

Impact of Organizational Context Factors on Individuals' Self-Reported Knowledge Sharing
Behaviors

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Abstract

The proliferation of teams and team-based activities emphasizes the need to understand knowledge sharing behaviors in order to facilitate team performance. Knowledge sharing in teams is valuable and indispensable for both academic and corporate organizations in order to meet and manage team effectiveness. Knowledge is driven by people who behave in different ways based on their environment and its accompanying factors. Considering what factors facilitate knowledge sharing behaviors in teams within an academic environment is an important benchmark for knowledge management researchers and instructional designers. Instructors and professors plan various thorough and organized collaborative opportunities for teams in their classrooms to encourage knowledge sharing. Similarly, understanding the specific factors of a collaborative context before setting team procedures better facilitates knowledge sharing behaviors. Therefore, the research problem addressed in this study was to predict what contextual factors promote perceptions toward knowledge sharing behaviors in students enrolled in graduate courses from a business school, as measured by a self-reported questionnaire.

Prior studies on student teams state that team climate and leadership contributes to student knowledge sharing behavioral patterns. These studies emphasize the importance of recognizing specific factors that function with climate and leadership to contribute towards knowledge sharing behaviors and attitudes toward knowledge sharing; this would allow instructional designers to more fully understand the process. Furthermore, other studies related to team knowledge sharing behaviors reported certain specific factors, like organizational context,

interpersonal and team characteristics, and cultural characteristics as crucial in influencing knowledge sharing behaviors. Specifically, in regard to team context, existing studies mentioned five factors - climate, leadership, rewards and incentives, structure, and support - that encourage knowledge sharing behaviors and attitude towards knowledge sharing in teams. Thus, in this study, the researcher investigated team climate, leadership, rewards and incentives, task structure, and task support to determine in what manner these factors influence student knowledge sharing behaviors as well as attitudes toward knowledge sharing in graduate business courses.

This study used the quantitative methodologies. Multiple regression and correlation analysis were used to measure students' self-reported perceptions of what contextual factors impacted their knowledge sharing behaviors and attitudes toward knowledge sharing during team project work. The findings of this study show that in the studied context, students reported that task structure affected their knowledge sharing behaviors more than the rest of the identified factors. Correspondingly, rewards and incentives impacted their attitudes toward knowledge sharing behaviors. The findings also indicate negative correlations of team climate and leadership with attitudes toward knowledge sharing. Correspondingly, this study delineates certain implications for instructional designers for assisting knowledge sharing behaviors in teams. The study results contribute to the body of literature that suggest the importance of motivating and supporting detailed task structure and procedures for promoting knowledge sharing behaviors in student teams.

Dedication

I dedicate this document to Joy and my late Mother

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The completion of this writing process engraves a significant milestone in my academic career. I would not have the privilege of successfully completing my doctoral program without my brother Joy's incessant inspiration and divine love. I wholeheartedly thank him for being with me during this harrowing journey.

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List of Abbreviations

EVT: Expectancy Value Theory

MRA: Multiple Regression Analysis

TAM: Technology Acceptance Model

TPB: Theory of Planned Behavior

TRA: Theory of Reasoned Action

Chapter One

Introduction and Need for the Study

Introduction

Instructional design is a systematic practice of interpreting principles of learning and instruction and applying those principles to the instructional materials such as activities, resources, and evaluations (Smith & Ragan, 1999). To accomplish this, instructional designers develop strategies that are purposefully well structured and effective for learners or users. In addition, instructional design involves thorough planning and review of processes before developing the materials to solve a problem (Cunningham & Duffy, 1996; Richey, Klein, & Tracey, 2011; Smith & Ragan, 1999). In today's world, learning is a shared process, a process that is persistently changing organizations and institutions in ways that help them to prosper and succeed in a world where members' needs also change rapidly (Collinson & Cook, 2006). The changing social and technological work practices, particularly those related to knowledge work, have initiated many investigations and studies about what kind of interaction opportunities an organization should provide to its members to share knowledge (Ludvigsen, Lund, Rasmussen, & Säljö, 2010; Paavola, Lipponen, & Hakkarainen, 2004). This is because, in today's environment, solving complex problems requires application of individual knowledge as well as sharing and incorporating new knowledge with others (Van den Bossche, Gijsselaers, Segers, Woltjer, & Kirschner, 2011). Therefore, institutions and organizations understand that one of the main salient features to promote learning and accept change is to provide members with opportunities to interact and share knowledge with other members on an ongoing basis (Abdallah, Khalil, & Divine; Richard, 1987). Due to globalization, cognitive (rational) and social (collective) forms of knowledge (Sfard, 1998) may be associated with members working in

teams (Ludvigsen et al., 2010; Paavola et al., 2004). In order to design and develop strategies to support knowledge sharing, instructional designers need to know more about team context.

We live in a world where innovative thinking and constructive processing at all levels is necessary (Huxham & Vangen, 2013). In this complex environment, people are learning, sharing knowledge and critically thinking about how to solve ill-defined problems in ill-structured contexts. Adapting, learning, and fitting to the context where knowledge sharing occurs are all closely linked. Therefore, to support problem solving, it might be helpful to include knowledge sharing behaviors in multiple instructional strategies. Hence, it is important for instructional designers to thoroughly examine and analyze the factors (individual and contextual) that impact how learners are sharing knowledge before “designing instructional strategies” (Reigeluth, 1999).

Need for the Study

In terms of successful collaboration, teams are paramount (Kirschner, Paas, & Kirschner, 2009; Van den Bossche et al., 2011). Team members collaborate and cooperate to achieve some task (Kay, Yacef, & Reimann, 2007), and during this collaborative process, teams engage in discussion, argumentation, and reflection upon the task at hand, which leads to deeper processing of knowledge and meaningful learning (Kirschner et al., 2009). In academic contexts, teamwork facilitates collaborative and cooperative learning, taking many forms like group work, projects in teams, and tutoring (Nonose, Kanno, & Furuta, 2012; Sacramento, Chang, & West, 2006).

Collaborative learning in the form of teams is encouraged and accepted by teachers as well as learners (Howley, Mayfield, & Rosé, 2011; Van Boxtel, Van der Linden & Kanselaar, 2000).

Today’s competitive world appreciates people as team players, which is often a key part of business success; hence, cooperative and collaborative learning is a very useful and relevant

tool in developing team players (Van den Bossche, Gijsselaers, Segers, & Kirschner, 2006). Knowledge is fabricated in our socio-cultural context; collaborative learning, cooperative learning, and team learning are all part of this context (Jorczak, 2011). In this collaborative world, where a learner is not alone in learning or solving a problem, learning and solving a problem together is a part of the knowledge sharing process.

In order to meet and manage the unceasingly changing environment, effective knowledge sharing is vital for teams to work together efficiently in both academic contexts and corporate organizations (Koch, 2011; Mathieu & Rapp, 2009). Thus, teams, whether in an academic setting or in a corporate organization, tend to participate in knowledge sharing behaviors (Decuyper, Dochy, & Van den Bossche, 2010). According to Ipe (2003), knowledge sharing is basically a behavioral act of making knowledge available to others. In teams, this is the process by which the knowledge owner shares his or her knowledge with others in a way that the receiver can understand, absorb, and use. Sharing is a conscious and deliberate action performed by individuals who are involved in the discussion process (Davenport & Prusak, 1998).

As a result, corporate organizations and academic institutions have increased team-based collaborative structures in their work to promote knowledge sharing (Horwitz, 2005; Michaelsen & Sweet, 2011; Sessa & London, 2008; Sessa, London, Pingor, Gullu, & Patel, 2011). One of the advantages of having a work or project team is the diversity of experience and expertise that these individuals bring together to accomplish a task. This diverse set of perspectives helps to foster innovative ideas and advance work practices to share knowledge (Bresman & Zellmer-Bruhn, 2012).

In addition, one of the critical parts of knowledge sharing in work or project teams is that it involves people; thus, social and cognitive factors play a major role in the process (Cabrera,

Collins, & Salgado, 2006; Davenport & Prusak, 1998; Ipe, 2003; Noh, 2013; van den Hooff & De Ridder, 2004). Chen and Huang (2007) emphasize that knowledge sharing behaviors in teams are extremely intricate social interactions that are influenced by social or cognitive factors and the contextual factors in which this interaction takes place.

Therefore, even though teams represent an important medium to bring together members' diverse perspectives to share knowledge, getting the most out of this knowledge base can be challenging. First, in a competitive environment, the working context with its associated factors determines how members may share knowledge. Knowledge sharing behaviors tend to become more complicated when factors such as the climate, leadership, rewards and incentives, task structure, and task support are not managed well (Kozlowski & Ilgen, 2006; Wang & Noe, 2010). Second, it is highly difficult to determine how and when the knowledge owner (i.e. the individual who possesses the relevant knowledge for the task) will share knowledge for the collective benefit of the team (Bunderson & Reagans, 2011; Egan, 2005; Ginkel & Knippenberg, 2008).

These two factors tend to make knowledge sharing a difficult process to understand because without appropriate organizational contextual resources, project or work teams may not be effectively employing the knowledge of their members (Noh, 2013; Srivastava, Bartol, & Locke, 2006; Xue, Bradley, & Liang, 2011). Thus, understanding what factors facilitate knowledge sharing practices within a corporate or academic environment are important criteria for knowledge management researchers and instructional designers (Sessa & London, 2008; Sessa et al., 2011; Smith & Ragan, 1999).

Studies Conducted in Corporate Context

In corporate organizations, knowledge is created through the process of working on the task and the resources provided to the team members (Srivastava et al., 2006; Xue et al., 2011). Knowledge sharing within teams has proven beneficial both to the individual member and to the team (Ludvigsen et al., 2010; Paavola et al., 2004). According to Kirschner et al. (2009), Sacramento et al., (2006), and Stewart et al. (1999), during the process of exchanging information at work, members share knowledge. In teams, members construct new knowledge by sharing and listening to one another's individual ideas. This manner of exchanging knowledge provides members with opportunities to express what they know, share this knowledge with others, receive feedback, and challenge their own beliefs and ideas.

Knowledge sharing behaviors are widely discussed in knowledge management literature. In that literature, there are a plethora of factors identified as important for facilitating knowledge sharing in teams like organizational context, interpersonal and team characteristics, cultural characteristics, and individual characteristics (Cabrera et al., 2006; Ipe, 2003; Wang & Noe, 2010). Teams are comprised of people who are influenced by the environment in which they are working, the people with whom they are collaborating, and the means by which they are executing a given task; these factors stimulate and influence knowledge sharing behaviors, but they are not easy to predict. Thus, knowledge management research states that it is imperative to comprehend what factors facilitate knowledge sharing behaviors in certain contexts (Cabrera et al., 2006; Ipe, 2003; Wang & Noe, 2010). Wang and Noe (2010) identify certain organizational context factors as important to facilitate and encourage knowledge sharing behaviors in teams: climate, leadership, rewards and incentives, structure, and support.

Limited Studies in Academic Context

Increasingly, academic contexts are using collaborative learning strategies to promote knowledge sharing in their course instructions in the form of teams (Jeong & Chi, 2007; Michaelsen & Sweet, 2011). Scholars support that collaboration between students in an academic environment are an important part of learning and knowledge sharing processes (Serce et al., 2010). Therefore, instructors are providing intensive and structured collaborative opportunities to students to build up scientific competencies and to help them develop effective knowledge sharing strategies (Milam Jr, 2001). Though knowledge sharing behaviors have been greatly studied in corporate teams, there is a strong need to perform similar research in an academic context (Education & Command, 2008; Hodges, 2010; Milam Jr, 2001).

Few empirical studies have examined how students share knowledge, what factors encourage students to share knowledge, and how much contextual factors impact knowledge sharing in project teams in an academic context (Hodges, 2010). Additionally, several recent studies indicate that further research is needed regarding non-technological factors that affect knowledge sharing behaviors. Chen and Huang (2007) recognize that in order to facilitate individual knowledge sharing, additional studies are necessary regarding personal and cultural characteristics (personal abilities, self-efficacy, cultural beliefs) and organizational contexts (climate, leadership, rewards and incentives, task structure, and task support) (Cabrera et al., 2006; Ipe, 2003; Wang & Noe, 2010).

Xue et al.'s (2011) research focuses on the impact of team climate and empowering leadership on knowledge sharing behaviors in an academic setting. They investigated college students (undergraduate and graduate) in United States (US) universities enrolled in business courses that required team projects (Xue et al., 2011). Xue et al. (2011) examine knowledge sharing patterns in relation to two team related factors: team climate and empowering leadership.

They used a survey instrument based on previous knowledge management studies which they had administered to 434 college students. According to them, team environment and empowering leadership factors support each other and influence individuals to share knowledge. Also, these two factors influence individual attitudes toward knowledge sharing and lead to more knowledge sharing behavior.

Purpose Statement

In the current study, the researcher builds upon Xue et al.'s (2011) research. Through this study, the researcher examined the two factors Xue et al. studied (team climate and empowering leadership) and added three more organizational context factors (rewards and incentives, task structure, and task support) to determine which factors impacted the self-reported knowledge sharing behaviors and attitudes toward knowledge sharing of students involved in team projects in business graduate courses.

The purpose of this study was to expand on the current understanding of knowledge sharing behaviors by examining factors that influence the extent to which team members share their knowledge. Specifically, this study measured and analyzed the impact of five identified organizational context factors: climate, leadership, rewards and incentives, task structure, and task support on students' self-reported knowledge sharing behaviors when engaged in graduate project teams. In addition, this study further attempted to determine the impact of these factors on students' attitudes toward knowledge sharing behaviors.

Brief Review of the Hypotheses and Methods

This study aimed to examine the following research question:

What organizational context factors influence individuals' self-reported knowledge sharing behaviors and attitudes toward knowledge sharing in academic project teams? To elaborate on this question, five (5) additional questions were designed with an associated ten (10) hypotheses:

Table 1

Questions and Associated Research Hypotheses

Questions	Associated Research Hypotheses
1. What are the significant relationships between students' perception of <i>climate</i> on knowledge sharing behaviors and on attitudes toward knowledge sharing?	H1. Team climate has a positive influence on knowledge sharing behaviors. H2. Team climate has a positive influence on attitudes toward knowledge sharing.
2. What are the significant relationships between students' perception of <i>leadership</i> on knowledge sharing behaviors and on attitudes toward knowledge sharing?	H3. Leadership has a positive influence on knowledge sharing behaviors. H4. Leadership has a positive influence on attitudes toward knowledge sharing.
3. What are the significant relationships between students' perception of <i>rewards and incentives</i> on knowledge sharing behaviors and on attitudes toward knowledge sharing?	H5. Rewards and incentives has a positive influence on knowledge sharing behaviors. H6. Rewards and incentives has a positive influence on attitudes toward knowledge sharing.
4. What are the significant relationships between students' perception of task <i>structure</i> on knowledge sharing behaviors and on attitudes toward knowledge sharing?	H7. Task structure has a positive influence on knowledge sharing behaviors. H8. Task structure has a positive influence on attitudes toward knowledge sharing.
5. What are the significant relationships between students' perception of task <i>support</i> on knowledge sharing behaviors and on attitudes toward knowledge sharing?	H9. Task support has a positive influence on knowledge sharing behaviors. H10. Task support has a positive influence on attitudes toward knowledge sharing.

The core concept of knowledge sharing behavior in teams is to collaborate and to build a shared understanding of a task or problem (Van den Bossche et al., 2011). As stated by Xue et al. (2011), individuals in a team need an effective climate and adequate leadership to trust, collaborate and build a collective understanding (Decuyper et al., 2010) of the task. By adding three more organizational context factors (rewards and incentives, task structure, and task support) into the study, the goal was to recognize how much, if any, these factors influenced students' knowledge sharing behaviors and attitudes toward knowledge sharing.

The study approach was quantitative, using a survey instrument to collect data from students enrolled in graduate courses. The survey instrument was designed to collect data on which organizational context factors influenced knowledge sharing behaviors and how these factors influenced students' attitudes toward sharing knowledge. The items on the survey instrument for this study were borrowed from Alsharo (2013); Bock, Zmud, Kim and Lee (2005); Evans (2012); Fulbright (2012); and Xue et al. (2011) studies on knowledge sharing behaviors (See Appendix A).

Statistical analyses were used to measure the impact of these five factors and to test the hypotheses. Statistical analyses included descriptive statistics, correlation analysis, and multiple regression analysis. A pilot-test was conducted prior to the actual data collection to refine data collection methods and procedures.

Significance of the Study

This study has the potential to highlight for instructional designers and faculties of graduate business course specific contextual factors that facilitate students' knowledge sharing behaviors while working in project teams. Therefore, this empirical research could provide insight for course developers to consider the contextual factors - climate, leadership, rewards and

incentives, task structure, and task support - to incorporate when designing and developing courses to better enable knowledge sharing behaviors and positive attitudes toward knowledge sharing. This study could be beneficial for future researchers by investigating further those specific factors that enable students' knowledge sharing behaviors for promoting team effectiveness.

In addition, the results of this study may be transferable to student teams working in different educational domains that wish to facilitate knowledge sharing behaviors. To that end, the survey items were structured to collect a thorough understanding of these behaviors from participants. The researcher targeted three potential outcomes from this study:

- (1) To provide insight to develop recommendations for course developers and designers in selecting appropriate strategies for facilitating knowledge sharing behaviors in teams.
- (2) To provide instructional designers with an understanding of what factors lead to effective knowledge sharing behaviors.
- (3) To assist instructional designers in developing and creating instructional materials designed to help professionals to increase knowledge sharing behaviors in teams.

Organization of the Dissertation

The focus of the dissertation is on organizational context factors and its impact on knowledge sharing behaviors and attitudes toward knowledge sharing. This dissertation is comprised of five chapters:

- (1) Introduction: lays the foundation of this dissertation and introduces the contribution towards instructional design, need for the study, the research hypotheses and significance of the study;
- (2) Literature Review and Conceptual Framework: describes the key concepts and the enabling factors of the research variables, includes the review of the literature and theories related to

knowledge sharing behaviors and attitude, and concludes with a conceptual framework for the study;

(3) Research Design and Methodology: details the research design and methodology that was used for this study, re-states the hypotheses, describes how the participants for the study were selected, includes what statistical procedures were used to study the selected participants, variables and research design, and ends with the description of the data collection and data analysis procedures;

(4) Results and Statistical Analyses: describes the results of the statistical analyses and testing of the hypotheses using correlation and multiple regression, and provides a summary of the results;

(5) Discussion: provides a discussion of the main findings and research contributions.

Chapter Two

Literature Review and Conceptual Framework

This chapter reviews the literature addressing the principal research question: *what organizational context factors influences individuals' self-reported knowledge sharing behaviors and attitudes toward knowledge sharing among graduate students?* To help understand the research question, the literature review is organized into five main sections. First, the key concepts of *Team and Team Learning* are discussed. Following that, a discussion of *Knowledge Sharing* presents the main phenomena of the study by defining knowledge sharing in project teams and outlining knowledge sharing behaviors. The next section, *Attitude and Knowledge Sharing*, examines the relationship between individuals' attitudes and knowledge sharing behaviors. Supporting theories are also examined in this section. The last section deals with enabling factors: *Enabling Factors of Knowledge Sharing in Organizational Context* and *Enabling Factors of Knowledge Sharing in Academic Context*. The *Organizational Context Factors and Knowledge Sharing* section explains the specific organizational factors that impact knowledge sharing. This chapter concludes with a conceptual framework for the current study.

Team and Team Learning

A team is a group of individuals who come together to accomplish some task (Robbins & Finley, 1995). Members of a team in a classroom and in a corporate context usually have some common objectives and collaborative agreement on how to achieve those objectives (Dilworth & Boshyk, 2010; Xue et al., 2011). Teamwork in both settings is the source of growth and development of a member's cognition because it helps in knowing, learning, constructing, and sharing new and unknown things (Stahl, 2013). Teamwork or working together efficiently and effectively helps teams to adapt to competitive, changing environments quickly (Smith, 2012). A

team is the most recognized form of collaboration and it helps in creating a platform for knowledge sharing, which ultimately leads to intelligent and inventive decision making and sharing and learning from each other (Beyerlein, Freedman, McGee, Moran, & Beyerlein, 2003). A team can accomplish more than the individual members and constructs new knowledge that is well-organized, efficient, and effective for the task.

For a team, learning plays a prominent role in constructing new knowledge (i.e. creativity) and sharing knowledge (Park, Park, Kim, & Kim, 2012). Team learning emphasizes the skills and abilities of the members who are working collaboratively (Van den Bossche et al., 2011). The learning process in teams arises from the members interaction with each other along with the task at hand (Michaelsen & Sweet, 2011). Team learning is largely determined by how team members interact and cognitively process knowledge from a particular context (DeChurch & Mesmer-Magnus, 2010). A team is composed of people who show different aspects of behavior during team interaction in order to construct a collective understanding, which is also known as cognition. Thus, team cognition is a state in which each member respectively internalizes knowledge, and shares and distributes knowledge with other members for execution in a particular context (Stahl, 2006, 2010). Team cognition is a cognitive activity that occurs at team level, where members collaborate to plan for a common goal.

When it comes to the impact of knowledge sharing in teams, empirical studies have shown that knowledge sharing enhances team performance because of its effect on building teams' collective understanding (i.e. team cognition) (Mesmer-Magnus & DeChurch, 2009; Srivastava et al., 2006), which in due course, enables team members' collaborative efforts (Ginkel, Tindale, & Knippenberg, 2009). Noh's (2013) study mentions that collective understanding or team cognition is an organized understanding of members about their team's

task context. According to Noh (2013, p.23), the “concept of collective understanding developed in the human factors literature as an expert’s cognitive representation of a system” can be “used for predicting system states and for generating inferences about system behavior”(as cited in Kozlowski and Ilgen, 2006).

Scholars state that team members knowledge sharing for rational learning and conceptual change can occur when they engage in constructive conflict (Van den Bossche et al., 2011). This sharing of knowledge results in the co-construction of knowledge (Decuyper et al., 2010) in order to share new knowledge (Fransen, Weinberger, & Kirschner, 2013). Team effectiveness depends on team members’ knowledge sharing skills, context, and cultural and motivational characteristics that facilitate team learning (Fransen et al., 2013; Van den Bossche et al., 2011; Wang & Noe, 2010). Team effectiveness is a combination of shared cognition and motivation of the members regarding the task.

Learning in teams does not only occur explicitly through sharing and acquisition of knowledge; members also learn implicitly through their team activities and behaviors. Hence, team learning is about gaining, sharing, and acquiring knowledge, as well as participating in the construction and application of new knowledge (Decuyper et al., 2010; Fransen et al., 2013).

Knowledge sharing is a fundamental necessity for a team to be effective.

Knowledge Sharing in Project Teams

When members come together for a project and form a team, it is called a project team or work team (Adams, Cain, Giraud, & Stedman, 2012; Decuyper et al., 2010; Majchrzak, More, & Faraj, 2012). Knowledge will inevitably be shared in that team; members share their experiences, ideas, and opinions to collectively agree on new knowledge. All these elements are components of individual knowledge. Davenport and Prusak (1998, p.4) define knowledge as “a fluid mix of

framed experiences, values, contextual information, and expert insight” that provides a framework for analyzing new knowledge. When that individual knowledge framework is shared with members, it is being evaluated and new experiences are being incorporated. Therefore, the process of knowledge sharing in work or project teams means how knowledge is being exchanged with respective members (Wang & Noe, 2010). According to Polanyi (1967), knowledge sharing is an action that helps in the process of knowing the new experiences.

The process of knowledge sharing starts with the expression of individual meaning in the team environment (Beers, Kirschner, Boshuizen, & Gijsselaers, 2007; Van den Bossche et al., 2011). It begins as one of the members describes the problem, trying to make it meaningful for the rest of the members and opening it to fellow team members for their contribution. The fellow members of the team listen and try to understand the differing opinions cognitively and provide individual views based on their experiences. This entire interaction, including providing opinions, helps in the construction of meaning individually (Van den Bossche et al., 2011). Eventually, the process of constructing meaning goes to a level where members of the team collaborate and mutually try to co-construct a new meaning for the problem. Through the behavioral process of sharing, not only is a new meaning constructed for the task, but the individuals also learn by being involved (Bossche, Gijsselaers, Segers, Woltjer, & Kirschner, 2011; Fransen et al., 2013; Park et al., 2012). Therefore, teams learn when individuals share knowledge with all members.

Knowledge sharing allows members to engage in shared exchanges, such as exchanging knowledge, constructing meaning, or asking questions, which eventually modifies each members' perception (Järvelä & Hadwin, 2013). Knowledge is embedded in the individuals of the team and when these individuals interact to share knowledge, learning takes place (Nonaka,

1994). According to Tsoukas (2005), knowledge sharing in teams depends on the capabilities of the members who distinctively carry out their work in a specific context following the structural guidelines of the individuals. These guidelines are designed by the collective understanding of the group functioning (Tsoukas, 2005, p.120). When incorporating this view of knowledge sharing in classrooms, it can be said that the framework is situated into the unique education and experience of the faculty and instructors. Knowledge sharing is also dependent on the instructional materials used in the classroom and the way that they have been conveyed to the students individually and as a whole (Hodges, 2010). There are certain conditions that enable students to share knowledge and those conditions vary depending on the structure of the course and its related factors.

Knowledge Sharing Behaviors

Before going into detail about knowledge sharing behaviors, it is important to define knowledge first. Nonaka (1994) divided knowledge into two broad categories: tacit and explicit knowledge. In addition, Nonaka described tacit knowledge as the base for creativity and innovation. Individual perceptions, attitudes, and willingness can be said to be an extension of tacit knowledge. Polanyi (1967) describes mechanisms of tacit knowledge sharing through imitation, identification, and learning by doing. Generally, this kind of knowledge builds from individuals' experiences and understandings of varied approaches during team interactions (Hodges, 2010). Alternatively, explicit knowledge is accumulated through data-based, written forms, and coding for future use as best measures and practices (Nonaka & Takeuchi, 1995). As Tsoukas (2005) said, coded artifacts act as a regulatory pathway by supported meaning and interpretation for tacit knowledge.

Learning by doing is a way to learn by working on a problem, task or project (Bresman, 2010). During the course of action, learners explore their surroundings, enhance their body of knowledge and experience, and converse with the members with whom they are working, as well as with themselves cognitively (Andres & Shipps, 2010). Construction of knowledge and sharing of knowledge are some forms of learning behaviors that learners perform during team activities (Baker, Hansen, Joiner, & Traum, 1999; Van den Bossche et al., 2011). Through these approaches, learners gain experience, become familiar with new behaviors in new contexts, and reflect back on their undertaken approaches (Ginkel et al., 2009).

These opportunities of experiencing real life situations help learners in analyzing problems by applying learned abilities and theories to practice (Decuyper et al., 2010). If members share and incorporate knowledge over the course of time, they can develop a skill to capture and apply knowledge in aggregate forms rather than in disconnected elements (Okhuysen & Waller, 2002); these aggregate forms will transform knowledge sharing into “collective intuition” (Isenberg, 1991). The knowledge sharing process helps in the development of team’s shared mental models that allow team members to be consistent in their team task and contribute to improving team performance (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000).

Knowledge sharing behaviors have been greatly studied in the literature of knowledge management systems, where these behaviors are divided into three types: provision, socialization, and externalization (Bartol, Liu, Zeng, & Wu, 2009; Earl, 2001; Nonaka & Takeuchi, 1995; Nonaka, Umemoto, & Senoo, 1996). In the provision type of knowledge sharing behavior, members share task relevant knowledge, often through written or verbal communication (Bartol et al., 2009; Bock et al., 2005; Chen, 2011; Cummings, 2004).

In teams, socialization is a more common form of knowledge sharing behavior because through this social interaction, members share their experiences and ideas, and help others while working on a mutual task or project (Bartol et al., 2009; Faraj & Sproull, 2000; Nonaka & Takeuchi, 1995). On the other hand, externalization stimulates knowledge sharing behaviors through meaningful dialogue or discussion (Nonaka, 1994). Through meaningful conversation, team members communicate and compare their own perspectives, which helps in revealing the hidden tacit knowledge that is, at times, hard to communicate (Nonaka, 1994; Nonaka & Takeuchi, 1995). These knowledge sharing behaviors are explained in Table 2 below, which is adapted and modified from Noh's (2013), Bartol et al.'s (2009) and Nonaka's (1994) studies.

Table 2

Knowledge Sharing Behaviors

Individual Behaviors	Description	Illustrations
Provision	Sharing know-how or expertise by transmitting and distributing task relevant data and information through written or verbal communication	Members pass along knowledge that may be helpful to the task of the team. Members keep other members informed of emerging developments that may increase their task effectiveness (Bartol et al., 2009; Bock et al., 2005; Chen, 2011; Cummings, 2004).
Socialization	Sharing know-how or expertise by directly working with team members through observation, imitation, and practice	Members readily share their expertise to help other team members to resolve team and task problems. Members willingly give advice to others in the team whose work efforts could benefit from their expertise (Bartol et al., 2009; Faraj & Sproull, 2000; Nonaka & Takeuchi, 1995).
Externalization	Sharing know-how or expertise by articulating and communicating through concepts, models, or ideas	Members offer innovative ideas in their area of expertise that can benefit the task at hand. Members frequently share their knowledge by making suggestions that benefit their task (Bartol et al., 2009; Nonaka & Takeuchi, 1995).

Note: Adapted and modified from Noh's (2013), Bartol et al.'s (2009) and Nonaka's (1994).

Knowledge sharing can also impact the coordination effort of team members through the growth of transactive memory. According to Wegner (1987), transactive memory is a mutual understanding by team members of each other's individual knowledge. Further, Wegner argues that when members of a team have a mutual understanding of other members' areas of expertise, then the team can draw on the complete knowledge accumulated by the members. In addition, Wegner states that transactive memory includes the documenting and updating processes of other

members' distinctive knowledge and offerings that occur during knowledge sharing (Mohammed & Dumville, 2001; Wegner, 1987). Thus, knowledge sharing contributes to the collective understanding and transactive memory of the members, and helps them to anticipate others' behaviors. In graduate student teams, this process may happen when students offer different knowledge in their areas of expertise, which can benefit the team's project (Hodges, 2010).

Hansen, Nohria, and Tierney (1999) suggest that organizations (academic or corporate) stress either a systematization strategy (i.e. knowledge is coded and documented in a technological system or tool [explicit knowledge]) or an individualization strategy (i.e. knowledge is created by the individual and shared through direct interaction [tacit knowledge]) for knowledge sharing behaviors among its members. It is important to note that these knowledge sharing behaviors are not mutually exclusive (Nonaka et al., 1996). It is difficult to determine whether the knowledge has been shared without members (i.e. knowledge owner and knowledge receiver) being engaged in some sort of behavioral actions, although the condition for the required behavior is also challenging to define. According to Bartol et al. (2009), project teams may prioritize tacit over explicit knowledge, but to understand knowledge sharing behaviors, it is important to analyze all of these behaviors together.

To facilitate the understanding of individuals' knowledge sharing behaviors in teams, Evans (2012) suggested three components for effective knowledge sharing. According to Evans, the first component is that the knowledge source must be willing to share knowledge. Second, the knowledge receiver must be willing to receive and recognize the knowledge that is shared. Finally, the knowledge receiver must perceive the knowledge shared as being useful to their individual task, project or the organization as a whole (Evans, 2012). Evans states that all these components are significant because to share knowledge, all individuals (i.e. owner and receiver)

should have a willingness to participate in the knowledge sharing process. Therefore, the three knowledge sharing components must be applied in conjunction to predict the actual knowledge sharing behavior.

Attitude and Knowledge Sharing

Attitudes toward behaviors reveal individuals' approving or disapproving intentions for performing a particular behavior (Chen & Chen, 2009). Fishbein and Ajzen (1975) define attitude as an individual's personal positive or negative appraisal of someone or something, or certain behaviors reflecting their likes and dislikes. Attitudes toward performing a behavior have long been found to be significantly related to actual behavior (Ajzen & Fishbein, 1977). According to Ajzen's (1991) theory of planned behavior (TPB), behavioral intentions are the driving force that captures the individual's intent to perform a behavior. This theory suggests that individuals' behavioral intentions are the most influential factor in determining a behavior because an individual does what they intend to do (Chen & Chen, 2009). In addition, this theory defines attitude as an individual's belief in a certain behavior. Fishbein (1979) further explains that TPB is an extension of the theory of reasoned action (TRA), which also helps in explaining and predicting behaviors.

According to TRA, individuals perform an action voluntarily and without influence from any factors in some contexts (Fishbein, 1979). Instead, when considering knowledge sharing behaviors in a social context (for example, teams), TPB helps to determine the driving attitude to perform a behavior (Chen, 2011); hence, this theory has more predicting capacity for a behavior than TRA. Expectancy value theory (EVT) also helps to explain individuals' underlying motivations to share knowledge, and that contributes to their attitudes (Wigfield & Eccles, 2000). This theory helps to explain individuals' choices of behavior in attempting tasks, determination

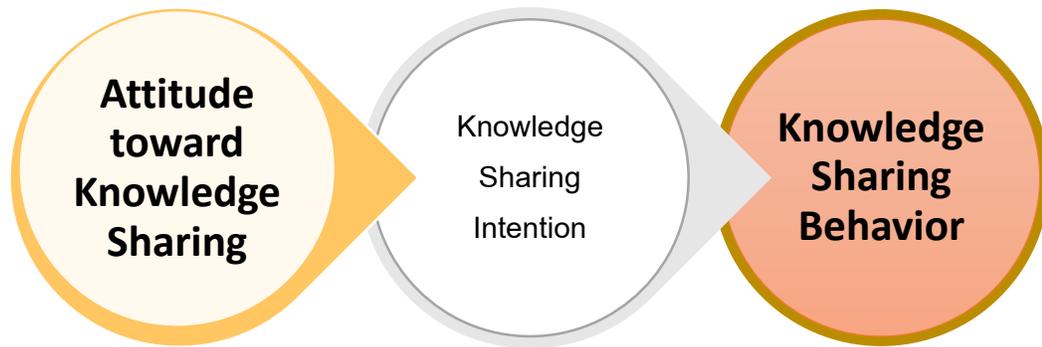
while completing those tasks, and performance while carrying them out. All these fundamental behavioral intentions can be explained by expectancy value theory (EVT).

Empirical research has shown that attitude towards performing a behavior has influenced the actual knowledge sharing behavior. Sheppard, Hartwick, and Warshaw's (1988), meta-analysis of 87 studies on attitudes toward sharing knowledge shows an average correlation of .53 between intentions and actual behavior. Bock et al.'s (2005) research results with 30 organization suggests that attitude towards knowledge sharing positively and significantly influenced actual behavioral actions. Attitudes toward performing knowledge sharing behaviors are prompted by an individual's desire to act as an "important referent where other's act or think one should act" (Pavlou & Fygenson, 2006, p.49). In teams, attitude towards knowledge sharing is greatly influenced by how members expect their performed behavior will be accepted, encouraged, and implemented by the other team members (Chen & Chen, 2009).

Attitude is directly associated with the happening of behaviors; when an individual has a strong attitude towards a definite behavior, the intention to perform such a behavior becomes more intense (Chen, 2011). Thus, when individuals on a team develop a positive attitude towards knowledge sharing, they will be more willing to engage in knowledge sharing. The influence of attitude towards knowledge sharing behavior has been described in the Figure 1 below. This figure is adapted and modified from Chen and Chen (2009).

Figure 1

Influence of Attitude towards Knowledge Sharing Behavior



Note: Adapted and modified from Chen and Chen (2009).

Theory of Knowledge Sharing Behavior

To comprehend how teams collaborate to share knowledge, it is important to understand the foundation of knowledge sharing in teams. The sharing of knowledge in teams has roots in social-constructive theory. Our understanding of the way members share knowledge in teams is evolving. This evolution emphasizes constructive learning theory to understand the importance of meaningful learning by engaging individuals in the activity (Dechant, Marsick, & Kasl, 1993). Knowledge sharing practices are discussed on this basis.

Social Constructive Theory

The epistemological framework of collaborative processes states that members, as owners of the learning environment, collaborate to construct and share knowledge and enhance learning; that is, knowledge is constructed and shared socially in the collaborative setting

(Stacey, 2012). According to Vygotsky (1978), learning is embedded in a social-cultural context. Learning occurs through members collaboration and interaction with each other in the social context (Vygotsky, 1978, p.79-82). Members generate meaning with their social interaction and this social collaboration enhances the learning and sharing process (Kanuka & Anderson, 2007). In the collaborative process, learning is an active, not a passive, process (Roschelle, 1992). Members are actively negotiating, reflecting, constructing, and sharing knowledge from their social context (Scardamalia & Bereiter, 2006; Stacey, 2012). The network of relationships possessed by an individual and the set of resources embedded in the context influences the extent to which interpersonal knowledge sharing occurs (Annadatha, 2012; Chiu, Hsu, & Wang, 2006). Knowledge is constructed in a context that involves peoples' interactions and collaborative practices (Brown, Collins, & Duguid, 1989; Roschelle, 1992), which means learning is situated in the embedded resources and structured in a social context.

Social-constructive theory has been incorporated for the theoretical framework of this study because sharing is a social process where people collectively work together to exchange knowledge and construct new ways to accomplish a given task. Social-constructive theory proposes that through knowledge sharing practices, individuals can internalize collaborative and cognitive strategies as skills that can be used in other settings as well (Beyerlein et al., 2003; Dillenbourg, Järvelä, & Fischer, 2009). This theory helps to understand how people interact and engage to share knowledge, how members acquire new behaviors by using the social context, and how team environments and interactions affect the change (i.e. knowledge sharing), which occurs during the process (Chiu et al., 2006; Putnam, 1995).

This theory also helps in predicting the progressive and versatile nature of human behaviors (Bandura, 2001; Chiu et al., 2006). Individuals' behavior is influenced and controlled

by the social climate (i.e. social network) and cognition (i.e. beliefs) (Chiu et al., 2006). Even though there is a dichotomy between dynamics of human behavior and how it is affected by social climate, knowledge is an amalgamation of personal experiences, values in a social context, and individuals' own reflections (metacognition) on this amalgamation. This process provides a framework for incorporating and assessing new knowledge (Davenport & Prusak, 1998). Individuals' ongoing practices of self-involvement largely motivate and regulate human behaviors.

Thus, this theory will help to determine the factors of knowledge sharing and the impact of them on individuals' behaviors in teams. Individuals' knowledge sharing behaviors are intricate and still require further exploration. The above mentioned theory helps to create a theoretical foundation to understand knowledge sharing behaviors in a team context, even as new theories and frameworks continue to grow.

Enabling Factors

Scholars of knowledge sharing behaviors in project or work teams have shown concern that members of a team fail to participate in these practices without an appropriate climate, leadership, rewards and incentives, structure, and support (Majchrzak et al., 2012; Weinberger, Stegmann, Fischer & Mandl, 2007; Xue et al., 2011). A team faces problems in utilizing its members effectively unless the individuals of the team share and construct concepts of their own and also assimilate team members' views and ideas for the new knowledge to build on. To further support the above idea, an understanding of the team context is needed (Donate & Guadamillas, 2011; Xue et al., 2011). Detailed information about the context in which a team performs helps members to prepare for other members' needs and actions, and as a result, to adapt certain behavioral changes to address those needs (Kozlowski & Ilgen, 2006).

Enabling Factors of Knowledge Sharing in Organizations

Knowledge sharing and learning in corporate organizations varies depending on the competitive level of the project in the organization and whether the project needs immediate handling or whether a delayed attempt would be acceptable (Bresman, 2010; Decuyper et al., 2010; Vaccaro, Brusoni & Veloso, 2011). Some scholars claim that knowledge sharing in corporate organizations is predisposed by the inherent characteristics of the association (Argote & Miron-Spektor, 2011). However, other scholars argue that a corporate organization's predisposed characteristics depend on an accumulative sophistication and involvement of members and organizational support. The knowledge generation process is also caused by the need to address higher performance standards and to be efficient (Albinsson & Arnesson, 2012; Bonnardel & Zenasni, 2010; Decuyper et al., 2010).

Knowledge sharing in corporate organizations depends on the following five steps: how members of a team manage the given problem, how the given problem is interpreted, what factors are considered and required to attempt to solve the problem, agreed milestones to solve the problem (Senge, 2014b), and how the process will be evaluated (criteria) (Senge, 2014a; Vaccaro et al., 2011). Applying these steps enhances members' capacity to understand the organizational context and helps make corrective decisions that improve organizational effectiveness (Smith, 2012; Sluis, 2004). The enabling factors of knowledge sharing in an organizational context are described in Table 3 below. A description of the elements of organizational context factors is shown in Figure 2.

Table 3

Organizational Factors Influencing Team learning, Knowledge Sharing and Innovation

Enabling Factors	Description
<i>Organizational Climate</i>	This term refers to the perspective of the team norms (climate) and the members who work there to share knowledge (Van den Bossche et al., 2011), i.e.; innovative thinking, trust, cohesion, etc. A positive climate promotes cooperative team perceptions for effective knowledge sharing (Wang & Noe, 2010).
<i>Leadership</i>	Leadership has been defined as when members of a team inspire, inform and help other members to set a mutually beneficial goal and provide each other a platform to share knowledge (Sluis, 2004). Good leadership contributes extensively to teams' knowledge sharing practices (Joshi, Lazarova & Liao, 2009) by handling tasks and managing socio-emotional needs of the members at the same time.
<i>Rewards and Incentives</i>	This term is used to define the motivational factors designed by an organization to encourage, reward, incentivize, and acknowledge the contribution that has been made by the members of the organization to share knowledge (Schippers, Den Hartog, Koopman & van Knippenberg, 2008). Grades as rewards for being an effective member and contributor to the task have been shown to influence students' intention to share knowledge, whereas members are more involved in knowledge sharing behaviors when they sense and connect internally to the process (Bock & Kim, 2001).
<i>Organizational Structure</i>	This term defines the scope of acceptable objectives within an organization regarding the task aligned with rules and regulations to share knowledge. It also defines inter-organizational <i>reciprocal relationships</i> , as well as those with its external environment (Richard, 1987). In addition, it describes those aspects of a team's work where members are flexible to communicate and discuss new task requirements, the complexity of the task, and the availability of the required resources for the task (Lipnack & Stamps, 1993; Wiedow & Konradt, 2011).
<i>Organizational Support</i>	In the literature, this term signifies the support provided by the management to promote a positive perception towards knowledge sharing (Wang & Noe, 2010). The available resources and support criteria set by the organization for the task determines how team members willingly share knowledge and interact (Argyris & Schön, 1999). Organizational support has a strong impact on teams' effort and performance towards finishing the task within and across boundaries (Sue Young, Heeseok & Youngjin, 2010).

Note: Adapted and modified from Wang and Noe (2010) and Van der Sluis (2004).

Figure 2

Elements of Organizational Context Factors



Note: These elements were used in the conceptual framework of the current study. See Figure 7: Conceptual Framework of Organizational Context Factors and Knowledge Sharing Behaviors.

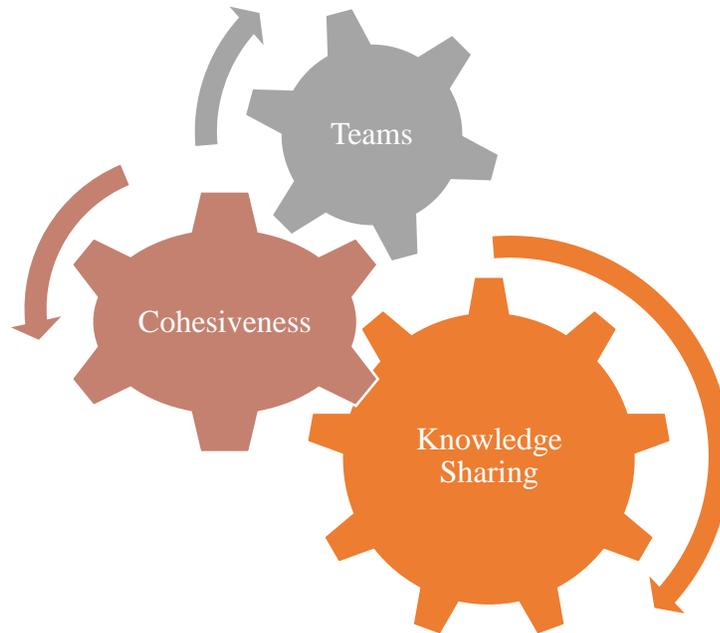
Enabling Factors of Knowledge Sharing in Academic Context

In an academic context, knowledge sharing in teams depends on their level of interaction (Holste, 2003). For a team to interact, learn, and perform, members need to share their diverse knowledge and understanding with others for the collective to benefit (Michaelsen & Sweet, 2011; Turner, 2001). Additionally, once the unique offerings of members have been identified, a team must be able to use these offerings as a contribution to improve performance. That is, the team must utilize and work on the obtained knowledge in order for learning to happen (Turner, 2001; Van den Bossche et al., 2006).

Academic teamwork is a structured form of small group-based learning that emphasizes learners' reflections, analyzation, preparations, and application of knowledge (Michaelsen, Knight & Fink, 2002; Michaelsen & Sweet, 2011). According to Michaelsen and Sweet (2011), the effectiveness of team-based interaction in classes as an instructional strategy is based on the fact that it nurtures the development of high levels of group cohesiveness (Figure 3). Further, Michaelsen (2011) also argues that pedagogical approaches that imply team-based collaboration promote high level of cohesiveness amongst team members (Park et al., 2012). This cohesion further enhances the knowledge sharing process by members offering and understanding inputs from others to accomplish a task.

Figure 3

Relationships between Teams, Cohesiveness and Knowledge Sharing



In an academic context, rewards and incentives affect the dynamics of the team and influence the way members share knowledge (Paulus, Horvitz & Shi, 2006). Rewards and incentives in the form of grades and a sense of self-worth offer additional motivations in the approach students take towards achieving their common goal. That approach involves a process of consideration, argumentation, cooperation, problem solving, and engagement with challenges, further leading to knowledge sharing behaviors (Israel & Aiken, 2007). The enabling factors for knowledge sharing in a team-based academic context are described in Table 4 below. The elements that correlate with organizational factors are shown in Figure 4.

Table 4

Factors that Enable Team Based Learning and Knowledge Sharing

Enabling Factors	Description
<i>Interdependence</i>	Scholars have suggested that teamwork is aided when individuals are interdependent on each other and coordinate their tasks and roles to meet team goals (Van den Bossche et al., 2006). Preferences for different types of thinking styles, different personality characteristics and cognitive abilities may influence the behavior of taking up different roles, which leads to effective knowledge sharing (Dechant, Marsick, & Kasl, 1993; Ellis et al., 2003). To promote knowledge sharing in academic or corporate organizations, interdependence seems to lead to <i>participative decision making</i> on the team level and influences the level of interactive behaviors (Van den Bossche et al., 2006).
<i>Cohesion (Social cohesion and Task cohesion)</i>	In teams, researchers state that cohesiveness can increase supportive behaviors and motivation to result in increased team effectiveness, and is itself an outcome of effective team performance and knowledge sharing (Schippers, Den Hartog, Koopman, & Wienk, 2003). Scholars state that in every team, members have a shared culture, vocabulary, values or interests, and a shared understanding of work practices and group norms, which is called social cohesion. This social cohesion enhances effective communication and coordination (Adams et al., 2012; Drach-Zahavy & Somech, 2001; Hinds & Mortensen, 2005). In teamwork, whether in academic contexts or corporate organizations, researchers argue that to have an effective task <i>cohesion</i> , a task should be engaging and challenging, and should require a coordinated effort of the members to complete (Carroll, Rosson, Convertino, & Ganoë, 2006; Decuyper et al., 2010).
<i>Team/Group Potency</i>	Researchers argue that group potency in academic or corporate teams allow team members to work together effectively, building <i>reciprocal relationships, communicating</i> and adjusting their activities as necessary and agreeing collectively that the group will be effective (Andres & Shipps, 2010). Positive team potency is believed to influence members' collective attitudes to share knowledge and perform (Van den Bossche et al., 2006).
<i>Psychological safety</i>	Researchers suggest that knowledge sharing can be improved by ensuring that all members have <i>trust</i> to voice opinions which are then fairly discussed by the team members, and that differences in status are not allowed to constrain knowledge sharing and decision making (Carroll et al., 2006; Decuyper et al., 2010).

Note: Adapted and modified from Van den Bossche et al.'s (2006).

Figure 4

Elements of Team Based Learning in Academic Context that Parallels with Corporate Organizational Context



Note: These elements are re-stated in the Figure 7: Conceptual Framework of Organizational Context Factors and Knowledge Sharing Behaviors.

Organizational Context Factors and Knowledge Sharing

The process of knowledge sharing is about exchanging shared understanding in a context (Goman, 2002). Thus, it is basically a social process, emphasizing that the context in which this process takes place is a dynamic factor (Decuyper et al., 2010). Brown and Duguid (1998) state that knowledge sharing is easier when it is rooted in the context or exercise of the partaking members. Thus, it is important that the owner and the receiver must share an appropriate setting for effective knowledge sharing (Mäkelä & Brewster, 2009). Furthermore, according to Wang and Noe (2010), organizational context supports the team by creating an environment (team

climate) that encourages knowledge sharing, promotes positive leadership, and provides resources to work in the team environment (Raes et al., 2013; Van den Bossche, 2006). It also rewards members for their contribution and provides support for their task and conflict resolution (Van den Bossche et al., 2006). Different stages of teamwork, various involvements, evolving catalysts, and circumstances (Decuyper et al., 2010) may impact the process of team learning and eventually members' knowledge sharing behaviors (Argote & Miron-Spektor, 2011).

Team Climate

Team climate refers to the team's social environment that encourages teams to perform and share knowledge (Xue et al., 2011). Context and associating knowledge are different terms and they both are influenced by each other (Wang & Noe, 2010). We all learn by making sense of our environment. The learning environment encompasses several elements that constitute the basis of effective learning and it is the contextual basis on which the knowledge sharing strategies build upon (Somech & Drach-Zahavy, 2013). A rich and useful climate helps people's learning process by providing appropriate learning guidance and motivation. This reinforces people's actions by giving useful feedback for better approaches to support knowledge sharing behaviors (North & Kumta, 2014). By associating new knowledge with prior knowledge, people make sense of the new constructed knowledge. The associations people make and the knowledge they build upon are greatly influenced by the context they live in.

The social environment or climate supports the knowledge sharing process in teams and thus, necessitates negotiation of new agreed and shared goals on newly constructed knowledge (Janssen & Bodemer, 2013; Van den Bossche et al., 2011). This process happens in a team climate which, according to Xue et al. (2011), is influenced by three conditions: cohesion, trust and innovativeness. The conditions are described below.

Cohesion

Cohesion is the interactive bond that forms among the members of a team (Raes et al., 2013). This bond can be created based on members' feelings of positive contribution, bonding and commitment, and social identification towards the team task. In academic contexts, a strong cohesion within a team leads to mutual coordination and support among members, and builds a strong team bond, which eventually influences positive knowledge sharing behaviors regarding the task (Xue et al., 2011).

Innovativeness

Innovativeness leads team members to work together as a unit to achieve the team goal. A team which is comprised of different members needs interdependence and encouragement to work, share knowledge, and be creative (Van Boxtel et al., 2000). Innovativeness in academic settings promotes creative ideas on the team level and influences the level of constructive interaction for knowledge sharing and learning (Van den Bossche, 2006).

Trust

Trust or collective belief is one of the key factors for knowledge sharing in corporate and academic settings (Alsharo, 2013). Team members need to trust that their team can be effective and will successfully accomplish the given task (Van den Bossche et al., 2006). More specifically, each and every member will trust and believe in their team, which will make the team altogether a common and effective contributor toward the task (Fransen, 2012). Additionally, trust connects the members of the team to their task (Kozlowski & Bell, 2008), making them more engaged and effective in knowledge sharing.

Leadership

Leadership is a collective responsibility of the members of a team (Adams et al., 2012; Schippers et al., 2008). According to Vecchio et al., empowering leadership is a process where members of a team develop self-control, act on their decisions and take charge of their actions (Vecchio, Justin, & Pearce, 2010). This collective team responsibility enables a team to sustain itself in a highly reflexive and competitive environment, in which a single person is not responsible as a leader for team performance and team accountability (Aldrich, 1999). If collective leadership in a team is attained, teamwork manages to bring together skills and abilities of diverse members to share knowledge for excellent team performance (Syer & Connolly, 1996). In an academic environment, members need to make constructive leadership efforts so that they manage, reflect, review, and lead their respective and collective performances (Adams et al., 2012; Akkerman & Bakker, 2011b). Leadership is enhanced by five conditions: lead by example, participative decision making, coaching, informing, and showing concern (Xue et al., 2011). These five conditions are described below.

Lead by Example

Leading by example helps in accommodating differences in perspectives. This accommodation acts as a constructive and potent component in knowledge sharing because they encourage critical and creative thinking, discussion, and debate (Raes et al., 2013; Stewart, Manz, & Sims, 1999). In academic contexts, diverse opinions and views are constructive when team problems are attacked, rather than individuals of the team (Levi, 2013). To handle differences in perspectives, a facilitator is required who can encourage teams to share knowledge by effectively modelling knowledge sharing behaviors (Kozlowski & Bell, 2008; Raes et al., 2013). An effective facilitator keeps the members focused on the task at hand by mediating

discussion regarding the task, setting up goals by members' consensus, clarifying doubts, and acknowledging and praising each and every member's contribution (Syer & Connolly, 1996).

Participative Decision Making

The process of sharing knowledge becomes more operative and dynamic when members collaborate for collective decision making by exchanging ideas, associating individual learning approaches, and discussing and assessing each other's concepts; this system eventually contributes to the overall knowledge sharing process (Janssen & Bodemer, 2013; Koschmann, Hall, & Miyake, 2002). Similarly, in academic contexts participative decision making allows students to engage in team-based processes, such as exchanging ideas, constructing meaning, or asking questions, which eventually change the students' rational knowledge and contributes to more knowledge sharing behaviors (Järvelä & Hadwin, 2013). When students participate in collective decision making, the process facilitates individuals' behavioral approaches (Van Boxtel et al., 2000).

Coaching

Coaching in corporate and academic settings provides members with domain-specific knowledge because teams carry out various tasks that require domain-specific sets of skills. Domain-specific knowledge has been identified as a specific skill required to work in an organization (Albinsson & Arnesson, 2012). Teams are recognized as the source of knowledge sharing because they are composed of members with specific skills, who interact to accomplish a task (Park et al., 2012). A team which brings together members with different skills, knowledge, and experiences in order to solve a problem at times faces problems in accommodating members' differing perspectives and building a shared understanding of the problem at hand (Van den Bossche et al., 2011). The task should be engaging, challenging, and should require

coaching as guidance to coordinate the members efforts toward completion (Fransen, 2012). A task brings different people into an unpredictable context; therefore, coaching can help members to prepare for the task. If the task does not engage the individual members and challenge them to work, then members will feel unmotivated and will not connect with the task or be able to share knowledge (van Woerkom & Croon, 2009).

Informing

Providing an adequate amount of information to team members for their task helps them in discussing the given task in order to build a mutually shared meaning (Turner, 2001). In academic and corporate contexts, the way information is distributed to members determines how knowledge is shared within a team. Thus, a team discusses a specified task by recalling the given information related to that task (Turner, 2001). The recall of information is directly related to the amount of information distributed to the members. Excessive information given at one time hinders the knowledge sharing process by creating excess cognitive load or information load (Van den Bossche et al., 2011; Wheelan, 2010). So, effective knowledge sharing ensues when team members are not overburdened with a high information load (Levi, 2013).

Showing Concern

Actions that show support and acceptance of others contribute a great deal toward knowledge sharing and are widely appreciated as one of the roles of the leader by team members (Xue et al., 2011), especially in academic contexts. When members work together, they become familiar with each other and build a bond of care and concern (Decuyper et al., 2010). This bond helps members to share knowledge, because they feel safe that their opinions will be valued and team members will appreciate their contribution. Also, in critical circumstances, members will care and will show concern for their respective members. It is not necessary to have a defined role

for each member in a team, but accepting and valuing each members' opinions and views is a part of team effectiveness (Decuyper et al., 2010). Listening and compassionate understanding make team members' bonding stronger, in addition to members expressing positive attitudes in their knowledge sharing behaviors (Bresman & Zellmer-Bruhn, 2012).

Rewards and Incentives

According to Davenport and Prusak (1998), knowledge sharing practices in teams are often unusual. Members often times do not share their knowledge, as they believe their knowledge is treasured and should be constrained to them only. However, Bock and Kim (2001) argue individuals have a natural attitude of gathering knowledge from others. Bock and Kim state that this natural attitude is difficult to change. Thus, to promote knowledge sharing, rewards can act as a motivator (Al-Alawi, Al-Marzooqi & Mohammed, 2007; Bock & Kim, 2001; Ipe, 2003). Real and perceived rewards and incentives that are structured to an individual influence the knowledge sharing process (Gupta & Govindarajan, 2000; Ipe, 2003). Rewards should be administered to the team as a whole, as well as to its individual members involved. Rewards and incentives are valuable for the successful team performance and knowledge sharing and therefore help in encouraging members to work collaboratively (Schoor & Bannert, 2011). Rewards and incentives have been supported by two constructs: extrinsic rewards and intrinsic rewards (Bock & Kim, 2001; Wang & Noe, 2010).

Extrinsic Rewards (Grade)

College students have distinctive ways of learning and mastering skills. Along with mastering skills, they want to obtain good grades in order to share knowledge (Lin, McKeachie, & Kim, 2001). Grades facilitate conditions for knowledge sharing because even though an individual might have a high intention to share knowledge, behavior might not occur if certain

conditions are not present for a particular task (Bock & Kim, 2001). According to Pressley, Van Etten, Yokoi, Freebern, and Van Meter's (1998) study, every student they interviewed reported that getting a good grade determines their motivation to share knowledge. Therefore, grades as reward and incentive may play complementary roles in motivating students to share knowledge (Lin et al., 2001).

Intrinsic Rewards (Sense of self-worth)

Gupta and Govindaranjan (2000) argue that external rewards and incentives are important for those who perceive them as a requisite to knowledge sharing. For some individuals tangible rewards alone are not satisfactory to motivate them to share knowledge (McDermott & O'Dell, 2001). Individuals with work experiences and pre-existing knowledge participate in knowledge sharing behaviors because of the intrinsic reward that they get from these behaviors: a sense of self-worth (Tissen, Andriessen, & Deprez, 1998; Wang & Noe, 2010). Harackiewicz, Barron, and Elliot's (1998) study on "Rethinking achievement goals" states that students share knowledge and perform based on their internal interest and urge to learn new things. In the knowledge sharing process, members are expected to share knowledge in order to collaborate with other members to solve the problem (Fransen et al., 2013). Sense of self-worth develops in members with their length of experience, which ultimately helps them to realize that extrinsic rewards are not the only factor to determine their performance. They need to feel intrinsically motivated to share knowledge and help other members to perform (Lin et al., 2001).

Task Structure

The task structure determines the complexity of the task and how that is communicated to team members to promote knowledge sharing behaviors (van Woerkom & Croon, 2009). In academic contexts, the task structure regulates how members will share knowledge in their team

(van Woerkom & Croon, 2009). The task structure defines how members will communicate together (Boon, Raes, Kyndt, & Dochy, 2013), how members will build reciprocal relationships to mutually perform and share knowledge (Fransen, Kirschner, & Erkens, 2011), and how members collectively believe that the objectives are fair, clear, and achievable for the task (van Offenbeek, 2001). Thus, the members of a team share knowledge when they are clear about the team objectives, have vigorous reciprocal relationships with each other, and have a strong clear communication channel (Decuyper et al., 2010). Task structure is enhanced by three conditions: fairness of objectives, reciprocal relationships, and communication (Wang & Noe, 2010).

Fairness of Objectives

The task objectives keep members together and maintain the cohesiveness of the team, even in critical circumstances. Objectives also support teams' communication networks and regulate the relationship between members. An organizational and educational context shares a set of values, culture, attitudes, and notions (Lee & Cho, 2011), which are important to foster and support knowledge sharing practices for a team to share knowledge and perform (Andres & Akan, 2010; Kirschner & Erkens, 2013). These specific structures at times are unsuccessful in influencing team members to adopt a shared coherent objective and to value the organization as a whole (Zhu, 2012). This is due to the fact that unclearly defined goals for the task can make it difficult for the members to set intermediate objectives and to determine what kind of information is going to be useful for the task (Lee & Cho, 2011). In an academic context, this is a critical issue that teachers confront in the classroom every day (Andres & Akan, 2010; Lee & Cho, 2011; Michaelsen & Sweet, 2011). Thus, in order to share knowledge, students need to have clear objectives which should be designed to meet the level of the students' learning capacities. In order to achieve those objectives, team members decide and communicate how

each and every member contributes to teamwork (Michaelsen & Sweet, 2011). After verifying the fairness of the objectives, team members organize themselves to accomplish those goals (Hung, 2013).

Reciprocal Relationships

A strong reciprocal relationship among team members, in both academic and corporate contexts, promotes the knowledge sharing behaviors necessary to understand and analyze differing arguments and opinions of members and to encourage innovativeness (Buchs, Gilles, Dutrévis, & Butera, 2011). Reciprocal relationships enhance group potency by accommodating differing perspectives.

Communication

One of the strongest ways to influence interrelation is by improving communication within a team (Hung, 2013), which eventually encourages innovativeness and knowledge sharing behaviors among members. This positive communication promotes constructive conflict and co-construction of new knowledge for effective learning and knowledge sharing (Van Boxtel et al., 2000). In academic contexts, the communication process is one of the fundamental activities of a team because the manner in which a team processes knowledge effects the team communication network and eventually the knowledge sharing behaviors (Akkerman & Bakker, 2011a). The team's communication network defines its linkage within its members, within its organization, and with external organizations across the boundaries of the niche organization (Akkerman & Bakker, 2011a).

Task support

In some studies, task support refers to the aid provided by the administrative members of the team to promote a positive perception of knowledge sharing (Wang & Noe, 2010). However,

those factors are included as part of task structure in this study. In the current research, task support refers to the willingness of team members to support each other. Teamwork in a shared environment supports members' knowledge sharing behaviors. Task activities and learning processes are embedded through their interactive relationships in this supportive environment (Albinsson & Arnesson, 2012). The task support improves teams' capabilities in several ways including: ability for reflection, as members enhance personal and team competencies; teams' willingness to work with diverse members across boundaries; communication and interaction process; and members' efforts to achieve teams' vision. Collectively these supporting factors contribute to the willingness of the team members to participate in effective knowledge sharing behaviors (Syer & Connolly, 1996; Van den Bossche, 2006). Task support consists of one construct: willingness to support each other (Wang & Noe, 2010).

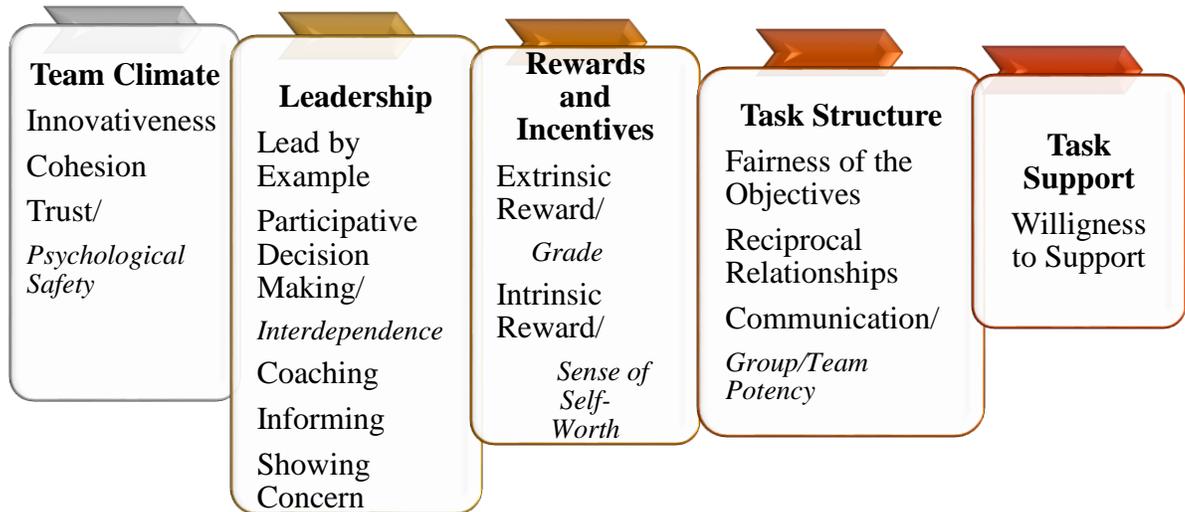
Willingness to Support

Positive task support has a strong impact on team members willingness to support knowledge and performance (Ludvigsen et al., 2010). In academic contexts, teams are sensitive to task related support and resources because a supportive culture enables team communication, interaction, and collaborative efforts to share knowledge even in a highly reflexive task environment (Akkerman & Bakker, 2011a; Lenz & Machado, 2008). Teams are made to feel responsible for their actions and want to improve their efforts for their tasks. They reflect, evaluate, and assess their actions to make better changes (Sacramento et al., 2006). A supportive task culture is responsible for the willingness of the members to share knowledge when teams are engaged in a very competitive task (Senge, 2013; Wiedow & Konradt, 2011).

Figure 5 below presents all the organizational context factors and their composite elements.

Figure 5

The Organizational Context Factors and its Composite Elements



Note: Items in italics indicates items refers to team-based learning in academic contexts.

Conceptual Framework

This section conceptually summarizes the elements that have been studied and the elements that need to be further analyzed in regard to organizational context factors and their impact on an individual's knowledge sharing attitude and behavior in academic project or work teams. The conceptual framework is based on the literature review presented in the previous sections, which dealt with defining teams, team learning, and enabling factors of knowledge sharing in organizational and academic contexts. Furthermore, this literature review also discussed the knowledge sharing in project or work teams, knowledge sharing behaviors, the relationships between organizational context factors and knowledge sharing, and the

relationships between attitude and knowledge sharing in organizational and academic contexts. Research studies within the organizational context were given priority in this literature review.

The review of literature indicates that supportive contextual factors facilitate members' attitudes toward effective knowledge sharing behaviors. The elements of organizational context factors discussed in the literature review (Figure 5) are team climate, leadership, rewards and incentives, task structure, and task support (Wang & Noe, 2010; Xue et al., 2011). These factors are based on Wang and Noe's (2010) work. According to Wang and Noe, several previous organizational empirical studies have found a significant impact of these elements of organizational context factors on knowledge sharing behaviors in teams, as discussed in the organizational context factors and knowledge sharing section above (Annadatha, 2012; Earl, 2001; Evans, 2012; Gupta & Govindarajan, 2000; Ipe, 2003; Kozlowski & Ilgen, 2006; Nonaka, 1994; Rynes, Bartunek, & Daft, 2001; Srivastava et al., 2006). Context impacts and defines a team's knowledge sharing procedures (Al-Alawi et al., 2007; Bresman & Zellmer-Bruhn, 2012; Wang & Noe, 2010). Teams perform better and are involved in effective knowledge sharing practices when they have a supportive climate in which to perform, leaders to inspire their efforts, rewards and incentives to encourage their contributions, and clear and specific task support and structure to facilitate their activities (Al-Alawi et al., 2007; Alavi & Leidner, 2001; Noe, Clarke, & Klein, 2013; Slof, Erkens, Kirschner, Janssen, & Jaspers, 2012; Wang & Noe, 2010; Xue et al., 2011). Both in academic contexts and corporate organizations, clear and specific task structure influences individuals to share knowledge (Ipe, 2003; Michaelsen & Sweet, 2011; Tissen et al., 1998). It has also been shown in previous studies that an organized task support impacts knowledge sharing practices and behaviors (Alsharo, 2013; Decuyper et al., 2010; Wang & Noe, 2010).

Another important feature, which has been shown to influence knowledge sharing behavior is attitude. Attitude is being stated by Fishbein and Ajzen (1975) as an individual's intention to perform a behavior. The above literature review recognized many studies which reported a strong relationship between attitude and actual knowledge sharing behavior (Chen & Chen, 2009). All those studies indicated that if an individual has a strong attitude to share knowledge, then that individual will readily perform knowledge sharing activities (Bock et al., 2005; Chen, 2011; Sheppard et al., 1988).

Additionally, Evans's (2012) study has acknowledged three behavioral components as crucial for effective knowledge sharing behaviors in teams (discussed in knowledge sharing behaviors in project teams section). First, the knowledge owner must be willing to share their own knowledge (i.e. willingness to share knowledge). Second, the knowledge receiver must be willing to recognize, receive, and use the shared knowledge (i.e. willingness to use knowledge). Finally, the knowledge receivers must recognize the shared knowledge as being useful to their individual tasks, projects, or the organization as a whole (i.e. useful knowledge). These three conditions collectively help to understand individuals' knowledge sharing behavioral patterns.

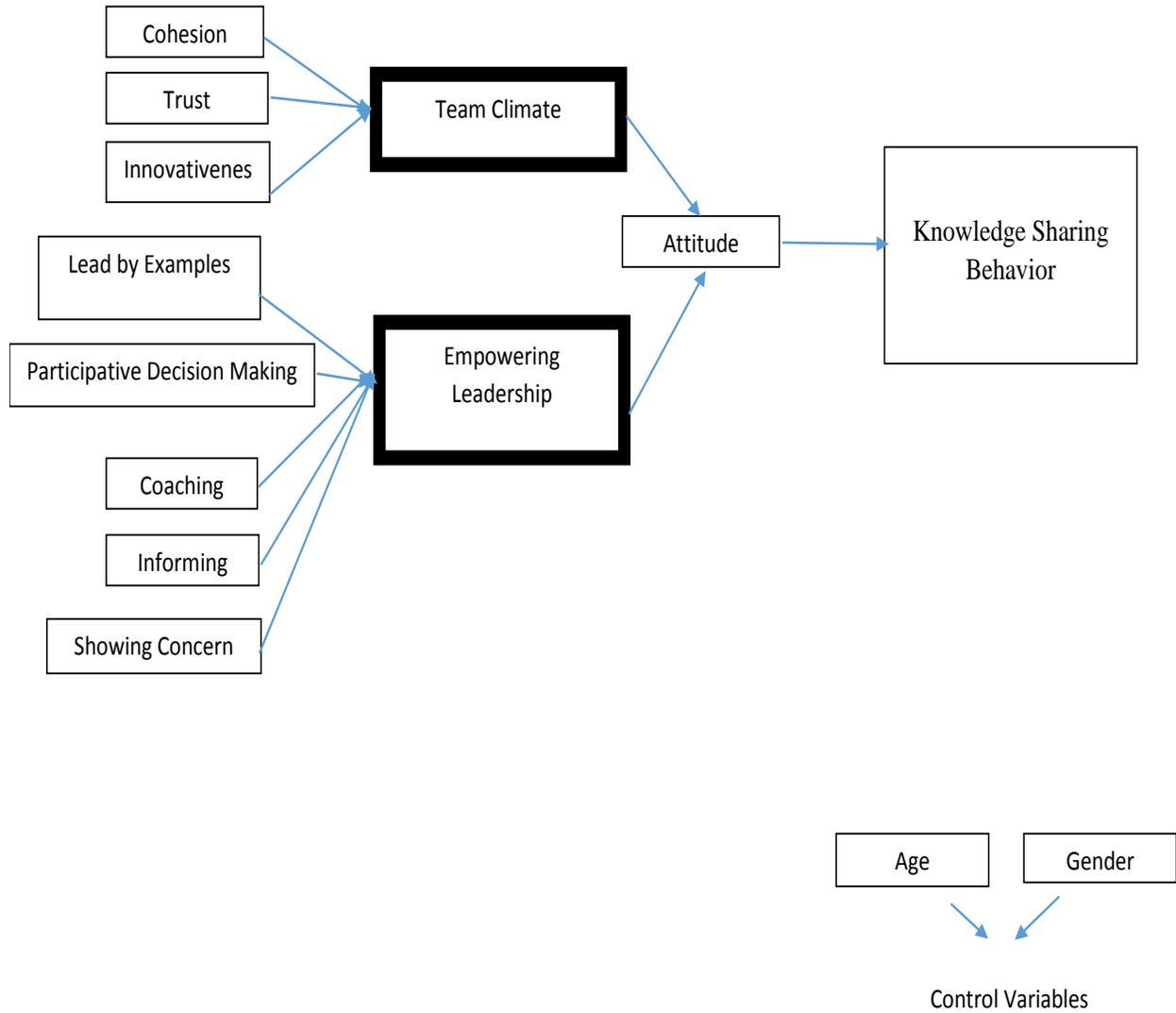
Most of the studies analyzed knowledge sharing behaviors in a corporate organizational context, where the importance of the above mentioned components have been studied in detail. There were very minimum reported studies that have analyzed organizational context factors and their impact on knowledge sharing behaviors in student teams.

To bridge this gap, in the current study, the researcher will further the Xue et al. (2011) research on team climate, empowering leadership, and its impact on knowledge sharing behaviors. These researchers have examined the impact of the two factors of team climate and leadership with United States (US) college student (undergraduate and graduate) teams enrolled

in business courses that require team projects (Xue et al., 2011). According to the researchers, in each team, a team leader was chosen to act as a coordinator between the instructor and team members. Team leaders were responsible for reporting their team members' activities and involvement and workload allocation within teams. Peer evaluation was used to assess each member's performance on the team projects. To simulate the real work environment, team leaders' evaluations were given a higher weight when aggregating all of the peer evaluation scores. Xue et al. used a survey instrument that was based on prior knowledge management studies to collect data from 434 college students. The researchers used partial least squares (PLS) to validate the construct's measurement and test the hypotheses. For the reliability of the measurement, they used Cronbach's alpha and composite reliability scores. In their results, Xue et al. (2011) found that team climate and empowering leadership are complementary to each other. The combination of these two factors cultivates individuals' attitude towards knowledge sharing and leads to more knowledge sharing behavior. Figure 6 is the framework Xue et al. (2011) used in their study.

Figure 6

Xue et al. (2011), Conceptual Framework of Team Climate and Empowering Leadership on Knowledge Sharing Behaviors



Based on their results, the researchers stated that both team climate and empowering leadership have two ways to influence knowledge sharing; along with indirect influence through attitude, these measured factors also directly impact knowledge sharing behaviors. This suggests that the effects of team climate and corresponding leadership are both internal and external. Internally, they influence individuals' personal attitude, which in turn increases knowledge sharing. Externally, a supportive social environment in the form of team climate or conditions from empowering leadership facilitates knowledge sharing.

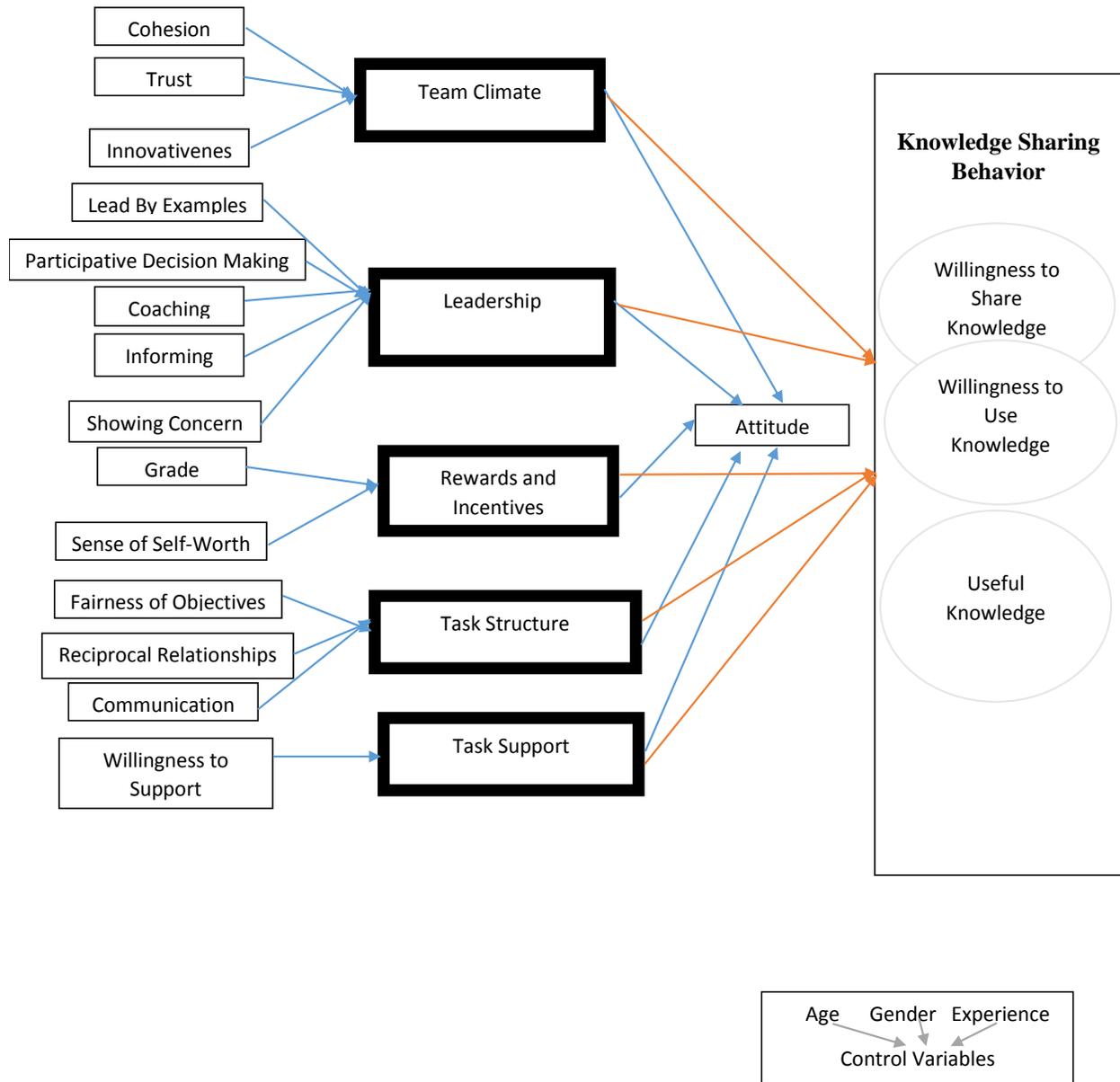
There are two important factors that Xue et al. have not studied. First, they have not analyzed knowledge sharing behaviors in respect to the manner in which knowledge is shared, perceived, and used in teams. Second, they also have not studied all the organizational context factors together (climate, leadership, rewards and incentives, task structure, and task support) which, as mentioned by Wang and Noe (2010), are important for effective knowledge sharing behaviors. The review of literature indicates that knowledge sharing is the source of change in members' knowledge because it helps in knowing, learning, constructing, relating, and appraising new and unknown things (Alsharo, 2013; Evans, 2012; Wang & Noe, 2010; Wu et al., 2012; Xue et al., 2011).

The current study examines the impact of all the elements of organizational context factors within senior and graduate students enrolled in business courses. Although the first two organizational factors (i.e. team climate and leadership) have already been studied by Xue et al. (2011), each of the organizational context factors (Figure 5 above) have been found in previous studies to influence knowledge sharing behaviors. Wang and Noe (2010) mention that task support assist in members' perceptions to share knowledge. Therefore, in the current research, the construct for task support is being considered as the outcome of positive support: willingness

to support. In this study, along with these relationships, the conceptual framework will be considering the impact of these factors on attitudes toward knowledge sharing. As mentioned earlier, previous studies have found a direct influence of attitude on knowledge sharing (Kwok & Gao, 2005; Mäkelä & Brewster, 2009) and Xue et al. (2011) further suggest a relationship exists and thus the team related factors were measured on attitude. Each of the factors reviewed in the current study and the potential relationships between them are represented in the new conceptual framework (see Figure 7), which is being used in the current research.

Figure 7

Conceptual Framework of Organizational Context Factors and Knowledge Sharing Behaviors



Chapter Three

Research Design and Methodology

This chapter describes the research design and methodology employed for this study. The chapter begins with a description of the purpose of the study and the associated hypotheses.

Next, the chapter describes how the participants of the study were selected, the characteristics of the participants, the procedures employed and materials used to study the selected participants, the variables studied and the research design. The chapter concludes with the data collection and data analysis procedures.

Purpose of the study

The purpose of this research study was to explore *what organizational context factors influences the self-reported knowledge sharing behaviors and attitudes toward knowledge sharing of graduate students who are enrolled in business courses that require project teams.*

According to Wang and Noe (2010), organizational context is one of the five areas that impact knowledge sharing in teams. The other areas include interpersonal and team characteristics, cultural characteristics, individual characteristics, and motivational factors. Wang and Noe (2010) have also further divided the organizational context element into culture and climate, leadership, rewards and incentives, structure, and support.

This research is modeled after Xue et al. (2011) study of the impact of the organizational context factors of climate and leadership on individual's self-reported knowledge sharing behaviors and attitudes toward knowledge sharing, when working in student project teams (undergraduate and graduate) in university courses. The current research investigated three additional organizational context factors in an academic setting beyond those analyzed in the Xue et al.'s study, as suggested by Wang and Noe (2010): rewards and incentives, task structure,

and task support. For the purpose of this academic setting, the researcher measured students' perceptions of how team climate, leadership, rewards and incentives, task structure and task support as mentioned by Xue et al. (2011), impacted their self-reported knowledge sharing behaviors and attitudes during teamwork, when enrolled in a graduate course at a College of Business in a large research university. In doing so, the study first examined the positive and negative relationships between the five factors with students' self-reported knowledge sharing behaviors and attitudes towards knowledge sharing using correlation analysis. Then the study used multiple regression analysis to examine the significant influence of all factors on students' self-reported knowledge sharing behaviors, and also, on each separate component of knowledge sharing behaviors.

Research Hypotheses

The predominant research question for this study is: what organizational context factors influences the self-reported knowledge sharing behaviors and attitudes towards knowledge sharing of individuals who are part of an academic project team?

Based on the literature review, the relationships between independent and dependent variables were hypothesized. A summary of the hypotheses is shown in Table 5.

Table 5: *Hypotheses of the Study*

- H1. Team climate has a positive influence on knowledge sharing behavior.
- H2. Team climate has a positive influence on attitudes toward knowledge sharing.
- H3. Leadership has a positive influence on knowledge sharing behavior.
- H4. Leadership has a positive influence on attitudes toward knowledge sharing.
- H5. Rewards and incentives has a positive influence on knowledge sharing behavior.

H6. Rewards and incentives has a positive influence on attitudes toward knowledge sharing.

H7. Task structure has a positive influence on knowledge sharing behavior.

H8. Task structure has a positive influence on attitudes toward knowledge sharing.

H9. Task support has a positive influence on knowledge sharing behavior.

H10. Task support has a positive influence on attitudes toward knowledge sharing.

Description of the Participants

Team-based learning for knowledge sharing is fairly common in courses within a university. In general, colleges of business rely greatly on team-based activities to solve complex problems in their course work (Bresman & Zellmer-Bruhn, 2012; Michaelsen & Sweet, 2011).

Therefore, the participants for this study were drawn from the senior undergraduate and graduate students in the College of Business at a large research university. These senior and graduate students were enrolled in a graduate course in their respective departments, which required them to do a significant amount of team activities. A purposive sampling approach (Guarte & Barrios, 2006) was undertaken to select the target population. According to this sampling technique, the researcher can specify the characteristics of the target population based on the need of the study, then, select the participants who match those characteristics (Guarte & Barrios, 2006). This approach was appropriate for this study for three reasons: first, the accessibility of the participants in an academic setting; second, the researcher had a certain amount of assurance that the participants adequately represented the target population of little to no team work experience; and last, the course work involved team projects in their curriculum.

Thus, the following steps were applied to select the participants for this study: 1) the researcher selected the graduate courses offered in the fall 2014 semester that involve students in

project works from the graduate school time-table; 2) the professors of those courses were contacted; and 3) their permission was sought to allow their students to participate. Once, the professors granted their permission to survey their students, an email survey was sent to those students to obtain consent for the study.

As mentioned earlier, these students were selected to participate in the study because they represented a population which gets involved in teamwork as part of their course requirements. The team formation was not the focus of this study, hence the researcher had no control on the target population team formation. To get a significant response rate the researcher targeted a specific sample size from the graduate courses of various departments in the College of Business. Data from all the undergraduate senior and graduate students, who agreed to participate in the study and are enrolled in the graduate courses were used.

For this study 90 business students from the marketing and management department were invited to take the survey. Out of the total population of 90, 86 responded to the survey. Of those that responded, 63 were management students and 23 were marketing students. Out of the entire 86 respondents, 56 provided answers to the entire survey.

Materials: Instruments

In this study, data were collected using a survey that was sectioned into four parts. The first section asked participants about their demographic information, which was comprised of age, gender and experience with team works. The second section addressed organizational context factors, asking participants to respond to questions on team climate, leadership, rewards and incentives, task structure, and task support. The third section asked participants to respond to questions related to their attitudes toward sharing knowledge, and the final section was

comprised of questions about their actual knowledge sharing behaviors. These sections are described below.

The five subscale variables were adapted from the studies of Wang and Noe (2010) and Xue et al.(2011) that included team climate, leadership, rewards and incentives, task structure and task support. There were a total of 70 items on the instrument. For this study, the researcher assembled an instrument from components of five published studies of Alsharo (2013); Bock et al. (2005); Evans (2012); Fulbright (2012); and Xue et al. (2011). The researcher adapted certain items to focus the academic context. The wording of some items was rephrased for this study. The reason behind this approach was to test and measure established variables in a specific context.

Demographic Information

The participants' prior experiences in project teams ranged from having a good amount of experience to those with little to no team work experience. The range of diversity (age, gender and experience) as anticipated was not significant in this population. That is, gender, age and experience variations were evenly distributed in this population.

Of the 56 who responded to the entire survey Table 6 shows that 34 (60.7%) were male and 22 (39.3%) were female, with 52 students (92.9%) within the age range of 19-24 (Table 7). The output of Table 8 shows that 41.4 percent reported having more experiences working in a team project. For further information about the demographics refer to the survey in Appendix A.

Table 6

Description of the Variables Based on Gender

Gender	Frequency	Valid Percent
Male (0)	34	60.7*
Female	22	39.3*
Total	56	100.0

*Note: *Significant Figures*

Table 7

Description of the Variables Based on Age Range

Age Range	Frequency	Valid Percent
19-24	52	92.9*
25-29	2	3.6
30-34	1	1.8
35-39	1	1.8
Total	56	100.0

*Note: * Significant Figures*

Table 8

Description of the Variables Based on Experiences

Number of times you have worked on a project team	Frequency	Valid Percent
1-2	2	3.6
3-4	18	32.1
5-6	13	23.2
7 an above	23	41.1*
Total	56	100.0

*Note: * Significant Figures*

Reliability and Validity

The assembled instrument was first pilot-tested with 20 senior and graduate students in a College of Business to measure construct validity before being used in the actual study. The validity of the instrument used in this study is predominantly reliant upon hypotheses validity. In the description of the instruments below, the Cronbach alpha is stated for each factor and the alpha coefficient of each factor is more than the minimally acceptable range of 0.65-0.70 (Cohen, 1992; Krosnick, 1999; Nunnally, 1978). To the best of the researcher's knowledge, this approach was an appropriate method to meet the validity and reliability of these statistical measures.

Organizational Factors (Independent Variables)

Students’ perceptions of organizational context factors were measured by forty-nine (49) items. All the items were measured on a five-point scale, where 1: Strongly disagree, 5: Strongly agree in the survey.

Team Climate

Team climate was modeled as a second order formative construct consisting of three first order reflective constructs: cohesion, trust, and innovation. Cohesion was measured using three items adapted from Xue et al.’s (2011) study. Innovativeness was measured by two items, which were adapted from the same study. Trust was also measured using three items adapted from Xue et al.’s (2011) study. In this study, the Cronbach alpha of team climate is .98. A summary of the survey questions of each variable is described below in Table 9.

Table 9

Description of the Team Climate Survey Questions

Independent Variables	Questions
Team Climate	
Innovativeness	1. My team encourages suggesting ideas for new opportunities. 2. My team encourages finding new methods to perform a task.
Cohesion	1. I feel I am really a part of my team. 2. If I had a chance to do the same work again in a team, I would rather stay in the same team. 3. If I had a chance to do the same work again in a team, I would rather join another team (revised).
Trust	1. We trust one another a lot in my team. 2. I know I can count on the other team members. 3. I trust all of the other team members.

Leadership

Leadership was modeled as a second order reflective construct comprised of five first order reflective constructs: lead by example, participative decision making, coaching, informing, and showing concern. The measurement for their constructs was adapted from Xue et al.'s study. Lead by example, participative decision making, informing, and showing concern were measured by four items each, which were adapted from the Xue et al.'s (2011) study. Coaching was measured by three items, which was also adapted from Xue et al.'s (2011) study. In this study, the Cronbach alpha of leadership is .98. A list of the variables and associated questions are presented in Table 10.

Table 10

Description of the Leadership Survey Questions

Independent Variables Leadership	Questions
Lead by Example	<ol style="list-style-type: none"> 1. Each team member sets high standards for performance by his/her own behavior. 2. Each team member works as hard as he/she can. 3. Each team member takes initiative and puts ideas on the table. 4. Each team member sets a good example by the way he/she behaves.
Participative Decision Making	<ol style="list-style-type: none"> 1. Leaders encourage team members to express ideas/suggestions. 2. Each team member listens to team's ideas and suggestions. 3. Every team member gives all team members a chance to voice their opinions. 4. The team leader manages the flow of the discussion constructively.
Coaching	<ol style="list-style-type: none"> 1. Team members suggest ways to improve my team's performance. 2. Collectively members encourage each other to solve problems together. 3. Team members are encouraged to collaborate and exchange information with one another.
Informing	<ol style="list-style-type: none"> 1. A specific team member usually takes the initiative to explain instructor decisions/comments. 2. A specific team member usually explains course/assignment-related materials. 3. A specific team member usually explains rules and expectations to my team. 4. A specific team member usually explains his/her decisions and actions to my team.
Showing Concern	<ol style="list-style-type: none"> 1. Each team member cares about the other team members' personal problems. 2. Each team member shows concern for the other team members' well-being. 3. Each team member treats the other team members as equals. 4. Team members take the time to discuss the other team members' concerns good-naturedly.

Rewards and Incentives

Rewards and incentives is stated as the second order reflective construct, which was comprised of two first order reflective constructs: grade as extrinsic reward, and sense of self-worth as intrinsic reward. The survey items were adapted from Fulbright’s (2012) study on effect of motivational text messages in online learning and Bock et al.’s (2005) study on behavioral intention formation in knowledge sharing through examining the roles of extrinsic motivators, social-psychological forces, and organizational climate. In this survey the researcher measured grade with two items where participants were asked to rate their perception of how fairly they were graded and how much they value the grades they receive. The last construct, sense of self-worth, was measured by four items, which attempted to know how an individual’s performance motivates them. In this study, the Cronbach alpha of rewards and incentives is .95. The list of the questions is arranged in Table 11.

Table 11

Description of the Rewards and Incentives Survey Questions

Independent Variables Rewards and Incentives	Questions
Grade (Extrinsic Reward)	<ol style="list-style-type: none"> 1. I believe I will receive an excellent grade in this class. 2. I value my grades because that determines my input in the team work.
Sense of self- worth (Intrinsic Reward)	<ol style="list-style-type: none"> 1. My knowledge sharing helped other members in the team to solve problems. 2. My knowledge sharing improved work processes in the team. 3. My knowledge sharing contributed to collaboration in the team works. 4. My knowledge sharing helped the team to achieve its objectives.

Task Structure

Task structure was measured with three first order constructs. These included: fairness to perform, clear communications and opportunities for reciprocal relationships. Fairness was measured by three items and anticipated reciprocal relationships was measured by five items. Communication was measured by four items, where the participants evaluated their self-assurance on satisfying themselves by understanding structure of the task. The survey items were adapted from Bock et al.'s (2005) study. In this study, the Cronbach alpha of task structure is .91. The list of the variables, and its associated questions are presented in Table 12.

Table 12

Description of the Task Structure Survey Questions

Independent Variables Task Structure	Questions
Fairness of Objectives	<ol style="list-style-type: none"> 1. The objectives given to me were reasonable. 2. The objectives given to the team were achievable. 3. The course was designed in a way which gave fair and equal opportunity to perform as an individual member and as a team.
Reciprocal Relationships	<ol style="list-style-type: none"> 1. The structure of the task strengthened the knowledge sharing behaviors between team members. 2. The structure of the task offered opportunities to get well-acquainted with other members of the team. 3. The structure of the task was flexible in expanding scope of the members. 4. The structure of the task encouraged smooth cooperation within members. 5. The structure of the task encouraged constructive conflict during teamwork.

- Communication
1. I am certain I understood the most difficult material presented in the readings for this course.
 2. I am confident I understood the basic concepts taught in this course.
 3. I am confident I understood the most complex material presented by the instructor in this course.
 4. The electronic methods we used to communicate with one another were effective.
-

Task Support

Task related support was measured by one first order construct: willingness to support each other. Willingness to support was measured by five items which were adapted from the Alsharo (2013) study on knowledge sharing in virtual teams: the impact on trust, collaboration, and team effectiveness. In this study, the Cronbach alpha of task support is .95. The description of the questions is organized in Table 13 below.

Table 13

Description of the Task Support Survey Questions

Independent Variables Task Support	Questions
Willingness to Support	<ol style="list-style-type: none"> 1. I only share knowledge with my team members when am I asked to. 2. I am more likely to share knowledge when I like the team I am working with. 3. I willingly interact and exchange knowledge with other members of different teams even when not mandated by the course curriculum. 4. I am less likely to share knowledge with other members when I am forced to do so. 5. Agreeing on a common ground helps me to share knowledge and exchange ideas.

Attitudes toward Knowledge Sharing (Dependent Variable)

In this study, the researcher replicated Xue et al.’s (2011) procedure of investigating the association between context factors and individuals’ attitudes towards knowledge sharing behavior. According to Xue et al. (2011), individuals’ positive attitudes towards knowledge sharing will help them to share knowledge with other members. That is, there is a significant relationship between how certain context factors influences attitudes towards knowledge sharing and eventually towards behavior (Sheeran, 2002; Venkatesh et al., 2008; Xue et al., 2011). Therefore, attitude was measure by five items, which were adapted from Bock et al.’s (2005) study. In this study, the Cronbach alpha of attitude is .91. The list of the survey items is outlined in Table 14 below. All the items were measured on a five-point scale, where 1: Strongly disagree, 5: Strongly agree.

Table 14

Description of the Attitude Survey Questions

Dependent Variables	Questions
Attitude	1. My knowledge sharing with team members was effective. 2. My knowledge sharing with team members was not effective (reverse). 3. My knowledge sharing with team members was an enjoyable experience. 4. My knowledge sharing with team members was valuable to me. 5. My knowledge sharing with team members helped me to learn new interactive strategies.

Self-Reported Knowledge Sharing Behaviors (Dependent Variable)

To understand self- reported knowledge sharing behaviors of students, three knowledge sharing components were examined in the survey. Similar to the components mentioned in the research of Evans (2012), the components are: the knowledge source must be *willing to share* the

knowledge they possess; the knowledge receiver must be *willing to receive* and use the knowledge that is shared; and the knowledge receiver must *perceive the knowledge shared as being useful* to their individual work or task. It is important to mention that these three conditions are stated as knowledge sharing behaviors, but these do not represent the actual behaviors of the individuals in project teams. Instead, these are self-reported signs of behavioral actions (willingness or intentions) and consequences of post behavioral actions (apparent usefulness) (Evans, 2012).

It was anticipated that this method was suitable for the understanding of knowledge sharing behaviors. The actual knowledge sharing behaviors of individuals are difficult to measure because there are no practical ways to study them. These kind of criteria have often been used in studies which measure intentions to engage in behavioral actions in certain conditions (for example, in the technology acceptance model [TAM], and interpersonal trust measures) (Evans, 2012). The Cronbach alpha of composite knowledge sharing behavior in this study is .90. The behavioral survey items for this study are described below.

Willingness to Share Knowledge and Willingness to Use Knowledge

In this study, willingness to share and willingness to use knowledge was measured by 10 items, which were adapted from Evans's (2012) study. The table below is similar to Evans's (2012) table, because the factors of knowledge sharing behavior that Evans studied are relevant to this research. Evans used this table to measure individuals' intention to perform a behavior in teams working in an organization. In this study, these items were used to measure students' intentions to perform a behavior in an academic setting. The Cronbach alpha of willingness to share is .88, and willingness to use is .85. The table 15 below describes the items in detail. All

willingness to share knowledge and willingness to use knowledge statements were measured on a five-point scale, where 1: Strongly disagree, 5: Strongly agree.

Table 15

Description of the Survey Questions for Willingness to Share and Use Knowledge

Factors	Author(s)	Author's Original Items	**Adapted and Used in Evans's Study
Willingness to share explicit organizational knowledge	Holste (2003); adapted from Choo (2000)	I would take the initiative to provide this individual with tools I have developed in connection with my work that I believe would be useful to him/her.	I would take the initiative to provide individuals of my team with useful materials I have developed (e.g. models, memos, notes, archives).
Willingness to use explicit organizational knowledge	Holste (2003); adapted from Choo (2000) and Haldin-Herrgard (2000)	I would eagerly receive and use tools developed by this person, if relevant to my work.	I would eagerly receive and use materials created by individuals of my team (e.g. models, memos, notes, archives), if relevant to the project.
Willingness to share tacit organizational knowledge	Holste (2003), adapted from Choo (2000), Clark & Rollo (2001), Davenport & Grover (2001); Scott (2000)	If requested to do so, I would allow this individual to spend significant time observing and collaborating with me in order for him/her to better understand and learn from my work.	I would allow individuals from my team to spend significant time observing me in order for them to understand and learn from my work.
Willingness to share tacit organizational knowledge	Holste (2003); adapted from Haldin-Herrgard (200), Wong & Radcliffe (200)	I would willingly share with this person rules of thumb, tricks of the trade, and other insights into the work of my office and that of the organization I have learned.	I would willingly share with members of my team rules of thumb or tricks of dealing with a task or project that I have learned.

table continued

Impact of Organizational Context Factors on Individuals

Willingness to use tacit organizational knowledge	Holste (2003); adapted from Choo (2000); Clarke & Rollo (2001); Davenport & Grover (2001); Scott (2000)	If relevant to my work, I would welcome the opportunity to spend significant time observing and collaborating with this individual in order for me to better understand and learn from his/her work.	If needed, I would welcome the opportunity to spend significant time observing and collaborating with members of my team and others, in order for me to better understand and learn from their work.
Willingness to use tacit organizational knowledge	Holste (2003); adapted from Haldin-Herrgard (2000); Wong & Radcliffe (2000)	If relevant to my work, I would welcome and use any rules of thumb, tricks of trade, and other insights he/she has learned.	I would welcome and use any rules of thumb, tricks of the projects/tasks, and other insights individuals of the team have learned from their past experiences.
Willingness to use tacit organizational knowledge	Holste (2003); adapted from Epstein (2000)	I would eagerly receive and consider any new ideas this individual might have.	I would eagerly receive and consider any new ideas members of my team might have.
Willingness to use tacit organizational knowledge	Holste (2003); adapted from Epstein (2000)	I would tend to believe organizational rumors shared by this individual and use such knowledge as appropriate.	I would tend to believe information shared by members of my team and would use such knowledge as appropriate.

Note: This table is from Evans (2012) study. ** Items from Evans' (2012) study used with permission in the current study.

Usefulness of Knowledge

According to Wang and Noe (2010), when individuals interact, there is always some kind of impact that happens during that exchange, on the individuals as well as on the task at hand. To measure perceptions of the usefulness of the shared knowledge, four items were used, which were adapted from Evans's (2012) study. The Cronbach alpha of usefulness of knowledge in this study is .91. The items used in measuring usefulness of knowledge were rated on a five-point scale, where 1: Strongly disagree, 5: Strongly agree. The description of the items is stated in Table 16 below.

Table 16

Survey Questions of Usefulness of Knowledge

*Factors	*Author(s)	*Author's Item	**Adapted Item for this Study
Perceived receipt of Useful Knowledge	Levin and Cross (2004); adapted from Keller (1994).	The information/advice I received from this person made (or is likely to make) the following contribution to this project's quality.	The information I received from each member of my team made a significant contribution to this project's quality.
Perceived receipt of Useful Knowledge	Levin and Cross (2004); adapted from Keller (1994).	The information/advice I received from this person made (or is likely to make) the following contribution to this project team's overall performance.	The information I received from each of the members of my team contributed to the project's overall performance.
Perceived receipt of Useful Knowledge	Levin and Cross (2004); adapted from Keller (1994).	The information/advice I received from this person made (or is likely to make) the following contribution to this project's coming in on budget or closer to coming in on budget.	The information I received from each member of my team made it easier to complete the portion of the task I am responsible for.
Perceived receipt of Useful Knowledge	Levin and Cross (2004); adapted from Keller (1994).	The information/advice I received from this person made (or is likely to make) the following contribution to my being able to spend less time on this project.	The information I received from the members of my team supported my individual performance on the task.

Note: * Items from Evans' (2012) study adapted with permission for the current study.

Data Collection Procedure

At first, the researcher looked at the required courses for senior and graduate students in the Business School course curriculum site. Among those courses offered in the Fall 2014 semester, the researcher looked at the graduate school catalog of the business courses that are offered to review their course descriptions. The courses which provided description of the use of

teams or team work in their course details were selected. After that, the professors in the College of Business graduate program who teach those courses were contacted through email to ask for permission to conduct this study in their classrooms.

A brief outline of the study and the estimated number of required participants were stated in an email to the professors teaching the selected courses. Also, this email indicated clearly that there would be no harm or threat to the participants in this study. In addition, this email also indicated that the Institutional Review Board (IRB) approval was completed and granted. Among all the contacted professors, two management and one marketing faculty agreed to run the survey in their classroom. Only these three faculty were using teams in their current classroom curriculum, which was one of the needed criteria for this study. The researcher met with the professors who agreed to run the study in their classrooms personally and explain the study. In this meeting two conditions were agreed upon: first, a specific time for releasing the survey and second, the survey would be released through the professor into their classrooms.

Pilot Study

As this study approach was survey based, before launching the actual study to the target sample, a pilot-test was conducted with approximately 16 undergraduate management seniors in the College of Business. The purpose of the pilot-test was to determine the validity of the instrument, and to ensure that the students could understand the questions in the survey. This study was created on Qualtrics.com survey tool.

For the pilot-test, the course instructor was contacted and the required permission was obtained. Once the instructor agreed, the researcher personally approached the class and explained the study to the students and that the study had no harm associated with it. The researcher collected their consent forms and informed the students that the link to the survey would be released the next day by the instructor. The pilot-test was launched and the participants

were allowed a week to respond to the survey. An email reminder was sent in the middle of the week to encourage participation.

Just two days before the closing of the survey, the researcher received an email from the instructor that said the students were facing issues in responding to the survey. The link was not able to save their previous responses when they were moving forward in the survey. An immediate action was taken by the researcher and the issue was fixed. The researcher extended the deadline for two more days for students to respond. The responses of the pilot study were analyzed in SPSS 22.0 to guide changes to the actual survey. The pilot study showed a very low response rate to questions about attitudes toward knowledge sharing. Therefore, the survey items for attitudes toward knowledge sharing were changed from those used in Xue et al.'s study (2011) study to those used in Bock et al.'s (2005) study to measure attitudes toward knowledge sharing. The revised questions were added to the final survey. Please refer to Appendix C for the pilot study.

Final Study

After the changes were incorporated in the actual survey, the survey was loaded on Qualtrics.com, an online survey tool. This online survey was reviewed by the two co-chairs of the dissertation committee to make sure the wording of the questions, as well as the estimated time and length of the survey, were consistent with the purpose of the study. Any changes suggested by these co-chairs were added to the final survey.

Once the final revisions were made in the survey, the researcher sent an email to the professors of the two management courses and one marketing course to inform them that the official survey was ready to be launched. The two management courses were comprised of twelve (12) students in one course and fifty-nine (59) students in the other one. Additionally, the marketing course was comprised of nineteen (19) students. After the mid-exam, an invitation to

complete the self-administered survey was emailed to all the senior and graduate students who were enrolled in these courses. A secure URL link that led participants directly to the Qualtrics survey tool was embedded in the email. The first page of the survey contained the Informed Consent form, which was used to determine if the participants realized the nature of the study and were able to decide whether to volunteer for the study.

After the participants read the Informed Consent Form, their progression into the survey was taken as their informed consent. Participants were permitted to ask questions prior to agreeing to consent for the survey. They could contact the researcher through the information provided in the email. If the participants chose not to consent, they simply had to exit the survey.

Before they were presented with the survey questions, participants were provided with instructions on how to complete the survey. These instructions included the approximate time to complete the survey, noted that the survey would be active for two weeks (14 days), and that the participants could participate anytime during that period. After the first week of the survey, an email reminder was sent to remind the participants to complete the survey.

Data were collected over a period of two weeks to obtain an effective sample size. Throughout this period, responses were compiled and time stamped through the Qualtrics hosted website of the survey. During this entire process, the researcher appraised and monitored the collected data frequently to track the progress.

Once the survey ended, there were no further communications between the participants and the researcher. However, an email notification was sent to the professors who provided the access to the sample, thanking them for their cooperation and association with the survey. Also, they were informed of their potential access to the data upon request. Survey responses were downloaded into the statistical tool, SPSS 22.0, to place all the data in a numerical order for

analysis. Later, survey responses that were incomplete were removed from the downloaded data in order to prevent them from skewing the analysis results.

Sample Size and Response Rate

According to the Soper Sample Size Calculation (2012), for a sample size analysis with a confidence level of 95 percent and confidence interval of 10 in a target population of 90, the required sample size needed is 47 (Creative Research Systems). Eighty six (86) students attempted the survey, where 56 responded to all the survey questions, which met the needed sample size requirements. The strength of this study is the response rate of 65.11 percent, which makes this study operative for further analysis. Response rate is based on the total number of people who responded to the survey divided by the total number of people asked to participate (population). Below, Table 17 explains the response rate of this study based on the sample size.

Table 17

Response Rate Based on Sample Size

Population	90
Confidence level	95%
Confidence interval	10
Required Sample Size	47
Responded	86
Sample Size Met	56
Response Rate	95.55%
Valid Response Rate	62.22%

Data Analysis Procedures

The statistical procedures that were applied to test the hypotheses are stated below in Table 18. To measure bivariate relationships between the independent variables and dependent variable, a correlational analysis was used. To further determine the relationships between the dependent variable and independent variables, the researcher used multiple regression analysis (MRA).

The reason for using correlation analysis and multiple regression analysis in this study was to see if any of the independent variables individually correlated with the dependent variable. It is possible that more than one independent variable individually correlates with a dependent variable, but not all of them will be statistically significant when examined in the same multiple regression analysis (Evans, 2012). Therefore, using both of the statistical procedures helped the researcher to predict whether all the five identified factors do or do not correlate with self-reported knowledge sharing behaviors. The researcher was also able to find, among the five factors, variables which did not correlate that were statistically influencing the self-reported knowledge sharing behaviors. Correlation analysis also helped in predicting the relationships between the five independent variables and the variables of attitudes towards the knowledge sharing.

During the analysis phase, if the results of the regression analysis did not match with the results of the correlation analysis, the results of the regression analysis were accepted. The researcher has chosen this approach because multiple-regression analysis characterizes the more rigorous analytical framework and was used to control all the variables in the conceptual framework.

Table 18

Description of the Statistical Procedures for the Study

Statistical procedures	Applied Variables
Correlation Analysis	Climate Leadership Rewards and Incentives Task Support Task Structure Attitude Knowledge Sharing Behaviors <ul style="list-style-type: none"> ▪ Willingness to Share Knowledge ▪ Willingness to Use Knowledge ▪ Useful Knowledge
Multiple Regression Analysis (MRA)	Climate Leadership Rewards and Incentives Task Support Task Structure <p style="text-align: right;">Willingness to Share Knowledge</p>
	Climate Leadership Rewards and Incentives Task Support Task Structure <p style="text-align: right;">Willingness to Use Knowledge</p>
	Climate Leadership Rewards and Incentives Task Support Task Structure <p style="text-align: right;">Useful Knowledge</p>
	Climate Leadership Rewards and Incentives Task Support Task Structure <p style="text-align: right;">Knowledge Sharing Behaviors</p>
	Climate Leadership Rewards and Incentives Task Support Task Structure <p style="text-align: right;">Attitudes</p>

Chapter Four

Results and Findings

In this chapter, three concepts will be explained: descriptive statistics, hypotheses testing and the results by hypotheses. First, descriptive statistics for each variable are stated. Second, hypotheses were tested using multiple regression analysis and correlation analysis was performed to measure which independent and dependent variables correlate with each other. In the end, results are summarized and presented in tables.

Descriptive Statistics

Descriptive statistics were performed on independent variables and the dependent variable. First, the data set was arranged to include only those cases where the respondents provided a complete set of answers to the survey questions. Second, the researcher created a dummy variable in the gender category (i.e. 0=Male, 1=Female). This was done to minimize the error in analysis, because linking 1 to Male and 2 to Female would have doubled the females compared to males.

Third, the researcher made all the five independent variables data sets composite for statistical analysis. First, climate was comprised of the three constructs (innovativeness, cohesion, and trust), which were combined together to make a composite variable. Second, leadership was comprised of the five constructs (lead by examples, participative decision making, coaching, informing, and showing concern), which were put together to make a composite variable. Third, rewards and incentives consisted of the two constructs (grade, and sense of self-worth), which were combined for a composite variable. Fourth, task structure consisted of three constructs (fairness of objectives, reciprocal relationships, and

communication), which were combined and made a composite variable. Fifth, task support was comprised of a single construct (willingness to support) and that was the composite variable.

The dependent variable knowledge sharing behaviors was assembled into three components: willingness to share, willingness to use and useful knowledge, which was adapted from Evans's (2012) study. The three components were individually grouped into separate datasets and then compiled to make a knowledge sharing composite data set. The second dependent variable, attitude towards knowledge sharing, was analyzed as an individual dataset.

Table 19 depicts the descriptive statistics which show that the majority of the respondents fall under a similar age range ($m= 1.12$, $SD= .50$) of 19-24 years (see Table 3). Among the independent variables, climate ($m=3.9$, $SD= .51$) and leadership ($m=3.9$, $SD= .50$) have approximately similar means and standard deviations. The mean of rewards and incentives ($m=4.02$) and standard deviation ($SD=.53$) was marginally higher than task structure ($m=4.000$; $SD= .49$). Task support mean and standard deviation was completely different from the other independent variables ($m=3.3$, $SD=.68$).

The mean and standard deviation of willingness to share knowledge ($m= 4.07$, $SD=.51$) and willingness to use knowledge ($m=4.12$, $SD=.47$) was higher than that of useful knowledge ($m= 3.9$, $SD=.58$). The knowledge sharing behaviors composite had a mean of 4.05 and standard deviation of 0.43. Attitudes toward knowledge sharing had a mean of 1.58 and standard deviation of 1.161. Table 19 represents the descriptive statistics of the independent variables and dependent variables.

Table 19

Summary of Descriptive Statistics of the Calculated Variables

		N	Minimum	Maximum	M	SD
Demographics	Gender	56	0	1	.39	.493
	Number of times you have worked on a project team.	56	1	4	3.02	.944
	Age	56	1.00	4.00	1.1250	.50677
Independent Variables	Climate Composite	56	2.00	5.00	3.8504	.51369
	Leadership Composite	56	2.05	5.00	3.8816	.50325
	Rewards Incentives Composite	56	2.50	5.00	4.0298	.53097
	Task Structure Composite	56	2.75	5.00	4.0000	.48174
	Task Support Composite	56	2.00	5.00	3.2714	.67196
Dependent Variable	Share Composite	56	3.00	5.00	4.0625	.50733
	Use Composite	56	3.00	5.00	4.1714	.46465
	Useful Composite	56	2.25	5.00	3.9375	.57850
	Knowledge Composite	56	3.00	5.00	4.0571	.43519
Dependent Variable	Attitude Composite	56	1.00	4.50	1.5893	1.16134

Hypothesis Testing

In this step, the hypotheses identified in previous chapters (see Table 20) were tested through a multiple regression analysis (MRA) statistical procedure.

Table 20

Identified Hypotheses of this Study

-
- H1. Team climate has a positive influence on knowledge sharing behaviors.
 - H2. Team climate has a positive influence on attitudes toward knowledge sharing.

 - H3. Leadership has a positive influence on knowledge sharing behaviors.
 - H4. Leadership has a positive influence on attitudes toward knowledge sharing.

 - H5. Rewards and incentives has a positive influence on knowledge sharing behaviors.
 - H6. Rewards and incentives has a positive influence on attitudes toward knowledge sharing.

 - H7. Task structure has a positive influence on knowledge sharing behaviors.
 - H8. Task structure has a positive influence on attitudes toward knowledge sharing.

 - H9. Task support has a positive influence on knowledge sharing behaviors.
 - H10. Task support has a positive influence on attitudes toward knowledge sharing.
-

Multiple Regression Analysis

The multiple regression analysis was performed in three steps as indicated in Table 21 below; First, the researcher accessed the relationships between each subscale of the dependent variable of self-reported knowledge sharing behaviors and the independent variables (see Tables 22, 23, 24); Second, as Table 25 exhibits, the researcher tested the relationship between the composite dependent variable (self-reported knowledge sharing behaviors) and independent variables (climate, leadership, rewards and incentives, task structure and task support); Third, the researcher tested the relationship between independent variables and the dependent variable of attitudes toward knowledge sharing (see Table 26).

Table 21

Multiple regression analysis (MRA)

Independent variables (IV)	Dependent Variable (DV)
<i>Step 1</i>	
Climate Leadership Rewards and Incentives Task Structure Task Support	Willingness to Share Knowledge
Climate Leadership Rewards and Incentives Task Structure Task Support	Willingness to Use Knowledge
Climate Leadership Rewards and Incentives Task Structure Task Support	Useful Knowledge
<i>Step 2</i>	
Climate Leadership Rewards and Incentives Task Structure Task Support	Composite Knowledge Sharing Behaviors (KSB) <ul style="list-style-type: none"> • Willingness to Share Knowledge • Willingness to Use Knowledge • Useful Knowledge
<i>Step 3</i>	
Climate Leadership Rewards and Incentives Task Structure Task Support	Attitude

Note: Running MRA collectively on IV and DV

Table 22

Multiple Regression Analysis with Willingness to Share Knowledge Subscale as Dependent Variable

Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	2.108	.448	.000
	Climate Composite	.508	.115	.000
2	(Constant)	1.831	.469	.000
	Climate Composite	.241	.193	.218
	Leadership Composite	.336	.197	.095
3	(Constant)	1.498	.496	.004
	Climate Composite	.179	.193	.357
	Leadership Composite	.224	.203	.275
	Rewards Incentives Composite	.250	.139	.078
4	(Constant)	1.044	.503	.043
	Climate Composite	.041	.191	.829
	Leadership Composite	.161	.195	.413
	Rewards Incentives Composite	.155	.137	.263
	Task Structure Composite	.403	.157	.013
5	(Constant)	1.359	.518	.012
	Climate Composite	.042	.186	.822
	Leadership Composite	.124	.191	.520
	Rewards Incentives Composite	.184	.135	.179
	Task Structure Composite	.457	.156	.005
	Task Support Composite	-.155	.082	.064

Note: Dependent Variable- Willingness to Share Knowledge Composite

Table 23

Multiple Regression Analysis with Willingness to Use Knowledge Subscale as Dependent Variable

Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	2.358	.408	.000
	Climate Composite	.471	.105	.000
2	(Constant)	2.226	.436	.000
	Climate Composite	.344	.180	.061
	Leadership Composite	.159	.183	.389
3	(Constant)	2.182	.475	.000
	Climate Composite	.336	.184	.074
	Leadership Composite	.145	.194	.461
	Rewards Incentives Composite	.033	.133	.803
4	(Constant)	1.774	.486	.001
	Climate Composite	.213	.184	.254
	Leadership Composite	.088	.188	.643
	Rewards Incentives Composite	-.051	.132	.699
	Task Structure Composite	.361	.152	.021
5	(Constant)	1.950	.512	.000
	Climate Composite	.213	.184	.252
	Leadership Composite	.067	.188	.724
	Rewards Incentives Composite	-.036	.133	.790
	Task Structure Composite	.392	.154	.014
	Task Support Composite	-.086	.081	.291

Note: Dependent Variable- Willingness to Use Knowledge Composite

Table 24

Multiple Regression Analysis with Useful Knowledge Subscale as Dependent Variable

Model		Unstandardized Coefficients		Sig.
		B	Std. Error	
1	(Constant)	1.224	.464	.011
	Climate Composite	.705	.120	.000
2	(Constant)	1.112	.498	.030
	Climate Composite	.597	.205	.005
	Leadership Composite	.136	.209	.518
3	(Constant)	.816	.531	.130
	Climate Composite	.541	.206	.011
	Leadership Composite	.037	.217	.865
	Rewards Incentives Composite	.222	.149	.143
4	(Constant)	.275	.530	.606
	Climate Composite	.377	.201	.066
	Leadership Composite	-.039	.205	.852
	Rewards Incentives Composite	.109	.145	.455
	Task Structure Composite	.480	.165	.005
5	(Constant)	.221	.565	.697
	Climate Composite	.377	.203	.069
	Leadership Composite	-.032	.208	.878
	Rewards Incentives Composite	.104	.147	.482
	Task Structure Composite	.471	.170	.008
	Task Support Composite	.027	.089	.766

Note: Dependent Variable- Useful Knowledge Composite

Table 25

Multiple Regression Analysis with Knowledge Sharing Behaviors Composite as Dependent Variable

Model		Unstandardized Coefficients		
		B	Std. Error	Sig.
1	(Constant)	1.897	.335	.000
	Climate Composite	.561	.086	.000
2	(Constant)	1.723	.354	.000
	Climate Composite	.394	.146	.009
	Leadership Composite	.210	.149	.164
3	(Constant)	1.499	.377	.000
	Climate Composite	.352	.146	.020
	Leadership Composite	.135	.154	.385
	Rewards Incentives Composite	.168	.106	.118
4	(Constant)	1.031	.361	.006
	Climate Composite	.210	.137	.131
	Leadership Composite	.070	.140	.619
	Rewards Incentives Composite	.071	.099	.475
	Task Structure Composite	.415	.113	.001
5	(Constant)	1.177	.380	.003
	Climate Composite	.211	.136	.129
	Leadership Composite	.053	.140	.707
	Rewards Incentives Composite	.084	.099	.399
	Task Structure Composite	.440	.114	.000
	Task Support Composite	-.071	.060	.239

Note: Dependent Variable- Knowledge Sharing Behaviors Composite

Table 26

Multiple Regression Analysis with Attitude as Dependent Variable

Model		Unstandardized Coefficients		
		B	Std. Error	Sig
1	(Constant)	4.682	1.117	.000
	Climate Composite	-.803	.288	.007
2	(Constant)	5.755	1.125	.000
	Climate Composite	.229	.463	.624
	Leadership Composite	-1.300	.473	.008
3	(Constant)	4.521	1.136	.000
	Climate Composite	-.002	.441	.997
	Leadership Composite	-1.714	.465	.001
	Rewards & Incentives Composite	.925	.319	.005
4	(Constant)	4.365	1.224	.001
	Climate Composite	-.049	.464	.916
	Leadership Composite	-1.735	.473	.001
	Rewards & Incentives Composite	.892	.334	.010
	Task Structure Composite	.139	.382	.718
5	(Constant)	4.417	1.304	.001
	Climate Composite	-.049	.468	.917
	Leadership Composite	-1.741	.480	.001
	Rewards & Incentives Composite	.897	.339	.011
	Task Structure Composite	.148	.392	.708
	Task Support Composite	-.025	.205	.902

Note: Dependent Variable- Attitudes toward Knowledge Sharing

Hypothesis 1: Team climate has a positive influence on knowledge sharing behaviors.

According to hypothesis 1, team climate has a positive influence on knowledge sharing behaviors. Table 19 indicates the descriptive statistics of team climate is $m=3.85$, $SD=.513$, and the knowledge sharing behaviors composite variables is $m=4.05$, $SD=.435$.

Knowledge Sharing Behaviors Composite

The MRA output (see Table 25) demonstrates that team climate did not have a statistically significant (.129) influence on the composite variables of knowledge sharing behaviors. However, table 25 above also shows team climate had a statistically significant influence (.009) when leadership was added to the list (.394, $p<.01$). Team climate also had a statistically significant (.020) influence when rewards and incentives was added (.352, $p<.05$). But, team climate had a statistically non-significant influence when task structure (.131) was added, and task support (.129) was added to the list. Therefore, when MRA was performed on the composite scores of team climate and knowledge sharing behaviors, team climate was found to have statistically non-significant influence on the composite knowledge sharing behaviors in this study.

Subscales of Knowledge Sharing Behaviors

The MRA output, Tables 22, 23, and 24 above express that team climate had a statistically non-significant influence on each individual subscale of knowledge sharing behaviors. First, when MRA was performed on team climate with the willingness to share knowledge composite variable (see Table 22), team climate (.822) was found to have a statistically non-significant influence. Further on, Table 22 also indicates that team climate was found as not statistically significant (.218) when leadership was added, rewards and incentives was added (.357), task structure was added (.829) and task support was added (.822). Hence, team climate had no significant influence on willingness to share knowledge.

The MRA output (see Table 23) indicates that team climate (.252) had a statistically non-significant influence on willingness to use knowledge. However, team climate (.061) was significant when leadership (.344, $p < .05$) was added. Team climate (.074) was also significant when rewards and incentives (.336, $p < .05$) was added. But, team climate was not statistically significant when task structure (.254) or task support (.252) were added. Therefore, team climate had no significant influence on the willingness to use knowledge.

When the MRA was performed with team climate and useful knowledge composite scores (see Table 24), team climate (.069) came out statistically significant (.377, $p < .10$). Team climate was significant (.005) when leadership was added to the list (.597, $p < .01$). It was also significant (.011) when rewards and incentives was added (.541, $p < .05$). Team climate was also statistical significant (.066) when task structure (.377, $p < .10$), and task support (.069) were added to the list. Therefore, it can be predicted that team climate had a marginal influence on the useful knowledge composite variable in this study.

Hypothesis 2: Team climate has a positive influence on attitudes toward knowledge sharing.

Hypothesis 2 states team climate has a positive influence on attitudes toward knowledge sharing. Table 19 displays the descriptive statistics of team climate is $m=3.85$, $SD=.513$, and attitudes toward knowledge sharing is $m=1.58$, $SD=1.16$.

The MRA of team climate with attitudes toward knowledge sharing (see Table 26) illustrates that team climate (.917) was not significant. Also, it was not statistically significant when leadership (.624), rewards and incentives (.997), task structure (.916), and task support (.917) were added together for the MRA. As a result, team climate had no significant influence on attitudes toward knowledge sharing variable in this study.

Hypothesis 3: Leadership has a positive influence on knowledge sharing behavior.

Hypothesis 3 states that leadership has a positive influence on knowledge sharing behavior. Based on Table 19, the descriptive statistics of leadership is $m=3.88$, $SD=.503$, and of knowledge sharing behaviors composite is $m=4.05$, $SD=.435$.

Knowledge Sharing Behaviors Composite

The MRA output as presented in Table 25 demonstrates that leadership was not statistically significant (.707) when regression analysis was performed with the composite knowledge sharing behaviors. Additionally, leadership was not statistically significant with the addition of team climate (.164), rewards and incentives (.385), task structure (.475) and task support (.707). This indicates, leadership had no significant influence on the composite knowledge sharing behaviors.

Subscales of Knowledge Sharing Behaviors

In willingness to share knowledge (see Table 22), when MRA was performed with leadership, it came out as not statistically significant (.520). It was significant when team climate (.095) was added (.336, $p < .10$). Whereas, it was not statistically significant when rewards and incentives (.275), task structure (.413) and task support were added (.520). Hence, it shows leadership had no significant influence on willingness to share knowledge.

After running MRA on leadership with willingness to use knowledge (see Table 23), leadership (.724) came out non-significant with team climate (.389), rewards and incentives (.461), task structure (.643), and task support (.724). It specifies that leadership had no significant impact on willingness to use knowledge in this study.

When MRA was performed with leadership and useful knowledge (see Table 24), leadership (.878) came out non-significant when climate was added (.518), and remained non-

significant when rewards and incentives (.865), task structure (.852) and task support were added (.878). Therefore, it indicates leadership had no significant impact on useful knowledge.

Hypothesis 4: Leadership has a positive influence on attitudes toward knowledge sharing.

Hypothesis 4 predicts that leadership has a positive influence on attitude towards knowledge sharing. Based on Table 19, the descriptive statistics of leadership is $m=3.88$, $SD=.503$, and of attitudes toward knowledge sharing is $m=1.58$, $SD=1.16$.

Based on Table 26 above the results of the MRA with leadership and attitudes toward knowledge sharing shows leadership had a statistically significant (.001) influence on attitude (-1.300, $p<.01$). Leadership had a statistically significant (.008) when climate was added (-1.300, $p<.001$), and rewards and incentives (.001) were added (-1.714, $p<.001$). Also, it was statistically significant when task structure (.001) was added (-1.735, $p<.001$) and task support (.001) was added (-1.741, $p<.001$). Leadership does have an influence on attitudes toward knowledge sharing. But, with a negative beta with all the individual and collective independent variables, it has a negative influence on attitudes toward knowledge sharing in this study.

Hypothesis 5: Rewards and incentives has a positive influence on knowledge sharing behavior.

According to hypothesis 5, rewards and incentives has a positive influence on knowledge sharing behavior. The descriptive statistics based on Table 19 shows that rewards and incentives has $m=4.02$, $SD=.530$, and knowledge sharing behaviors composite has $m=4.05$, $SD=.435$.

Knowledge Sharing Behaviors Composite

The MRA output (see Table 25) highlights that rewards and incentives did not have a statistically significant (.399) influence on the composite knowledge sharing behaviors. Also, Table 25 displays that rewards and incentives was not statistically significant when team climate and leadership were added (.118), nor when task structure (.475), and task support (.399) were

added in the regression analysis. Hence, rewards and incentives had no significant impact on knowledge sharing behaviors composite variable.

Subscales of Knowledge Sharing Behaviors

The MRA (see Table 22), found that rewards and incentives (.179) had a statistically non-significant influence on willingness to share knowledge. It was not statistically significant when team climate and leadership (.078) were added. Also, when task structure (.263) and task support were added (.179) it came out non-significant. Therefore, the output of the MRA on willingness to share knowledge indicates that rewards and incentives was statistically non-significant in influencing the dependent variable.

In willingness to use knowledge (see Table 23), when MRA was performed, rewards and incentives (.790) came out as non-significant. It was non-significant when team climate and leadership (.803), task structure (.699), and task support (.790) were added. Thus, the MRA output on willingness to use knowledge indicates that rewards and incentives was statistically non-significant in impacting willingness to use knowledge.

The MRA output of useful knowledge (see Table 24) with rewards and incentives (.482) shows a non-significant impact. Furthermore, it was not statistically significant when team climate and leadership were added (.143). It remained non-significant when task structure (.455) and task support were added (.482). As a result, the MRA on useful knowledge indicates, rewards and incentives was statistically non-significant and had no significant influence on the useful knowledge.

Hypothesis 6: Rewards and incentives has a positive influence on attitudes toward knowledge sharing.

Hypothesis 6 says rewards and incentives has a positive influence on attitudes toward knowledge sharing. The descriptive statistics based on Table 19 shows that rewards and incentives has $m=4.02$, $SD=.530$, and attitudes toward knowledge sharing is $m=1.58$, $SD=1.16$.

Table 26 indicates rewards and incentives was statistically significant (.011) in influencing attitude (.897, $p<.05$) in this context. It was significant (.005) when team climate and leadership was added (.925, $p<.01$). It was significant (.010) when task structure (.892, $p<.05$) and task support (.011) were added (.897, $p<.10$). Thus, the MRA output indicates rewards and incentives impacted positively on attitudes toward knowledge sharing.

Hypothesis 7: Task structure has a positive influence on knowledge sharing behaviors.

Hypothesis 7 claims that task structure has a positive influence on knowledge sharing behaviors. The descriptive statistics from Table 19 denotes, task structure has $m=4.00$, $SD=.481$, and knowledge sharing behaviors composite has $m=4.05$, $SD=.435$.

Knowledge Sharing Behavior Composite

The MRA output in Table 25 above shows that task structure had a positive influence on the composite knowledge sharing behaviors. Table 25 emphasizes that task structure (.000) was statistically significant (.440, $p<.001$). Task structure was strongly significant (.001) when team climate, leadership, and rewards and incentives, were added (.415, $p<.001$). Therefore, in this context, task structure had a strong positive impact on the composite knowledge sharing behaviors variable.

Subscales of Knowledge Sharing Behaviors

The MRA output of willingness to share knowledge (see Table 22) shows that task structure (.005) had a statistically significant (.457, $p<.01$) influence. When team climate,

leadership, and rewards and incentives, were added, task structure (.013) also was statistically significant (.457, $p < .05$). This indicates, task structure had a positive influence on the willingness to share knowledge.

The MRA output shows (Table 23) that task structure was statistically significant in influencing willingness to use knowledge (.014) when team climate, leadership, rewards and incentives were added and with task support (.392, $p < .10$). Table 24 also illustrates that task structure (.008) was significant in impacting positively the useful knowledge variable (.471, $p < .01$). In addition, task structure was also statistically significant in influencing useful knowledge (.005) when climate, leadership, and rewards and incentives were added (.480, $p < .01$). This specifies, in the studied context task structure had a positive influence and impacted positively on the willingness to share knowledge and useful knowledge.

Hypothesis 8: Task structure has a positive influence on attitudes toward knowledge sharing.

Hypothesis 8 predicts that task structure has a positive influence on attitudes toward knowledge sharing. The descriptive statistics from Table 19 denotes, task structure has $m=4.00$, $SD=.481$, and attitudes toward knowledge sharing is $m=1.58$, $SD=1.16$.

Table 26 articulates that task structure was not statistically significant (.708) in influencing attitudes toward knowledge sharing. It was also not statistically significant when team climate, leadership, rewards and incentives and task support were added (.718). Thus, task structure had no significant influence on attitudes toward knowledge sharing in this context.

Hypothesis 9: Task support has a positive influence on knowledge sharing behaviors.

Hypothesis 9 predicts that task support has a positive influence on knowledge sharing behaviors. According to Table 19 the descriptive statistics of task support is $m=3.25$, $SD=.671$, and knowledge sharing behaviors composite is $m=4.05$, $SD=.435$.

Knowledge Sharing Behaviors Composite

The MRA output (see Table 25) highlights that task support was not statistically significant in influencing the composite knowledge sharing behaviors (.239). Thus, task support had no significant influence on knowledge sharing behaviors composite variable in this context.

Subscales of Knowledge Sharing Behaviors

For willingness to share knowledge, the MRA output shows (Table 22) that task support (.064) was statistically significant (-.155, $p < .10$) in impacting willingness to share knowledge. Table 23 indicates that task support was non-significant (.291) in influencing the willingness to use knowledge. Task support was also non-significant (.766) in influencing perceptions of useful knowledge as delineated in Table 24. So, task support was significant in influencing willingness to share knowledge. But, it had no significance influence on willingness to use knowledge and the useful knowledge.

Hypothesis 10: Task support has a positive influence on attitudes toward knowledge sharing.

The last hypothesis predicts that task support has a positive influence on attitudes toward knowledge sharing. Based on Table 26, task support was not statistically significant in impacting attitudes toward knowledge sharing (.902). The results of MRA on task support with attitudes toward knowledge sharing indicate that task support does not significantly influence attitudes toward knowledge sharing in this study.

Correlation Analysis

To measure and illustrate how strongly the independent variables and the two dependent variables are related, correlation analysis was performed (see Table 27). Through this method, the researcher measured which variables (dependent, independent and controlled) had significant correlation with each other and also predicted the direction of the relationships when all the other variables are constant.

The following are the statistically significant correlations of this study (see Table 27):

- Team climate positively correlates with self-reported composite knowledge sharing behaviors (.662, $p < .01$), as well as with the subscales of willingness to share knowledge (.514, $p < .01$), willingness to use knowledge (.521, $p < .01$) and useful knowledge (.626, $p < .01$).
- Team climate was negatively correlated with attitudes toward knowledge sharing (-.355, $p < .05$).
- Leadership positively correlates with composite knowledge sharing behaviors (.620, $p < .01$). Along with composite knowledge sharing behaviors, leadership positively correlates with the subscales of willingness to share knowledge (.531, $p < .01$), willingness to use knowledge (.481, $p < .01$) and useful knowledge (.548, $p < .01$).
- Leadership has a negative correlation with attitudes toward knowledge sharing (-.481, $p < .01$).
- Rewards and incentives positively correlate with composite knowledge sharing behaviors (.545, $p < .01$). It also positively correlates with the subscales of willingness to share knowledge (.505, $p < .01$), willingness to use knowledge (.352, $p < .01$) and useful knowledge (.504, $p < .01$).
- Rewards and incentives have no significant correlation with attitudes toward knowledge sharing (-.038).
- Task structure positively correlates with composite knowledge sharing behaviors (.720, $p < .01$). Along with that, it positively correlates with the subscales of

willingness to share knowledge (.601, $p < .01$), willingness to use knowledge (.552, $p < .01$) and useful knowledge (.654, $p < .01$).

- Task structure and attitudes toward knowledge sharing do not correlate (-.189) at a significant level.
- Task support has no significant correlation with the self-reported composite knowledge sharing behaviors (.049) or with the subscales of willingness to share knowledge (-.059), willingness to use knowledge (-.010) and useful knowledge (.171).
- Task support and attitudes toward knowledge sharing with each other have no significant correlation (.018).

Control Variables

The control variables in the study were gender, number of times worked in project teams, and age. The first independent variable, climate has a significant positive correlation with number of times worked in a project team (.292, $p < .05$). Leadership has a significant negative correlation with age (-.462, $p < .01$). Rewards and incentives correlate positively with number of times worked in a project team (.271, $p < .05$); however, they correlate negatively with age (-.352, $p < .01$). Task structure has a significant positive correlation with number of times worked in a project team (.290, $p < .05$), whereas, it has significant negative correlation with age (-.273, $p < .05$). Table 28 summarizes the correlation analysis between control variables and the five independent variables of this study.

Correlation Analysis between Attitudes toward Knowledge Sharing and Self-Reported Knowledge Sharing Behaviors

Attitudes toward knowledge sharing negatively correlates with the subscales of willingness to use knowledge (-.290, $p < .05$), useful knowledge (-.289, $p < .05$), and composite

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knowledge sharing behaviors (-.312, $p < .05$). It has no significant correlation with willingness to share knowledge.

Impact of Organizational Context Factors on Individuals

Table 27
Correlation Matrix among Dependent, Independent and Control Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	1												
2. No. of Times Worked	-.133	1											
3. Age	-.055	-.119	1										
4. Climate Composite	.039	.292*	-.180	1									
5. Leadership Composite	.118	.160	-.462**	.810**	1								
6. Rewards Incentives Composite	-.080	.271*	-.352**	.585**	.619**	1							
7. Task Structure Composite	.12	.290*	-.273*	.649**	.620**	.574**	1						
8. Task Support Composite	.035	-.117	-.048	.107	.070	.181	.227	1					
9. Attitude Composite	-.396*	.057	.259	-.355**	-.481**	-.038	-.189	.018	1				
10. Share Composite	-.118	.197	-.137	.514**	.531**	.505**	.601**	-.059	-.208	1			
11. Use Composite	.002	.184	-.154	.521**	.481**	.352**	.552**	-.010	-.290*	.760**	1		
12. Useful Composite	.072	.135	-.159	.626**	.548**	.504**	.654**	.171	-.289*	.472**	.484**	1	
13. Knowledge Sharing Composite	-.013	.202	-.179	.662**	.620**	.545**	.720**	.049	-.312*	.869**	.865**	.800**	1

Note: p < .05* p < .01**, N= 56

Table 28

Summary of Control Variables and Independent Variables Correlation Analyses

Independent Variables	Control Variables	Correlations
Climate	Gender	N/S
	Number of times worked in a project team**	PC
	Age	N/S
Leadership	Gender	N/S
	Number of times worked in a project team	N/S
	Age*	NC
Rewards and Incentives	Gender	N/S
	Number of times worked in a project team**	PC
	Age*	NC
Task Structure	Gender	N/S
	Number of times worked in a project team**	PC
	Age*	NC
Task Support	Gender	N/S
	Number of times worked in a project team	N/S
	Age	N/S

Note: **PC=Positive Correlation, * NC=Negative Correlation, N/S=Non-Significant

Summarizing the Results

Table 29 below summarizes the statistical analyses based on the studied hypotheses. The results of the analyses shows task structure is the only one independent variable which had a significant positive influence on students' self-reported knowledge sharing behaviors in this context. Also, rewards and incentives is the only independent variable which had a significant positive influence on students' attitudes toward knowledge sharing in this context. In this studied context, leadership showed a significant negative influence on self-reported knowledge sharing behaviors.

Table 29

Summary of the Hypotheses Based on Multiple Regression Analysis

Hypotheses	Statistically Significance
H1. Team climate has a positive influence on knowledge sharing behaviors.	Non-Significant
H2. Team climate has a positive influence on attitudes toward knowledge sharing.	Non-Significant
H3. Leadership has a positive influence on knowledge sharing behaviors.	Non-Significant
H4. Leadership has a positive influence on attitudes toward knowledge sharing.	Negative Influence
H5. Rewards and incentives has positive influence on knowledge sharing behaviors.	Non-Significant
H6. Rewards and incentives has positive influence on attitudes toward knowledge sharing.	Positive Influence
H7. Task structure has a positive influence on knowledge sharing behaviors.	Positive Influence
H8. Task structure has a positive influence on attitudes toward knowledge sharing.	Non-Significant
H9. Task support has a positive influence on knowledge sharing behaviors.	Non-Significant
H10. Task support has a positive influence on attitudes toward knowledge sharing.	Non-Significant

The Table 30 below indicates, team climate, leadership, rewards and incentives, and task structure showed positive correlations with self-reported composite knowledge sharing behaviors and subscales of knowledge sharing behaviors. However, team climate and leadership showed negative correlation with attitudes toward knowledge sharing. Rewards and incentives, and task structure had no significant correlation with attitudes toward knowledge sharing. Also, task support had no significant correlations with self-reported composite knowledge sharing behaviors and subscales of knowledge sharing behaviors.

Table 30

Summary of the Correlation Findings between Dependent Variables and Independent Variables

Independent Variables	Dependent Variables	Significant Correlations
Team Climate	Knowledge Sharing Behaviors Composite Willingness to Share Knowledge Willingness to Use Knowledge Useful Knowledge	Positive
	Attitudes toward Knowledge Sharing	Negative
Leadership	Knowledge Sharing Behaviors Composite Willingness to Share Knowledge Willingness to Use Knowledge Useful Knowledge	Positive
	Attitudes toward Knowledge Sharing	Negative
Rewards and Incentives	Knowledge Sharing Behaviors Composite Willingness to Share Knowledge Willingness to Use Knowledge Useful Knowledge	Positive
	Attitudes toward Knowledge Sharing	Non-Significant
Task Structure	Knowledge Sharing Behaviors Composite Willingness to Share Knowledge Willingness to Use Knowledge Useful Knowledge	Positive
	Attitudes toward Knowledge Sharing	Non-Significant
Task Support	Knowledge Sharing Behaviors Composite Willingness to Share Knowledge Willingness to Use Knowledge Useful Knowledge	Non-Significant
	Attitudes toward Knowledge Sharing	Non-Significant

Chapter Five

Summary and Conclusion

This chapter is comprised of five main sections: first, reaffirming the need and purpose of this study; second, discussion of the main findings and research contributions; third, implications for instructional design for team effectiveness; fourth, addressing the research limitations; finally, concluding by suggesting directions for further research.

Introduction

In graduate courses, faculty members tend to require students to work in teams (Education & Command, 2008; Hodges, 2010; Milam Jr, 2001). While students are becoming more familiar with team projects, there is a need to understand what factors facilitate knowledge sharing behaviors among their team members. Research suggests that when students share knowledge, it contributes towards their team effectiveness and project performances (Kirschner et al., 2009; Van den Bossche et al., 2006).

Therefore, the objective of this study was to investigate what contextual factors influence the self-reported knowledge sharing behaviors and attitudes toward knowledge sharing of students who are participating in an academic team project. This research was an extension of the Xue et al. (2011) study, where they investigated the effects of team climate and empowering leadership in academic contexts. Xue et al. (2011) conducted their study with undergraduate and graduate students enrolled in business courses nationwide in the United States of America. By adding three more contextual factors- rewards and incentives, task structure, and task support, as suggested by Wang and Noe (2010)- the researcher created a new study. Precisely, this research investigated contextual factors through an online survey among business senior and graduate students from a specific business school who may or may not have had prior teamwork experience. The conceptual framework was built from Wang and Noe's (2010) and Xue et al.'s

(2011) studies, along with literature related to knowledge sharing in teams, team effectiveness, team development, and team based learning in organizations and academic institutions.

The following hypotheses were addressed in this quantitative study to explore factors influencing students' self-reported knowledge sharing behaviors.

- H1. Team climate has a positive influence on knowledge sharing behaviors.
- H2. Team climate has a positive influence on attitudes toward knowledge sharing.

- H3. Leadership has a positive influence on knowledge sharing behaviors.
- H4. Leadership has a positive influence on attitudes toward knowledge sharing.

- H5. Rewards and incentives has a positive influence on knowledge sharing behaviors.
- H6. Rewards and incentives has a positive influence on attitudes toward knowledge sharing.

- H7. Task structure has a positive influence on knowledge sharing behaviors.
- H8. Task structure has a positive influence on attitudes toward knowledge sharing.

- H9. Task support has a positive influence on knowledge sharing behaviors.
- H10. Task support has a positive influence on attitudes toward knowledge sharing.

The instrument used in this study was comprised of 70 items which were gathered from components of studies by Alsharo (2013), Bock et al. (2005), Evans (2012), Fulbright (2012), and Xue et al. (2011). The reason for assembling this instrument was to measure the five identified factors - climate, leadership, rewards and incentives, task structure, and task support – and their impact on knowledge sharing behaviors and attitudes toward knowledge sharing with a very specific population.

In the current study, eighty-six (86) students responded to the online survey, out of which fifty-six (56) completed the entire survey. The online survey was distributed in three classes: one class of marketing students and two classes of management students. In each of these classes, the survey was open for two weeks. For all of the classes, a reminder email was sent after a week

through the instructor of the course. During this active period, students were open to participate any time based on their schedules and data were collected.

After the collection of data, the identified hypotheses were tested to understand which of the contextual factors influenced knowledge sharing behavior in these students. Statistical analysis procedures, specifically multiple regression analyses, were used to test the hypotheses and correlation was performed to highlight the relationships between the factors.

Discussion of the Main Findings and Research Contributions

Among the five factors studied (team climate, leadership, rewards and incentives, task structure and task support), multiple regression and correlation analysis indicated only one had a positive impact on students' self-reported knowledge sharing behaviors in this context: task structure. Rewards and incentives had a positive influence on attitudes toward knowledge sharing in the studied context. Furthermore, leadership showed a negative influence on attitudes toward knowledge sharing. In this study, knowledge sharing behaviors and attitudes toward knowledge sharing were the dependent variables, and rewards and incentives, leadership, and task structure were independent variables. Each of these factors is discussed below. It is worth mentioning that the findings below are logical predictions which the researcher draws based on the findings of the analyses and literature review of knowledge sharing behaviors in chapter two.

Knowledge Sharing Behaviors

Wang and Noe (2010) define knowledge sharing behaviors as a way of exchanging and sharing knowledge with other members. Knowledge sharing behaviors have supported benefits for the individual member and collectively to the team (Kirschner et al., 2009; Sacramento et al., 2006, and Stewart et al., 1999). In project teams, members construct new knowledge by sharing information (Evans, 2012). Chapter one and two, indicate that when members of a team

collaborate for a task, they converse and argue with each other. During this process of conversation and argumentation, members exchange their understanding, ideas and beliefs regarding how to accomplish the task and thus, share knowledge. In this study to address knowledge sharing behaviors, the survey was comprised of fourteen items:

- *I would take the initiative to provide individuals of my team with useful materials I have developed (e.g. models, memos, notes, archives).*
- *I would eagerly receive and use materials created by individuals of my team (e.g. models, memos, notes, archives), if relevant to the project.*
- *I would allow individuals from my team to spend significant time observing me in order for them to understand and learn from my work.*
- *I would willingly share with members of my team rules of thumb or tricks of dealing with a task or project that I have learned.*
- *I would willingly share with members of my team informal information related to the task, if significant.*
- *If needed, I would welcome the opportunity to spend significant time observing and collaborating with members of my team and others, in order for me to better understand and learn from their work.*
- *I would welcome and use any rules of thumb, tricks of the projects/tasks, and other insights individuals of the team have learned from their past experiences.*
- *I would eagerly receive and consider any new ideas members of my team might have.*
- *I would tend to believe information shared by members of my team and would use such knowledge as appropriate.*
- *The information I received from each member of my team made a significant contribution to this project's quality.*
- *The information I received from each of the members of my team contributed to the project's overall performance.*
- *The information I received from each member of my team made it easier to complete the portion of the task I am responsible for.*
- *The information I received from the members of my team supported my individual performance on the task.*

The results suggest that students in this studied context have performed certain of those stated 14 items in their team projects. In this studied context, the students reported that they have:

- taken initiatives to share their self created resources with their team members;
- allowed other members to observe and learn from them while they were working on the task with other students;
- willingly shared any pertinent information with other students of the team;
- utilized every opportunity of observing and working together in their team;
- being opened to accept any new concepts or thoughts from their team members.

According to the results, it can be predicted that students have reported the knowledge they have gathered from each member contributed towards their team project. Likewise, they have reported that the information they received from each member helped them to successfully complete their part of the task and also assisted in their individual performances.

As per Boon et al. (2013) and Woerkom and Croon (2009), task structure is defined as the characteristics of the tasks, such as how well the task is being communicated to its members, how well the objectives of the task are being defined, and how members will build relationships with each other for the task. In this study, the researcher asked students to report their perception of task structure on three constructs: fairness of objectives, reciprocal relationships, and communication.

Michaelsen and Sweet (2011) refer to fairness of objectives as how the purposes of the course were determined and developed for the members to perform their task. Buchs et al. (2011) indicate reciprocal relationships are the shared associations that team members develop during the course of teamwork to support knowledge sharing. Akkerman and Bakker (2011a) suggest

that communication is a network of associations with which a team is provided in the beginning of the task and also builds on during the process of the task. These associations help teams to share knowledge and understand the parameters to successfully complete the task.

In this study, fairness of objectives, reciprocal relationships, and communication were laid together to make the composite variable for task structure. The items used in this study to address fairness of objectives were:

- *The objectives given to me were reasonable.*
- *The objectives given to the team were achievable.*
- *The course was designed in a way which gave fair and equal opportunity to perform as an individual member and as a team.*

The items used in this study to address reciprocal relationships were:

- *The structure of the task strengthened the knowledge sharing behaviors between team members.*
- *The structure of the task offered opportunities to get well-acquainted with other members of the team.*
- *The structure of the task was flexible in expanding scope of the members.*
- *The structure of the task encouraged smooth cooperation within members.*
- *The structure of the task encouraged constructive conflict during teamwork.*

The items used in this study to address communication were:

- *I am certain I understood the most difficult material presented in the readings for this course.*
- *I am confident I understood the basic concepts taught in this course.*

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- *I am confident I understood the most complex material presented by the instructor in this course.*
- *The electronic methods we used to communicate with one another were effective.*

Based on the findings, it can be suggested that in this study, students perceived:

- clear objectives were provided to them;
- objectives were realistic and practical in the course;
- the task structure of the course aided in strengthening their knowledge sharing behaviors with other students;
- the task was designed to assist them in getting acquainted with other student members;
- the task structure was flexible in accommodating students' varied skills;
- the task structure facilitated interaction and collaboration among students;
- being able to comprehend the course materials.

It can be predicted from the reviewed literature in chapter two and the findings of this study that when individuals have clear specifications about the structure of the task, they engage more actively in knowledge sharing behaviors by discussing and exchanging information.

Detailed and fluid task descriptions have been communicated in this studied context, which promoted flexibility in knowledge sharing behaviors.

The MRA model, Tables 22, 23, and 24, revealed that each identified component of knowledge sharing behavior was positively influenced by task structure in this study. It is worth mentioning that task structure was found to have a strong positive influence on two of the self-reported knowledge sharing components: willingness to share and comprehending useful knowledge. This indicates that students perceived the task structure encouraged their intentions

to share specific knowledge in their team projects and also helped to understand how to use the accrued knowledge.

Based on Table 30, team climate, leadership, rewards and incentives, and task structure had strong positive correlations with the composite knowledge sharing behaviors variable and with each subscales of knowledge sharing behaviors. Statistically, this illustrates that in the studied context the above mentioned independent variables had a strong relationship with the measured dependent variable. Positive correlation indicates that team climate, leadership, rewards and incentives, and task structure was intensely related to students' perspectives and beliefs towards knowledge sharing when working collaboratively in project teams.

Attitudes toward Knowledge Sharing

Attitude specifies a person's objective to perform or behave towards an action (Fishbein, 1979). Venkatesh et al. (2008) state that behavioral intentions as a predictor of actual behavior has limitations. Also, Sheeran (2002) argues that there is always a difference between intention to perform a behavior and the actual behavior performed.

In this study, the researcher asked students to report their attitudes toward knowledge sharing on the following items:

- *My knowledge sharing with team members was effective.*
- *My knowledge sharing with team members was not effective.*
- *My knowledge sharing with team members was an enjoyable experience.*
- *My knowledge sharing with team members was valuable to me.*
- *My knowledge sharing with team members helped me to learn new interactive strategies.*

From the findings of this study, it can be suggested that students believed that:

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- they shared effective knowledge with members;
- they valued the experience of knowledge sharing process with members;
- they gained and learned new approaches for the project while sharing knowledge.

According to Al-Alawi, et al., (2007); Bock et al., (2001); and Ipe, (2003), rewards and incentives act as a persuader for individuals to share and exchange knowledge. This factor helps teams in their successful performance and promote members collaboration for the team task (Schoor et al., 2011). In this study, the researcher asked students to report their perception of rewards and incentives on two constructs: grades, and sense of self-worth.

Bock et al., (2001) suggest that grades act as a conditional support which inspire perceptions of individuals toward knowledge sharing. According to Harackiewicz, et al., (1998), due to sense of self-worth, students tend to share more knowledge and participate to accomplish a task because they are internally connected with the process of sharing knowledge.

In this study, grades, and sense of self-worth were laid together to make the composite variable for rewards and incentives. The items used in this study to address grades were:

- *I believe I will receive an excellent grade in this class.*
- *I value my grades because that determines my input in the team work.*

The items used in this study to address sense of self-worth were:

- *My knowledge sharing helped other members in the team to solve problems.*
- *My knowledge sharing improved work processes in the team.*
- *My knowledge sharing contributed to collaboration in the team works.*
- *My knowledge sharing helped the team to achieve its objectives.*

Based on the results of this study, it can be suggested that students perceived:

- the grades influenced their perception of knowledge sharing behaviors;
- the experience of knowledge sharing process advanced their team work;

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- the knowledge sharing process helped their teams to attain the overall purposes.

As mentioned above, rewards and incentives had a positive influence on attitudes toward knowledge sharing. It can be anticipated based on the results of this study that students have perceived their attitudes toward knowledge sharing were highly promoted by rewards and incentives they received in their team project performances. The results indicate that, in this studied context, students have reported their attitudes toward knowledge sharing have been influenced by the grades they received in their team projects. Also, rewards and incentives helped students to internally connect with their objectives of the task and facilitated their attitudes to share more knowledge.

In this study, leadership had a negative influence on attitudes toward knowledge sharing. It indicates that students have perceived their attitudes toward knowledge sharing not have been influenced by the roles and duties performed by their leaders.

Finally, it is important to highlight the statistically significant negative correlation that two of the measured factors had on attitudes toward knowledge sharing in this studied context. Team climate and leadership both had negative correlations with attitudes toward knowledge sharing. Statistically, this indicates that irrespective of any change in team climate or attitude, and leadership or attitude, the relationships between them will always lead to a negative correlation.

The result indicate that the students perceived supporting team climate and leadership in their teamwork impeding their attitudes toward knowledge sharing or their attitudes might be impeding their perception of the team climate and leadership. This result is in complete contrast with the findings of Xue et al. (2011), where their findings reveal that team climate and leadership positively influencing individuals' attitudes toward knowledge sharing behaviors.

Therefore, the current findings lead the researcher to predict that there can be unknown factors that influenced students' attitudes toward knowledge sharing behaviors in the studied context.

Furthermore, attitudes towards knowledge sharing correlates negatively with the knowledge sharing behaviors composite variable and the subscales of knowledge sharing behaviors. This results shows that in this studied context, students might have perceived that their attitudes towards knowledge sharing had no relationship with their actual knowledge sharing behaviors during their team projects.

Demographic Findings

In this study, the following organizational context factors correlate positively with students' having work experiences in project teams: climate, rewards and incentives, and task structure. This shows that in the studied scenario, students with more teamwork experience perceived team climate, rewards and incentives provided in the task, and the task structure as positive for their knowledge sharing behaviors and activities. In this study, students with experiences in team projects viewed team climate as an important aspect for effective teamwork. Students in the studied context viewed rewards and incentives as a motivational factor since they had more experience working in project teams. Task structure was viewed by the experienced students in this context as a significant source of information in order for them to complete their task.

Implications for Instructional Design for Team Effectiveness

The studies of Akkerman and Bakker (2011), Buchs et al. (2011), Hung (2013), and Fransen et al. (2011) indicate that team members who work together over a project for a course not only learn about the project content, but also learn about collaborating and communicating with others, and how to incorporate differing opinions. Hence, the need for this study was to

comprehend knowledge sharing behaviors in student teams for a task, and the findings of this study indicate that the most important organizational context factors for knowledge sharing behaviors is task structure. Therefore, the most crucial element for instructional designers to consider is that supporting knowledge sharing behaviors in teams comprised of students is predominately dependent on the task structure during the team work. As indicated in the findings of the study, effective task structure promotes fair objectives for the task, support reciprocal relationships within members, and improve the communication process of the teams. Although this research was conducted in a School of Business, these implications may be applicable to any successful course design. The research suggest that promoting them may facilitate knowledge sharing behaviors in student teams.

In chapter one, the researcher predicted three key findings that may impact the design of courses to facilitate knowledge sharing behaviors. Based on the reviewed literature on instructional design in chapter two and the current findings of this study, these results:

- (1) Provide insight to develop recommendations for course developers and designers in selecting appropriate strategies for facilitating knowledge sharing behaviors in student project teams.
- (2) Assist instructional designers to understand what factors lead to effective knowledge sharing behaviors.
- (3) Assist instructional designers to develop and create instructional materials designed to assist professionals with supporting knowledge sharing behaviors in student project teams. Results of this study shows that designers should support clear and specific task structures while designing and developing instructional materials for student project teams.

Limitations of the Study

This study, while providing valuable insights on knowledge sharing behaviors in student project teams, has the following limitations. Addressing these limitations may assist researchers in future studies:

1. The scope of this research was limited, as only project teams of graduate courses from a single business school were studied. However, in the future, it would be valuable to observe how the five factors would impact students' knowledge sharing behaviors from different colleges.
2. Another limitation was that it only measured self-reported data of students for their knowledge sharing behaviors, not the actual measure of the process of sharing and exchanging knowledge. As a future reference, it would be appropriate to obtain some detailed data on how students share knowledge and how contextual factors influence their attitudes toward knowledge sharing.

Conclusion

This study helped to identify a significant contextual factors, task structure, that influenced self-reported knowledge sharing behaviors in senior and graduate student project teams. Effective knowledge sharing in a team can take time to evolve, especially if a team is comprised of participants with varied age, gender, and experiences. To improve knowledge sharing behaviors of team members, contextual factors of the team need to be studied further in different contexts and settings, so that effective pedagogies for knowledge sharing can be designed for learners performing in teams.

References

- Abdallah, S., Khalil, A., & Divine, A. The impact of knowledge sharing on innovation capability in united arab emirates organizations. *Age*, 21(25), 23.
- Adams, B. L., Cain, H. R., Giraud, V., & Stedman, N. L. (2012). Leadership, motivation, and teamwork behaviors of principal investigator's in interdisciplinary teams. *Journal of Leadership Education*, 11(2), 176-191.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888.
- Akkerman, S.F., & Bakker, A. (2011a). Boundary crossing and boundary objects. *Review of Educational Research*, 81(2), 132-169.
- Akkerman, S.F., & Bakker, A. (2011b). Learning at the boundary: An introduction. *International Journal of Educational Research*, 50(1), 1-5.
- Al-Alawi, A.I., Al-Marzooqi, N.Y., & Mohammed, Y.F. (2007). Organizational culture and knowledge sharing: Critical success factors. *Journal of Knowledge Management*, 11(2), 22-42.
- Alavi, M., & Leidner, D.E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, 107-136.
- Albinsson, G., & Arnesson, K. (2012). Team learning activities: Reciprocal learning through the development of a mediating tool for sustainable learning. *Learning Organization*, 19(6), 456-468. doi: 10.1108/09696471211266956

Aldrich, H. (1999). *Organizations evolving*. London: Sage.

Alsharo, M.K. (2013). *Knowledge sharing in virtual teams: The impact on trust, collaboration, and team effectiveness* (Doctoral dissertation, University of Colorado at Denver).

Retrieved from

<http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/1399581216?accountid=14826> ProQuest Dissertations & Theses Full Text database.

Andres, H.P., & Akan, O.H. (2010). Assessing team learning in technology-mediated collaboration: An experimental study. *Journal of Educational Technology Systems, 38*(4), 473-487.

Andres, H.P., & Shipps, B.P. (2010). Team learning in technology-mediated distributed teams. *Journal of Information Systems Education, 21*(2), 213-221.

Annadatha, J.V. (2012). *Sociocultural factors and knowledge sharing behaviors in virtual project teams* (Doctoral dissertation, Robert Morris University). Retrieved from <http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/1095406893?accountid=14826> ProQuest Dissertations & Theses Full Text database.

Argote, L., & Miron-Spektor, E. (2011). Organizational learning: From experience to knowledge. *Organization Science, 22*(5), 1123-1137.

Argyris, C., & Schön, D. A. (1997). Organizational learning: A theory of action perspective. *Reis: Revista Española de Investigaciones Sociológicas, (77)*, 345-348

Arnold, J.A., Arad, S., Rhoades, J.A., & Drasgow, F. (2000). The empowering leadership questionnaire: The construction and validation of a new scale for measuring leader behaviors. *Journal of Organizational Behavior, 21*(3), 249-269.

- Baker, M., Hansen, T., Joiner, R., & Traum, D. (1999). The role of grounding in collaborative learning tasks. *Collaborative Learning: Cognitive and Computational Approaches*, 31-63.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52(1), 1-26.
- Bartol, K.M., Liu, W., Zeng, X., & Wu, K. (2009). Social exchange and knowledge sharing among knowledge workers: The moderating role of perceived job security. *Management and Organization Review*, 5(2), 223-240.
- Beers, P.J., Kirschner, P.A., Boshuizen, H.P., & Gijsselaers, W.H. (2007). ICT-support for grounding in the classroom. *Instructional Science*, 35(6), 535-556.
- Beyerlein, M.M., Freedman, S., McGee, C., Moran, L., & Beyerlein, M. (2003). *Beyond teams: Building the collaborative organization*. San Francisco, CA: Jossey-Bass/Pfeiffer.
- Bock, G.W., & Kim, Y.G. (2001). Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. *Pacis 2001 proceedings*, 78.
- Bock, G.W., Zmud, R.W., Kim, Y.G., & Lee, J.N. (2005). Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate. *MIS Quarterly*, 87-111.
- Bonnardel, N., & Zenasni, F. (2010). The impact of technology on creativity in design: An enhancement? *Creativity and Innovation Management*, 19(2), 180-191.
- Boon, A., Raes, E., Kyndt, E., & Dochy, F. (2013). Team learning beliefs and behaviours in response teams. *European Journal of Training and Development*, 37(4), 357-379.

- Bossche, P., Gijsselaers, W., Segers, M., Woltjer, G., & Kirschner, P. (2011). Team learning: Building shared mental models. *Instructional Science*, 39(3), 283-301. doi: 10.1007/s11251-010-9128-3
- Bresman, H. (2010). External learning activities and team performance: A multimethod field study. *Organization Science*, 21(1), 81-96.
- Bresman, H., & Zellmer-Bruhn, M. (2013). The structural context of team learning: effects of organizational and team structure on internal and external learning. *Organization Science*, 24(4), 1120-1139.
- Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.
- Brown, J.S., & Duguid, P. (1998). Organizing knowledge. *California Management Review*, 40(3), 91.
- Buchs, C., Gilles, I., Dutrévis, M., & Butera, F. (2011). Pressure to cooperate: Is positive reward interdependence really needed in cooperative learning? *British Journal of Educational Psychology*, 81(1), 135-146.
- Bunderson, J.S., & Reagans, R.E. (2011). Power, status, and learning in organizations. *Organization Science*, 22(5), 1182-1194.
- Cabrera, A., Collins, W.C., & Salgado, J.F. (2006). Determinants of individual engagement in knowledge sharing. *The International Journal of Human Resource Management*, 17(2), 245-264.
- Carroll, J.M., Rosson, M.B., Convertino, G., & Ganoë, C.H. (2006). Awareness and teamwork in computer-supported collaborations. *Interacting with Computers*, 18(1), 21-46.

- Chen, C.C. (2011). Factors affecting high school teachers' knowledge-sharing behaviors. *Social Behavior and Personality: An International Journal*, 39(7), 993-1008.
- Chen, C.J., & Huang, J.W. (2007). How organizational climate and structure affect knowledge management—the social interaction perspective. *International Journal of Information Management*, 27(2), 104-118.
- Chen, I.Y., & Chen, N.S. (2009). Examining the factors influencing participants' knowledge sharing behavior in virtual learning communities. *Educational Technology & Society*, 12(1), 134-148.
- Chiu, C.M., Hsu, M.H., & Wang, E.T. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42(3), 1872-1888.
- Choi, S. Y., Lee, H., & Yoo, Y. (2010). The impact of information technology and transactive memory systems on knowledge sharing, application, and team performance: A field study. *MIS Quarterly*, 34(4), 855-870.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155.
- Collinson, V., & Cook, T.F. (2006). *Organizational learning: Improving Learning, Teaching, and Leading in School Systems*. Thousand Oaks, California: Sage.
- Creative Research Systems (Free; downloadable version, 2012) [Computer software]. Petaluma CA: Sample Size Calculator. Available from <http://www.surveysystem.com/sscalc.htm>
- Cummings, J.N. (2004). Work groups, structural diversity, and knowledge sharing in a global organization. *Management Science*, 50(3), 352-364.

- Cunningham, D., & Duffy, T. (1996). Constructivism: Implications for the design and delivery of instruction. *Handbook of Research for Educational Communications and Technology*, 170-198.
- Davenport, T.H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Cambridge, MA: Harvard Business Press.
- Dechant, K., Marsick, V.J., & Kasl, E. (1993). Towards a model of team learning. *Studies in Continuing Education*, 15(1), 1-14.
- DeChurch, L.A., & Mesmer-Magnus, J.R. (2010). The cognitive underpinnings of effective teamwork: A meta-analysis. *Journal of Applied Psychology*, 95(1), 32.
- Decuyper, S., Dochy, F., & Van den Bossche, P. (2010). Grasping the dynamic complexity of team learning: An integrative model for effective team learning in organisations. *Educational Research Review*, 5(2), 111-133. doi: <http://dx.doi.org/10.1016/j.edurev.2010.02.002>
- Dillenbourg, P., Järvelä, S., & Fischer, F. (2009). The evolution of research on computer-supported collaborative learning. In *Technology-Enhanced Learning*, 3-19. Springer Netherlands.
- Dilworth, R.L., & Boshyk, Y. (2010). *Action learning and its applications*. Hampshire: Palgrave Macmillan.
- Donate, M.J., & Guadamillas, F. (2011). Organizational factors to support knowledge management and innovation. *Journal of Knowledge Management*, 15(6), 890-914.
- Drach-Zahavy, A., & Somech, A. (2001). Understanding team innovation: The role of team processes and structures. *Group Dynamics: Theory, Research, and Practice*, 5(2), 111.

- Earl, M. (2001). Knowledge management strategies: Toward a taxonomy. *Journal of Management Information Systems*, 18(1), 215-242.
- Education, A., & Command, T. (2008). On learning: The future of air force education and training. *AETC White Paper*, Randolph Air Force Base, TX. Available on <http://www.robins.af.mil/shared/media/document/AFD-081216-008.pdf>
- Egan, K. (2005). *An imaginative approach to teaching*. San Francisco, CA: Jossey-Bass.
- Evans, M.M. (2012). *Knowledge sharing: An empirical study of the role of trust and other social-cognitive factors in an organizational setting* (Doctoral dissertation, University of Toronto, Canada). Retrieved from <http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/1330500137?accountid=14826> ProQuest Dissertations & Theses Full Text database.
- Faraj, S., & Sproull, L. (2000). Coordinating expertise in software development teams. *Management Science*, 46(12), 1554-1568.
- Fishbein, M. (1979). A theory of reasoned action: Some applications and implications.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Vermont South, Victoria: ARRB Group Limited.
- Fransen, J. (2012). *Teaming up for learning: Team effectiveness in collaborative learning in higher education* (Doctoral dissertation, Open University, Netherlands). Retrieved from http://dspace.ou.nl/bitstream/1820/4580/1/josfransen_proefschrift.pdf
- Fransen, J., Kirschner, P.A., & Erkens, G. (2011). Mediating team effectiveness in the context of collaborative learning: The importance of team and task awareness. *Computers in Human Behavior*, 27(3), 1103-1113.

- Fransen, J., Weinberger, A., & Kirschner, P.A. (2013). Team effectiveness and team development in CSCL. *Educational Psychologist, 48*(1), 9-24. doi: 10.1080/00461520.2012.747947
- Fulbright, R. (2012). *A quantitative study investigating the effect of motivational text messages in online learning* (Doctoral dissertation, Northcentral University). Retrieved from <http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/922420500?accountid=14826> ProQuest Dissertations & Theses Full Text database.
- Goman, C. K. (2002, June). Five reasons people don't tell what they know. *Knowledge Management CRM Magazine*. Retrieved from <http://www.kmmag.com/print/default.asp>
- Guarte, J.M., & Barrios, E.B. (2006). Estimation under purposive sampling. *Communications in Statistics—Simulation and Computation, 35*(2), 277-284.
- Gupta, A.K., & Govindarajan, V. (2000). Knowledge flows within multinational corporations. *Strategic Management Journal, 21*(4), 473-496.
- Hansen, M.T., Nohria, N., & Tierney, T. (1999). What's your strategy for managing knowledge? *The Knowledge Management Yearbook, 2000–2001*.
- Harackiewicz, J.M., Barron, K.E., & Elliot, A.J. (1998). Rethinking achievement goals: When are they adaptive for college students and why? *Educational Psychologist, 33*(1), 1-21.
- Hendriks, P. (1999). Why share knowledge? The influence of ict on the motivation for knowledge sharing. *Knowledge and Process Management, 6*(2), 91-100.
- Hinds, P.J., & Mortensen, M. (2005). Understanding conflict in geographically distributed teams: The moderating effects of shared identity, shared context, and spontaneous communication. *Organization Science, 16*(3), 290-307.

- Hodges, J.K. (2010). *Examining knowledge management capability: Verifying knowledge process factors and areas in an educational organization* (Doctoral dissertation, Northcentral University). Retrieved from <http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/89184980?accountid=14826> ProQuest Dissertations & Theses Full Text database.
- Holste, J.S. (2003). *A study of the effects of affect-based trust and cognition-based trust on intra-organizational knowledge sharing and use* (Doctoral dissertation, Regent University). Retrieved from <http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/305234156?accountid=14826> ProQuest Dissertations & Theses Full Text database.
- Horwitz, S.K. (2005). The compositional impact of team diversity on performance: Theoretical considerations. *Human Resource Development Review*, 4(2), 219-245.
- Howley, I., Mayfield, E., & Rosé, C.P. (2011). Missing something? authority in collaborative learning. In *Proceedings of Computer Supported Collaborative Learning*.
- Hung, W. (2013). Team-based complex problem solving: a collective cognition perspective. *Educational Technology Research and Development*, 61(3), 365-384.
- Huxham, C., & Vangen, S. (2013). *Managing to collaborate: The theory and practice of collaborative advantage*. Madison Ave, NY: Routledge.
- Ipe, M. (2003). Knowledge sharing in organizations: A conceptual framework. *Human Resource Development Review*, 2(4), 337-359.
- Isenberg, D.J. (1991). *How senior managers think*. Thousand Oaks, CA: Sage Publications.
- Israel, J., & Aiken, R. (2007). Supporting collaborative learning with an intelligent web-based system. *International Journal of Artificial Intelligence in Education*, 17(1), 3-40.

Janssen, J., & Bodemer, D. (2013). Coordinated computer-supported collaborative learning: Awareness and awareness tools. *Educational Psychologist, 48*(1), 40-55.

Järvelä, S., & Hadwin, A.F. (2013). New frontiers: Regulating learning in cscl. *Educational Psychologist, 48*(1), 25-39.

Jeong, H., & Chi, M.T. (2007). Knowledge convergence and collaborative learning. *Instructional Science, 35*(4), 287-315.

Jorczak, R.L. (2011). An information processing perspective on divergence and convergence in collaborative learning. *International Journal of Computer-Supported Collaborative Learning, 6*(2), 207-221.

Joshi, A., Lazarova, M.B., & Liao, H. (2009). Getting everyone on board: The role of inspirational leadership in geographically dispersed teams. *Organization Science, 20*(1), 240-252.

Kanuka, H., & Anderson, T. (2007). Online social interchange, discord, and knowledge construction. *The Journal of Distance Education/Revue de l'Éducation à Distance, 13*(1), 57-74.

Kay, J., Yacef, K., & Reimann, P. (2007, July). Visualisations for team learning: small teams working on long-term projects. In *Proceedings of the 8th international conference on Computer supported collaborative learning* (pp. 354-356). Hong Kong, China. International Society of the Learning Sciences.

Kirschner, F., Paas, F., & Kirschner, P.A. (2009). A cognitive load approach to collaborative learning: United brains for complex tasks. *Educational Psychology Review, 21*(1), 31-42.

Kirschner, P.A., & Erkens, G. (2013). Toward a framework for cscl research. *Educational Psychologist, 48*(1), 1-8.

Koch, J. (2011). Inscribed strategies: Exploring the organizational nature of strategic lock-in.

Organization Studies, 32(3), 337-363.

Koschmann, T., Hall, R. P., & Miyake, N. (Eds.). (2002). *CSCL 2: Carrying forward the*

conversation. Mahwah, NJ: Routledge.

Kozlowski, S. W. J., & Bell, B. S. (2008). Team learning, development, and adaptation. In V. I.

Sessa & M. London (Eds.), *Group learning* (pp. 15-44). Mahwah, NJ: LEA

Kozlowski, S.W., & Ilgen, D.R. (2006). Enhancing the effectiveness of work groups and teams.

Psychological science in the public interest, 7(3), 77-124.

Krosnick, J.A. (1999). Survey research. *Annual review of psychology*, 50(1), 537-567.

Kwok, S.H., & Gao, S. (2005). Attitude towards knowledge sharing behavior. *Journal of*

Computer Information Systems, 46(2), 45-51.

Langfred, C.W. (2004). Too much of a good thing? Negative effects of high trust and individual

autonomy in self-managing teams. *Academy of Management Journal*, 47(3), 385-399.

Lee, J.S., & Cho, H. (2011). Factors affecting information seeking and evaluation in a distributed

learning environment. *Educational Technology & Society*, 14(2), 213-223.

Lenz, R.; Machado, C. (2008). Virtual teamwork: A product of globalization. Implications for

University Education. In Barsky, N.P., Clemens, M., Ravn, J., & Smith, K. (Eds.), *Virtual*

teamwork: A product globalization. (Vol.1, pp. 77-93). Netherlands: Springer.

Levi, D. (2013). *Group dynamics for teams* (4th ed.). Thousand Oaks, CA: Sage.

Lin, Y.G., McKeachie, W.J., & Kim, Y.C. (2001). College student intrinsic and/or extrinsic

motivation and learning. *Learning and Individual Differences*, 13(3), 251-258.

Lipnack, J., & Stamps, J. (1993). *The teamnet factor: Bringing the power of boundary crossing*

into the heart of your business. Somerset, NJ: John Wiley & Sons.

- Ludvigsen, S.R., Lund, A., Rasmussen, I., & Säljö, R. (Eds.). (2010). *Learning Across Sites: New Tools, Infrastructures and Practices*. Oxford, UK: Routledge.
- Majchrzak, A., More, P.H., & Faraj, S. (2012). Transcending knowledge differences in cross-functional teams. *Organization Science*, 23(4), 951-970.
- Mäkelä, K., & Brewster, C. (2009). Interunit interaction contexts, interpersonal social capital, and the differing levels of knowledge sharing. *Human Resource Management*, 48(4), 591-613.
- Mathieu, J.E., Heffner, T.S., Goodwin, G.F., Salas, E., & Cannon-Bowers, J.A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology*, 85(2), 273.
- Mathieu, J.E., & Rapp, T.L. (2009). Laying the foundation for successful team performance trajectories: The roles of team charters and performance strategies. *Journal of Applied Psychology*, 94(1), 90.
- McDermott, R., & O'Dell, C. (2001). Overcoming cultural barriers to sharing knowledge. *Journal of Knowledge Management*, 5(1), 76-85.
- Mesmer-Magnus, J.R., & DeChurch, L.A. (2009). Information sharing and team performance: A meta-analysis. *Journal of Applied Psychology*, 94(2), 535.
- Michaelsen, L.K., Knight, A.B., & Fink, L.D. (2002). *Team-based learning: A transformative use of small groups*. Santa Barbara, CA: Greenwood Publishing Group.
- Michaelsen, L.K., & Sweet, M. (2011). Team-based learning. *New directions for teaching & learning*, 2011(128), 41-51. doi: 10.1002/tl.467

- Michaelsen, L.K., Sweet, M., & Parmelee, D.X. (Eds.). (2011). *Team-Based Learning: Small Group Learning's Next Big Step: New Directions for Teaching and Learning*, 116 (103). San Francisco, CA: Jossey-Bass.
- Milam Jr, J.H. (2001). *Knowledge management for higher education*. Retrieved from ERIC Digest. (ED464520): <http://www.ericdigests.org/2003-1/higher.htm>
- Mohammed, S., & Dumville, B.C. (2001). Team mental models in a team knowledge framework: Expanding theory and measurement across disciplinary boundaries. *Journal of Organizational Behavior*, 22(2), 89-106.
- Noe, R.A., Clarke, A.D., & Klein, H.J. (2013). Learning in the twenty-first-century workplace. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(1), 245-275.
- Noh, J.H. (2013). *Employee knowledge sharing in work teams: Effects of team diversity, emergent states, and team leadership* (Doctoral dissertation, University of Minnesota). Retrieved from <http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/1448556403?accountid=14826> ProQuest Dissertations & Theses Full Text database.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Madison Avenue, NY: Oxford University Press.
- Nonaka, I., Umemoto, K., & Senoo, D. (1996). From information processing to knowledge creation: A paradigm shift in business management. *Technology in Society*, 18(2), 203-218.

- Nonose, K., Kanno, T., & Furuta, K. (2012). A team cognition model derived from an analysis of reflection on cooperation. *Cognition, Technology & Work, 14*(1), 83-92.
- North, K., & Kumta, G. (2014). Organisational Forms to Leverage Knowledge. In *Knowledge Management* (pp. 63-104). Springer International Publishing. doi: 10.1007/978-3-319-03698-4_3
- Nunnally, J. (1978). *Psychometric methods*. New York: McGraw Hill.
- Okhuysen, G.A., & Waller, M.J. (2002). Focusing on midpoint transitions: An analysis of boundary conditions. *Academy of Management Journal, 45*(5), 1056-1065.
- Paavola, S., Lipponen, L., & Hakkarainen, K. (2004). Models of innovative knowledge communities and three metaphors of learning. *Review of Educational Research, 74*(4), 557-576.
- Park, S., Park, W.W., Kim, S., & Kim, C.Y. (2012). Team Learning and Creativity: the Roles of Exploitation and Team Cohesiveness. *Journal of Organizational Psychology, 12*(3/4), 70-80.
- Paulus, T., Horvitz, B., & Shi, M. (2006). 'Isn't it just like our situation?' Engagement and learning in an online story-based environment. *Educational Technology Research & Development, 54*(4), 355-385. doi: 10.1007/s11423-006-9604-2
- Pavlou, P.A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly, 115*-143.
- Polanyi, M., & Sen, A. (1967). *The tacit dimension*. New York: Doubleday .
- Pressley, M., Van Etten, S., Yokoi, L., Freebern, G., & Van Meter, P. (1998). The metacognition of college studentship: A grounded theory approach. *Metacognition in Educational Theory and Practice, 347*-366.

- Putnam, R.D. (1995). Bowling alone: America's declining social capital. *Journal of democracy*, 6(1), 65-78.
- Raes, E., Decuyper, S., Lismont, B., Van den Bossche, P., Kyndt, E., Demeyere, S., & Dochy, F. (2013). Facilitating team learning through transformational leadership. *Instructional Science*, 41(2), 287-305.
- Reigeluth, C.M. (1999). What is instructional-design theory and how is it changing. *Instructional-design theories and models: A New Paradigm of Instructional Theory*, 2, 5-29.
- Richard, S.W. (1992). Organizations: Rational, natural, and open systems. *Aufl., Englewood Cliffs (NJ)*.
- Richey, R., Klein, J.D., & Tracey, M.W. (2011). *The instructional design knowledge base: Theory, research, and practice*. New York: Routledge.
- Robbins, H., & Finley, M. (1995). *Why teams don't work: What went wrong and how to make it right*. Princeton, NJ: Peterson's/Pacesetter Books.
- Roschelle, J. (1992). Learning by collaborating: Convergent conceptual change. *The Journal of the Learning Sciences*, 2(3), 235-276.
- Rynes, S.L., Bartunek, J.M., & Daft, R.L. (2001). Across the great divide: Knowledge creation and transfer between practitioners and academics. *Academy of Management Journal*, 44(2), 340-355.
- Sacramento, C.A., Chang, M.W.S., & West, M.A. (2006). Team innovation through collaboration. *Advances in Interdisciplinary Studies of Work Teams*, 12, 81-112.
- Sallis, E., & Jones, G. (2013). *Knowledge management in education: Enhancing Learning & Education*. New York, NY: Routledge.

- Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory, pedagogy, and technology. *The Cambridge Handbook of the Learning Sciences*, 97-115.
- Schippers, M.C., Den Hartog, D.N., Koopman, P.L., & van Knippenberg, D. (2008). The role of transformational leadership in enhancing team reflexivity. *Human Relations*, 61(11), 1593-1616.
- Schoor, C., & Bannert, M. (2011). Motivation in a computer-supported collaborative learning scenario and its impact on learning activities and knowledge acquisition. *Learning and Instruction*, 21(4), 560-573.
- Senge, P.M. (2014). *The dance of change: The challenges to sustaining momentum in a learning organization*. New York, NY: Random House LLC.
- Senge, P. M. (2014). *The fifth discipline fieldbook: Strategies and tools for building a learning organization*. London: Crown Business.
- Serce, F. C., Alpaslan, F. N., Swigger, K., Brazile, R., Dafoulas, G., & Lopez, V. (2010, April). Strategies and guidelines for building effective distributed learning teams in higher education. In *Information Technology Based Higher Education and Training (ITHET), 2010 9th International Conference* (pp. 247-253). Cappadocia: IEEE.
- Sessa, V.I., & London, M. (2008). *Work group learning: Understanding, improving & assessing how groups learn in organizations*. Madison Avenue, New York, NY: Lawrence Erlbaum Associates.
- Sessa, V.I., London, M., Pingor, C., Gullu, B., & Patel, J. (2011). Adaptive, generative, and transformative learning in project teams. *Team Performance Management: An International Journal*, 17(3/4), 146-167.

- Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, 27(2), 4-13.
- Sheeran, P. (2002). Intention—behavior relations: A conceptual and empirical review. *European Review of Social Psychology*, 12(1), 1-36.
- Sheppard, B.H., Hartwick, J., & Warshaw, P.R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 325-343.
- Slof, B., Erkens, G., Kirschner, P.A., Janssen, J., & Jaspers, J. (2012). Successfully carrying out complex learning-tasks through guiding teams' qualitative and quantitative reasoning. *Instructional Science*, 40(3), 623-643.
- Smith, P.A.C. (2012). The importance of organizational learning for organizational sustainability. *The Learning Organization*, 19(1), 4-10. doi: 10.1108/09696471211199285
- Smith, P. L., & Ragan, T. J. (1999). *Instructional design*. New York, NY: Wiley.
- Somech, A., & Drach-Zahavy, A. (2013). Translating team creativity to innovation implementation the role of team composition and climate for innovation. *Journal of Management*, 39(3), 684-708.
- Soper, D. (2012). A-priori sample size calculator for multiple regression. *Statistics Calculators*.
- Srivastava, A., Bartol, K.M., & Locke, E.A. (2006). Empowering leadership in management teams: Effects on knowledge sharing, efficacy, and performance. *Academy of Management Journal*, 49(6), 1239-1251.
- Stacey, E. (2002, January). Learning links online: Establishing constructivist and collaborative learning environments. In *Proceedings of the International Education & Technology*

- Conference: Untangling the web-establishing learning links* (pp. 1-6). Melbourne, Australia: ASET.
- Stahl, G. (2006). *Group cognition: Computer Support for Building Collaborative Knowledge*. Cambridge MA: The MIT Press.
- Stahl, G. (2010). Guiding group cognition in CSCL. *International Journal of Computer-Supported Collaborative Learning*, 5(3), 255-258.
- Stahl, G. (2013). Theories of collaborative cognition: Foundations for CSCL and CSCW together. In *Computer-Supported Collaborative Learning at the Workplace*, 43-63.
- Stewart, G. L., Manz, C. C., & Sims, H. P. (1999). *Team work and group dynamics*. New York, NY: J. Wiley.
- Syer, J., & Connolly, C. (1996). *How teamwork works: The dynamics of effective team development*: London: McGraw-Hill.
- Tissen, R., Andriessen, D., & Deprez, F. L. (1998). *Creating the 21st century company: Knowledge intensive, people rich. Value-based knowledge management*. The Netherlands: Addison Wesley Longman.
- Tsoukas, H. (2005). Afterword: Why language matters in the analysis of organizational change. *Journal of Organizational Change Management*, 18(1), 96-104.
- Turner, M.E. (Ed.). (2014). *Groups at work: Theory and research*. Mahwah, NJ: Psychology Press.
- Vaccaro, A., Brusoni, S., & Veloso, F.M. (2011). Virtual design, problem framing, and innovation: An empirical study in the automotive industry. *Journal of Management Studies*, 48(1), 99-122.

- Van Boxtel, C., Van der Linden, J., & Kanselaar, G. (2000). Collaborative learning tasks and the elaboration of conceptual knowledge. *Learning and Instruction, 10*(4), 311-330.
- Van den Bossche, P. (2006). Minds in teams. *The influence of social and cognitive factors on team learning*. Maastricht: Datawyse.
- Van den Bossche, P., Gijsselaers, W., Segers, M., Woltjer, G., & Kirschner, P. (2011). Team learning: Building shared mental models. *Instructional Science, 39*(3), 283-301.
- Van den Bossche, P., Gijsselaers, W.H., Segers, M., & Kirschner, P.A. (2006). Social and cognitive factors driving teamwork in collaborative learning environments team learning beliefs and behaviors. *Small Group Research, 37*(5), 490-521.
- van den Hooff, B., & De Ridder, J.A. (2004). Knowledge sharing in context: The influence of organizational commitment, communication climate and cmc use on knowledge sharing. *Journal of Knowledge Management, 8*(6), 117-130.
- Van der Sluis, L. E. (2004). Designing the workplace for learning and innovation: Organizational factors affecting learning and innovation. *Development and Learning in Organizations: An International Journal, 18*(5), 10-13 .
- van Ginkel, W., Tindale, R.S., & van Knippenberg, D. (2009). Team reflexivity, development of shared task representations, and the use of distributed information in group decision making. *Group Dynamics: Theory, Research, and Practice, 13*(4), 265.
- van Ginkel, W.P., & van Knippenberg, D. (2008). Group information elaboration and group decision making: The role of shared task representations. *Organizational Behavior and Human Decision Processes, 105*(1), 82-97.

- van Knippenberg, D., van Ginkel, W.P., & Homan, A.C. (2013). Diversity mindsets and the performance of diverse teams. *Organizational Behavior and Human Decision Processes*, *121*(2), 183-193.
- van Offenbeek, M. (2001). Processes and outcomes of team learning. *European Journal of Work and Organizational Psychology*, *10*(3), 303-317.
- van Woerkom, M., & Croon, M. (2009). The relationships between team learning activities and team performance. *Personnel Review*, *38*(5), 560-577.
- Vecchio, R.P., Justin, J.E., & Pearce, C.L. (2010). Empowering leadership: An examination of mediating mechanisms within a hierarchical structure. *The Leadership Quarterly*, *21*(3), 530-542.
- Venkatesh, V., Brown, S.A., Maruping, L.M., & Bala, H. (2008). Predicting different conceptualizations of system use: The competing roles of behavioral intention, facilitating conditions, and behavioral expectation. *MIS Quarterly*, 483-502.
- Vygotsky, L. S. (1980). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wang, S., & Noe, R.A. (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review*, *20*(2), 115-131.
- Wegner, D.M. (1987). Transactive memory: A contemporary analysis of the group mind. In *Theories of group behavior* (pp. 185-208). New York: Springer .
- Weinberger, A., Stegmann, K., Fischer, F., & Mandl, H. (2007). Scripting argumentative knowledge construction in computer-supported learning environments. In *Scripting Computer-Supported Collaborative Learning*, *6*, 191-211. doi: 10.1007/978-0-387-36949-5_12

- West, M. A. (2012). *Effective teamwork: Practical lessons from organizational research*. West Sussex: UK: John Wiley & Sons.
- Wheelan, S. A. (2014). *Creating effective teams: A guide for members and leaders*. Washington, DC: Sage Publications.
- Wiedow, A., & Konradt, U. (2011). Two-dimensional structure of team process improvement: Team reflection and team adaptation. *Small Group Research*, 42(1), 32-54.
- Wigfield, A., & Eccles, J.S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology*, 25(1), 68-81.
- Wu, C. S., Lee, C. J., & Tsai, L. F. (2012). Influence of creativity and knowledge sharing on performance. *Journal of Technology Management in China*, 7(1), 64-77.
- Xue, Y., Bradley, J., & Liang, H. (2011). Team climate, empowering leadership, and knowledge sharing. *Journal of Knowledge Management*, 15(2), 299-312.
- Xue, Y., Sankar, C.S., & Mbarika, V.W. (2004). Information technology outsourcing and virtual team. *Journal of Computer Information Systems*, 45(2).
- Zhu, C. (2013). The effect of cultural and school factors on the implementation of CSCL. *British Journal of Educational Technology*, 44(3), 484-501.

Appendix A

Survey Instrument

Knowledge Sharing Survey

Important information for participants in the survey

We are conducting a research study that examines knowledge sharing behavior in team work.

We are interested in the experiences you and other students have with knowledge sharing during team activities involved in course related project work. The study is led by Vaishali Nandy, a Doctoral Candidate in the Virginia Tech Department of Learning Sciences and Technologies, School of Education, and is part of a doctoral thesis. The research is supervised by Dr. Katherine Cennamo, professor and Chair of Learning Sciences and Technologies, Virginia Tech and Dr. Glenda Scales, Associate Dean, College of Engineering, Virginia Tech.

You are invited to complete the survey, which has four parts. The first part ask about you to respond to demographic questions, which asks you to answer about yourself and your length of experience in team works; the second asks you to answer questions about your perception related to the support you get to complete a given course project with team members; third asks you about your attitude and intention to perform with members for the task.. The final section asks some questions about the way you behave to interact, share and exchange knowledge related to task with members. For most questions, you simply select a numbered response that best matches your belief.

The survey take 15-20 minutes to complete the questions.

The risks associated with completing the survey are none to minimal. Please note that:

- The survey is completely voluntary.
- Your responses will be treated confidentially and with anonymity.

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- The survey questionnaire will not ask you to identify yourself, your team mates, or the name of the project you are referencing.
- No personal records will be used and no matching or personal characteristics will be made.
- Your identity will not be revealed in the reporting of the results of the study.
- The collected data will be securely placed on a server at Virginia Tech, College of Engineering.
- Only researcher and associated dissertation committee people will have access to the data. Participated members can also get access to the data, upon request.
- You have the right to withdraw consent and discontinue your participation at any time. There are no penalties or consequences if you choose not to participate or if you choose to withdraw.
- Your progression with the survey will be your consent.

The researcher intends to publish the study's results in scholarly journals. In all publications, including the summary report, the identity of the participants in any form will not be disclosed. If you have any questions regarding these procedures or the study in general, please feel free to contact Vaishali Nandy (vnandy@vt.edu), Dr. Katherine Cennamo (cennamo@vt.edu) and Dr. Glenda Scales (gscscales@vt.edu). If you have any questions regarding your rights as a participant, please feel free to contact Virginia Tech Institution Review Board (irb@vt.edu).

Before to begin with the survey, please click the consent form link and provide your consent for the participation. Doing so indicate that you agree to the following statements:

1. I have volunteered to participate.

Impact of Organizational Context Factors on Individuals

2. I have been informed about the nature of the questions, what my task will be, and what procedures will be followed.
3. I have given the opportunity to ask questions at any point of time before and after the survey.
4. I understand the information I provide will be treated confidentially and with anonymity. My identity in any form will not be disclosed in the study.
5. I am aware that I have the right to withdraw consent and discontinue participation at any time.

Section 1: Demographic Section

Please answer the questions in this section related to yourself

1. Age

19-24 25-29 30-34 35-39 40-44 45-50 Over 50

2. Gender

Male Female

3. Number of experience in project related team works.

1-2 2-4 4-6 7 and above

Impact of Organizational Context Factors on Individuals

	Disagree				Agree
I trust all of the other team members.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree

Each team member sets high standards for performance by his/her own behavior.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Each team member works as hard as he/she can.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Each team member takes initiative and puts ideas on the table.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Each team member sets a good example by the way he/she behaves.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Leaders encourage team members to express ideas/suggestions.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree

Impact of Organizational Context Factors on Individuals

Each team members listens to team's ideas and suggestions.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Every team member gives all team members a chance to voice their opinions.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The team leader manages the flow of the discusion constructively.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Team members suggest ways to improve my team's performance.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Collectively members encourage each other to solve problems together.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Team members are encoraged to collaborate and exchange information with one another.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
A specific team member usually takes the initiative to explain instructor decisions/comments.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
A specific team member usually explains course/assignment-related materials	1	2	3	4	5
	Strongly				Strongly

Impact of Organizational Context Factors on Individuals

	Disagree				Agree
A specific team member usually explains rules and expectations to my team.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
A specific team member usually explains his/her decisions and actions to my team.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Each team member cares about the other team members' personal problems.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Each team member shows concern for the other team members' well-being.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Each team member treats the other team members as equals.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
Team members take the time to discuss the other team members' concerns good-naturedly.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
I believe I will receive an excellent grade in this class.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree

Impact of Organizational Context Factors on Individuals

I value my grades because that determines my input in the team work.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
My knowledge sharing helped other members in the team to solve problems.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
My knowledge sharing improved work processes in the team.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
My knowledge sharing contributed to collaboration in the team works.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
My knowledge sharing helped the team to achieve its objectives.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The objectives given to me were reasonable.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The objectives given to the team were achievable.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree

Impact of Organizational Context Factors on Individuals

The course was designed in a way which gave fair and equal opportunity to perform as an individual member and as a team.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The structure of the task strengthened the knowledge sharing behaviors between team members.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The structure of the task offered opportunities to get well-acquainted with other members of the team.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The structure of the task was flexible in expanding scope of the members.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The structure of the task encouraged smooth cooperation within members.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The structure of the task encouraged constructive conflict during teamwork.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
I am certain I understood the most difficult material presented in the readings for this course.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree

Impact of Organizational Context Factors on Individuals

I am confident I understood the basic concepts taught in this course.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
I am confident I understood the most complex material presented by the instructor in this course.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
The electronic methods we used to communicate with one another were effective.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
I only share knowledge with my team members when am I asked to.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
I am more likely to share knowledge when I like the team I am working with.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
I willingly interact and exchange knowledge with other members of different teams even when not mandated by the course curriculum.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
I am less likely to share knowledge with other members when I am forced to do so.	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree

Impact of Organizational Context Factors on Individuals

Agreeing on a common ground helps me to share knowledge and exchange ideas.	1	2	3	4	5
	Strongly Disagree			Strongly Agree	
	Disagree			Agree	

Section 3: Intention to Perform Section

My knowledge sharing with team members was effective.	1	2	3	4	5
	Strongly Disagree			Strongly Agree	
	Disagree			Agree	
My knowledge sharing with team members was an enjoyable experience.	1	2	3	4	5
	Strongly Disagree			Strongly Agree	
	Disagree			Agree	
My knowledge sharing with team members was valuable to me.	1	2	3	4	5
	Strongly Disagree			Strongly Agree	
	Disagree			Agree	
My knowledge sharing with team members helped me to learn new interactive strategies.	1	2	3	4	5
	Strongly Disagree			Strongly Agree	
	Disagree			Agree	

Impact of Organizational Context Factors on Individuals

<p>The information I received from each member of my team made it easier to complete the portion of the task I am responsible for.</p>	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree
<p>The information I received from the members of my team supported my individual performance on the task.</p>	1	2	3	4	5
	Strongly				Strongly
	Disagree				Agree

Appendix B

IRB Approval Letter



Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website <http://www.irb.vt.edu>

MEMORANDUM

DATE: September 29, 2014
TO: Glenda R Scales, Vaishali Nandy, Katherine S Cennamo
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires April 25, 2018)
PROTOCOL TITLE: Impact of Organizational Context Factors on Individual's Knowledge Sharing Behaviors
IRB NUMBER: 14-801

Effective September 29, 2014, the Virginia Tech Institutional Review Board (IRB) Chair, David M Moore, approved the Amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Exempt, under 45 CFR 46.110 category(ies) 2**
Protocol Approval Date: **August 27, 2014**
Protocol Expiration Date: **N/A**
Continuing Review Due Date*: **N/A**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

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An equal opportunity, affirmative action institution

Impact of Organizational Context Factors on Individuals

IRB Number 14-801

page 2 of 2

Virginia Tech Institutional Review Board

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

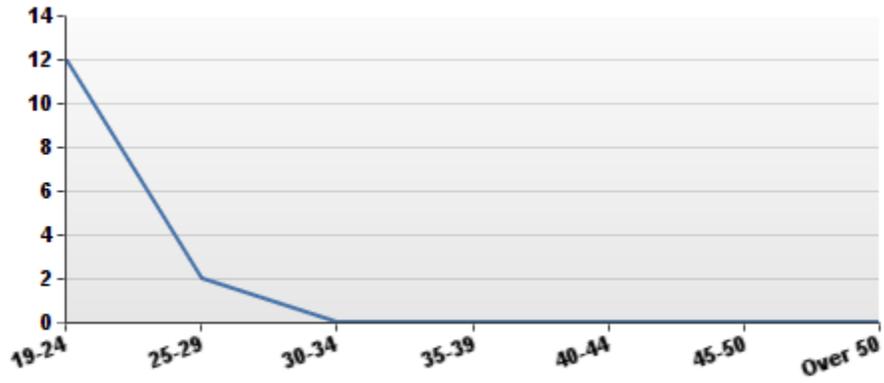
* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

Appendix C

Pilot Study

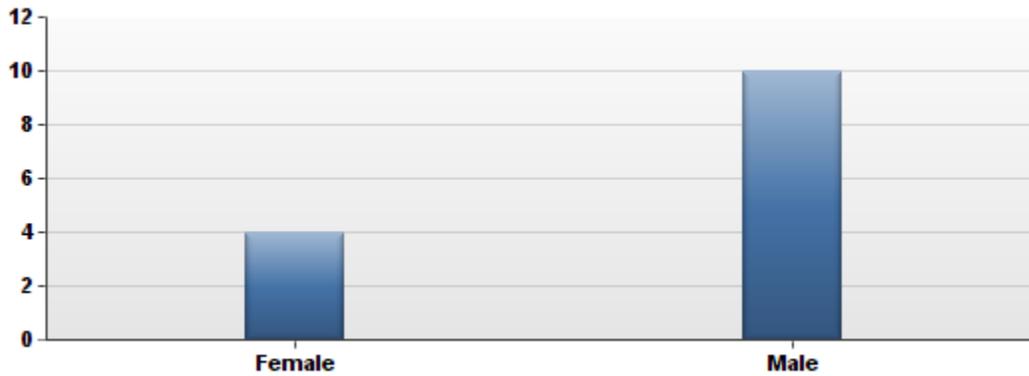
1. Age



#	Answer	Response	%
1	19-24	12	86%
2	25-29	2	14%
3	30-34	0	0%
4	35-39	0	0%
5	40-44	0	0%
6	45-50	0	0%
7	Over 50	0	0%

Statistic	Value
Min Value	1
Max Value	2
Total Responses	14

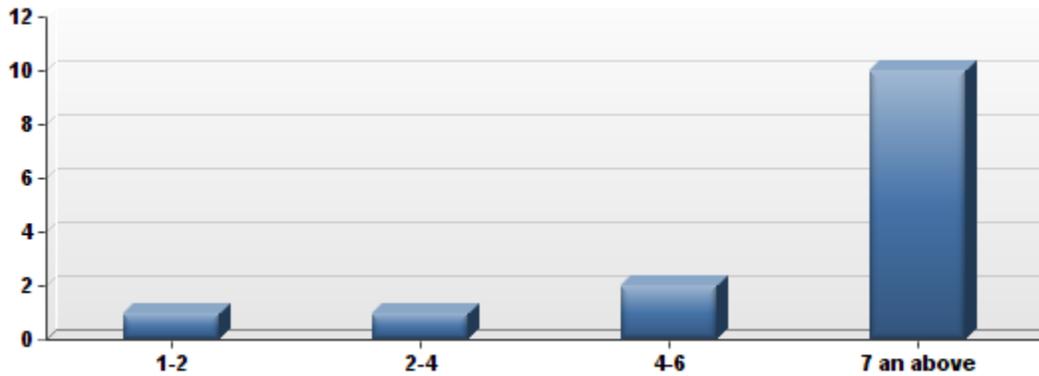
2. Gender



#	Answer	Response	%
1	Female	4	29%
2	Male	10	71%
	Total	14	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.71
Variance	0.22
Standard Deviation	0.47
Total Responses	14

3. Number of experience in project related team works.



#	Answer	Response	%
1	1-2	1	7%
2	2-4	1	7%
3	4-6	2	14%
4	7 an above	10	71%
	Total	14	100%

Statistic	Value
Min Value	1
Max Value	4
Mean	3.50
Variance	0.88
Standard Deviation	0.94
Total Responses	14

4. Please answer the questions in this section related to how you coordinated with your teammates to complete a task in your recent class project.

Impact of Organizational Context Factors on Individuals

#	Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Total Responses
1	My team encourages suggesting ideas for new opportunities.	0	0	0	2	1	3
2	My team encourages finding new methods to perform a task.	0	0	0	1	2	3
3	I feel I am really a part of my team.	0	0	0	1	1	2
4	If I had a chance to do the same work again in a team, I would rather stay in the same team.	0	0	1	1	0	2
5	If I had a chance to do the same work again in a team, I would rather join another team.	0	0	0	0	0	0
6	We trust one another a lot in my team.	0	0	0	0	0	0
7	I know I can count on the other team members.	0	0	0	0	0	0
8	I trust all of the other team members.	0	0	0	0	0	0
9	Each team member sets high standards for performance by his/her own behavior.	0	0	0	0	0	0
10	Each team member works as hard as he/she can.	0	0	0	0	0	0
11	Each team member takes initiative and puts ideas on the table.	0	0	0	0	0	0
12	Each team member sets a good example by the way he/she behaves.	0	0	0	0	1	1

Impact of Organizational Context Factors on Individuals

13	Leaders encourage team members to express ideas/suggestions.	0	0	0	0	0	0
14	Each team members listens to team's ideas and suggestions.	0	0	0	0	0	0
15	Every team member gives all team members a chance to voice their opinions.	0	0	0	0	0	0
16	The team leader manages the flow of the discussion constructively.	0	0	0	0	0	0
17	Team members suggest ways to improve my team's performance.	0	0	0	0	0	0
18	Collectively members encourage each other to solve problems together.	0	0	0	0	0	0
19	Team members are encouraged to collaborate and exchange information with one another.	0	0	0	0	0	0
20	A specific team member usually takes the initiative to explain instructor decisions/comments.	0	0	0	0	0	0
21	A specific team member usually explains course/assignment-related materials.	0	0	0	0	0	0
22	A specific team member usually explains rules and expectations to my team.	0	0	0	0	0	0

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23	A specific team member usually explains his/her decisions and actions to my team.	0	0	0	0	0	0
24	Each team member cares about the other team members' personal problems.	0	0	0	0	0	0
25	Each team member shows concern for the other team members' well-being.	0	0	0	0	0	0
26	Each team member treats the other team members as equals.	0	0	0	0	0	0
27	Team members take the time to discuss the other team members' concerns good-naturedly.	0	0	0	0	0	0
28	I believe I will receive an excellent grade in this class.	0	0	0	0	0	0
29	I value my grades because that determines my input in the team work.	0	0	0	0	0	0
30	My knowledge sharing helped other members in the team to solve problems.	0	0	0	0	0	0
31	My knowledge sharing improved work processes in the team.	0	0	0	0	0	0
32	My knowledge sharing contributed to collaboration in the team works.	0	0	0	0	0	0
33	My knowledge sharing helped the team to achieve its objectives.	0	0	0	0	0	0

Impact of Organizational Context Factors on Individuals

34	The objectives given to me were reasonable.	0	0	0	0	0	0
35	The objectives given to the team were achievable.	0	0	1	0	0	1
36	The course was designed in a way which gave fair and equal opportunity to perform as an individual member and as a team.	0	0	0	0	0	0
37	The structure of the task strengthened the knowledge sharing behaviors between team members.	0	0	0	0	0	0
38	The structure of the task offered opportunities to get well-acquainted with other members of the team.	0	0	0	0	0	0
39	The structure of the task was flexible in expanding scope of the members.	0	0	0	0	0	0
40	The structure of the task encouraged smooth cooperation within members.	0	0	0	0	0	0
41	The structure of the task encouraged constructive conflict during teamwork.	0	0	0	0	0	0
42	I am certain I understood the most difficult material presented in the readings for this course.	0	0	0	0	0	0
43	I am confident I understood the basic concepts taught in this course.	0	0	0	0	0	0

Impact of Organizational Context Factors on Individuals

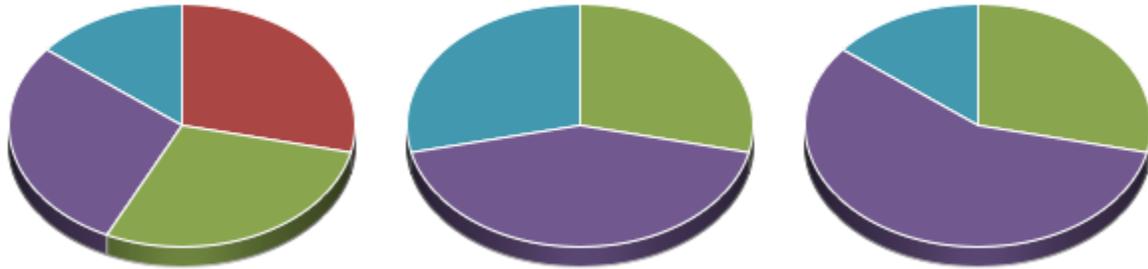
44	I am confident I understood the most complex material presented by the instructor in this course.	0	0	0	0	0	0
45	The electronic methods we used to communicate with one another were effective.	0	0	0	0	0	0
46	I only share knowledge with my team members when am I asked to.	0	0	0	0	0	0
47	I am more likely to share knowledge when I like the team I am working with.	0	0	0	0	0	0
48	I willingly interact and exchange knowledge with other members of different teams even when not mandated by the course curriculum.	0	0	0	0	1	1
49	I am less likely to share knowledge with other members when I am forced to do so.	0	0	0	1	0	1
50	Agreeing on a common ground helps me to share knowledge and exchange ideas.	0	0	0	0	0	0

Min Value	4	4	4	3	5	-
Max Value	5	5	5	4	5	-
Total Responses	3	3	2	2	1	0

5. My knowledge sharing with other team members are/was

■ 1 ■ 2 ■ 3 ■ 4 ■ 5

Very Formal:Very Informal Very Ineffective:Very Effective Very Unuseful:Very Beneficial



#	Question	1	2	3	4	5	Total Responses	Mean
1	Very Formal: Very Informal	0	2	2	2	1	7	3.29
2	Very Ineffective: Very Effective	0	0	2	3	2	7	4.00
3	Very Unuseful: Very Beneficial	0	0	2	4	1	7	3.86

Statistic	Very Formal: Very Informal	Very Ineffective: Very Effective	Very Unuseful: Very Beneficial
Min Value	2	3	3
Max Value	5	5	5
Mean	3.29	4.00	3.86
Variance	1.24	0.67	0.48
Standard Deviation	1.11	0.82	0.69
Total Responses	7	7	7

6. Please answer the questions related to your willingness to share and use knowledge in team works.

Impact of Organizational Context Factors on Individuals

#	Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Total Responses
1	I would take the initiative to provide individuals of my team with useful materials I have developed (e.g. models, memos, notes, archives).	0	0	0	3	3	6
2	I would eagerly receive and use materials created by individuals of my team (e.g. models, memos, notes, archives), if relevant to the project.	0	0	0	3	3	6
3	I would allow individuals from my team to spend significant time observing me in order for them to understand and learn from my work.	0	0	0	5	1	6

Impact of Organizational Context Factors on Individuals

4	I would willingly share with members of my team rules of thumb or tricks of dealing with a task or project that I have learned.	0	0	0	3	2	5
5	I would willingly share with members of my team informal information related to the task, if significant.	0	0	0	4	1	5
6	If needed, I would welcome the opportunity to spend significant time observing and collaborating with members of my team and others, in order for me to better understand and learn from their work.	0	0	0	4	1	5

Impact of Organizational Context Factors on Individuals

7	I would welcome and use any rules of thumb, tricks of the projects/tasks, and other insights individuals of the team have learned from their past experiences.	0	0	0	3	0	3
8	I would eagerly receive and consider any new ideas members of my team might have.	0	0	0	2	1	3
9	I would tend to believe information shared by members of my team and would use such knowledge as appropriate.	0	0	0	3	0	3
10	The information I received from each member of my team made a significant contribution to this project's quality.	0	0	1	2	0	3

Impact of Organizational Context Factors on Individuals

11	The information I received from each of the members of my team contributed to the project's overall performance.	0	0	0	3	0	3
12	The information I received from each member of my team made it easier to complete the portion of the task I am responsible for.	0	0	1	2	0	3
13	The information I received from the members of my team supported my individual performance on the task.	0	0	0	3	0	3

Min Value	4	4	4	4	4	4	4	4	4	3	4	3	4
Max Value	5	5	5	5	5	5	4	5	4	4	4	4	4
Total Responses	6	6	6	5	5	5	3	3	3	3	3	3	3