test, Confirmatory factor analysis and structural equation modeling and PLS.
Achievement	study investigates the structural	The positive relationship between learning goal	Survey: seven-point Likert scale, 29

motivation theory (Kim & Lee 2013)	relationships among two distinctive forms of goal orientations as personal intrinsic motivators (learning goal orientation and performance goal orientation), two distinctive types of knowledge-sharing behaviors (knowledge collecting and knowledge donating), and employee service innovative behavior. This study is to develop and test a model that takes into account individual factors—goal orientations (learning goal orientation and performance goal orientation) as personal intrinsic motivators—in explaining employees' willingness both to collect knowledge from (knowledge collecting) and donate knowledge to colleagues (knowledge donating), and in explaining whether more willingness leads to superior employee service innovative behavior in hotels.	orientation and knowledge collecting was stronger than that of the relationship between learning goal orientation and knowledge donating. The negative relationship between performance goal orientation and knowledge donating was stronger than the relationship between performance goal orientation and knowledge collecting. In addition, the positive relationship between knowledge collecting and employee service innovative behavior was stronger than the positive relationship between knowledge donating and employee service innovative behavior. **H1**. Learning goal orientation has a positive influence on willingness to both collect (1a) and donate (1b) knowledge. **H2**. Performance goal orientation has a negative influence on willingness to both collect (2a) and donate (2b) knowledge. **H3**. Willingness to both collect (3a) and donate (3b) knowledge has a positive influence on service innovative behavior. Demographics: gender, age, education, dept, role Full mediating roles of knowledge collecting and knowledge donating between learning goal orientation/performance goal orientation and employee service innovative behavior are substantial.	items N=418 (76%rr) Population: respondents working in five-star hotels In Busan, Korea. Analysis: CFA, path analysis (AMOS)
Sliat & Alnsour 2013 (Sliat & Alnsour 2013)	identify and examine the influence of the individual and organizational knowledge sharing enablers on knowledge sharing behavior that leads to develop firm Workplace Innovation capability.	The study found that while there is a positive effect of the individual factor 'enjoyment in helping others' and the organizational factor 'top management support' on the employee knowledge sharing behavior. There is no influence of the individual factor 'knowledge self efficacy' and the organizational factor 'organizational rewards' on the employee knowledge sharing behavior. Findings also confirmed that the organizational factor 'top management support' was effective to knowledge sharing behavior and both of its'	Survey: 7 point Likert scale. N=95 (32%rr) Population: managerial and development level staff on telecommunications cos in Jordan. Analysis:?

		aspects donation and collecting. While the other organizational factor 'organizational rewards' has no influence on knowledge sharing activities. These findings states that, employee knowledge sharing behavior is affected and encouraged by the influence of top management support but not dependent on the level of organizational rewards system . Results show that employee willingness to both donate and collect knowledge is significantly related to firm Workplace Innovation capability and has influence on it.	
social capital theory social network theory (Yu, Y et al. 2013)	investigate the multilevel effects of social capital on individuals' knowledge sharing in knowledge intensive work teams. This study makes a distinction between the social capital at the team-level and that of social capital at the individual level to examine their cross-level and direct effects on an individual's sharing of explicit and tacit knowledge.	**H1**. The relationship between an individual's structural capital in a team (betweenness centrality) and his/her knowledge sharing in the team is in an inverted U-shape. **H2**. The relationship between a team's structural capital (network density) and the nested individual's knowledge sharing in the team is in an inverted U-shape. **H3**. An individual's perceived shared cognition with other members in a team will enhance his/her knowledge sharing in the team. **H4**. A higher level of cognition commonality within a team will increase the nested individuals' knowledge sharing in the team. **H5**. An individual's affective commitment to the belonging team will enhance his/her knowledge sharing in the team. **H6**. The stronger cooperative norms within a team will increase the nested individuals' knowledge sharing in the team. *Demographics:* team size, physical distance/ proximity.	Survey: 343 (94.2% rr) 25 items Population: 343 participants in 47 knowledge-intensive teams in 9 Chinese organizations. Analysis: Hierarchical Linear Modeling (HLM6), Descriptives, CFA.
Big Five model Chu et al. 2014 (Chu, KrishnaKumar & Khosla 2014)	Assumes that different perceptions towards knowledge will influence members' behaviors and affect organizational benefit differently in the context of CoPs.	Hypotheses: H1: Members of Generic CoPs have high level of Openness to Experience. H2: Members of Induced Workplace Innovation CoPs has high level of Openness to Experience.	literature review Survey: 5 point Likert scale; n=120 Sample: one company as research target due to their characteristics: (1) a knowledge intensive R&D firm recruit-

	Five factors affecting knowledge sharing: extrinsic, intrinsic, personality traits, relationship factors and organization culture/climate.	H3: Members of Promoted Responsiveness CoPs rank high in Conscientiousness. H4: Members of Increased Core Competency CoPs rank high in Agreeableness H5: Members of Enhanced Work Efficiency CoPs rank high in Conscientiousness All supported.	ing knowledge workers primarily; (2) engage with CoPs activity associated with various business strategy among teams; (3) a full range of knowledge workers in R&D, product engineering, production management, and quality assurance. with different personality traits. Analysis: LISERAL software to calculate path analysis coefficients

Appendix D. Gap analysis

D 1. Research Gaps Table

Gap	*Reference*	*Addressed by*	*Question*
No clear definition of knowledge sharing and the current use of the term is often confused with knowledge transfer and information transfer.	Ipe 2003; Pulakos, Dorsey & Borman 2003; Szulanski, Cappete & Jensen 2004; Yi 2009	Review prior definitions and clearly state which definition is being used in this thesis. Structure research design to support this definition.	GQ1.What is the definition of knowledge sharing?
No substantial literature on knowledge sharing among the teams and members of transnational corporations.	Almeida, Song & Grant 2002; Bock et al. 2005; Mäkelä & Brewster 2009; Nessler & Muller 2011	Review current literature in this domain. Structure research design to support this focus.	GQ2.What are the behavioral factors influencing knowledge sharing and Workplace Innovation in a transnational corporation?
Very few studies of the behavioral aspects of individual's knowledge sharing in relation to the Workplace Innovation behavior.	Foss 2009; Fenwick 2008; Song & Chermack 2008; Geithner 2011; Felin & Foss 2009	Review current literature in this domain. Structure research design to support this focus.	
Empirical studies with large sample sizes, a sample population frame across multiple counties and a focus on knowledge workers (not university students) are rare.	Block 2013b; Mäkelä & Brewster 2009; Sié & Yakhlef 2009, 2013; Lu, Leung & Koch 2006	Structure research design to support this focus. Selection of sample population frame and target organization. Data collection (and survey) design.	GQ3.How will the sample selection and data collection be undertaken for this thesis?
The focus on demographic characteristics (gender, education, role, tenure, expatriate experience and geographic operating entity) and their linkages to knowledge sharing and Workplace Innovation are neglected.	Constant, Kiesler & Sproull 1994; Downes & Thomas 2000; Bouquet, Hébert & Delios 2004;Jarvenpaa & Staples 2000; Reychav & Weisberg 2010; Block 2013b	Structure research design to support this focus. Selection of sample population frame and target organization. Data collection (and survey) design.	GQ4.How do the demographic variables influence knowledge sharing and Workplace Innovation behaviors in a transnational corporation and what is their significance?
			GQ5. *What are the behavioral antecedents of knowledge sharing and how they are related with the consequences of Workplace Innovation in the context of transnational corporations?*

D 2. Research Gaps and Research Objectives

Based on a review of literature on knowledge sharing, five important gaps appear as:

Firstly, there is no clear definition of knowledge sharing and the current use of the term is often confused with knowledge transfer and information transfer.

Secondly, there is no substantial literature on knowledge sharing among employees of transnational corporations.

The current focus has been given to knowledge management perspectives or technology initiatives broadly but knowledge sharing has received little attention.

Whereas, other than technology, there are numbers of antecedents such as behavior, organization structure, culture etc., which impact the extent of knowledge sharing.

Thirdly, very few studies have been made in studying behavioral aspects of knowledge sharing in relation to the Workplace Innovation behavior.

Scant attention has been directed toward understanding the role of individual behavior traits or perceptions of team behaviors in relation to the knowledge sharing and Workplace Innovation among the members of a transnational corporation.

Fourthly, empirical studies with large sample sizes, a sample population frame across multiple counties and a focus on knowledge workers (not university students) are rare.

Fifthly, the focus on demographic characteristics (gender, education, role, tenure, expatriate experience and geographic operating entity) and their linkages to knowledge sharing and Workplace Innovation are neglected.

Thus, this proposed research is intended to fill these research gaps and to examine how individual behavioral characteristics and individual perceptions of team behavior characteristics affect knowledge sharing and Workplace Innovation within a transnational corporation perspective, as the current state of knowledge sharing and Workplace Innovation in this context is limited.

The novelty of the study lies with examining the role of knowledge sharing on Workplace Innovation of members of a transnational corporation.

In the research population, groups/teams, permanent or client project related, typically do more joint hands-on work than inter-unit meetings because the group

work toward a clearly defined mutual objective, and this is likely to build a stronger shared knowledge experience base.

Cross-operating entity teams, necessitate richer interaction because their task is more novel, complex, and ambiguous than that of client project groups, and their interdependence is higher due to joint reporting and reduced cognitive distance.

Extant research has associated this type of behavior with expatriate strategies and with transnational corporation structures.

Knowledge sharing is a key component in a TNC's effective operation and that it is built through the kind of collaboration found in cross-border teams and expatriation (Mäkelä & Brewster 2009).

Because such design usually enhances interdependence and often uses teamwork, it implies greater communication between co-workers and greater opportunities and need to share knowledge in order to accomplish organizational goals. In this research, this team interaction is represented by the two scales; Knowledge Absorptive Capability (AC) and organization citizenship behavior – voice (OCB). These are measured as the individual's interpretation of group behaviors.

The proposed research work has following research objectives namely, (a) to identify and examine the antecedents of knowledge sharing, (b) to examine the relationship between Knowledge Sharing Behavior and Workplace Innovation among the employees of a transnational corporation, and (c) to study the relationship of the role of Knowledge Sharing Behavior on the Workplace Innovation.

The researcher identified the research question as:

What are the antecedents of Knowledge Sharing Behavior and how they are related to Workplace Innovation in the context of a transnational corporation?

Based on the above research question, the researcher identified the appropriate research framework and subsequent research model along with the proposed hypotheses.

D 3. Gap Comments

To date, very little attention has been paid to factors that influence an individual's intention to share knowledge and its relationship to workplace innovation

Very few multi-geography large sample empirical studies.

Very few empirical studies linking knowledge sharing and workplace innovation.

'Research is needed into knowledge sharing, differentiated by organization type and sector, supported by empirical studies' (Block 2013a, p. 223).

Recent researchers e.g. Foss (2006); Fenwick (2008); Song & Chermack (2008); Geithner (2011), have stated that there is an apparent lack of dialogue and a lack of empirical research regarding individual and organizational knowledge creation.

'More research attention needs to be allocated to the "individuals first" if the knowledge movement is to continue making progress' (Foss 2009, p. 16).

The workplace is a context where individuals discover and create knowledge through collective acting and reflecting (Geithner 2011; Schulz 2008; Schulz & Geithner 2010)

'A synthesis between behavioral and knowledge' lens ideas has 'gradually taken form, becoming influential in major' domains, including international business research, and innovation studies (Foss 2009, p. 17).

There is a need to begin 'knowledge' theory-building from foundations rooted in assumptions about individuals (Felin & Foss 2009).

Foss (2009) argues 'that the micro-level of individuals and their interaction, has been comparatively neglected'. He posits that this level 'holds ontological and explanatory primacy' (p. 17).

Behavioral scale measures need to be developed for innovation 'instead of patent-activity and its determinants' (Almeida, Song & Grant 2002, p. 151).

Research into knowledge sharing and innovation needs to be expanded from its firm-based ICT and healthcare base and include an individual level focus (Foss 2009).

Little research on what influences the sharing of knowledge between teams (Nessler & Muller 2011).

Little research into knowledge sharing across organizational subsidiaries boundaries (Nessler & Muller 2011).

The literature about knowledge sharing typically concentrates on the organizational level (Eisenhardt & Santos 2001).

Although there has flourished a significant body of research in the area, our knowledge of knowledge transfer process is still limited (Sié & Yakhlef 2009, 2013).

Available empirical evidence on the association between informal social relations and knowledge transfer is still scarce (Sié & Yakhlef 2009, 2013).

There is a need for research into knowledge sharing across different national cultures (Bock et al. 2005).

Empirical research on knowledge sharing is still in its infancy and there are no well-established scales for some of the proposed constructs (Lu, Leung & Koch 2006).

Knowledge-sharing intention and behavior need further studies to substantiate, due to the limited socio-economic and geographic variability of the companies and people that were studied (Reychav & Weisberg 2010).

Extensive research has not been done in the past to examine the relationship between the KM and technological Workplace Innovation. Meanwhile, the investigation on the interrelationships between the KM dimensions has also been scarce (Lee et al. 2013).

Table 6.1. *Post-hoc Test between Different Age Categories*

Dependent Variable: Knowledge Sharing Behavior
Tukey HSD

(I) My age group is:	*(J) My age group is:*	*Mean Difference (I-J)*	*Std. Error*	*Sig.*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
18 to 21 years old	22 to 30 years old	.15034	.17925	.960	-.3616	.6623
	31 to 40 years old	.11740	.17873	.986	-.3931	.6279
	41 to 50 years old	.07609	.17915	.998	-.4356	.5878
	51 to 60 years old	.02323	.18021	1.000	-.4915	.5380
	61 plus years	.16884	.18500	.943	-.3596	.6972
22 to 30 years old	18 to 21 years old	-.15034	.17925	.960	-.6623	.3616
	31 to 40 years old	-.03295	.03325	.921	-.1279	.0620
	41 to 50 years old	-.07425	.03542	.290	-.1754	.0269
	51 to 60 years old	-.12711*	.04047	.021	-.2427	-.0115
	61 plus years	.01850	.05817	1.000	-.1476	.1846
31 to 40 years old	18 to 21 years old	-.11740	.17873	.986	-.6279	.3931
	22 to 30 years old	.03295	.03325	.921	-.0620	.1279
	41 to 50 years old	-.04131	.03268	.805	-.1347	.0520
	51 to 60 years old	-.09417	.03810	.134	-.2030	.0146
	61 plus years	.05144	.05655	.944	-.1101	.2130
41 to 50 years old	18 to 21 years old	-.07609	.17915	.998	-.5878	.4356
	22 to 30 years old	.07425	.03542	.290	-.0269	.1754
	31 to 40 years old	.04131	.03268	.805	-.0520	.1347
	51 to 60 years old	-.05286	.04000	.773	-.1671	.0614
	61 plus years	.09275	.05785	.596	-.0725	.2580
51 to 60 years old	18 to 21 years old	-.02323	.18021	1.000	-.5380	.4915
	22 to 30 years old	.12711*	.04047	.021	.0115	.2427
	31 to 40 years old	.09417	.03810	.134	-.0146	.2030
	41 to 50 years old	.05286	.04000	.773	-.0614	.1671
	61 plus years	.14561	.06107	.163	-.0288	.3200
61 plus years	18 to 21 years old	-.16884	.18500	.943	-.6972	.3596
	22 to 30 years old	-.01850	.05817	1.000	-.1846	.1476
	31 to 40 years old	-.05144	.05655	.944	-.2130	.1101
	41 to 50 years old	-.09275	.05785	.596	-.2580	.0725
	51 to 60 years old	-.14561	.06107	.163	-.3200	.0288

*. The mean difference is significant at the 0.05 level.

Dependent Variable: Workplace Innovation
Tukey HSD

(I) My age group is:	(J) My age group is:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
18 to 21 years old	22 to 30 years old	.12814	.22764	.993	-.5221	.7783
	31 to 40 years old	.11414	.22698	.996	-.5342	.7625
	41 to 50 years old	.09607	.22751	.998	-.5537	.7459
	51 to 60 years old	.09045	.22886	.999	-.5632	.7441
	61 plus years	.21141	.23493	.947	-.4596	.8824
22 to 30 years old	18 to 21 years old	-.12814	.22764	.993	-.7783	.5221
	31 to 40 years old	-.01400	.04222	.999	-.1346	.1066
	41 to 50 years old	-.03207	.04498	.980	-.1605	.0964
	51 to 60 years old	-.03769	.05139	.978	-.1845	.1091
	61 plus years	.08327	.07387	.870	-.1277	.2943
31 to 40 years old	18 to 21 years old	-.11414	.22698	.996	-.7625	.5342
	22 to 30 years old	.01400	.04222	.999	-.1066	.1346
	41 to 50 years old	-.01807	.04150	.998	-.1366	.1005
	51 to 60 years old	-.02369	.04838	.997	-.1619	.1145
	61 plus years	.09727	.07181	.754	-.1078	.3024
41 to 50 years old	18 to 21 years old	-.09607	.22751	.998	-.7459	.5537
	22 to 30 years old	.03207	.04498	.980	-.0964	.1605
	31 to 40 years old	.01807	.04150	.998	-.1005	.1366
	51 to 60 years old	-.00562	.05080	1.000	-.1507	.1395
	61 plus years	.11534	.07346	.619	-.0945	.3252
51 to 60 years old	18 to 21 years old	-.09045	.22886	.999	-.7441	.5632
	22 to 30 years old	.03769	.05139	.978	-.1091	.1845
	31 to 40 years old	.02369	.04838	.997	-.1145	.1619
	41 to 50 years old	.00562	.05080	1.000	-.1395	.1507
	61 plus years	.12096	.07756	.625	-.1006	.3425
61 plus years	18 to 21 years old	-.21141	.23493	.947	-.8824	.4596
	22 to 30 years old	-.08327	.07387	.870	-.2943	.1277
	31 to 40 years old	-.09727	.07181	.754	-.3024	.1078
	41 to 50 years old	-.11534	.07346	.619	-.3252	.0945
	51 to 60 years old	-.12096	.07756	.625	-.3425	.1006

Table 6.2. *Post-Hoc Test between Different Categories of Educational level*

Dependent Variable: Knowledge Sharing Behavior
Tukey HSD

(I) My highest level of education is:	(J) My highest level of education is:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High School certificate	Associate's Degree / Diploma	.13569	.05835	.185	-.0310	.3024
	Bachelor Degree	.04983	.05080	.924	-.0953	.1949
	Masters Degree	.00861	.05125	1.000	-.1378	.1550
	Doctorate	.01603	.06690	1.000	-.1751	.2071
	Other – Please Specify	-.05118	.07419	.983	-.2631	.1607
Associate's Degree / Diploma	High School certificate	-.13569	.05835	.185	-.3024	.0310
	Bachelor Degree	-.08586	.04036	.274	-.2011	.0294
	Masters Degree	-.12708*	.04092	.024	-.2440	-.0102
	Doctorate	-.11966	.05936	.334	-.2892	.0499
	Other – Please Specify	-.18687	.06747	.063	-.3796	.0058
Bachelor Degree	High School certificate	-.04983	.05080	.924	-.1949	.0953
	Associate's Degree / Diploma	.08586	.04036	.274	-.0294	.2011
	Masters Degree	-.04122	.02916	.719	-.1245	.0421
	Doctorate	-.03380	.05196	.987	-.1822	.1146
	Other – Please Specify	-.10101	.06105	.562	-.2754	.0734
Masters Degree	High School certificate	-.00861	.05125	1.000	-.1550	.1378
	Associate's Degree / Diploma	.12708*	.04092	.024	.0102	.2440
	Bachelor Degree	.04122	.02916	.719	-.0421	.1245
	Doctorate	.00742	.05240	1.000	-.1422	.1571
	Other – Please Specify	-.05979	.06143	.926	-.2352	.1157
Doctorate	High School certificate	-.01603	.06690	1.000	-.2071	.1751
	Associate's Degree / Diploma	.11966	.05936	.334	-.0499	.2892
	Bachelor Degree	.03380	.05196	.987	-.1146	.1822
	Masters Degree	-.00742	.05240	1.000	-.1571	.1422
	Other – Please Specify	-.06721	.07498	.947	-.2814	.1470
Other – Please Specify	High School certificate	.05118	.07419	.983	-.1607	.2631
	Associate's Degree / Diploma	.18687	.06747	.063	-.0058	.3796
	Bachelor Degree	.10101	.06105	.562	-.0734	.2754
	Masters Degree	.05979	.06143	.926	-.1157	.2352
	Doctorate	.06721	.07498	.947	-.1470	.2814

*. The mean difference is significant at the 0.05 level.

Dependent Variable: Workplace Innovation
Tukey HSD

(I) My highest level of education is:	(J) My highest level of education is:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High School certificate	Associate's Degree / Diploma	.04364	.07383	.992	-.1672	.2545
	Bachelor Degree	.09607	.06427	.668	-.0875	.2797
	Masters Degree	.01606	.06484	1.000	-.1691	.2013
	Doctorate	.03928	.08464	.997	-.2025	.2810
	Other – Please Specify	-.00476	.09386	1.000	-.2728	.2633
Associate's Degree / Diploma	High School certificate	-.04364	.07383	.992	-.2545	.1672
	Bachelor Degree	.05243	.05107	.909	-.0934	.1983
	Masters Degree	-.02758	.05178	.995	-.1755	.1203
	Doctorate	-.00436	.07511	1.000	-.2189	.2102
	Other – Please Specify	-.04840	.08536	.993	-.2922	.1954
Bachelor Degree	High School certificate	-.09607	.06427	.668	-.2797	.0875
	Associate's Degree / Diploma	-.05243	.05107	.909	-.1983	.0934
	Masters Degree	-.08002	.03690	.254	-.1854	.0254
	Doctorate	-.05680	.06574	.955	-.2446	.1310
	Other – Please Specify	-.10084	.07724	.782	-.3215	.1198
Masters Degree	High School certificate	-.01606	.06484	1.000	-.2013	.1691
	Associate's Degree / Diploma	.02758	.05178	.995	-.1203	.1755
	Bachelor Degree	.08002	.03690	.254	-.0254	.1854
	Doctorate	.02322	.06629	.999	-.1661	.2126
	Other – Please Specify	-.02082	.07771	1.000	-.2428	.2012
Doctorate	High School certificate	-.03928	.08464	.997	-.2810	.2025
	Associate's Degree / Diploma	.00436	.07511	1.000	-.2102	.2189
	Bachelor Degree	.05680	.06574	.955	-.1310	.2446
	Masters Degree	-.02322	.06629	.999	-.2126	.1661
	Other – Please Specify	-.04404	.09487	.997	-.3150	.2269
Other – Please Specify	High School certificate	.00476	.09386	1.000	-.2633	.2728
	Associate's Degree / Diploma	.04840	.08536	.993	-.1954	.2922
	Bachelor Degree	.10084	.07724	.782	-.1198	.3215
	Masters Degree	.02082	.07771	1.000	-.2012	.2428
	Doctorate	.04404	.09487	.997	-.2269	.3150

Table 6.3. *Post-Hoc Test between Different Roles*

Dependent Variable: Knowledge Sharing Behavior
Tukey HSD

(I) At my organization I work in a:	(J) At my organization I work in a:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Professional technical role	Technical role	.09886*	.03449	.034	.0046	.1931
	Business support role	.06623	.03378	.286	-.0261	.1586
	Managerial role	-.08872	.03831	.141	-.1934	.0160
	Other	.13358	.05703	.133	-.0223	.2895
Technical role	Professional technical role	-.09886*	.03449	.034	-.1931	-.0046
	Business support role	-.03263	.04169	.936	-.1466	.0813
	Managerial role	-.18758*	.04544	.000	-.3118	-.0634
	Other	.03472	.06204	.981	-.1349	.2043
Business support role	Professional technical role	-.06623	.03378	.286	-.1586	.0261
	Technical role	.03263	.04169	.936	-.0813	.1466
	Managerial role	-.15495*	.04490	.005	-.2777	-.0322
	Other	.06735	.06165	.811	-.1012	.2359
Managerial role	Professional technical role	.08872	.03831	.141	-.0160	.1934
	Technical role	.18758*	.04544	.000	.0634	.3118
	Business support role	.15495*	.04490	.005	.0322	.2777
	Other	.22230*	.06425	.005	.0467	.3979
Other	Professional technical role	-.13358	.05703	.133	-.2895	.0223
	Technical role	-.03472	.06204	.981	-.2043	.1349
	Business support role	-.06735	.06165	.811	-.2359	.1012
	Managerial role	-.22230*	.06425	.005	-.3979	-.0467

*. The mean difference is significant at the 0.05 level.

Multiple Comparisons

Dependent Variable: Workplace Innovation

Tukey HSD

(I) At my organization I work in a:	(J) At my organization I work in a:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Professional technical role	Technical role	.02511	.04366	.979	-.0942	.1445
	Business support role	-.03297	.04276	.939	-.1499	.0839
	Managerial role	-.13916*	.04850	.034	-.2717	-.0066
	Other	.19986*	.07220	.045	.0025	.3972
Technical role	Professional technical role	-.02511	.04366	.979	-.1445	.0942
	Business support role	-.05808	.05277	.806	-.2023	.0862
	Managerial role	-.16427*	.05752	.036	-.3215	-.0070
	Other	.17474	.07854	.171	-.0400	.3894
Business support role	Professional technical role	.03297	.04276	.939	-.0839	.1499
	Technical role	.05808	.05277	.806	-.0862	.2023
	Managerial role	-.10619	.05684	.335	-.2616	.0492
	Other	.23282*	.07804	.024	.0195	.4462
Managerial role	Professional technical role	.13916*	.04850	.034	.0066	.2717
	Technical role	.16427*	.05752	.036	.0070	.3215
	Business support role	.10619	.05684	.335	-.0492	.2616
	Other	.33902*	.08133	.000	.1167	.5613
Other	Professional technical role	-.19986*	.07220	.045	-.3972	-.0025
	Technical role	-.17474	.07854	.171	-.3894	.0400
	Business support role	-.23282*	.07804	.024	-.4462	-.0195
	Managerial role	-.33902*	.08133	.000	-.5613	-.1167

*. The mean difference is significant at the 0.05 level.

Table 6.4. *Post-Hoc Test between Different Operating Entities*

Dependent Variable: Knowledge Sharing Behavior
Tukey HSD

(I) My Operating Company is:	(J) My Operating Company is:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Corporate	Africa	.10278	.08931	.945	-.1686	.3741
	Asia	.12659	.10231	.921	-.1843	.4375
	Australasia	.15759	.07365	.390	-.0662	.3814
	Canada	.16227	.06945	.275	-.0488	.3733
	Europe	.16713	.07894	.404	-.0727	.4070
	South America	.07604	.08031	.981	-.1680	.3201
	USA	.15487	.07410	.422	-.0703	.3800
Africa	Corporate	-.10278	.08931	.945	-.3741	.1686
	Asia	.02381	.09732	1.000	-.2719	.3195
	Australasia	.05481	.06653	.992	-.1474	.2570
	Canada	.05949	.06186	.980	-.1285	.2474
	Europe	.06435	.07235	.987	-.1555	.2842
	South America	-.02674	.07384	1.000	-.2511	.1976
	USA	.05209	.06704	.994	-.1516	.2558
Asia	Corporate	-.12659	.10231	.921	-.4375	.1843
	Africa	-.02381	.09732	1.000	-.3195	.2719
	Australasia	.03100	.08318	1.000	-.2217	.2837
	Canada	.03568	.07949	1.000	-.2058	.2772
	Europe	.04054	.08790	1.000	-.2265	.3076
	South America	-.05055	.08913	.999	-.3214	.2203
	USA	.02828	.08359	1.000	-.2257	.2823
Australasia	Corporate	-.15759	.07365	.390	-.3814	.0662
	Africa	-.05481	.06653	.992	-.2570	.1474
	Asia	-.03100	.08318	1.000	-.2837	.2217
	Canada	.00468	.03570	1.000	-.1038	.1131
	Europe	.00954	.05179	1.000	-.1478	.1669
	South America	-.08155	.05385	.800	-.2452	.0821
	USA	-.00272	.04407	1.000	-.1366	.1312
Canada	Corporate	-.16227	.06945	.275	-.3733	.0488
	Africa	-.05949	.06186	.980	-.2474	.1285
	Asia	-.03568	.07949	1.000	-.2772	.2058
	Australasia	-.00468	.03570	1.000	-.1131	.1038
	Europe	.00486	.04562	1.000	-.1338	.1435
	South America	-.08622	.04795	.622	-.2319	.0595
	USA	-.00740	.03663	1.000	-.1187	.1039
Europe	Corporate	-.16713	.07894	.404	-.4070	.0727
	Africa	-.06435	.07235	.987	-.2842	.1555
	Asia	-.04054	.08790	1.000	-.3076	.2265
	Australasia	-.00954	.05179	1.000	-.1669	.1478
	Canada	-.00486	.04562	1.000	-.1435	.1338
	South America	-.09109	.06089	.810	-.2761	.0939
	USA	-.01226	.05244	1.000	-.1716	.1471
South America	Corporate	-.07604	.08031	.981	-.3201	.1680
	Africa	.02674	.07384	1.000	-.1976	.2511
	Asia	.05055	.08913	.999	-.2203	.3214
	Australasia	.08155	.05385	.800	-.0821	.2452
	Canada	.08622	.04795	.622	-.0595	.2319
	Europe	.09109	.06089	.810	-.0939	.2761
	USA	.07883	.05448	.835	-.0867	.2444
USA	Corporate	-.15487	.07410	.422	-.3800	.0703

	Africa	-.05209	.06704	.994	-.2558	.1516
	Asia	-.02828	.08359	1.000	-.2823	.2257
	Australasia	.00272	.04407	1.000	-.1312	.1366
	Canada	.00740	.03663	1.000	-.1039	.1187
	Europe	.01226	.05244	1.000	-.1471	.1716
	South America	-.07883	.05448	.835	-.2444	.0867

Dependent Variable: Workplace Innovation

Tukey HSD

(I) My Operating Company is:	(J) My Operating Company is:	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Corporate	Africa	.11131	.11168	.975	-.2280	.4507
	Asia	.11310	.12795	.987	-.2757	.5019
	Australasia	.23326	.09210	.183	-.0466	.5131
	Canada	.15600	.08685	.623	-.1079	.4199
	Europe	.30506*	.09871	.043*	.0051	.6050
	South America	.08058	.10043	.993	-.2246	.3857
	USA	.28054	.09267	.052	-.0010	.5621
Africa	Corporate	-.11131	.11168	.975	-.4507	.2280
	Asia	.00179	.12170	1.000	-.3680	.3716
	Australasia	.12195	.08320	.826	-.1309	.3748
	Canada	.04469	.07735	.999	-.1903	.2797
	Europe	.19375	.09047	.389	-.0812	.4687
	South America	-.03073	.09234	1.000	-.3113	.2498
	USA	.16923	.08383	.470	-.0855	.4240
Asia	Corporate	-.11310	.12795	.987	-.5019	.2757
	Africa	-.00179	.12170	1.000	-.3716	.3680
	Australasia	.12017	.10402	.944	-.1959	.4362
	Canada	.04291	.09940	1.000	-.2591	.3449
	Europe	.19196	.10992	.657	-.1420	.5260
	South America	-.03251	.11146	1.000	-.3712	.3062
	USA	.16745	.10453	.749	-.1502	.4851
Australasia	Corporate	-.23326	.09210	.183	-.5131	.0466
	Africa	-.12195	.08320	.826	-.3748	.1309
	Asia	-.12017	.10402	.944	-.4362	.1959
	Canada	-.07726	.04464	.667	-.2129	.0584
	Europe	.07180	.06476	.955	-.1250	.2686
	South America	-.15268	.06735	.313	-.3573	.0519
	USA	.04728	.05511	.990	-.1202	.2147
Canada	Corporate	-.15600	.08685	.623	-.4199	.1079
	Africa	-.04469	.07735	.999	-.2797	.1903
	Asia	-.04291	.09940	1.000	-.3449	.2591
	Australasia	.07726	.04464	.667	-.0584	.2129
	Europe	.14906	.05705	.153	-.0243	.3224
	South America	-.07542	.05997	.914	-.2576	.1068
	USA	.12454	.04581	.118	-.0146	.2637
Europe	Corporate	-.30506*	.09871	.043*	-.6050	-.0051
	Africa	-.19375	.09047	.389	-.4687	.0812
	Asia	-.19196	.10992	.657	-.5260	.1420
	Australasia	-.07180	.06476	.955	-.2686	.1250
	Canada	-.14906	.05705	.153	-.3224	.0243
	South America	-.22448	.07614	.065	-.4558	.0069
	USA	-.02452	.06557	1.000	-.2238	.1747
South America	Corporate	-.08058	.10043	.993	-.3857	.2246
	Africa	.03073	.09234	1.000	-.2498	.3113

	Asia	.03251	.11146	1.000	-.3062	.3712
	Australasia	.15268	.06735	.313	-.0519	.3573
	Canada	.07542	.05997	.914	-.1068	.2576
	Europe	.22448	.07614	.065	-.0069	.4558
	USA	.19996	.06812	.067	-.0070	.4070
	Corporate	-.28054	.09267	.052	-.5621	.0010
	Africa	-.16923	.08383	.470	-.4240	.0855
	Asia	-.16745	.10453	.749	-.4851	.1502
USA	Australasia	-.04728	.05511	.990	-.2147	.1202
	Canada	-.12454	.04581	.118	-.2637	.0146
	Europe	.02452	.06557	1.000	-.1747	.2238
	South America	-.19996	.06812	.067	-.4070	.0070

*. The mean difference is significant at the 0.05 level.

E 1. Statistical results and syntax

Note: based on a CFA analysis, the following items have been excluded: at1, in1, sn3, wic5, ti1, ti3, ii4, ii6

EFA –at1 -in1 -sn3 -wic5 -ti1 -ti3 -ii4 -ii6 vars PC promax 5 Mar

[DataSet1] F:\GA Survey results\GA_ks_i_survey Sept clean -21 Feb 2014.sav

```
FACTOR
  /VARIABLES sn1 sn2 at2 at3 in2 in3 in4 be1 be2 be3 pc1 pc2 pc3 sw1 sw2 sw3 sw4 ksa1 ksa2 ksa3 ksa4 ocb1
ocb2 ocb3 ac1 ac2 ac3 ac4 wic1 wic2 wic3 wic4 ii1 ii2 ii3 ii5 ti2 ti4 oi1 oi2 oi3 oi4 oi5
  /MISSING LISTWISE
  /ANALYSIS sn1 sn2 at2 at3 in2 in3 in4 be1 be2 be3 pc1 pc2 pc3 sw1 sw2 sw3 sw4 ksa1 ksa2 ksa3 ksa4 ocb1
ocb2 ocb3 ac1 ac2 ac3 ac4 wic1 wic2 wic3 wic4 ii1 ii2 ii3 ii5 ti2 ti4 oi1 oi2 oi3 oi4 oi5
  /PRINT INITIAL KMO REPR EXTRACTION ROTATION
  /FORMAT SORT BLANK(.3)
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /ROTATION PROMAX(4).
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KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Bartlett's Test of Sphericity	Approx. Chi-Square	13138.244
	df	903
	Sig.	.000

Communalities

	Initial	Extraction
sn1	1.000	.768
sn2	1.000	.771
at2	1.000	.795
at3	1.000	.774
in2	1.000	.548
in3	1.000	.576
in4	1.000	.497
be1	1.000	.475
be2	1.000	.567
be3	1.000	.509
pc1	1.000	.551
pc2	1.000	.740
pc3	1.000	.738
sw1	1.000	.602
sw2	1.000	.653
sw3	1.000	.784
sw4	1.000	.800
ksa1	1.000	.520
ksa2	1.000	.467
ksa3	1.000	.531
ksa4	1.000	.655
ocb1	1.000	.690
ocb2	1.000	.784
ocb3	1.000	.728
ac1	1.000	.736
ac2	1.000	.785
ac3	1.000	.650
ac4	1.000	.608
wic1	1.000	.725
wic2	1.000	.606
wic3	1.000	.810
wic4	1.000	.677
ii1	1.000	.592
ii2	1.000	.624
ii3	1.000	.412
ii5	1.000	.626
ti2	1.000	.617
ti4	1.000	.615
oi1	1.000	.652
oi2	1.000	.666
oi3	1.000	.601
oi4	1.000	.574
oi5	1.000	.509

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.321	21.678	21.678	9.321	21.678	21.678	5.625
2	3.997	9.296	30.974	3.997	9.296	30.974	4.536
3	1.931	4.490	35.464	1.931	4.490	35.464	4.816
4	1.797	4.179	39.642	1.797	4.179	39.642	5.558
5	1.763	4.099	43.742	1.763	4.099	43.742	5.284
6	1.537	3.574	47.315	1.537	3.574	47.315	4.560
7	1.434	3.335	50.651	1.434	3.335	50.651	3.731
8	1.296	3.015	53.666	1.296	3.015	53.666	3.817
9	1.220	2.838	56.503	1.220	2.838	56.503	3.096
10	1.171	2.723	59.226	1.171	2.723	59.226	3.371
11	1.098	2.552	61.778	1.098	2.552	61.778	3.737
12	1.043	2.426	64.204	1.043	2.426	64.204	2.962
13	.938	2.182	66.386				
14	.839	1.952	68.337				
15	.779	1.811	70.148				
16	.768	1.787	71.935				
17	.732	1.702	73.637				
18	.712	1.655	75.293				
19	.688	1.601	76.894				
20	.634	1.474	78.368				
21	.602	1.400	79.768				
22	.601	1.398	81.166				
23	.580	1.349	82.514				
24	.549	1.277	83.792				
25	.531	1.234	85.026				
26	.498	1.158	86.184				
27	.482	1.120	87.304				
28	.470	1.093	88.397				
29	.447	1.040	89.437				
30	.439	1.021	90.458				
31	.418	.973	91.431				
32	.402	.934	92.364				
33	.388	.903	93.267				
34	.377	.877	94.145				
35	.357	.830	94.974				
36	.329	.765	95.739				
37	.313	.728	96.467				
38	.306	.712	97.179				
39	.288	.669	97.849				
40	.270	.629	98.477				
41	.249	.579	99.056				
42	.218	.506	99.562				
43	.188	.438	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix[a]

	Component											
	1	2	3	4	5	6	7	8	9	10	11	12
be2	.820											
in3	.778											
in4	.648											
in2	.594											
be3	.517											
be1	.506											
oi1		.783										
oi2		.765										
oi3		.760										
oi4		.756										
oi5		.611										
ac2			.944									
ac1			.883									
ac3			.729									
ac4			.705									
sw3				.919								
sw4				.919								
sw2				.776								
sw1				.632								
wic3					.935							
wic1					.856							
wic4					.835							
wic2					.524							
ocb2						.902						
ocb1						.821						
ocb3						.807						
ii5							.763					
ii1							.755					
ii2							.722					
ii3							.503					
ksa4								.778				
ksa3								.721				
ksa1								.674				
ksa2								.495				
pc2									.874			
pc3									.829			
pc1									.635			
sn1										.885		
sn2										.853		
at2											.879	
at3											.866	
ti4												.793
ti2												.737

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Component Correlation Matrix

Component	Be-In	OI	AC	SW	WIC	OCB	II	KSA	PC	SN	AT	TI
Be-In	1.000											
OI	.182	1.000										
AC	.243	.349	1.000									
SW	.524	.151	.280	1.000								
WIC	.277	.450	.368	.293	1.000							
OCB	.223	.383	.417	.219	.425	1.000						
II	.334	.035	.148	.382	.195	.168	1.000					
KSA	.397	.134	.209	.355	.204	.184	.358	1.000				.
PC	.223	.189	.194	.230	.252	.214	.170	.189	1.000	.		
SN	.289	.131	.203	.304	.302	.256	.220	.163	.208	1.000		
AT	.471	.140	.215	.409	.219	.147	.207	.270	.183	.240	1.000	
TI	.175	.226	.256	.247	.335	.297	.181	.082	.205	.302	.107	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Be-In= Behavior and Intent

OI= Organizational Workplace Innovation

AC = Knowledge Absorptive Capability

SW= Self-Worth

WIC= Workplace Innovation Climate

OCB= Organization Citizenship Behavior

II= Individual Innovation

KSA= Knowledge Sharing Activity

PC= Perceived Behavioral Control

SN= Subjective Norm

AT= Attitude

TI= Team Innovation

Cronbach alpha and Component Correlation Matrix, n=780

Component	Be-In	OI	AC	SW	WIC	OCB	II	KSA	PC	SN	AT	TI
Be-In	***.795***											
OI	.182	***.804***										
AC	.243	.349	***.846***									
SW	.524	.151	.280	***.844***								
WIC	.277	.450	.368	.293	***.831***							
OCB	.223	.383	.417	.219	.425	***.820***						
II	.334	.035	.148	.382	.195	.168	***.708***					
KSA	.397	.134	.209	.355	.204	.184	.358	***.670***				.
PC	.223	.189	.194	.230	.252	.214	.170	.189	***.714***	.		
SN	.289	.131	.203	.304	.302	.256	.220	.163	.208	***.717***		
AT	.471	.140	.215	.409	.219	.147	.207	.270	.183	.240	***.771***	
TI	.175	.226	.256	.247	.335	.297	.181	.082	.205	.302	.107	***.699***
Items	7	5	4	4	4	3	6	4	3	3	2	4
Mean												
Std Devn												

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
Cronbach alpha on the diagonal

Note: /FORMAT SORT BLANK(.0)

Structure Matrix

	Component											
	1	2	3	4	5	6	7	8	9	10	11	12
in3	.728	.083	.081	.374	.118	.059	.319	.184	.155	.188	.317	.155
be2	.726	.096	.108	.357	.169	.150	.206	.281	.109	.211	.185	.143
in2	.697	.113	.225	.357	.179	.216	.298	.332	.157	.295	.490	.080
in4	.693	.138	.133	.383	.240	.144	.285	.265	.203	.266	.367	.122
be3	.631	.246	.254	.412	.271	.223	.213	.352	.186	.054	.390	-.037
be1	.618	.082	.244	.379	.251	.186	.216	.334	.153	.402	.357	.279
oi2	.177	.791	.282	.190	.369	.376	.060	.100	.140	.184	.187	.337
oi1	.113	.784	.219	.134	.374	.322	.048	.081	.155	.183	.125	.322
oi3	.148	.763	.329	.113	.331	.277	.046	.177	.149	.108	.058	.179
oi4	.109	.715	.201	.059	.278	.188	-.067	.083	.187	.000	.125	-.040
oi5	.173	.679	.346	.116	.407	.333	.101	.086	.090	.161	.039	.162
ac2	.145	.241	.875	.172	.244	.298	.066	.171	.164	.156	.127	.177
ac1	.159	.278	.852	.204	.280	.335	.155	.148	.163	.191	.142	.187
ac3	.225	.364	.793	.264	.332	.396	.132	.194	.198	.124	.188	.278
ac4	.208	.301	.764	.273	.353	.383	.137	.153	.102	.211	.244	.258
sw4	.463	.161	.246	.885	.261	.184	.315	.335	.203	.211	.324	.125
sw3	.449	.178	.233	.876	.248	.218	.285	.292	.189	.192	.361	.155
sw2	.392	.018	.184	.789	.161	.097	.375	.273	.177	.280	.312	.250
sw1	.456	.077	.225	.735	.258	.120	.262	.296	.161	.381	.404	.293
wic3	.203	.383	.323	.204	.894	.370	.138	.166	.235	.235	.190	.231
wic1	.299	.417	.267	.230	.835	.312	.111	.172	.168	.174	.221	.250
wic4	.175	.349	.281	.240	.819	.360	.153	.160	.186	.250	.130	.273
wic2	.221	.328	.315	.324	.686	.394	.373	.189	.274	.415	.165	.454
ocb2	.182	.285	.369	.126	.348	.878	.087	.112	.171	.198	.098	.277
ocb3	.176	.392	.417	.208	.365	.845	.154	.148	.176	.193	.103	.258
ocb1	.156	.320	.289	.161	.381	.820	.126	.138	.190	.281	.172	.247
ii5	.313	.042	.128	.336	.159	.042	.767	.246	.122	.165	.297	.167
ii1	.186	.021	.123	.238	.177	.122	.748	.351	.089	.112	.097	.057
ii2	.334	.012	.032	.252	.050	.105	.748	.405	.163	.095	.155	.029
ii3	.330	.036	.188	.353	.168	.233	.563	.117	.117	.190	.108	.258
ksa4	.364	.129	.141	.314	.103	.132	.321	.800	.132	.119	.229	.078
ksa3	.302	.139	.164	.213	.238	.117	.191	.692	.095	.164	.166	.210
ksa1	.147	.032	.143	.241	.111	.055	.361	.677	.150	.128	.177	-.013
ksa2	.387	.121	.221	.388	.240	.348	.291	.611	.226	.147	.237	.126
pc2	.103	.138	.101	.144	.138	.159	.122	.140	.850	.173	.132	.185
pc3	.173	.134	.163	.220	.254	.230	.203	.139	.848	.270	.146	.226
pc1	.342	.231	.277	.231	.287	.159	.068	.169	.683	.118	.196	.212
sn1	.283	.153	.173	.263	.241	.247	.144	.180	.187	.866	.217	.183
sn2	.338	.158	.226	.303	.289	.233	.186	.160	.225	.865	.267	.186
at2	.445	.134	.201	.346	.199	.166	.187	.282	.149	.233	.887	.144
at3	.397	.125	.201	.406	.217	.140	.207	.203	.194	.218	.874	.092
ti2	.121	.226	.209	.202	.276	.280	.153	.113	.241	.286	.038	.772
ti4	.166	.195	.232	.172	.246	.217	.102	.098	.163	.027	.147	.743

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Residuals are computed between observed and reproduced correlations. There are 102 (11.0%) nonredundant residuals with absolute values greater than 0.05.

EFA (-at1) all vars ML promax 5 Mar 2014

```
FACTOR
  /VARIABLES sn1 sn2 sn3 at2 at3 in1 in2 in3 in4 be1 be2 be3 pc1 pc2 pc3 sw1 sw2 sw3 sw4 ksa1 ksa2 ksa3 ksa4
ocb1 ocb2 ocb3 ac1 ac2 ac3 ac4 wic1 wic2 wic3 wic4 wic5 ii1 ii2 ii3 ii4 ii5 ii6 ti1 ti2 ti3 ti4 oi1 oi2 oi3 oi4 oi5
  /MISSING LISTWISE
  /ANALYSIS sn1 sn2 sn3 at2 at3 in1 in2 in3 in4 be1 be2 be3 pc1 pc2 pc3 sw1 sw2 sw3 sw4 ksa1 ksa2 ksa3 ksa4
ocb1 ocb2 ocb3 ac1 ac2 ac3 ac4 wic1 wic2 wic3 wic4 wic5 ii1 ii2 ii3 ii4 ii5 ii6 ti1 ti2 ti3 ti4 oi1 oi2 oi3 oi4 oi5
  /PRINT INITIAL KMO REPR EXTRACTION ROTATION
  /FORMAT SORT BLANK(.3)
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION ML
```

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.897
Bartlett's Test of Sphericity	Approx. Chi-Square	15846.275
	df	1225
	Sig.	.000

Goodness-of-fit Test

Chi-Square	df	Sig.
1265.450	653	.000

Pattern Matrix[a]

	Factor												
	1	2	3	4	5	6	7	8	9	10	11	12	13
in2	.814												
in3	.730												
in4	.665												
be2	.525												
be3	.484												
be1	.380												
in1	.375												
oi1		.804											
oi2		.786											
oi3		.669											
oi4		.597											
oi5		.469											
ac2			.989										
ac1			.875										
ac3			.511										
ac4			.473										
ii5				.672									
ii2				.621									
ii1				.581									
wic5				.542									
ii4													
ii3													
wic3					.995								
wic1					.779								
wic4					.725								
wic2					.388								
sw4						.936							
sw3						.901							
sw2						.614							
sw1						.491							
ocb2							.909						
ocb3							.780						
ocb1							.670						
pc2								.796					
pc3								.754					
pc1								.456					
sn1									.827				
sn2									.825				
sn3													
ksa4										.774			
ksa3										.525			
ksa1										.457			
ksa2										.360			
ti3											.666		
ti4											.630		
ti2											.545		
ii6												.944	
ti1												.713	
at3													1.058
at2													.520

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 8 iterations.

Pattern Matrix[a]

	Factor												
	1	2	3	4	5	6	7	8	9	10	11	12	13
in2	.814	-.049	.064	.054	-.027	-.080	.045	-.027	.055	-.027	.024	-.132	-.048
in3	.730	-.002	-.053	.140	-.049	.026	-.042	.008	-.047	-.133	.025	-.027	-.065
in4	.665	.011	-.048	.093	.058	.001	-.014	.026	.018	-.078	.004	-.072	-.028
be2	.525	-.009	-.064	-.021	-.008	.019	.013	-.016	.014	.076	-.027	.080	-.046
be3	.484	.095	.041	-.012	.084	.106	.061	.023	-.116	.063	-.222	.047	.044
be1	.380	-.066	.023	-.073	-.010	.012	-.030	.008	.142	.106	.031	.156	.042
in1	.375	.059	-.001	-.088	-.073	.002	.001	.005	.089	.109	.121	-.064	.126
oi1	-.074	.804	-.089	-.007	-.034	-.007	-.054	.001	.051	.017	.120	.005	.014
oi2	.023	.786	-.051	.010	-.064	.033	.002	-.041	.038	-.026	.142	-.057	-.003
oi3	-.003	.669	.072	.029	-.022	-.023	-.004	.003	-.001	.045	-.039	.007	-.024
oi4	.025	.597	.007	-.081	.042	-.008	.002	.070	-.033	.020	-.178	.009	.046
oi5	.030	.469	.108	.036	.117	-.027	.063	-.050	.023	-.034	-.069	.036	-.038
ac2	-.025	-.068	.989	-.053	-.017	-.031	-.062	.017	.020	.040	.016	-.047	-.022
ac1	-.053	.006	.875	.072	-.022	-.020	-.008	-.004	.047	-.019	-.036	-.018	.017
ac3	.045	.114	.511	-.036	-.014	.062	.081	.019	-.075	.012	.080	.055	-.025
ac4	.023	.052	.473	-.027	.024	.056	.084	-.070	.020	-.030	.078	.062	.038
ii5	.088	.028	.018	.672	-.025	-.011	-.089	-.038	-.035	-.057	-.010	.072	.103
ii2	.131	.008	-.056	.621	-.105	-.055	.049	.027	-.062	.199	-.023	-.048	-.038
ii1	-.070	-.014	.010	.581	.033	-.006	.052	-.036	-.034	.148	-.070	.003	.023
wic5	-.018	-.054	-.028	.542	.020	.055	.035	-.006	.185	-.027	.023	.062	-.004
ii4	.088	.090	.053	.298	.271	-.055	-.104	.034	-.050	-.076	.143	-.017	.003
ii3	.101	-.049	.014	.293	-.061	.078	.085	-.002	-.022	-.037	.023	.189	-.005
wic3	-.043	-.058	.011	-.029	.995	-.047	-.005	.010	-.002	.027	-.075	-.017	.024
wic1	.155	.048	-.065	-.097	.779	-.011	-.030	-.054	-.070	.019	.023	.021	-.021
wic4	-.099	.009	.002	.017	.725	.062	.026	-.007	.031	.019	.038	-.078	-.007
wic2	-.112	.049	-.019	.206	.388	.047	.064	.061	.130	-.027	.091	.073	-.001
sw4	.017	.026	.007	-.009	.026	.936	.018	.005	-.039	.000	-.096	-.027	-.055
sw3	.010	.040	-.032	-.041	-.015	.901	.056	-.003	-.063	-.018	-.038	-.006	.013
sw2	.007	-.089	.034	.101	-.049	.614	-.090	.003	.038	.006	.107	.010	.013
sw1	.119	-.064	.006	-.017	.030	.491	-.109	-.030	.116	.017	.173	-.049	.061
ocb2	.059	-.094	.001	-.041	-.013	-.048	.909	.017	-.038	-.030	.012	.004	-.002
ocb3	-.024	.109	.056	.084	-.035	.058	.780	.007	-.016	-.047	-.080	-.036	-.006
ocb1	-.031	.015	-.068	.001	.040	-.020	.670	.006	.082	.014	.076	-.040	.028
pc2	-.063	.031	-.024	-.020	-.074	-.016	.012	.796	.009	.036	.033	-.033	.036
pc3	-.018	-.058	-.023	.018	.019	.022	.049	.754	.058	-.036	.070	-.021	-.006
pc1	.202	.049	.087	-.087	.079	-.026	-.066	.456	-.059	-.010	-.008	.106	.003
sn1	.018	.029	.003	-.016	-.021	-.027	.017	.010	.827	.035	-.076	-.024	-.055
sn2	.077	.027	.046	.033	.004	-.016	-.016	.027	.825	-.058	-.126	.004	-.023
sn3	.242	-.008	-.038	-.166	.020	.036	.036	-.047	.291	.068	-.015	.098	.144
ksa4	-.020	.048	-.012	.064	-.042	-.005	-.033	-.019	-.017	.774	-.006	.002	-.003
ksa3	.055	.007	-.005	-.013	.077	-.034	-.042	-.013	.010	.525	.058	.025	-.054
ksa1	-.091	-.015	.064	.234	.041	.010	-.062	.031	.026	.457	-.029	-.107	.005
ksa2	.117	-.051	-.004	.044	.036	.078	.134	.043	-.049	.360	.010	.062	-.028
ti3	-.011	-.050	.029	-.014	.046	-.065	.211	-.075	-.026	.018	.666	.004	.027
ti4	.063	.000	.040	-.021	-.001	-.002	-.071	.041	-.184	-.005	.630	.006	-.022
ti2	-.063	.038	-.012	-.020	-.032	.042	-.007	.110	.017	.022	.545	.011	-.068
ii6	-.057	-.036	-.013	.118	-.058	-.030	-.075	-.002	.003	-.018	-.045	.944	.007
ti1	-.026	.060	-.003	-.035	.029	-.014	.051	-.005	-.019	.002	.129	.713	-.034
at3	-.055	.010	-.005	.072	.006	.004	.020	.032	-.051	-.058	-.088	.005	1.058
at2	.249	-.011	.011	-.010	-.009	-.035	-.017	-.019	-.017	.052	.102	-.047	.520

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

EFA-at1 -in1 -sn3 vars ML promax 5 Mar 2014

Goodness-of-fit Test

Chi-Square	df	Sig.
1128.298	582	.000

EFA –at1 -in1 -sn3 -wic5 -ti1 -ii6 vars ML promax 5 Mar 2014

Goodness-of-fit Test

Chi-Square	df	Sig.
1027.262	516	.000

EFA –at1 -in1 -sn3 -wic5 -ti1 -ii4 -ii6 vars ML promax 5 Mar 2014

Goodness-of-fit Test

Chi-Square	df	Sig.
984.957	484	.000

at1, in1, sn3, wic5, ti1, ti3, ii4, ii6

Appendix F. Survey Invitation, Reminder and Instrument

Survey Invite email

Hello,

You have been selected based on your employment level and the region you work in to receive this **invitation to participate** in a survey to understand how our employees feel about sharing knowledge (what you know) in the workplace**.**

Click here to complete the survey: Qualtrics link

The Technical Development team is working with Peter Chomley, a Ph.D. Candidate from the College of Business at RMIT University in Melbourne, Australia, to gather opinions on 15 aspects of knowledge sharing. Your response will be submitted ***anonymously***. This survey will take approximately 10 minutes, and will be an integral piece in the future development of a ***Knowledge Management system***.

If you'd like to learn more about this survey and how the results will be used, please visit the Project's CWS page.

Thank you in advance for your participation!

Sincerely,

zzzzz
Technical Development Leader – Africa

xxxx
Chair, Global Technical Development Committee

* Peter's background includes over 20 years' experience with IBM working on KM matters and his research is looking at KM practices in the workplace. We will be provided with the analysis and results of the survey.

** Knowledge Management system: The information gathered in this survey is an important step in the development of our Knowledge Management system, which will integrate and make accessible our Technical Communities, Co-pedia, Workplace Innovation Gallery, libraries, reports archives and other information sources.

Bonjour,

Vous avez été sélectionné en fonction de votre niveau d'emploi et de la région dans laquelle vous travaillez pour recevoir cette **invitation à participer** à un sondage pour comprendre l'opinion des employés sur le partage des connaissances (ce que vous savez) en milieu de travail.

Cliquez ici pour remplir le questionnaire: Qualtrics link

L'équipe de développement technique travaille étroitement avec Peter Chomley, étudiant au doctorat du « College of Business » à l'Université RMIT à Melbourne, en Australie, pour recueillir des opinions sur 15 aspects du partage des connaissances. Vos réponses seront soumises **de manière anonyme**. Ce sondage prendra environ 10 minutes. Il sera un élément essentiel dans le développement futur d'**un système de gestion des connaissances** chez yyy.

Si vous souhaitez en savoir plus sur ce sondage et comment les résultats seront utilisés, consultez le CWS du projet.

Merci d'avance pour votre participation!

Click here to complete the survey: Qualtrics link

Survey closes on 18 September, 2013 at 17:00 GMT+10.

Technical difficulties with this survey or issues with the survey questions? Contact **Peter Chomley** at peter.chomley@rmit.edu.au

Questions or feedback about this survey? Contact **xxx**, at zzz

---

Cliquez ici pour remplir le questionnaire: **Qualtrics link**

Le sondage prendra fin le 18 Septembre 2013 à 17 h 00 (GMT +10).

Si vous éprouvez des difficultés techniques avec ce sondage ou des problèmes avec les questions du sondage, communiquez avec Peter Chomley à peter.chomley@rmit.edu.au

Si vous avez des questions ou commentaires au sujet de ce sondage, communiquez avec xxx, président du comité de développement technique mondial, à yyyy

---

Haz clic aquí para completar la encuesta:

Qualtrics link

La encuesta finaliza el 18 de septiembre 2013 a las 17:00 GMT +10.

¿Dificultades técnicas con la encuesta o problemas con las preguntas de la

Cordialement,

zzzz
Technical Development Leader – Africa

xxxxx
Presidente del Comité de Desarrollo Técnico Global

* Peter cumule plus de 20 ans d'expérience chez IBM où il s'est penché sur des questions liées à la gestion des connaissances et son projet de recherche vise à étudier les pratiques de gestion des connaissances en milieu de travail. L'analyse et les résultats du sondage seront transmis à zzzz.

** Système de gestion des connaissances : L'information recueillie dans le cadre de cette étude contribuera grandement au développement d'un système de gestion des connaissances chez Yyy, qui intégrera et rendra accessible nos communautés techniques, Yyypedia, les galeries d'Workplace Innovation, les bibliothèques, les archives de rapports et d'autres sources d'information.

encuesta? Ponte en contacto con Peter Chomley en peter.chomley@rmit.edu.au

¿Preguntas o comentarios sobre esta encuesta? Contacta a xxxx, en zzzz

Hola,

Has sido seleccionado de acuerdo a los criterios de nivel profesional y región en la que trabajas para participar en una encuesta cuyo fin es entender cómo los colaboradores de Yyy se sienten acerca de compartir el conocimiento (lo que sabes) en el lugar de trabajo.

Haz clic aquí para completar la encuesta: Qualtrics link

Esta encuesta, que ha sido desarrollada por Peter Chomley, doctorando de la Escuela de Negocios de la Universidad RMIT de Melbourne, Australia y un equipo de técnicos, pretende recoger opiniones ***anónimas*** sobre 15 aspectos del intercambio de conocimientos.

Realizar la encuesta te llevará aproximadamente 10 minutos. Tu respuesta será una pieza fundamental en el desarrollo de **un sistema de gestión del conocimiento en Yyy.**

Si desea obtener más información sobre esta encuesta y cómo se utilizarán los resultados, por favor visite el CWS del Proyecto.

¡Gracias de antemano por tu participación!
Atentamente,

cccc
Líder Regional de Desarrollo Técnico e Innovación

xxxx
Presidente del Comité de Desarrollo Técnico Global

* La trayectoria profesional de Peter Chomley incluye más de 20 años de experiencia en IBM trabajando en el tema de gestión del conocimiento y su investigación versa sobre prácticas de gestión del conocimiento en el lugar de trabajo. Yyy Associates recibirá el análisis y los resultados de la encuesta.

** Sistema de Gestión del Conocimiento: La información recogida en este estudio es un paso importante en el desarrollo de un sistema de gestión del conocimiento en Yyy, que hará accesibles de forma integrada nuestras comunidades técnicas, Yyypedia, la Galería de Innovación, bibliotecas,

Haz clic aquí para completar la encuesta:

Qualtrics link

La encuesta finaliza el 18 de septiembre de 2013 a las 17:00 GMT +10.

¿Dificultades técnicas con la encuesta o problemas con las preguntas de la encuesta? Ponte en contacto con Peter Chomley en peter.chomley@rmit.edu.au

¿Preguntas o comentarios sobre esta encuesta? Contacta a xxx, en zzzz

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Clique aqui para preencher a pesquisa:

Qualtrics link

A pesquisa encerra em 18 de

archivos de informes y otras fuentes de información.

Olá,

Você foi selecionado com base em seu nível profissional e a região em que trabalha para participar de uma pesquisa que visa entender como os funcionários da Yyy se sentem sobre o compartilhamento de conhecimento (o que você sabe) no local de trabalho.

Clique aqui para preencher a pesquisa: Qualtrics link

A pesquisa foi desenvolvida pelo Peter Chomley, candidato ao doutorado da Escola de Negócios da Universidade RMIT, em Melbourne, Austrália, e uma equipe de técnicos com o intuito de recolher opiniões ***anônimas*** sobre 15 aspectos do compartilhamento de conhecimento. A pesquisa demora uns 10 minutos aproximadamente e será uma peça fundamental no desenvolvimento de ***um sistema de Gestão do Conhecimento na Yyy.***

Se você quiser saber mais sobre esta pesquisa e como os resultados serão usados, por favor visite o CWS do Projeto.

Agradecemos antecipadamente pela sua participação!
Atenciosamente,

cccc
Líder Regional de Desenvolvimento Técnico e Inovação

xxxx
Presidente da Comissão de Desenvolvimento Técnico Global

* A trajetória profissional de Peter Chomley inclui experiência de mais de 20 anos com a IBM trabalhando em questões de Gestão do Conhecimento e sua pesquisa visa estudar as práticas de Gestão do Conhecimento no local de trabalho. Yyy Associates será fornecido com a análise e os resultados da pesquisa.

** Sistema de Gestão do Conhecimento: A informação recolhida nesta pesquisa é um passo importante no desenvolvimento do sistema de Gestão do Conhecimento da Yyy, que irá tornar acessíveis de forma integrada as nossas Comunidades Técnicas, Yyypedia, Galeria de Inovação, bibliotecas, arquivos de relatórios e outras fontes de informação.

setembro de 2013 às 17:00 GMT +10.

Dificuldades técnicas com a pesquisa ou com as perguntas da pesquisa? Contate Peter Chomley em peter.chomley@rmit.edu.au

Perguntas ou comentários sobre esta pesquisa? Contate xxx, em zzzz

---

Click here to complete the survey:

Qualtrics link

Survey closes on 18 September, 2013 at 17:00 GMT+10.

Technical difficulties with this survey or issues with the survey questions? Contact **Peter Chomley** at peter.chomley@rmit.edu.au

Questions or feedback about this survey? Contact **xxx**, at yyy

Survey Reminder

Hello,

On September 4 we asked you to participate in a survey to gather opinions on *how Yyy employees feel about sharing knowledge (what you know) in the workplace*. This short (10-minute) academic survey asks you to consider 15 aspects of knowledge sharing.

If you haven't yet completed the survey, we encourage you to click here to **complete the survey: Qualtrics link**

Thank you to the 000 *anonymous respondents who completed the survey – they represent 00% of our target number of responses.*

Your participation is essential to helping us understand how to best invest in developing Yyy's Knowledge Management System.

Sincerely,

cccc
Technical Development Leader – Australasia

xxxx
Chair, Global Technical Development Committee

To learn more about this project, visit the project CWS page: ***CWS Link***.

Click here to complete the survey: Qualtrics link

Survey closes on 18 September, 2013 at 17:00 GMT+10 – IN JUST 2 DAYS!

Technical difficulties with this survey or issues with the survey questions? Contact **Peter Chomley** at peter.chomley@rmit.edu.au

Questions or feedback about this survey? Contact **xxx**, at zzz

Appendix G. Survey instrument

Knowledge sharing and Workplace Innovation survey

Understanding views on sharing knowledge and Workplace Innovation in the workplace.

This survey will take approximately 10 minutes to complete and will close 29 July 2013 at 17:00 GMT+10. Knowledge is defined as a subjective way of knowing, based on experience, perceptions, and values. There are two types of knowledge being captured in a Knowledge Management system – tacit and explicit knowledge. Tacit knowledge resides in the mind and for highly skilled individuals it is difficult to articulate and therefore, difficult to capture and share but it is also a highly valued type of knowledge within organizations. Explicit or systematic knowledge is readily communicated and shared as it is based on technical academic data or information. This survey will ask you to provide your opinion on sharing tacit and explicit knowledge in the workplace.

I desire of my own free will to participate in this study.

Yes (1) No (2)

(If No is selected, then skip to End of Survey)

Note: unless otherwise advised, all question answers are based on a 5 point Likert scale –

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Section A: Subjective Norm explores the perceived social pressure on an individual to engage or not to engage in knowledge sharing.

Most people who are important to me, think that I should share knowledge and experience with others, in relevant circumstances.

People whose opinions I value approve of my willingness to share knowledge with others.

Because I am a team member, I have a duty to share knowledge with others.

Most people I know, share their knowledge with others.

Section B: Attitude explores the degree to which an individual has a favorable or unfavorable opinion of sharing knowledge.

If I were to share my knowledge with others, I feel I would lose power.

If I share my knowledge with others, I feel very pleased.

If I share my knowledge with others, I feel I have made a positive contribution.

Section C: Intention explores the individual's readiness to share knowledge.

I always intend to share knowledge with others if they ask.

I always will make an effort to share knowledge with others.

I always intend to be the first to share knowledge with others.

I always plan to share knowledge with others.

Section D: Behavior explores the individual's behavior in sharing knowledge.

I will share knowledge obtained from people outside my work group with my colleagues.

I will immediately share knowledge obtained from outside sources with colleagues.

I will share my knowledge with others, using all the tools available to me.

Section E: Perceived Behavioral Control explores the individual's belief in their ability to make a difference by sharing knowledge.

Sharing my knowledge is always possible.

It is up to me whether or not I share knowledge.

I believe that I am in control regarding the sharing of my knowledge with others.

Section F: Self-Worth explores the individual's opinion about the value of sharing knowledge.

Sharing my knowledge will contribute to helping other members of the organization solve problems.

Sharing my knowledge will contribute to the creation of business opportunities for the organization.

Sharing my knowledge will contribute to an increase in productivity within the organization.

Sharing my knowledge will help the organization achieve its performance objectives.

Section G: Organizational citizenship behavior explores my work group's spontaneous behavior when sharing knowledge.

Members of my work group generally speak up to encourage others in this group to get involved in issues that affect the group.

Work group members communicate their opinions about work group issues to others in this group, even if their opinion differs to that of their colleagues.

Members of my work group speak up with ideas for new projects or changes in procedures.

Section H: Knowledge Sharing Activity explores the individual's passion for learning and sharing knowledge.

I actively search for more about the subject when I learn something new and interesting.

I discuss it with my colleagues when I learn something new.

I am willing to change my previous mindset when my colleagues share something new.

When my colleagues learn something new, I want to find out more about it.

Section I: Absorptive capability explores the work group's capability to search for, acquire and apply knowledge.

My work group has the ability to scan for valuable knowledge in external organizations.

My work group has the ability to acquire knowledge needed from other organizations.

My work group has the ability to assimilate new found knowledge in our organization.

My work group has the ability to exploit the knowledge we have gathered for our organization.

Section J: Workplace Innovation Climate explores my work group's climate or culture for Workplace Innovation.

My supervisor is my role model in creative thinking.

I have opportunities to try new approaches to problems.

My supervisor gives me useful feedback regarding my creative ideas.

My supervisor gives me opportunities to learn from my mistakes.

The people I work with perceive me to be a creative problem solver.

Section K: Individual Innovation explores an individual's passion for bringing new ideas into profitable use.

I make time to pursue my own ideas or projects.

I am constantly thinking of new ideas to improve my workplace.

I express myself frankly in staff meetings.

My performance appraisal is related to my own creativity in the workplace.

At work I demonstrate originality.

I work in teams to solve complex problems.

Section L: Team Innovation explores the role of my team in bringing new ideas into use.

We work in teams to solve complex problems.

My team has the freedom to make decisions without needing to ask for permission.

My team feels a strong sense of membership.

My team welcomes uncertainty related to our work.

Amongst my colleagues I am the first one to try new ideas.

Section M: Organizational Workplace Innovation explores the role of the organization in bringing new ideas into use.

Our workplace has a purpose (vision) that is made very clear to the employees.

The purpose of my workplace helps the employees in setting their goals.

Workplace Innovation in my workplace is linked to its business goals.

In our workplace, opportunities to learn are created through systems and procedures.

Our workplace rewards innovative ideas regularly.

Section N: Perception explores how you would describe the culture of your work group and organization.

What is the first word you think of to describe the culture of your work group?

What is the first word you think of to describe the culture of your organization?

Section O: Work practices explores the activities I use for knowledge sharing.

I share my knowledge by:

- ❑ Being an active member of a Technical Community (1)
- ❑ Contributing to the organization WIKI(s) or similar (2)
- ❑ Coordinating a discussion group in my work group (3)
- ❑ Mentoring other co-workers (4)
- ❑ Publishing a blog or similar (5)
- ❑ Writing review papers for my organization (6)
- ❑ Other (7) _____

Section P: this last section explores how your demographic context influences the workgroup and organization.Your responses will remain confidential and anonymous.

My gender is:

- ❍ Male (1)
- ❍ Female (2)
- ❍ Do not wish to answer (3)

My age group is:

- ❍ 18 to 21 years old (1)
- ❍ 22 to 30 years old (2)
- ❍ 31 to 40 years old (3)
- ❍ 41 to 50 years old (4)
- ❍ 51 to 60 years old (5)

- ❍ 61 plus years (6)

My highest level of education is:

- ❍ High School certificate (1)
- ❍ Associate's Degree / Diploma (2)
- ❍ Bachelor Degree (3)
- ❍ Masters Degree (4)
- ❍ Doctorate (5)
- ❍ Other – Please Specify (6) _____

I completed my most recent qualification ... years ago:

- ❍ 0 to 5 years (1)
- ❍ 6 to 10 years (2)
- ❍ 11 years or greater (3)

I have worked with my current organization for:

- ❍ Under 2 years (1)
- ❍ 2 to 5 years (2)
- ❍ 6 to 10 years (3)
- ❍ 11 to 20 years (4)
- ❍ 21 to 30 years (5)
- ❍ more than 30 years (6)

I sometimes work from home.

- ❍ yes (1)
- ❍ No (2)

(If No Is Selected, Then Skip To How many hours per week do you usuall...)

I spend % of time working from home (number).

…..

I usually work (hours per week).

…..

At my organization I work in a:

- ❍ Professional technical role (1)
- ❍ Technical role (2)
- ❍ Business support role (3)
- ❍ Managerial role (4)
- ❍ Other (5)

My Operating Company is:

- ❍ Corporate (1)
- ❍ Africa (2)
- ❍ Asia (3)
- ❍ Australasia (4)
- ❍ Canada (5)
- ❍ Europe (6)
- ❍ South America (7)
- ❍ USA (8)

Answer If At my organization I work in a Managerial role Is Selected

- ❍ I have ... people working for me.
- ❍ …..

I was born in (country):

- ❍ Do not wish to answer (1)
- ❍ Country list (2) … (194)
- ❍ Not known (195)

My country of residence is:

- ❍ Country list (2) … (194)

I have experience working as an expatriate (lived and worked in a foreign country).

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To End of Survey

Answer If I have experience working as an expatriate (lived and wor... Yes Is Selected

I am currently working as an expatriate.

- ❍ Yes (1)
- ❍ No (2)

If you wish to provide any general comments, feel free to do so. Note, by clicking on the >> you will be submitting the survey anonymously.

FINISH

Appendix H. Ethics Plain Language Statement

PROJECT INFORMATION STATEMENT

Plain language Statement for Questionnaire Survey (original on RMIT letterhead)

Project Title: The Relationship between Knowledge Sharing and Workplace Innovation within a Transnational Corporation.

Investigators: Mr. Peter Chomley (PhD degree student peter.chomley @rmit.edu.au, +61 412258047) Professor Adela J McMurray (Project supervisor: RMIT University, adela.mcmurray@rmit.edu.au +61 3 9925 5946)

Dear Participant,

You are invited to participate in a PhD research project being conducted by RMIT University, which will take approximately 10 minutes to complete. These 2 pages are to provide you with an overview of the proposed research. Please read these pages carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators identified above.

I am currently a research student in the school of management at RMIT University. This project is being conducted as a part of my PhD degree. My principal supervisor for this project is Professor Adela J. McMurray. The project has been approved by the RMIT Business College Human Ethics Advisory Network (Approval number: RMIT BCHEAN 1000351).

This study is designed to explore the relationship between knowledge sharing and Workplace Innovation within a transnational corporation. This research will distribute up to 1500 questionnaires. In the questionnaire, the participants need to answer the questions which related to their expectations and perceptions of knowledge sharing and Workplace Innovation, and some demographic questions about the participants.

There are no perceived risks associated with participation outside the participants' normal day-to-day activities. The participants in this research have been chosen randomly by your management. As a matter of fact, your responses will contribute to understanding the behavioral antecedents of knowledge sharing and Workplace Innovation. The findings of this study will be disseminated in conference papers and published in journals.

If you are unduly concerned about your responses or if you find participation in the project distressing, you can decline to participate and should contact my supervisor as soon as convenient. My supervisor will discuss your concerns with you confidentially and suggest appropriate follow-up, if necessary.

You can examine the questionnaire before deciding whether you want to participate. As participation is anonymous and voluntary, the first survey question asks if you wish to proceed. An answer in the affirmative indicates and confirms your consent to participate.

Participation in this research is entirely voluntary and anonymous; you may withdraw your participation and any unprocessed data concerning you at any time, without prejudice. There is no direct benefit to the participants as a result of their

participation. However, I will be delighted to provide you with a summary copy of the research report upon request as soon as it is published.

I am asking you to participate in this survey so as to provide us with an insight into the traits that affect knowledge sharing and Workplace Innovation behaviors. Your privacy and confidentiality will be strictly maintained in such a manner that you will not be identified in the thesis report or any publication. Any information that you provide can be disclosed only if (1) it is to protect you or others from harm, (2) a court order is produced, or (3) you provide the researchers with written permission. Interview data will be only seen by my supervisor and examiners who will also protect you from risk.

To ensure that data collected is protected, the data will be retained for five years upon completion of the project after which time paper records will be shredded and placed in a security recycle bin and electronic data will be deleted/destroyed in a secure manner. All hard data will be kept in a locked filling cabinet and soft data in a password protected computer in the office of the investigator in the research lab at RMIT University. Data will be saved on the University network system where practicable (as the system provides a high level of manageable security and data integrity, can provide secure remote access, and is backed up on a regular basis). Only the researcher will have access to the data. Data will be kept securely at RMIT University for a period of five years before being destroyed.

You have right to withdraw their participation at any time, without prejudice. You have the right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and it does not increase the risk for the participant. Participants have also the right to have any questions, in relation to the project and their participation, answered at any time.

I am assuring you that responses will remain confidential and anonymous. The findings of this research could be used by multi-cultural teams in order to improve Workplace Innovation performance by more effective knowledge sharing.

If you have any queries regarding this project please contact me at +61 412258047 or email me at peter.chomley@rmit.edu.au. You may also contact my principal supervisor Professor Adela J. McMurray, RMIT University, +61 3 9925 5946, adela.mcmurray@rmit.edu.au or The Chair, Business College Human Ethics Advisory Network (BCHEAN), RMIT University, GPO Box 2476V, Melbourne, 3001, Australia.

Thank you very much for your contribution to this research.

Yours Sincerely,

Peter Chomley

PhD Candidate
School of Management, RMIT University, level 8, 445 Swanston Street, Melbourne, VIC 3000