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ABSTRACT

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Abstract

Although there has been many studies that were conducted over the years about trust and its influence on knowledge sharing, the phenomenon in the context of project teams still remains ambiguous in theory and in practice. Moreover, managers often have difficulty in creating a workspace that team members are able to generate trust in order to encourage knowledge sharing. For this reason, this current research aims to examine three forms of trust namely: affect-based trust, cognition-based trust, and information-based trust, and their influences on the sharing of knowledge of project teams. In order to successfully conduct the research, the researcher shall provide an empirical investigation to explain the proposed relationships between the three forms of trust and knowledge sharing regarding project team members in various organizations by implementing a quantitative methodology research. A survey data of 256 responses was used to conduct confirmatory factor analysis and hierarchical multiple regression, and the hypotheses were tested. The results indicate that all the three proposed relationships between trust and knowledge sharing are positively and significantly supported, with affect-based trust being the most significant influence on knowledge sharing. Consequently, this research provides insights for managers about the value of project team members' trust on their sharing of knowledge and proposes future directions for improvement.

Key words	Knowledge sharing, trust, project team
Further information	-

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Turku School of Economics

THE EFFECT OF TRUST ON KNOWLEDGE SHARING BETWEEN PROJECT TEAMS

Master's Thesis
in International Business

Author(s):
Le Nguyen Nhat Vi

Supervisor(s):
D.Sc Birgitta Sandberg
Dr. Johanna Raitis

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Turku

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 INTRODUCTION

1.1 Background

The present business environment is exponentially facing challenges, uncertainties, and intense competition (Marouf 2016, 154; Cheung, Gong, Wang, Zhou & Shi 2016, 1508). In order to develop resources that are unique and worthwhile, organizations need to compose their own internal difficult-to-recreate resources (Marouf 2016, 154). Knowledge is viewed as a valuable asset in innovative competitive environment as it is the only determinant that suggests change and innovation in business; and thus, knowledge is considered to be the pillar for any business survival (Ullah, Akhtar, Shahzadi, Farooq & Yasmin 2016, 629). Moreover, the act of sharing knowledge benefits organizations in terms of gaining insights and profound understandings into their external and internal resources (Ullah et al. 2016, 629-630). The main objective of knowledge sharing is the efficient, effective, and innovative deployment of tangible and intangible resources to leverage organizational performance (Gholami, Asli, Nazari-Shirkouhi & Noruzy 2013, 206). By doing so, knowledge sharing can help organizations achieve critical competencies, such as in resolving problems, making plans for strategies, learning actively, deciding critical decisions, and improving productivity (Gholami et al. 2013, 206; Ullah et al. 2016, 629-630).

In addition, some authors say that the competence of an organization to manage knowledge effectively relies largely upon its people (Wickramasinghe & Widyaratne 2012, 214). The center of organizational voluntary knowledge sharing relies upon its employees (Wickramasinghe & Widyaratne 2012, 215). Likewise, Liu, Cheng, Chao & Tseng (2012, 408-409) and Ullah et al. (2016, 630) mention that whether knowledge sharing could be successful or not relies upon the relationships among employees in a company. Because knowledge lies within individuals, whether or not knowledge can move between individuals and units within an organization depends on its employees' behaviors of sharing knowledge (Liu et al. 2012, 409). As organizations relies upon their employees' behaviors of sharing knowledge, an individual's knowledge should be seen as a valuable resource that should be managed productively in order to benefit organizational performance and ultimately, bring organizational value-added and competitive advantage (Wickramasinghe & Widyaratne 2012, 214; Liu et al. 2012, 409). More specifically, when employees share their skills and expertise, the organizational

ability to manage and renew knowledge is strengthen which leads to more favorable consequences such as organizational long-term success (Power & Cornican 2015, 18; Liu et al. 2012, 409). Furthermore, previous researchers have acknowledged that the effective act of sharing knowledge is the core to a project accomplishment; consequently, it has a tremendous influence on a project performance because knowledge sharing not only can strengthen employees' relationships, but also can strengthen their professional skills regarding their technicality, analysis, as well as decision making (Power & Cormican 2015, 18). Therefore, knowledge sharing was concluded to be a crucial strategy used for knowledge management in an organizational project environment (Power & Cornican 2015, 18; Liu et al, 2012, 409; Wickramasinghe & Widyaratne 2012, 216).

On a team level, previous research demonstrated that teams' knowledge sharing contributes to a higher team performance as cited in different working environments, for instance, finance and insurance industries (Yu, Yu & Yu 2013), product creation process (Daood, Power, Phelan & O'Brien 2017), human resource (Marouf 2016), healthcare management (Liu, Cheng, Chao & Tseng 2012), e-commerce (Gefen, Karahanna & Straub 2003). Moreover, organizations need to rely on teams for innovation since teams can be seen as information processors (Cheung, Gong, Wang, Zhou & Shi 2016, 1508). For instance, knowledge sharing is the foundation for product design teams to advance their skills, competencies, value added, and sustainable competitive advantages (Zaglago, Chapman & Shah 2013). Furthermore, knowledge sharing is proposed to be the means that able team diversity advantages to emerge since members with different backgrounds can share their knowledge in order to retrieve new information, know-hows, and viewpoints from one and another (Cheung et al. 2016, 1511).

Furthermore, due to the dynamics in workforce formation, one crucial trend is the increasing diversity of people coming from different backgrounds join together, interact with one another. The diversity in workforce changes how employees' dependence on social resemblance, similar background, and experiences to devote and willing to work together (Mayer, Davis & Schoorman 1995, 710.). Team members with different backgrounds may determine different problems and have different angles to solve the problem and by sharing their knowledge, team members are able to discuss and exchange their various views regarding the possible ideas, feedback during implementation stage, and recognition of improvement opportunities (Cheung et al. 2016, 1511-1512). Trust, therefore, is essential in a team because it could generate an environment between team members that is open, interactive and cancel out conflicts and undesired behaviors

(Zaglago et al. 2013). Employees working together in an organization often involves interconnection which means they shall rely upon each other in several means to fulfill their individual and organizational goals (Mayer et al. 1995, 710). Hence, managers often strive to develop an appropriate environment to leverage trust between employees, which is a crucial factor of a team's knowledge sharing (Zaglago et al. 2013). It has been proven that the impact of trust on both the intention and attitude of knowledge sharing is direct and significant (Tamjidyamcholo, Baba, Tamjid & Gholopour 2013). Similarly, Chen, Chen, Lin & Chen (2010, 853) confirmed that trust crucially promotes the sharing of knowledge.

1.2 Purpose of the study

Teams are considered to be the composite of organizations and often cross ownership barriers, hierarchical positions, geological areas, businesses, and operations which diminish the effectiveness of traditional controls and monitor based on hierarchy (Chan Kim & Mauborgne 1998, 324). Moreover, a team needs to be established regarding self-organization principles (Nonaka 1994, 23). There is a variety of teams in an enterprise, for instance, joint venture teams, process restructuring teams, cross-functional teams, organizational transfiguration teams, management teams, strategic alliance teams, company-supplier teams, etc. (Chan Kim & Mauborgne 1998, 324). In addition, teams are crucial in organizational strategic performance because they facilitate organizational knowledge sharing behaviors through mutual trust between individuals in a team which brings about the process of learning new knowledge from one's past experience (Nguyen & Phan 2012, 57.). Therefore, the strategic competence of an enterprise relies heavily upon the responsibility of these teams because they act as internal and organizational systems in making crucial strategic decisions which in turn, makes teams become the crucial units of organizational performance (Chan Kim & Mauborgne 1998, 324).

However, managers and leaders have recognized that knowledge sharing is difficult to develop within project teams (Power & Cornican 2015, 18; Wickramasinghe & Widyaratne 2012, 215). The reason for this difficulty is because knowledge sharing concept is dynamic and multi-dimensional that could be considered as the heart of the contemporary knowledge creation and can also be seen as an asset for managing, applying, and absorbing (Power & Cornican 2015, 18). Because of its dynamics, knowledge sharing can either boost or prevent behaviors of sharing knowledge between

teams (Ullah et al. 2016, 629). Moreover, the resistance of team members towards sharing their personal knowledge with others is also a negative factor contributing to the mentioned difficulty (Wickramasinghe & Widyaratne 2012, 215). Because of the importance of knowledge sharing, scholars indicate that knowledge sharing between teams is a topic that need to be explored more adequately (Power & Cornican 2015, 18; Ullah et al. 2016, 629).

In addition, despite the fact that trust has received a lot of attention from academia, its study in knowledge sharing between project teams has remained ambiguous. Trust is multi-dimensional that has a variety of definitions which are suitable for diverse areas (Chen et al. 2010, 853). Due to the fact that trust relies upon a latent set of beliefs, which are vague, trust has multiple definitions that are suitable to different contexts and changes with time, environment, and other elements (Kanawattanachai & Yoo 2002, 188; Chen et al. 2010, 853). Moreover, the differences between multiple features of trust are not well understood in the literature (Kanawattanachai & Yoo 2002, 188). Therefore, enhanced understandings of the function of trust and the influences of different trust forms are expected to be meaningful both in theory and in management for knowledge-intensive organizations. More importantly, an extensive insight about impacts of various forms of trust on knowledge sharing shall be beneficial (Ellonen, Blomqvist & Puumalainen 2008, 161.). Consequently, an objective assessment of trust has become a crucial concern in the area of knowledge sharing (Chen et al. 2010, 254). In order to fulfill the purpose of this study, the main research question is formed accordingly:

How trust influences on knowledge sharing between project teams?

The three sub-questions are formed as following:

SQ1: What are the features and factors of knowledge sharing between project teams?
SQ2: What are the features and different forms of trust?
SQ3: How does trust impact knowledge sharing between project teams?

The first sub-question focuses on an in-depth understanding of knowledge sharing. Building an understanding of knowledge sharing by providing various literature of its features, discussing how knowledge is created, introducing various forms of knowledge and the stages of sharing knowledge. Then, the factors that crucially influence knowledge

sharing between teams are discussed to provide an insight of why knowledge sharing is still needed to be studied.

The second sub-question focuses on trust as one crucial factor affecting knowledge sharing by providing existing literature. The review of literature identifies and examines various aspects of trust, provides definitions of trust, forms of trust, and highlights the effect of trust on knowledge sharing.

The third sub-question clarifies the relationship of trust and knowledge sharing between teams after the evaluation from the previous two sub-questions. The discussion is provided to answer this sub-question by drawing from existing literature and the results of analysis. A theoretical model of the relationship is developed and tested which, consequently, provides answers for the main research question and contributes to the research gap.

2 KNOWLEDGE SHARING BETWEEN PROJECT TEAMS

2.1 Knowledge and knowledge sharing

Knowledge is power which means knowledge has a huge impact on various parts of an enterprise (Wiig, de Hoog & Van Der Spek 1997, 16). However, because knowledge is intangible and is changing over time, it is difficult to measure and attain (Wiig et al. 1997, 16). Consequently, enterprises need to develop a set of tools, methods, and techniques that helps solve this problem. For analyzing knowledge sharing in more detail, the features of the shared knowledge should be considered because it helps understand the process of knowledge sharing.

2.1.1 Features of the shared knowledge

Firstly, knowledge can flow inward and outward, which are called knowledge inflows and knowledge outflows, respectively (Michailova & Mustaffa 2012, 385). Knowledge inflows happens when the firm receives the knowledge and vice versa, knowledge outflows happens when the firm delivers its knowledge to others (Michailova & Mustaffa 2012, 385).

Secondly, knowledge is categorized into two types which are “tacit knowledge and explicit knowledge” (Nonaka 1994, 16). *Tacit knowledge,* or implicit knowledge*,* is defined as abstract knowledge which is hard to conduct, express, and communicate to others, instances such as personal experiences, professional insight, and know-hows of an individual (Nonaka 1994, 16; Huang et al. 2014, 817; Huang et al. 2011, 561). Tacit knowledge cannot be taught easily but it can be converted by implementing various methods such as demonstration, illustration, experiences, and stories (Rana et al. 2013, 914). Tacit knowledge is profoundly embedded in the action of a person, engagement, and responsibility in a specific area (Nonaka 1994, 16). On the other hand, *explicit knowledge* is objective knowledge which has the ability to be systematized, formatted which can be expressed and stored in various formal forms and written language, for instance, documents, cases, reports, and stored in knowledge repositories (Nonaka 1994, 16; Huang et al. 2014, 817; Huang et al. 2011, 561; Rana et al. 2013, 914). Explicit knowledge is also identified under the name knowledge articulation, which has similar definitions about having an ease of codification and documentation (Renzl 2008, 208). In the context of team, these two types of knowledge sharing can be differentiated. Team

members share tacit knowledge by sharing their personal experiences, leveraging their foundation knowledge and expertise, while explicit knowledge is shared when team members share codified ideas and knowledge (Huang et al. 2014, 817).

Previous research about organizational tacit and explicit knowledge developed two perspectives (Huang et al. 2011, 562). On one end, tacit knowledge could be turned into knowledge explicitly in order to be saved and preserved, especially when an employee stops working at an organization. Organizations save knowledge by coding it into formal electronic forms and store it in their electronic knowledge storages. In contrast, focus on explicit knowledge is about sharing it, identifying and overcoming blockades to share tacit knowledge such as geography distance, time, different culture norms (Huang et al. 2011, 562.) while interaction between people, trust, and informal structure encourages the sharing behaviors of tacit knowledge between people (Koskinen et al. 2003, 281).

Furthermore, another study categorized knowledge into three dimensions: (1) abstractness, (2) phenomenon comprehension and application purpose, and (3) openness (Chen et al. 2010, 854). One, abstractness includes formal, conceptual knowledge, and practical, experience-based knowledge (Chen et al. 2010, 854). Knowledge is referred as formal and informal knowledge with similar definitions (Nissen et al. 2000, 33). Therefore, by the definitions from different researchers, abstractness covers both tacit knowledge and explicit knowledge. Two, Chen et al. (2010, 854.) who based on the research of Quinn, Anderson, & Finkelstein (1996) grouped knowledge into a category to understand the phenomenon and its purpose in which there are "(1) declarative knowledge (know-what) – facts, theories and formation of an event; (2) causal knowledge (know-why) – causes and consequences of an event; (3) procedural knowledge (know-how) – development, progress, and mechanism of an event, and (4) relational knowledge (know-with) – relationships between an event and other influences". Three, the level of knowledge openness refers to whether some knowledge has high security and protection, which means knowledge could be divided into "public knowledge or private knowledge". Public knowledge is able to be accessed and shared by all individuals and teams, whereas private knowledge cannot and can only be shared based on trust with others (Chen et al. 2010, 854.). Similarly, Renzl (2008, 208) identified knowledge at individual and collective levels which have the same definitions as the private and public knowledge.

Additionally, characteristics of knowledge that individuals share are separated into three kinds: information-based (know-what), experience-based (know-how), and personal knowledge (dispositional knowledge) (Løwendahl, Revang & Fosstenløkken

2001, 916-917). According to the researchers, know-what is knowledge related to the tasks need to be conducted which is objective explicit knowledge, know-how knowledge is learnt from experience which is subjective tacit knowledge, and dispositional knowledge is that of an individual including talent, creativity, intuition (Lowendahl et al. 2001, 916-917; Wickramasinghe & Widyaratne 2012, 217; Vera-Munoz et al. 2006, 135).

On the other hand, at the firm-level knowledge, also known as collective knowledge (Renzl 2008, 208), knowledge is a combination of skills, habits, standards, and values that is created and exchanged by two or more employees working together and the shared knowledge incorporated by each employee's personal knowledge and information (Lowendahl et al. 2001, 917). Previous researcher stated that collective knowledge depends greatly on the interactions between team members (Renzl 2008, 208). Consequently, the collective knowledge of an organization is significantly impacted by the cultural system through which people gain their understandings, as well as the socially situated activities and the socially constructed character in which collective knowledge has been emphasized (Renzl 2008, 208, Lowendahl et al. 2001, 917). Moreover, as the results, knowledge at the collective level often consists of the firm's formal corporate reporting structures and its formal and informal planning, managing, and coordinating systems, which means it involves implementing a unique code of language, as well as common standards and values that instruct individual behavior (Lowendahl et al. 2001, 917).

In order for collaborative teamwork to prosper, the shared knowledge should be evaluated by team members (Leinonen & Bluemink 2008, 38). The shared knowledge in teamwork is developed, searched, collected that is relevant to the topic they are working on (Leinonen & Bluemink 2012, 39). The results from Leinonen & Bluemink's study (2012, 47) indicated team members tend to assume that that the shared knowledge they have in common mainly concentrates on the overall team goals and teamwork activities instead of project activities content. Furthermore, to generate new knowledge collaboratively, team members should express their shared reference to integrate their work (Leinonen & Bluemink 2012, 48). Therefore, team members' interaction and communication are crucial for knowledge sharing to succeed (Wickramasinghe & Widyaratne 2012, 217).

2.1.2 Features of knowledge sharing

Many researchers argued that knowledge sharing is the center of knowledge management (Rana et al. 2013, 914; Power & Cornican 2015, 18; Liu et al. 2012, 409; Wickramasinghe & Widyaratne 2012, 216). Briefly defined, knowledge management is "a method to manage resource of a company by making sure that the resource is available at the right time, right place, in the right shape, satisfy the quality requirements, and at the lowest costs possible" (Wiig et al. 1997, 16.) and it consists of five practices: "knowledge creation, knowledge acquisition, knowledge sharing, knowledge storage, and knowledge implementation" (Gholami et al. 2013, 207.). Previous research argued that in order to survive in today's intensively competitive market, enterprises need to adapt smart strategies successfully in which knowledge sharing processes and practices are (Gholami et al. 2013, 207). Moreover, because of the strong connection between learning and knowledge, organizations need to focus on enhancing knowledge sharing behaviors in order to attain organizational shared vision (Rana, Crowe & Usoro 2013, 914). In addition, knowledge sharing also help improve performance, decreases excessive learning, and develops competitive edge (Rana et al. 2013, 914), which consequently, makes knowledge sharing an essential strategy in knowledge management (Power & Cornican 2015, 18; Liu et al, 2012, 409; Wickramasinghe & Widyaratne 2012, 216).

By definition, the act of sharing knowledge occurs when knowledge is accessible to everyone in the company (Szulanski 1996, 28; Wickramasinghe & Widyaratne 2012, 216). Moreover, the flows of knowledge include creating, transferring, and integrating the dispersed knowledge (Cabrera & Cabrera 2005, 720). Previous research also stated that terms such as "flows", "transfer", "sharing", "exchange", or "involvement" in different articles all refer to the flows of knowledge, which in other words, are also referred to knowledge sharing (Michailova & Mustaffa 2012, 384). In addition, Marouf (2016, 155.) defined knowledge sharing as an action that

"involves transferring knowledge between two individuals, units or entities, through a process of communication where the knowledge becomes reinterpreted and recreated." (Marouf 2016, 155.)

Additionally, the four stages of knowledge sharing have been identified including "(1) initiation, (2) implementation, (3) ramp-up, and (4) integration" (Szulanski 1996,

28.). One, *initiation* stage consists of all motivations which contribute to the decision of sharing knowledge. The author stated that motivation for knowledge sharing often occur when there is a demand and the needed knowledge can meet that demand both exist in an organization (Szulanski 1996, 28). Two, *implementation* stage begins with the decision to proceed in which knowledge moves between the sharer and the recipient. At this stage, the connection between the knowledge sharer and knowledge recipient is formed and the shared knowledge is altered to meet the recipient's demands, to anticipate problems that may occur because the knowledge shared is of the same practice, or to help convince the recipient about the reliability of the new knowledge. The third stage is *ramp-up* which means the recipient begins to implement the knowledge received. This is when recipient has to identify and solve unexpected problems that appear outside of post-knowledge sharing performance expectations, slowly improve performance and move toward a satisfactory level. The last stage is *integration*, the recipient attains positive results with the shared knowledge and then, the use of shared knowledge becomes routinized and the used knowledge and new practices become standardized (Szulanski 1996, 28-29.).

Lastly, knowledge sharing is determined based on the foundation of "request" and "respond" cycle, which means it starts with an individual requests or asks others knowledge to solve issues and finishes with another fulfills the request (respond) to provide what is asked (Teng & Song 2011, 105). However, knowledge sharing depends largely on the sharer's behaviors instead of being two-sided with both the sharer and recipient (Wickramasinghe & Widyaratne 2012, 216). The reason is because there are chances that people are willing to offer, voluntarily without being asked, their information or knowledge that could possibly be useful to other. This act of giving knowledge voluntarily without being asked is also included in the knowledge sharing behaviors (Teng & Song 2011, 105.). In contrast, when knowledge sharer is asked for specific information as well as requests for fulfilling the requests, it is solicited knowledge sharing (Teng & Song 2011, 105). Therefore, knowledge sharing can either be solicited or voluntary (Wickramasinghe & Widyaratne 2012, 216; Teng & Song 2011, 105). In contrast, Wickramasinghe & Widyaratne (2012, 216), based on Davenport's study (1997), stated that knowledge sharing should only be defined solely as voluntary which means knowledge sharing indicates that the sharer willingly, without any attachment, gives knowledge which could be adopted by others; plus, the act of sharing knowledge includes some conscious actions from the sharer possessing the knowledge who is willing to take part in the process of sharing knowledge although no obligation is available.

Hence, based on the discussions made by Wickramasinghe & Widyaratne (2012), this current research shall use the term knowledge sharing as referring to the act of voluntarily share knowledge by knowledge owners to other team members.

2.2 The factors influencing knowledge sharing between project teams

Four groups of factors that influence knowledge sharing are categorized: the context in which knowledge sharing occur, the knowledge sharer and knowledge recipient (the actors), the source of knowledge, and the shared knowledge (Szulanski 1996, 30.). Moreover, previous studies added technology as a crucial factor that influences knowledge sharing (Vera-Munoz, Ho & Chow 2006, 133; Chennamaneni, Teng & Raja 2012, 1097). Specifically, Vera-Munoz, Ho & Chow (2006, 133.) proposed three factors: "information technology, formal and informal interactions among individuals, and reward systems". In addition, Chennamaneni, Teng & Raja (2012, 1097) indicated three sets of important antecedents are: psychological precedents (include extrinsic and intrinsic motivations), organizational precedent (such as organizational climate), and technological precedents (include assisting tools and technology) (Chennamaneni et al. 2012, 1099-1101.). Furthermore, evidence has been provided concerning the impact of team climate as contextual factors and the effects of individuals' altruistic intentions as intrinsic motivation on the act of knowledge sharing (Liu et al. 2012, 408). Therefore, in this chapter, the factors influencing the knowledge sharing between project teams would be categorized into: (1) The context, (2) the knowledge sharers and knowledge recipients, (3) information technology, and (4) the shared knowledge. Because the shared knowledge was already discussed in chapter 2.1.1, it would not be restated, and the other three factors shall be discussed in the following chapters.

2.2.1 The context of knowledge sharing

Contextual factors were confirmed to have a crucial role in the process of designing and implementing of knowledge sharing (Nissen, Kamel & Sengupta 2000, 40). Also, other researchers stated that organizational context has a crucial role in impacting knowledge sharing implementation (Nissen et al. 2000, 33; Szulanski 1996, 30).

Organizational context factors include relationships and productivity of an organization (Szulanski 1996, 31). Since knowledge is created by individuals, enterprises need their employees to be innovative for knowledge creation (Nonaka 1994, 17) by

providing supportive context. It was stated that the act of sharing knowledge, specifically implicit knowledge, requires communication between individuals (Nonaka 1994, 16-17). Moreover, the ease of sharing knowledge relies upon the lack of difficulty of communication and also upon how close the relationship between knowledge sender and recipient is (Szulanski 1996, 32). Therefore, an exhausting relationship which is laborious and distant should create difficulty in the sharing process. As the same time, an enterprise in which its structure is formal and framed negatively influence the attempts to share knowledge (Szulanski 1996, 32.).

In addition, three organizational contexts were listed which are (1) the role of organizational memory, (2) structure of the organization, and (3) organizational incentives (Nissen et al. 2000, 33-34). These three contexts are discussed in the following paragraphs.

One, *organizational memory* is stored within an organization are lessons learnt from experience over time (Nissen et al. 2000, 33.). The authors mentioned informal and formal organizational memory. Formal knowledge can be stored physically such as memos, reports, files, etc. while informal knowledge is created by individuals through practical practices. The risks related to organizational memory comprise of the need to store the knowledge due to lack of clarity about the value and content of the lessons learned, the difficulty in capturing informal memory because it is created outside of organizational boundaries leading to the loss of knowledge, and the capabilities of enterprises to incorporate the lesson learned into practices (Nissen et al. 2000, 33.).

Two, *organizational structure* influences the knowledge sharing process in ways regarding its formality, traditional, or non-traditional structure, for instance, virtual organization does not have established structure or norms (Nissen et al. 2000, 34). Organizational structure consists of implicit standards, common values, beliefs, everyday routines, and underlying assumptions that structure the models and qualities of cooperations between employees at multiple hierarchical positions (Vera-Munoz et al. 2006, 140; Chennamaneni et al. 2012, 1101). Organizational structure instructs employees how to behave by transmitting them the behaviors that are considered to be appropriate and desirable; consequently, making a strong impact on sharing knowledge intention (Chennamaneni et al. 2012, 1101). Also, norms and practices that leverage broad-mindedness and teamwork could encourage a lot of motivation to share knowledge; therefore, it has a huge impact on attitudes of employees toward communication and communication process and system (Vera-Munoz et al. 2006, 140). Additionally,

leadership acts as an essential player in knowledge sharing because in order for knowledge to be shared successfully and effectively, leaders are the ones who provide visions, and are the ones who generate and encourage knowledge sharing behaviors, allow and boost the continuous process of knowledge creation (Nonaka 1994, 29; Nonaka & Toyama 2005, 431).

Three, *organizational incentives* relate to whether or not an enterprise decides to continue working on the project by continuously retaining and updating the necessary knowledge which might be costly to its resources (Nissen et al. 2000, 34). In addition, previous studies also proved that extrinsic incentives could be incredibly influential on the intentions to share knowledge. Organizational rewards, for instance, bonuses, paid vacations, promotions, and other material benefits are found to be effective encouragement for employees to share their knowledge willingly (Hau, Kim, Lee & Kim 2013, 358-359).

Furthermore, organizational climate factors, stated in previous studies as part of the organizational context that influences knowledge sharing, which were identified are (1) innovativeness, (2) affiliation, and (3) fairness (Bock, Zmud, Kim & Lee 2005, 91). These three organizational climates shall be explained in the following paragraphs.

Firstly, *innovativeness* as the consciousness that creativity and learning are encouraged and rewarded, information flows are opened, and mistakes are tolerated (Chennamaneni et al. 2012, 1101; Bock et al. 2005, 91). As the result, employees who work in an innovative environment tend to share inventive and contemporary ideas with others than those who do not work innovative environments (Bock et al. 2005, 91).

Secondly, *affiliation* is the sense of cohesion among members of an enterprise which shows the support to motivate its members helping each other (Chennamaneni et al. 2012, 1101; Bock et al. 2005, 91).

Thirdly, *fairness* is the consciousness that organizational practices are impartial, neither restricted nor inconsistent which contributes to building trust between individuals (Bock et al. 2005, 91). Fairness in organization would also be called procedural justice which is the driving force of the decision-making process (Chan Kim & Mauborgne 1998, 325, Vera-Munoz et al. 2006, 141). It was argued that fairness does not determine the decision making, it only gives everyone's ideas a chance and it is the merits of the ideas that determine what decision is chosen (Chan Kim & Mauborgne 1997, 69). The conclusion stated when individuals feel that the strategic decision-making procedures are reasonable, they would generate trust and commitment which in turn make them more

willing to engage in voluntary cooperation and vice versa, when they feel that the procedures are unreasonable, they are more unwillingly to cooperate, keeping the ideas to themselves, refusing to share their knowledge, and delaying the process of formulating and implementing critical decisions (Chan Kim & Mauborgne 1998, 323). Fairness, therefore, motivate individuals to exercise knowledge sharing (Chennamaneni et al. 2012, 1101).

2.2.2 The sharers and recipients of knowledge sharing

The knowledge sharers and recipients and the relationship between them also has an essential role in the act of sharing knowledge (Michailova & Mustaffa 2012, 387).

Initially, the interaction between team members is important because interaction problems within project teams usually appear when each person listens and speaks individually (Koskinen, Pihlanto & Vanharanta 2003, 286). A team can be made of individuals having various backgrounds which means their views can be incredibly different and causes unsettled conflicts with miscommunication and misunderstanding. Members in a team often think about their own viewpoints and proposals in addition to their different worldviews, they not always understand other people's opinions. Therefore, effective cooperation demands the capability and the motive to verbally exchange issues by involving team members to compromise as well as frequently interact with each other (Koskinen et al. 2003, 286.).

Moreover, trustworthiness between actors of knowledge sharing was described to be important (Szulanski 1996, 31). Szulanski, Cappetta & Jensen (2004) examined and concluded that perceived trustworthiness, a characteristic of the sharers and the recipients, has a big impact on the accuracy of knowledge sharing (Michailova & Mustaffa 2012, 387; Szulanski et al. 2004, 608). Also, previous research about relationships between the sharers and recipients as well as knowledge sharing were analyzed and concluded that the existence of competence-based trust is incredibly important for tacit knowledge sharing (Levin & Cross 2004, 1479 & 1486). Additionally, it was stated that the knowledge sharer should be seen as a trustworthy source of knowledge which leads to the knowledge is reliable to be shared and exploited. If both parties do not have faith in each other, they will be unmotivated to share or receive the knowledge as the sharer sees his or her knowledge as a precious possession, while the recipient is hesitant to accept knowledge

from the outside due to the fear of unseen sabotage and rejection when using the new knowledge (Szulanski 1996, 31.).

On a different angle, individual motivations of the knowledge sharers and knowledge recipients are highly valued, including intrinsic and extrinsic motivations towards knowledge sharing (Hau et al. 2013, 357). Previous research stated that knowledge sharing most likely occurs with the existence of strong individual motivations (Hau et al. 2013, 357). Moreover, individual-level factors such as organizational commitment, knowledge, ability, as influences of knowledge sharing in which organizational commitment relates greatly to effective communication within organizations (Vera-Munoz et al. 2006, 143-144). Commitment in organization is the level of an employee engaging in organizational goals and values. In other words, the higher an employee's organizational commitment is, the more the employee is satisfied with the job, the more loyal the employee is, and thus, the more he or she willingly share knowledge (Vera-Munoz et al. 2006, 144.).

In addition, according to Scott's rational choice theory (2000, 127), individuals are motivated for any action by which they prefer or their wants and goals. People will likely to calculate the benefits and costs before making decisions about what to do, hence, the implementation of rational choice theory to social interaction can also be seen as exchange theory (Scott 2000, 126) and knowledge sharing can be seen as a part of social exchange (Hau et al. 2013, 357). The benefits of social exchange can be money-related such as rewards and promotions; or not money-related such as happiness and acknowledgement (Hau et al. 2013, 357, Wickramasinghe & Widyaratne 2012, 221). Hence, motivation is said to be a crucial factor affecting individuals' intentions to engage in knowledge sharing despite what type of knowledge it is (Vera-Munoz 2006, 133). Therefore, extrinsic and intrinsic motivated employees were studied to examine their effects on knowledge sharing in the following paragraphs.

Firstly, "*extrinsic motivated employees* are motivated by benefits and rewards when they share their knowledge" (Hau et al. 2013, 357.). Previous researchers stated that extrinsic motivation in an organization include rewards and reciprocity (Kankanhalli, Tan & Wei 2005, 113). Different researchers found different evidence on whether benefits such as better job assignment, better job position, higher paid, bonus, or job guarantee, can have either positive or negative influence on employees' knowledge sharing (Hau et al. 2013, 362; Wickramasinghe & Widyaratne 2012, 221). While it has been proven that rewards can encourage individuals to share their knowledge (Kankanhalli et al. 2005,

133), a different research actually found extrinsic rewards would be unbeneficial to how individuals feel about sharing their knowledge (Bock et al. 2005, 88), and another research found that organizational rewards would negatively impact employees' act of sharing tacit knowledge but positively impact their intentions to share explicit knowledge (Hau et al. 2013, 362). Also, evidence concluded that rewards significantly and positively influence the extent to share knowledge (Wickramasinghe & Widyaratne 2012, 229).

Furthermore, previous research concluded that financial rewards can promote organizational knowledge sharing on both formal and informal interactions (Bartol & Srivastava 2002, 64). Regarding formal integrations, rewards (e.g. monetary) could partially be generated from sharing information within teams or between team units; which possibly make them useful in encouraging employees to collaborate, partner with each other, and commit to the work. Consequently, team-based rewards would generate an increased knowledge sharing incentives within teams and across teams. On the other hand, regarding informal interactions, the main influential factor is trust between individuals. Because of this reason, the impact of rewards is indirect, which means organizational justice in the distribution of rewards is the crucial element in trust development leading to the encouragement of knowledge sharing (Bartol & Srivastava 2002, 64.).

Additionally, reciprocity happens when employees exchange relations in a firm and it is different from rewards based on the exchange relationship of the sharers and recipients (Hau et al. 2013, 357). According to Chennamaneni et al. (2012, 1100), individuals expect that when they involve in social exchanges, their future would be profitable based on their contributions, their expectations are driven by personal duty, recognition, and trust. Results from researchers recognized reciprocity positively affect the employees' intentions to share tacit and explicit knowledge through their attitudes toward sharing their knowledge (Hau et al. 2013, 363; Bock et al. 2005, 88). Hence, reciprocity was concluded as one of the important predictors for knowledge sharing (Chennamaneni et al. 2012, 1107). Therefore, employees who are highly motivated by extrinsic incentives would more likely to take part in sharing knowledge (Kankanhalli et al. 2005, 113).

Secondly, *intrinsic motivated employees* refer to the motivation to exercise an activity for immaterial gains (Hau et al. 2013, 360) and it positively impacts knowledge sharing (Hau et al. 2013, 360; Bock et al. 2005, 87; Chennamaneni et al. 2012, 1107; Liu et al. 2012, 408, Vera-Munoz et al. 2006, 133). Previous researchers have found out that

intrinsic motivations that highly affect knowledge sharing behaviors include enjoyment (Hau et al. 2013, 360) and knowledge self-efficacy (Kankanhalli et al. 2005, 113). Due to the fact that organizational knowledge belongs to individuals, an organization needs to have an ability to manage and enhance knowledge and this ability is greatly controlled by the employees' willingness to share their knowledge (Liu et al. 2012, 409). Moreover, employees who are motivated by intrinsic motivations when engage in the share of knowledge would experience joy and happiness (Hau et al. 2013, 360). The feeling of enjoyment is created inside a sharer is a type of stimulation that based on the exchange of relationships between people who share their own knowledge and ego. The authors found out that enjoyment affect the people intend to share both formal and informal knowledge (Hau et al. 2013, 363). In both research studies by Liu et al. (2012, 409) and Kankanhalli et al. (2005, 122), the enjoyment in aiding others, also called altruism, generates when individuals attain enjoyments from assisting others voluntarily, without the expectation of receiving anything in return. Because the act of helping is viewed as voluntary acts performed to benefit persons, unselfish intentions seem to be motivated from within due to the concern about what other people need (Liu et al. 2012, 409). Hence, knowledge sharers gain satisfaction by implementing their unselfish behavior which originates from internal satisfaction in assisting other people (Kankanhalli et al. 2005, 122). In addition, self-adequacy knowledge is about people knowing what they are capable of with the abilities they possess. The competence of knowledge is demonstrated by employees thinking about their knowledge could be used to resolve issues, advance work performance, or contribute to company (Kankanhalli et al. 2005, 122). The more they see their expertise is of help to the organization, the more they gain confidence and hence, increase their self-efficacy (Kankanhalli et al. 2005, 122).

2.2.3 The use information technology in knowledge sharing

Technologies used in information and communication includes internet, group support system, database management, email, bulletin boards, intranets, knowledge domains and practice communities leverage cooperation and encourage knowledge sharing (Chennamaneni et al. 2012, 1101; Vera-Munoz et al. 2006, 136). Information technology often leads to various consequences, for instance, enhance the process of making decisions, in-time for reporting, improve the availability of information, boost work rate, and boost profitability (Dehning 2002, 223).

Moreover, information technology improves the ability of organization to reach essential data and information and transmit them within and across the entire organization, which in turn would enhance work productivity and boost the process of decision making (Vera-Munoz et al. 2006, 139). The preferred results could occur if a technological tool is user-friendly and well-designed which could encourage employees to share knowledge and decrease the time needed to engage in the share of knowledge behaviors (Chennamaneni et al. 2012, 1101). For example, computers can be used as a mediated communication tool, such as group support system, to reinforce the team in the process of making decision and associated responsibilities (Vera-Munoz et al. 2006, 139). As the result, employees are expected to use the companies technology systems to take part in knowledge sharing (Chennamaneni et al. 2012, 1101). Hence, these technological systems enable employees to work in virtual teams which support electronic meetings in terms of geographically dispersed teams and cost saving advantage (Murthy & Kerr 2004, 8).

However, using information technology systems does not mean there are no limitations in terms of effectively sharing knowledge. Vera-Munoz et al. (2006, 139) argued that knowledge can be difficult to document due to its significant amount of knowledge in an organization. For instance, determining best processes of a company often faces two key challenges: (1) the difference between the instruction of a task in a process guide and the reality in practice, and (2) the difference between people expectation about how they work do their assignment and the reality of what they complete it. The reason is because to carry out a work in reality that is full of implicit difficulties, employees would have to improvise in order to complete the assigned task (Vera-Munoz et al. 2006, 139.). Moreover, tacit knowledge is part of the work-related knowledge and it can only surface through experience (Nonaka 1994, 16; Huang, Hsieh & He 2014, 817; Huang, Davison & Gu 2011, 561). In addition, even if company managers are able to gather and encode a considerable amount of knowledge base, they should arrange the available database and validate which information is usable for the current problem. In addition, when knowledge is coded with a specialized information technology-based system, it will be difficult to be applied by all employees in an enterprise (Vera-Munoz et al. 2006, 140.).

3 TRUST BETWEEN PROJECT TEAM MEMBERS

3.1 The concept of trust in literature

Research about trust have been conducted for years as it has always generated scholars' interest in organizational studies (Mayer et al. 1995, 709). Trust has been proven to be the central part of an effective information sharing which leads to mutual understanding in a team (Zaglago et al. 2013; Pinjani & Palvia 2013, 145). Moreover, studies have found that trust is not a single-dimensional concept (Tamjidyamcholo et al. 2013, 231) but instead, it is a multi-dimensional construct which makes trust a dynamic concept that generally alters with time or with environmental changes (Chen et al. 2010, 853-854). Therefore, trust has various definitions depending on different situations and contexts (Chen et al. 2010, 854).

Trust has been defined in literature in multiple theoretical and operational ways. One research stated that a person can have trust in another person, in an organization, or in a group of individuals (Chowdhury 2005, 312). Interpersonal trust can be described as someone who is willing to depend on other person's actions which relate to opportunism, for instance, when a person shares an idea, he or she would anticipate that someone else might take credit of that idea. In addition, trust is about a person knowing and can anticipate others' actions when they can freely perform on their own will (Chowdhury 2005, 312.).

Furthermore, trust is the belief of others that an individual will not act in a manner that is unethical and unacceptable by the social norms (Gefen et al. 2003, 54). Trust concerns with the confidence that the credible person will execute the commitments he made, in spite of the dependency and vulnerability of the trusting person (Gefen et al. 2003, 54). Trust was categorized into four dimensions including (1) a particular set of beliefs primarily related to honesty, compassion, and competence of the other person, (2) a common belief that the other person could be trusted, which is also considered as the willingness to trust and be exposed to other people's actions, (3) the effect shown in how confident a person is and safety of others, and (4) a combination of these elements (Gefen et al. 2003, 55.).

Trust is not easy to be detected and examined because it has a taken-for-granted characteristics for having a lot of similarities to the fundamental social standards and norms (Atkinson & Butcher 2003, 288) in different situations and contexts (Chen et al.

2010, 854). For instance, trust was defined based on three dimensions which were ability, benevolence, and integrity (Mayer et al. 1995, 715). On the other hand, interpersonal trust was categorized into two dimensions: (1) horizontal trust, which is the trust that employees have internally, and (2) vertical trust, which is the trust employees have toward each other and toward people holding higher positions (Ellonen et al. 2008, 161). Similarly, another definition of trust which involving employees of a company includes (1) positive anticipations, for instance, integrity, competence, honesty, goodwill, and (2) ability, with regard to the employees' competence and reliability within the company (Chen et al. 2010, 854). Table 1 consists of multiple definitions of trust from various authors.

In general, definition of trust used in this study is a psychological state of a person who accepts to be exposed and vulnerable to confide in the other party without controlling or monitoring that other party, which is mainly based on trust definition from Mayer et al. (1995, 712), because the authors' definition is one of the oldest and the most often mentioned in further studies about trust.

Table 1: Definitions of trust

Authors	***Definition***
Pinjani & Palvia (2013, 145.)	"Trust in a team context is the confidence level of team members towards each other."
Chen et al. (2010, 853.)	"Trust is a psychological state that consists of the intention to be vulnerable based on positive expectations related to another person's intention or behavior without the ability to monitor or control that other party."
Atkinson & Butcher (2003, 288.)	"Trust is efforts to incorporate existing credible views into a conceptualization that is possibly to lead to unusually complex or abstract concepts for scientific research purposes of an organization."
Gefen et al. (2003, 54.)	"Trust is an expectation that others will not behave opportunistically by taking advantage of the situation."
Mayer et al. (1995, 712.)	"Trust is the willingness of one party to be vulnerable to the actions of another party based on the expectation that the other party will take actions that are important to the trustor, regardless of ability to supervise or control the other party."
Rotter (1967, 651.)	"Interpersonal trust is defined as an expectation held by an individual or a group from which another person's promise or statement can be based on."

On the other hand, there are other terms that have been used identically and in replacement of trust which are “cooperation, confidence, and predictability” (Mayer et al. 1995, 172.) as well as “familiarity” (Luhmann 2000, 95.). Trust and cooperation could be easily confused because with trust, people would engage in collaborative work, but trust is not an antecedent of cooperation (Mayer et al. 1995, 712). Additionally, trust and confidence have similarity in the concept in terms of a person having the expectation of others which could lead to disappointment when expectation is not met, but the terms are different from each other because trust requires having a past interaction, being aware and accepting the risks (Mayer et al. 1995, 713). Also, predictability and trust are similar because they are based on risk reduction methods; but trust must go beyond predictability because a party is trusted when he or she is predicted to behave in a specific way in which the executor distributes the resource between the trustee and trustor (Mayer et al. 1995, 714). In addition, there has been confusion between familiarity and trust and the distinction between the two terms has been provided (Luhmann 2000). Familiarity is an unavoidably verifiable truth, whereas trust is the base to resolve problems when risks exist (Luhmann 2000, 95.). Because of the fact that trust has a close link to fundamental social standards and practices, trust is a socially composed phenomenon and thus, it is a pointless effort in indicating a universal meaning of the word “trust” as its meaning is built according to the situation and the relationship of both parties.

3.2 Features of trust

It has been proven that the adaptability, improvment, and survival of social groups depends on the existence of trust (Rotter 1967, 651). According to Ellonen et al. (2008, 160-161), the crucial function of trust in an organization is to encourage organizational effectiveness and efficiency, trust is considered to be stronger in post-bureaucratic network businesses in which distinctive information and collaboration between individuals and within organizations are increasingly significant. Moreover, trust was proven to increase communication (Rana et al. 2013, 917), organizational cooperation and collaboration (Ellonen et al. 2008, 161), leadership effectiveness (Tyler 2003, 556). On the other hand, the reason for which trust is crucial to team performance or organizational accomplishment, because of it being an important antecedent to exchanges that are connected to work outcomes (Lau & Cobb 2010, 901).

In Tyler's study (2003, 556) about trust within organizations, the author contend that trust is important because it is the key to cooperation. Although cooperation has always been essential in companies, new movements in the nature of organizational motion have led to several outcomes such as the nature of work is changing which makes the traditional ways of maintaining cooperation becomes difficult, and the nature of cooperation has been changed in ways that it is more difficult to motivate voluntary forms of cooperation (Tyler 2003, 556). Due to the fact that the nature of work is changing into more creative labor rather than simple, repeated tasks, it is increasingly more difficult to monitor the work and it depends heavily on the willingness to engage in work from employees; therefore, company must have faith that people are working hard to complete their assigned jobs (Tyler 2003, 557-558).

Moreover, the growing insight of the function of trust and the influence of different types of trust is believed to be both theoretically and managerially beneficial for organizations that have comprehensive knowledge, which further leads to a profound understanding of the impact of different trust types on innovativeness of organizations (Ellonen et al. 2008, 161). Different aspects of interpersonal trust including competence, benevolence, and reliability, influence different aspects of the creativeness of an enterprise (Mayer et al. 1995, 715; Ellonen et al. 2008, 161). Definitions were given to competence, benevolence, and integrity in Lau & Cobb's research (2010, 901). *Competence* of a trustee is his or her ability to conduct transactions; *benevolence* is the assumption that the person being trusted will consider the trustor's benefits in mind; and *integrity* is the assumption that the trusted person will comply with the behavioral norms which are crucial to both the trustor and the transaction conducted (Lau & Cobb 2010, 901.).

In addition, the core of trust is the individual presentation as a social identity which is built from interaction and correlates to its environment (Koskinen et al. 2003, 287). Trust relies on sincerity in the sense that project team members are what they claim to be, which in other words, trust is based on expectations of project team members toward each other (Koskinen et al. 2003, 287). Expectations are based on trustors' perceptions of the motives and abilities of the trustees, such as the identity is shaped by the trustees' perceived motives and abilities (Koskinen et al. 2003, 287). However, the expectations of the team members can easily be crashed because of these three aspects: (1) the progression of the ordinary and ethical order, (2) the professional competence of the

responsible involved individuals, and (3) the obligations of the individuals – the duties and motives to put the interest of others above theirs (Luhmann 2000, 94-95).

Consequently, identity and trust are center concerns, both as precedents and results of business relationships in terms of harmonizing cohesion and diversity of relationships because trust strengthens value and rises the capabilities in relationships (Huemer 2004, 251). Although teams can generate great advantages such as adding more innovativeness when people from various backgrounds working together, team diversity can also generate conflict within and among teams (Han & Harms 2010, 20-21). In terms of team diversity, Han & Harms (2010) investigated the importance of team identification on trust in peers because of the nature of teams nowadays change drastically. For instance, virtual work teams are operated because team members nowadays have to collaborate across geographic boundaries, or employees are more possible to involve in more than two teams concurrently. The authors concluded that team identity helps decrease the disputes happening at work by employees having trust in their colleagues (Han & Harms 2010, 35.). Also, teams can provide instruments for learning interaction, but members require time to reflect each other and also a safe environment through which trust and shared identity are developed after a period of time working together, and in turn, the ability of team members to share and learn from each other would be enhanced (Kimble 2011, 7).

Another research proposed that in order to build unified relationships, companies are required to comprehend ways to encourage supportive attitudes and encouraging values through social motivations, namely "motive-based trust and procedural justice (fairness)" (Tyler 2003, 566.). Compared with procedural justice, trust has a more direct link toward social relationships and is the central to understand the dynamics of organizations. Because people's motives and personalities are the foundation of people's interaction, and thus, trust based on motivation is connected with individuals' conclusions regarding the intentions and characters of others; especially, people are more eager to have faith in others who have similar social connection, for instance, a similar background (Tyler 2003, 566.).

Additionally, trust significantly impacts the connection between conflict in task implementation and job performance in ways that when individuals experience a higher level of trust in their colleagues, job performance will improve (Lee, Lin, Huang, Huang & Teng 2015, 534-535). In more details, team members' relation could be strengthened that could direct to more consistent and coordinated relationships between individuals, in which unfavorable feelings can be prevented; thus, team collaboration is improved, and

job performance is intensified (Lee et al. 2015, 535). In addition, when team members cooperate based on trust, their relationships shall be strengthen and the conflict on team performance shall be minimized (Lau & Cobb 2010, 903). Also, in their study, with the existence of trust, members in a team are eager to provide and allow mistakes, more open to feedback, and accept drawbacks (Lee et al. 2015, 535).

Furthermore, a study about trust in the development of relationships at managerial levels suggested that managers shall have a higher demand to understand the causes of trust rather than to understand trust itself (Atkinson & Butcher 2003, 284). Previous researchers addressed the contextual issues surrounding the developing of managerial trust (Atkinson & Butcher 2003, 282) and that trust encourages people to work together productively (Mayer et al. 1995, 710). Because managers are the main designers of organizational form, they are also the forerunners who govern the information flow and chances to exchange information (Atkinson & Butcher 2003, 283); thus, trust is the core factor for managers to develop and maintain the effectiveness of employees' working together leading to managerial and organizational effectiveness (McAllister 1995, 24; Atkinson & Butcher 2003, 283).

Lastly, in order to understand why a person is more likely to have more or less trust for another person, characteristics of the trustee are taken into account (Mayer et al. 1995, 716). The authors stated that three characteristics of the trustee that determined the trustworthiness are "(1) ability, (2) benevolence, and (3) integrity" (Mayer et al. 1995, 717-720.). The three factors are all crucial features of trust and may alter separately from each other (Mayer et al. 1995, 720). *Ability* is a set of skills, competencies, and traits that allow a person to have an impact in certain areas. These areas are those technical areas that the trustee has specialized abilities in which allow he or she to be trusted on the tasks associated in that area although the trustee probably is not be experienced in another area (Mayer et al. 1995, 717.). *Benevolence* means that the trustee is believed to have good intentions for the trustor besides from his or her personal goal. Benevolence can be originated from the special bonds between two parties and happens when trustor has positive attitudes towards the trusted person (Mayer et al. 1995, 718-719.). Lastly, *integrity* was described as an intricate concept which connects to moral standards, such as honesty and fairness – called moral integrity, and to personal integrity that probably disagree with such social standards (McFall 1987, 5-6). Integrity and trust are related to each other based on the trustor's understanding that the other person follows the rules that is acceptable to the trustor (Mayer et al. 1995, 719). In general, one should consider both

the tendency of trustworthiness of the trustor and the trustor's consciousness of the other party's ability, benevolence, and integrity if he or she wishes to understand how much someone wants to trust others (Mayer et al. 1995, 724).

In contrast, on the trustor's end, it was proven that one determinant which will influence the trust a person has for another includes personal characteristics of the trustor in which some people are more willing to have faith in a person than others (Mayer et al. 1995, 714). A proposal called generalized expectancy – a natural expectation to expect that the other party will keep the promises – was created as a measure of trust (Rotter 1967, 653). In other words, trust can also be characteristics of a person (Mayer et al. 1995, 714). Mayer et al. (1995, 714), based on the work of Rotter (1967), proposed a measurement called "propensity to trust" which is the general willingness of a trustor to have faith in others before any information is given to the trustor. Individuals from different backgrounds, experiences, and personalities vary their propensity to trust (Mayer et al. 1995, 715). Also, evidence was found that gender has a significant impact on the level of interpersonal trust and communication (Moore et al. 1987, 26). The research concluded that communication leverages the management performance of male groups with high trust for but not for female groups with high trust (Moore et al. 1987, 19).

3.3 Forms of trust

Based on Lewis & Weigert's (1985) foundations of interpersonal trust, McAllister (1995, 25) categorized trust into affect-based and cognition-based trust. These two trust forms show that an individual who tends to work with others may come from reasonable expectations about another person's behavior or in an emotional relationship with that person (Ng & Chua 2006, 45). Moreover, Tamjidyamcholo et al. (2013, 225) added a trust factor in knowledge sharing called information-based trust which focuses on information security that virtual communities should have in order to ensure trust is generated. In general, trust has three forms namely affect-based trust, cognition-based trust, and information-based trust. This current research shall go in-depth to the literature of each of the form in the following chapters.

3.3.1 Affect-based trust

Affect-based trust is based on someone caring and concerning other people (McAllister 1995, 25). Affect-based trust can be described as the emotional links between a trustor and a trustee (Cheung et al. 2016, 1509). In other words, affect-based trust is formed by those who invest in emotions, express interests and understandings (Huang et al. 2011, 559). It is also based on the influence that comes from social interactions and belief in others, which is generated with the welfare of others in mind (Ng & Chua 2006, 45). People invest emotions in trusting relationships, express concern and care for other people's welfares, accept the underlying qualities of these relationships, and believe that their feelings would be retaliated (Huang et al. 2011, 559). Moreover, affect-based trust indicates a strong sense of relationship and a willingness to cooperate, and concentrates on motivating to interconnect in collaborative and risk-taking behavior (Cheung et al. 2016, 1509). Benevolence is identified as one of the three factors of trustworthiness (Mayer et al. 1995, 715) and by definition, benevolence is the affection between two parties which represents a large affective component (Levin & Cross 2004, 1478).

The premises of trust that based on affection is the citizenship behavior towards the trustor (a person who has faith in someone else) and the regularity of casual interaction between two parties (McAllister 1995, 27; Chowdhury 2005, 313). Citizenship behavior is when a person chooses to deliver sensible needs, cares and concerns about other people interests rather than focusing on personal motives; thus, citizenship behavior is said to be crucial for affect-based trust development (McAllister 1995, 29). Moreover, due to affect-based trust is found in a person's actions and motives for another, this form of trust is based on frequent interaction, civic behavior, and repetitive collaboration for the trustor to have faith in the trustee (McAllister 1995, 29; Chowdhury 2005, 313). Therefore, once affect-based trust is established, the trustor is more likely to provide to the trustee with sensitive information, personal knowledge, and ideas (Chowdhury 2005, 313).

Affect-based trust has several names such as relationship-based or identification-based trust (Lau & Cobb 2010, 901; Maguire, Phillips, & Hardy 2001, 290). Although the terms have several differences on how they are used, the core concept behind them are similar (Maguire et al. 2001, 290; Lau & Cobb 2010, 900). Affect-based trust is developed from mutual understanding between all parties on which each party can act affectively for the other (Panteli & Sockalingam 2005, 602). In addition, affect-based trust is created by shaping and carving identifiers in a way that increases identity between

parties because it is based on in an combination of both trustor and trustee's desires and intentions (Maguire et al. 2001, 289-290). With affect-based trust, parties establish a shared identity including shared values, goals, interests, thoughts, behavior patterns that emphasizes the development of strong interactive relationships through emotional connections between parties, hence, enables the alliance to function in harmony, boosts unified strengths and diminishes individual weaknesses to generate a cooperation that outperform its individual parts (Panteli & Sockalingam 2005, 602; Chen, Lin & Yen 2014, 570).

In this form of trust, goodwill also derives from predictable behavior in a way that "trustees forego opportunistic behavior not because of deterrence, punishment or reward, but because it is what is right" (Maguire et al. 2001, 290.). Therefore, trust is unconditional and requires a minimum control of parties (Chen, Lin, & Yen 2014, 570). Accordingly, the potential for effective and value-added knowledge sharing is greatest with affect-based trust which maximizes the collective benefits of knowledge sharing (Panteli & Sockalingam 2005, 602; Chen et al. 2014, 570). The similarities between parties promote the sharing and understanding of a greater level of valuable hidden knowledge and a diverse set of knowledge, while strong trust developed over time allows the distribution of more confidential knowledge sharing, which in turn, strengthens the chance for creating new knowledge (Panteli & Sockalingam 2005, 602.).

Lastly, trust based on affection is also described as trust of members in virtual communities that arises from emotional connections among parties (Tamjidyamcholo et al. 2013, 225) because of the interpersonal links, consciousness of their reliability and dependability, common needs, values, and preferences related to transaction options, and will seek a person's welfare and benefits (Lau & Cobb 2010, 901).

3.3.2 Cognition-based trust

On the other hand, "cognition-based trust is based on individual beliefs about reliability and dependability of other colleagues" (McAllister 1995, 25.). Cognition-based trust is created through competency and reliability, and could generate affect-based trust (Huang et al. 2011, 559). In other words, this form of trust relies upon the history of reliability and competence of the trustee which is shown in his or her records (Ng & Chua 2006, 45).

The premises of cognition-based trust are ability of fulfilling the responsibility of the trusted colleagues, cultural-ethnic similarity, and the level of professional information of the trustee (McAllister 1995, 27; Chowdhury 2005, 313). First, because relationships at workplace are often personal and last a long time, people can view colleagues' tracking profiles or observe how they performed associated tasks in the past when making evaluation about their reliability (McAllister 1995, 28). In highly interdependent working relationships, performance of colleagues can have a decisive influence on individual productivity and research found proof that colleagues who perform credibly and complete their responsibilities well will strengthen a trustor's assessments of a trustee's trustworthiness (McAllister 1995, 28). Second, social similarities among team members can affect the development of trust such as ethnicity, race, age, gender, which could be more advantageous than teams with large diversity in the ability to form and manage reliable professional relationships (McAllister 1995, 28.). Third, formal organizations that have formal qualification process determine trust limits for work relationships and decide what kind of qualified information is used to send explicit signals for role readiness. Other factors such as education, professions, and qualified certifications could be used to build trust by ensuring that the standards of professionalism are met. Consequently, an individual's professional status could be continued through constant participation in related organizations (McAllister 1995, 28.). Similarly, when the trustee displays his or her competence in performing complicated jobs, or when he or she possess exceptional qualities such as admirable education, unique training, and related accomplished experience, he or she shall possibly receive high trust from others. When a trustor has a high level of cognition-based trust in the trustee, he or she shall eagerly participate in cooperative work and look for knowledge when in need (Chowdhury 2005, 313.).

Similar to affect-based trust, cognition-based trust has different names as well, including calculus-based or rational-based trust which all have similar ideas behind them despite how they are used (Lau & Cobb 2010, 901). The trust based on cognition results from a centralized and systematic assessment about the other person's ability to complete an activity. It consists of evaluations of the other party's intention and competence to finish an activity, the restrictions and authorization of the organizational role they hold, and an evaluation of the values they hold to keep promises and adopt orders such as honor. Cognition-based trust often requires resources and exchange terms to be noticeable and clarified with specific terms for an exchange time which consequently, makes this type

of trust to be formal, explicit, detailed, and often exist in economic transaction contracts (Lau & Cobb 2010, 910.).

With this form of trust, involved parties are considered to be realistic and shall perform with their best interest in mind, for which the other parties can determine and anticipate behaviors if they are aware of the advantages and disadvantages related to different behavioral options (Maguire et al. 2001, 290).

In other words, a trustor can believe in a trustee to perform in a way because it would be expensive for the trustee to perform differently (Maguire et al. 2001, 290). Therefore, cognition-based trust is based on the rewards earned from pursuing and preserving relationships, and the fear of being punished for violating trust (Panteli & Sockalingam 2005, 601; Maguire et al. 2001, 290). Potential punishments in professional connections may consist of the loss of repeat business or of reputation. Respectively, this incomplete and delicate trust tends to promote limited extent of knowledge sharing needed to implement the expectations of trustworthy behavior. Given the limited potential for mutual understanding and the focus on meeting partners' expectations, the nature of the shared knowledge is more likely to be formal and clear. However, in special situations, parties may choose to surpass the expected minimum knowledge sharing level for numerous of reasons such as strengthening their image or improving future connections with preferred partners (Panteli & Sockalingam 2005, 601.).

3.3.3 Information-based trust

Information-based trust, which is also known as "knowledge-based trust" (Tamjidyamcholo et al. 2013, 225.) depends on information about involved parties in an interaction that they both know each other well (Panteli & Sockalingam 2005, 601; Tamjidyamcholo et al. 2013, 225). The confirmation is that the more information one has experienced with others, the more he or she is able to anticipate their behaviors (Panteli & Sockalingam 2005, 601; Tamjidyamcholo et al. 2013, 225; Maguire et al. 2001, 289). In other words, information-based trust is the result of historical interaction and mutual understanding in which the other party's behavior is predictable. Consequently, it involves improving mutual understanding and shared goals leading to a more effective sharing of personal and basic knowledge (Chen et al. 2014, 570.).

Moreover, information-based trust appears when a trustor discovers a constant pattern of the trustee's behavior and predicts it will continue. In order to predict the

trustees' behavior to be discovered by trustors, there should be a process of observation and experience between trustor and trustee (Maguire et al. 2001, 289.). The trust that exists because of inherent consistency is available in the acts of actors generating predictability on information rather than them wanting the achieve the rewards of being trustworthy or their fear of being punished (Tamjidyamcholo et al. 2013, 225; Lander, Purvis, McCray, & Leigh 2004, 510). Similarly, knowledge-based trust is more robust than cognition-based trust and more forgiving in terms of unpredictable behavior and the associated cost due to the development of mutual understanding between partners. Consequently, this enhanced trust supports an increased level of knowledge sharing. Furthermore, the intensified range of trust for the generation of mutual values and understanding allows more effective knowledge sharing because it promotes the distribution and insight of more personal and emotional tacit knowledge, and at the same time implements a system to measure the value of a given piece of shared knowledge (Panteli & Sockalingam 2005, 602.).

In addition, information-based trust increases among businesspeople because they must adhere technical criteria, company policies regarding insurance and protection, and strategies for security which in turn, help make information-based trust to become abstract (Tamjidyamcholo et al. 2013, 225). Previous research proves that information-based trust is formed in an unfavorable economic environment (e.g. without familiarity), and in an unfavorable similarity (e.g. in a community) when trust is generated not because of the fact that individuals already know each other, but because of the existence of institutional structures such as licensing, auditing, laws, and government enforcement agencies (Ratnasingam 2005, 527). Accordingly, contracts, regulations, guarantees, promises legal resource, and procedure which provide advantages to the situational success would generate information-based trust (Ratnasingam 2005, 527). Consequently, trust based on information takes into account how much confident users in virtual communities feel about implemented technology appropriation and security mechanism (Tamjidyamcholo et al. 2013, 225).

Furthermore, previous research provided evidence on one of the antecedents of trust in other community individuals is how much they entrust personal information (Ridings, Gefen & Arinze 2002, 278). The research stated that when a person posts personal information about himself or herself, that person is willing to be vulnerable with sensitive information and appear to be more than just a stranger towards other people in the community. The fundamental is by behaving reliably through posting personal

information, an individual encourages others to have faith in him or her and in return, the decision to trust others should depends on the knowledge of others because of their personal information. By revealing gender, age, or even personal issues, others in the virtual community become less alien and become acquaintances or friends (Ridings et al. 2002, 278.).

3.4 Trust associated with knowledge sharing between project teams

Initially, trust is determined to be a needed precedent for knowledge sharing (Wickramasinghe & Widyaratne 2012, 219). To explain the statement, previous research stated that knowledge sharing is an intricate procedure that the knowledge possessors thoughtfully decide "what knowledge they would share and with whom and when they would share it" (Andrews & Delahaye 2000, 803.). In fact, in a fiercely competitive environment, knowledge is a valuable asset that should not be shared carelessly (Andrews & Delahaye 2000, 803). Similarly, due to the fact that knowledge is considered to have commercial value and its ownership can be disputed, knowledge sharing is not a mechanical procedure, but instead, knowledge sharing decisions should be made wisely. Therefore, to decide what knowledge to share with whom and when has created a complexity in decision making of the knowledge sharers (Andrews & Delahaye 2000, 804.).

Similarly, the trustworthiness and credibility of the knowledge source leads to better outcomes and effectiveness of knowledge sharing because trust encourages the amount of information can be shared (Andrews & Delahaye 2000, 805; Szulanski et al. 2004, 601). Previous research stated that when employees have a higher degree of trust and identify with one another, they will be more willingly or more motivated to share knowledge (Cabrera & Cabrera 2005, 722).

Moreover, trust is said to be able to cancel betrayal, deceiving, and the employees' desire of blaming others when failures occur (Wickramasinghe & Widyaratne 2012, 219). Also, when the knowledge recipients consider the source to be trustworthy, he or she will less likely to be suspicious and will be more open toward to information received (Szulanski et al. 2004, 601). On the other hand, the knowledge recipient would respect the ownership of the ideas, which is considered to be the core of the trustworthiness of knowledge sharing (Andrews & Delahaye 2000, 805).

Previous research stated that because knowledge is considered to be a valuable asset that should not be shared carelessly, knowledge sharers make decisions based on the trustworthiness of their colleagues (Andrews & Delahaye 2000, 804). Moreover, empirical evidence was provided that management trust promotes knowledge sharing through minimizing the concern of losing one's uniqueness (Renzl 2008, 206). Trust, therefore, is said to be more crucial than proper cooperative processes (Andrews & Delahaye 2000, 805) or technical support (Choi, Kang & Lee 2008, 748) because without trust, knowledge sharing would not occur (Andrews & Delahaye 2000, 805; Wickramasinghe & Widyaratne 2012, 219).

A number of past researches have been done on knowledge sharing in teamwork environment and empirical results have concluded that trust is positively associated with knowledge sharing (Tamjidyamcholo et al. 2013; Huang et al. 2011; Ridings et al. 2002; Chang & Chuang 2011; Renzl 2008). When team members have faith in each other's abilities and competencies, they are more likely to share information more willingly (Tamjidyamcholo et al. 2013, 219) and they are not afraid to take risks to cooperate and share valuable knowledge with others (Renzl 2008, 210). Therefore, this means that a trusting person will have a higher tendency to deliver useful knowledge to others (Chen et al. 2010, 854).

In addition, in the context of teams working on projects, few researches have evaluated the relationship between trust and knowledge sharing and they concluded that trust critically anticipates how much people engage in sharing knowledge (Lee, Gillespie, Mann & Wearing 2010, 473). Previous researchers stated that for projects, trust that is built in the team is more important than in leadership because team members are linked to openness and accuracy of the information and knowledge transferred (Lee et al. 2010, 485). In project teams, which are essentially temporary, the connection between team members are a crucial determinant in developing an initial trust and doing effective teamwork during project implementation (Wickramasinghe & Widyaratne 2012, 210).

3.5 Proposed framework

Figure 1 shows the theoretical development and the theoretical model and concept of this study. The model is based on the above discussion and concepts by demonstrating the relationships between affect-based trust, cognition-based trust, information-based trust, and knowledge sharing. The model presents that independent variables including affect-

based trust, cognition-based trust, and information-based trust will directly develop knowledge sharing activities.

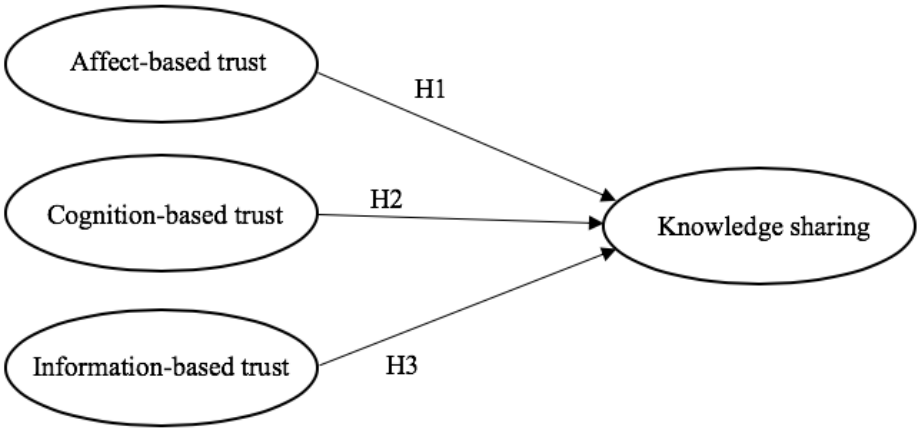

Figure 1 The proposed framework

This study proposes three hypotheses corresponding to the proposed framework. Each hypothesis is illustrated by H and a number:

H1: Affect-based trust will have a positive effect on sharing knowledge.

H2: Cognition-based trust will have a positive effect on sharing knowledge.

H3: Information-based trust will have a positive effect on sharing knowledge.

4 RESEARCH DESIGN

4.1 Research approach

There are three types of research approaches that an empirical research typically employs: qualitative, quantitative, and mixed method approach. Each approach contends three framework elements: philosophical assumptions about what constitutes knowledge claims (knowledge claim is a researcher's assumptions about how and what he/she will learn from the research); strategies of inquiry that provide general procedures in a research design; and methods that include detailed processes of data collection, data analysis, and writing. Qualitative, quantitative, and mixed methods approach frame each of these elements differently (Creswell 2003, 3.).

This research uses the quantitative method to justify theoretical model and examine the relationships between constructed variables. The research model was justified through theoretical, empirical, and constructive examinations (Chen et al. 2014, 572). Quantitative method bases on statistical numeric to categorize and quantify characteristics, and transforms data into helpful statistics (Watson 2015, 1). By using this method, the researcher will ensure that the research aims and conclusions will be kept unbiased due to two characteristics: One, its capability to collect large amount of data which then be used to verify, calculate and analyze (Creswell 2003, 14), and two, due to its deductive characteristics with following: measurements are created, analysis is implemented, and conclusions are drawn (Watson 2015, 1).

Quantitative method has an important feature which is the usage of surveys for collecting data. Surveys are useful because of the ability to gather a large amount of data to describe samples and populations (Watson 2015, 4). Moreover, survey method could reveal how a population thinks or acts in a certain way through quantitively analyzed data (Fisher 2010, 207). Other authors also agreed that this design is beneficial in determining the whole picture of the relationships between people's working environment and their responses to the study's hypotheses (Wickramasinghe & Widyaratne 2012, 223). In addition, this thesis uses cross-sectional surveys which means they are conducted once and not over many years (Watson 2015, 4).

4.2 Data collection

4.2.1 Pilot test

Regarding the proficiency of the respondents and the comprehensiveness of the questionnaires, the survey is self-managed in English and Vietnamese languages. Hence, the survey was pre-tested with a random group of individuals that matches the target sample of the research before being distributed (Wickramasinghe & Widyaratne 2012, 223). A pilot test can serve many purposes including evaluation of feasibility, adequacy of instrument, problems of the proposed data collection strategies and research methodology, then answer questions about the research methodology and plan for a larger study (Hertzog 2008, 180). Pilot tests range from relatively informal trials of procedures on a small number of participants to more effective studies based on small-scale trials. According to the author, recommended sample size for a pilot test is approximately 10 to 40 participants, or 10 percent of the final study size (Hertzog 2008, 181).

A preliminary questionnaire had 40 items on a 5-point Likert scale and was sent randomly to students who are studying and living in Finland as well as working individuals living in Vietnam (Appendix 1). Altogether, 20 participants filled out the questionnaires. The pilot test will check the reliability of each variables: Affect-based trust (AT), Cognition-based trust (CT), Information-based trust (IT), and Knowledge sharing (KS). The results are shown in Table 2. The Cronbach's alphas of 0.7 or higher is commonly considered as a benchmark for reliability testing (Bonett & Wright 2015, 4). The Cronbach's alphas for the pilot test exceeded 0.7 across all measurement variables, hence, all items were kept for data analysis in the next chapter.

Table 2 Reliability test for pilot test

Variables	***Cronbach's Alpha***	***Number of items***
AT	0.819	10
CT	0.896	12
IT	0.727	6
KS	0.831	11

However, considering the languages translations and the context of the study, there are some changes made for some items of the constructs. Six items in Affect-based trust construct including AT6 to AT11 as well as five items in Cognition-based trust including CT8 to CT12 were changed. The original subjects adapted from Ridings et al. (2002, 290)

which were “The other participants on this bulletin board…” were changed to “The other team members…”. Also, IT5 was changed from “The posts on this bulletin board often contain personal information” to “The discussion on virtual community often contain personal information”. Lastly, IT6, “People seem very willing to divulge private information about themselves to other participants”, was altered to “People seem willing to reveal private information about themselves to other team members”.

4.2.2 Sampling

Sampling receives attention in both qualitative and quantitative research methods because all types of methodologies such as surveys, interviews, focus groups, directories, content analysis, usability testing, etc. depend on a suitable number of people or items chosen and analyzed (Wilson 2016, 45). Sample is a part of a chosen population or universe. Population does not certainly mean a group of individuals; it also has meanings of the total number of things or cases depending on the subject of the study (Etikan, Musa & Alkassim 2016, 1.). In order to justify the study’s literature, a valid sample would be studied in order to achieve generalizability and trustworthiness in quantitative study (Wilson 2016, 45).

There are two types of sampling which are probability sampling and nonprobability sampling (Wilson 2016, 45; Etikan et al. 2016, 1). Probability sampling is a type of sampling that every participant from the population have equal probability of being chosen (Etikan et al. 2016, 1). It can also be described as objective sampling which means elements selected could be used to indicate the total population from which the elements were chosen (Wilson 2016, 45). According to the authors, every element of the population has the opportunity to be selected differently through the use of a random selection process (Etikan et al. 2016, 1). On the other hand, nonprobability sampling means participants are collected by researcher’s choice and this means not all participants in the population are given an equal chance to participate (Etikan et al. 2016, 1) because the researcher does not guarantee that the sample can represent the population (Wilson 2016, 45). Nonprobability sampling is easier and cheaper to operate and can be implemented more quickly (Etikan et al. 2016, 1; Wilson 2016, 45). There are several types of nonprobability sampling namely “convenience, quota, snowball, purposive, and self-selected samplings” (Wilson 2016, 46.). Depending on the type, nature, and purpose of the study, it is important to choose a technique to implement (Etikan et al. 2016, 1).

For this current research, it implements convenience sampling which is a type of nonprobability sampling that the participants of the target population were selected based on practical criteria such as the ease of approachability, geographical location, availability at the time conducting the research, and the willingness to participate in the study, until the desired number of participants is reached (Etikan et al. 2016, 2; Wilson 2016, 46). Moreover, snowballing effect was also implemented during data collection process of this research due to the fact that it is easier to have participants who have experienced in team-working to connect with their current and/or former team members within the organizations they worked for in the past or have been working for now. Snowball sampling means that the sample begins with a small group of people and expands to more individuals through recommendation (Wilson 2016, 46).

The questionnaire of this thesis was only distributed electronically. Google Form technology was used to create an online survey in two languages, English and Vietnamese. The anonymity of the survey participants is guaranteed to relieve the fear of evaluation (Wickramasinghe & Widyaratne 2012, 223). The target participants are random groups of people, focusing on anyone who experienced teamwork in the past, either throughout their education or in working environments. Hence, the link of the online survey was distributed to members of different organizations including universities, companies, groups of individuals living in Finland and Vietnam, etc. via Facebook, WhatsApp, and emails. The duration of distributing out the survey is from March 3rd to March 15th, 2020. At the end of the survey distribution, a total of 256 responses was collected. There was no exclusion of invalid responses after a filtering process.

4.2.3 Measurement instruments

The original constructs were developed and testified through previously published studies (Tamjidyamcholo et al. 2013, Huang 2011, Ridings et al. 2002). From the literature review, a measurement instrument in form of a questionnaire is developed with carefully chosen items used to measure major constructs with independent variables including Affect-based trust, Cognition-based trust, and Information-based trust as well as dependent variable Knowledge sharing. In this research, the items chosen for the constructs are largely adapted from previous research and are modified to be suitable to the context of knowledge sharing between project teams.

In order to cover all aspects of trust and knowledge sharing discussed in literature review chapter, some items and concepts were adapted from Huang (2011) and Ridings et al. (2002) to examine affect-based trust variable. Items AT1 to AT5, adapted from Huang (2011), were chosen because they cover one of the factors that influence knowledge sharing which is the actors, or the knowledge sharers and knowledge recipients. Items AT6 to AT11, adapted from Ridings et al. (2002), were chosen because they cover the cooperation feature of trust. Altogether, they make up a set of questions for affect-based trust.

Moreover, the concepts and items implemented to assess cognition-based trust were adapted from Huang (2011), McAllister (1995), and Ridings et al. (2002). Items CT1 to CT5, adapted from Huang (2011), were chosen because they present the colleagues (the context) with which the team member is working. Also, item CT6 covers the identity feature of trust when mentioning about individual's background (McAllister 1995, 37). This research composed items CT7 to CT12 from Ridings et al. (2002) because they cover the confidence in knowledge possessed of both knowledge sharer and recipient, presenting the actors that influences knowledge sharing. Altogether, they make up a set of questions for cognition-based trust.

Furthermore, information-based trust was examined according to Tamjidyamcholo et al. (2013) and Ridings et al. (2002), covering the information technology factor of knowledge sharing and the set of question consists of six questions from IT1 to IT6.

Lastly, knowledge sharing was assessed through concepts and items taken from Bock et al. (2005) and Chowdhury (2005). From items KS1 to KS4, adapted from Bock et al. (2005), focus on the knowledge sharer, the actor of knowledge sharing. The rest of the items, KS5 to KS11 (Chowdhury 2005), are about the characteristics of the shared knowledge. Altogether, they make up a set of questions for knowledge sharing.

In general, the final tool (see Appendix 1) comprises of 40 items with answers measured on a 5-point Liker scale; it was distributed to various individuals in several organizations. Appendix 1 provides a list of questionnaires items used to testify the research constructs of this thesis. The questionnaire is designed with five main parts with each construct is coded with the following combinations: "AT" (Affect-based Trust), "CT" (Cognition-based Trust), "IT" (Information-based Trust), and "KS" (Knowledge Sharing). Each item of each construct is coded with the corresponding combination and a number. Demographic questions are included such as gender, age, work experience, education, and nationality.

4.3 Data analysis procedures

One crucial feature of quantitative method is using questionnaire surveys for data collection and using probability method to examine hypotheses statistically correlated to research questions (Creswell 2003, 157). Various items are used to measure all structures and all items are measured on a five-point Likert scale. A 5-point Likert scale is implemented to determine the level of agreeable or disagreeable attitude from survey participants to a given statement on an ordinal scale. The participants are invited to evaluate their thoughts about a given statement on the scale from 1 to 5 as: (1) "Strongly Disagree", (2) "Somewhat Disagree, (3) "Neutral", (4) "Somewhat Agree", and (5) "Strongly Agree" (Tamjidyamcholo et al. 2013, 227). In total, this current research applied 40 items to assess the variables, not including demographics questions. Appendix 1 includes the questionnaire items of the research model as well as the abbreviations and scales of each items.

After data collecting, a process of filtering is implemented to get valid data from questionnaire responses. The complete data is then examined through a sequence of steps. The analyzed results are retrieved using a mathematic software called SPSS (Statistical Package for the Social Science) version 26. This software is operated to conduct three main analyses (Chang & Chuang 2011, 13). One, a descriptive statistical analysis is performed to compose the demographic of participants and the results of the research variables.

Two, exploratory factor analysis is operated to evaluate the reliability and validity of the proposed construct, which comprises of convergent and discriminate validity (Chang & Chuang 2011, 13.). Reliability test, construct, convergent, and discriminant validity to ensure that they could be used to test this research hypotheses. For all measurement scales, standardized Cronbach's alpha was evaluated and principle components factor analysis (varimax rotation) was examined. In order for exploratory factor analysis to be appropriate, these criteria must be met (Wickramasinghe & Widyaratne 2012, 223; Bonett & Wright 2015, 4; Jabnoun and Al-Tamimi 2003, 463; García-Cabrera & García-Barba Hernández 2014, 453):

- The approved significant factor loadings should to be equal or greater than 0.5 (Wickramasinghe & Widyaratne 2012, 223);
- "Standardized Cronbach's alpha values of each factor extracted, and overall measure should be greater than 0.7" (Bonett & Wright 2015, 4.);

- "Kaiser-Meyer-Olkin (KMO) value should be equal or higher than 0.5;
- Bartlett's Test of Sphericity with significant should be smaller than 0.001;
- The difference between absolute factor loadings should be equal or higher than 0.3, if items are distributed in more than one component" (Jabnoun & Al-Tamimi 2003, 463.);
- "Total variance extracted should be equal or higher than 50%" (García-Cabrera & García-Barba Hernández 2014, 453.).

Three, once these were validated, hypotheses testing was conducted using hierarchical multiple regression analysis for evaluating the relationships among items of this research model (Pinjani & Palvia 2013, 148). First, the averages if all scales were computed for composites. Once they have been created, the constructs of the independent variables were centralized to prevent multicollinearity interactions from happening. The rule of thumb for testing multicollinearity in the data is that "correlation should not exceed 0.75 between independent variables" and :the collinearity diagnostics index should be lower than the cutoff 20" (García-Cabrera & García-Barba Hernández 2014, 455.). Then, interaction between measurement scales were examined by evaluating the favorability of the product of the mean-centered constructs based on the variance inflation factor (VIF) scores that should be below than the threshold of 10. Regarding the testify of the main effects and hypothetical interactions, this research used a two-tailed examination to ensure that the standardized coefficients are significant (Chang & Chuang 2011, 13). Table 3 summarizes the types of data analysis with the corresponding chapters and result tables.

Table 3 Summary of research analysis with corresponding tables and chapters

Type of analysis	***Result table***	***Chapter***
Reliability	5	5.2.1, 5.2.2
Exploratory factor analysis		5.2
Confirmatory factor	6	5.2.1, 5.2.2
Collinearity diagnostics	8	5.3
Correlation	7	5.3
Hierarchical multiple regression	8	5.3

4.4 Trustworthiness of the research

According to the previous research studies, the main indicators for evaluating the quality of a measuring instrument are the instrument's reliability and validity (Hagan 2014, 431; Kimberlin & Winterstein 2008, 2276). *Reliability* of a measurement instrument is the consistency of scores of the construct of interest recorded (Hackett 2018, 61; Hagan 2014, 431). If the measurement instrument is reliable, researchers can argue that the instrument is dependent, consistent, and possibly to be generalized to other models, time periods, reviewers, and behaviors (Hagan 2014, 431). The most common measure of reliability is reliability coefficient, which is based on the correlations between scores either on the same test, equivalent tests, or at the same timepoints. The higher the correlations, the less error occurs (Hagan 2014, 431-432.). On the other hand, *validity* of a measurement instrument means the accuracy that it measures what it is designed to (Hackett 2018, 61; Hagan 2014, 431). Validity demands that a measurement tool is reliable, but it cannot be reliable without being valid (Kimberlin & Winterstein 2008, 2278). The validation process involves gathering different types of evidence to ensure that the interpretations are correct (Hagan 2014, 432). There are various forms of reliability and validity that shall be discussed in the following paragraphs.

Regarding reliability, reliability can be measured in various methods depending on the type of instrument (Hagan 2014, 431). Forms of reliability include: (1) internal consistency, (2) test-retest reliability, (3) interrater reliability, and (4) scorer reliability (Hagan 2014, 431; Watson 2015, 3). Firstly, *internal consistency* is the degree to which all items in a questionnaire measure the same thing and the item responses are compared against other item responses (Watson 2015, 3; Hagan 2014, 431). This method provides an evaluation of the similarity between groups of items from the same measurement instrument by using coefficient. Coefficient is based on the presumtion that items of the same construct should be correlated (Kimberlin & Winterstein 2008, 2277.). Internal reliability is most often evaluated using Cronbach's alpha (Hackett 2018, 61). Secondly, *test-retest reliability*, also known as stability, is the degree to which a measurement instrument delivers similar result on two occasions, which means this method compares item responses from the same participant at different times in order to discover the correlation or strength of relationships of the two sets of scores (Watson 2015, 3; Hagan 2014, 431; Kimberlin & Winterstein 2008, 2277). Thirdly, *interrater reliability*, also known as interobserver agreement, is the degree to which two people access the same

measurement to establish a consistent, equivalent ratings between different observers (Watson 2015, 3; Kimberlin & Winterstein 2008, 2277). Last but not least, *scorer reliability* is the method that compares one analyst with another towards a filled-in instrument of a scorer (Hagan 2014, 431).

In terms of validity, various forms of validity include: "(1) construct validity, (2) content validity, and (3) criterion-related validity" (Kimberlin & Winterstein 2008, 2279.). Firstly, *construct validity* is based on evidence accumulated from multiple research sources (Kimberlin & Winterstein 2008, 2279) and is an overall evaluation to see whether the items created in an instrument measure the construct of interest (Hackett 2018, 61). Assessing the validity of a construct demands evaluating the relationship between the theoretically proposed variables and the measured construct, often examined with a factor analysis to discover the relationships between items (Kimberlin & Winterstein 2008, 2279; Hagan 2014, 432). Construct validity has several forms including structural validity (an examination of whether the factor of the instrument is consistent with what theoretically expected), convergent validity (the extent to which items in a scale examine the same construct as items from another scale that have been designed to measure the same, or similar, structure), and discriminant or divergent validity (the extent to which items from a scale are not related to items from another scale that have been designed to measure different constructs). Second, *content validity* is the extent to which items within a scale are evaluated to see how well they appear to measure the construct of interest (Hackett 2018, 61). Content validity is often evaluated by experts in the field because there is no statistical examination to evaluate whether a measurement scale sufficiently examines a construct. Third, *criterion-related validity* is the extent to which scores on a scale are connected to crucial outcomes, which means it delivers evidence of a measure's scores that are related to other measures of the same theoretically relevant construct (Hackett 2018, 61; Kimberlin & Winterstein 2008, 2279). There are three types of criterion-related validity including predictive validity (the extent to which an examination anticipates an outcome in the future), concurrent validity (the relationship between scale scores and the current outcome), and postdictive validity (the relationship between scale scores and a result in the past) (Hackett 2018, 61).

Linking the literature to this research, this research implements internal consistency of reliability test, based on the results examined using Cronbach's alpha, because internal consistency indicates that if a respondent scores high on an item, he or she will score high on the other items measuring the same construct (Hackett 2018, 61). A favorable result

of internal consistency means that the items developed are reliable based on the satisfactory Cronbach's alpha of higher than 0.7 (Bonett & Wright 2015, 4). The items of this research instrument were evaluated to see if they are reliable or not. Initial reliability test was conducted in a pilot test with 20 participants, shown in chapter 4.2.1, and the results were all satisfactory. Moreover, this research also implements interrater reliability because the questionnaire was distributed to a large amount for people during data collection process. Later, in chapter 5, instrument reliability tests of all constructs are examined more in-depth after collecting a larger number of participants. Any items that were not satisfied are deleted because interrater reliability test depends on the equivalent ratings of the respondents, which means the majority of respondents score differently on the same item.

In addition, regarding the validity, this research satisfies construct validity out of the three forms because the instrument was developed based on previous studies. The research examines the validity based on examining the relationships of the constructs using factor analysis, shown in chapter 5.2, in order to evaluate whether the variables are theoretically related. More specifically, the results of data analysis provide evidence that the construct is consistent with the theories, indicating structural validity of construct validity. Moreover, convergent and discriminant validity were examined during the factor analysis process to determine the sets of items of a construct is not related to other sets of items of other constructs based on the factor loadings of the variables. In other words, convergent validity and discriminant validity were implemented to validate the measurement model.

5 RESULTS OF DATA ANALYSIS

5.1 Descriptive data analysis

The descriptive characteristics of participants' demographics are presented in Table 4. The sample consisted of approximately equal amount of female and male, with 54.7% and 45.3% respectively. Nearly half of the respondents are over 40 years old, 24.2% between 31 and 40 years, 14.8% from 26 to 30 years, and 11.3% at the group age 18 to 25 years. Due to the highest percentage of survey participants' age is older than 40 years, it makes sense that the largest period of working experience which the respondents have is more than 10 years, with 77% of responses. Others have five years or less in terms of working experience account for 21.9%, and only a small portion of respondents' 5 to 10 years of work experience takes 1.2%. Considering the respondents' education, it is clear from the data that people with bachelor's level accounts for more than half of the total respondents. The second largest portion of participants' education belongs to master's degree level with 30.1% and a proportion of 7.8% has doctoral degree. A few respondents chose "Other" as their answers with four people added college and seven people added high school, and the remaining five answers are unknown. Lastly, in terms of nationality, the majority of responses are Vietnamese with 97.7%, only four Finns answered the survey, one American and one Australian which are in the Other answers.

The aim of collecting participants initially was to collect half of respondents are Finnish and the other half are Vietnamese. However, due to the inaccessibility to Finns respondents, the author was able to collect only four Finns although there was an attempt of sending out the questionnaires to numerous people. One American and one Australian are Vietnamese who are residence in those countries and data of those two participants was collected through the snowballing effect, which means they are of acquaintances of the participants who received the survey initially. Because the total number of Finns, American and Australian is only 6 people, which is a considerably small proportion comparing with Vietnamese proportion, the results yielded later on in this research dominantly generalize the Vietnamese people who have been working and studying in teamwork environments.

Table 4 Demographics of respondents (N = 256)

Measures	*Items*	*Frequency*	*Percentage*
Gender	Male	116	45.3
	Female	140	54.7
Age	18-25	29	11.3
	26-30	38	14.8
	31-40	62	24.2
	Over 40	127	49.6
Work experience	0-5 years	56	21.9
	5-10 years	3	1.2
	More than 10 years	197	77
Education	Bachelor	143	55.9
	Master	77	30.1
	Doctor	20	7.8
	College	4	1.6
	High school	7	2.7
	Other	5	2
Nationality	Vietnamese	250	97.7
	Finnish	4	1.6
	Other	2	0.8

5.2 Measurement model

5.2.1 Independent variables

Affect-based trust was measured by instruments adapted from existing scales in the literature, so affect-based trust has 11 items (Huang 2011; Ridings et al. 2002). The reliability test with Cronbach's alpha for affect-based trust initially showed a satisfactory level of 0.788. However, the data showed that the Cronbach's alpha would be higher, at 0.849, if two items AT11 (The other team members do not behave in a consistent manner) and AT3 (If one of the members of my work team was transferred to work in a different team, I would feel unhappy because I enjoy working with them all) are deleted. Hence, items AT11 and AT3 were deleted. Affect-based trust construct had 9 items afterwards. Moreover, an exploratory factor analysis with varimax rotation and maximum likelihood

estimation was conducted. From table 6, the results presented that Kaiser-Meyer-Olkin (KMO) test, total variance explained (TVE) and Bartlett's Test of Sphericity ($\chi 2$) for affect-based trust were at satisfactory levels. KMO = 0.879 (greater than 0.5) with significant at .000 (less than 0.001); $\chi 2$ = 737.610*; TVE = 57.118% (greater than 50%). In addition, the factor loadings for AT4 (If I share problems with my team members, I know that they will respond constructively and caringly), AT5 (I believe that the members of my work team have made considerable emotional investments in our working relationship), and AT6 (The other team members are very concerned about the ability of people to get along) were lower than the recommended value 0.3. Their factor loadings were 0.005, 0.223, and 0.25 respectively; therefore, they are excluded in further analyses. Consequently, the measurement of affect-based trust has 6 items left at the end (see table 6)..

Secondly, cognition-based trust construct used measurements adapted from Huang (2011), McAllister (1995), and Ridings et al. (2002). A scale of twelve items was used to testify (see Appendix 1). According to table 5, the reliability test results showed that the scale was excellently reliable with Cronbach's alpha of 0.887, but the alpha would increase even higher, up to 0.913, after deleting item CT6 (If people knew more about this individual and his/her background, they would be more concerned and monitor his/her performance more closely). Consequently, the scale had 11 items left. An exploratory factor analysis with varimax rotation and maximum likelihood estimation was carried out (see table 6). The results showed that the KMO test and Bartlett's Test of Sphericity ($\chi 2$) both offer satisfactory levels (KMO = 0.921; $\chi 2$ = 1464.166*). The significant level was at .000 which is less than 0.001 and the variance explained was 53.841% which is more than 50%. Moreover, the results proved that the factor loadings of several items including CT1, CT2, CT3, CT4, CT5, CT6, CT7, CT11, and CT12 were unsatisfactorily lower than 0.3; hence, they were excluded. The construct ended up having three items left which were CT8 (The other team members have much knowledge about the subject we discuss), CT9 (The other team members have specialized capabilities that can add to the conversation), and CT10 (The other team members are well qualified in the topics we discuss).

With regard to information-based trust construct, this research used four-scale items from Tamjidyamcholo et al. (2013) and two items from Ridings et al. (2002). A reliability test was conducted. Table 5 presents the initial Cronbach's alpha was 0.714 and increased to 0.842 when three items IT6 (People seem willing to reveal private information about

themselves to other team members), IT5 (The discussions on virtual community often contain personal information), and IT1 (Information security virtual community (ISVC) has enough safeguards to make me feel comfortable to reveal personal information) were removed. Hence, the measurements ended with three items. Moreover, an exploratory factor analysis was conducted similarly to the other two independent variables. The results from table 6 presented that Kaiser-Meyer-Olkin (KMO) test, total variance explained (TVE) and Bartlett's Test of Sphericity ($\chi 2$) for affect-based trust were all at satisfactory levels. KMO = 0.721 (greater than 0.5) with significant at .000 (less than 0.001); $\chi 2$ = 316.848*; TVE = 76.187% (greater than 50%). In addition, the results showed that all factor loadings of the remaining information-based trust items, IT2 (0.826), IT3 (0.838), and IT4 (0.825), have satisfactory levels which were all higher than the recommended value 0.3.

5.2.2 Dependent variable

Knowledge sharing is the only dependent variable of this research's proposed model. This research measured knowledge sharing by using a total of 11 items in which four items were adapted from Bock et al. (2005) and seven items from Chowdhury's (2005) scale. All the items were significantly reliable at 0.829 Cronbach's alpha and there was no item needed to be deleted for the result to be higher (table 5). As confirmed in table 6 for factor analysis results, KMO test, Bartlett's Test of Sphericity, and total variance explained were satisfactory (KMO = 0.812; $\chi 2$ = 1024.526*; TVE = 64.715%). Moreover, from table 6, the factor loading results for KS8 (The extent of knowledge that I have gained from a team member is dependent on other knowledge possessed by him/her (for instance, knowledge of calculus is dependent on knowledge of algebra)) and KS9 (The extent of knowledge that I have gained from a team member is dependent on the specific situation in which it was created (how to handle a particular situation or situational problem)) were unsatisfactory, at 0.252 and 0.281 respectively, which were lower than the recommended value of 0.3 as according to Jabnoun & Al-Tamimi (2003, 463). Therefore, two items KS8 and KS9 were excluded for further analyses.

Table 5 Instrument reliabilities

Measure	***Initial Cronbach's alpha***	***Items deleted***	***Cronbach's alpha after deleting items***	***Number of items after deleting***
Affect-based trust	0.788	AT11 AT3	0.849	9
Cognition-based trust	0.887	CT6	0.913	11
Information-based trust	0.714	IT6 IT5 IT1	0.842	3
Knowledge sharing	0.829	-	0.829	11

Table 6 Factor analysis results

Measure	***Absolute factor loading***	***KMO***	***Bartlett's Test of Sphericity***	***Total Variance explained***
Affect-based trust (9 items)		0.879	737.610*	57.118
AT1	0.862			
AT2	0.35			
AT4	0.005			
AT5	0.223			
AT6	0.25			
AT7	0.714			
AT8	0.733			
AT9	0.694			
AT10	0.654			
Cognition-based trust (11 items)		0.921	1464.166*	53.841
CT1	0.251			
CT2	0.229			
CT3	0.269			
CT4	0.035			
CT5	0.028			
CT7	0.231			
CT8	0.817			
CT9	0.827			
CT10	0.403			
CT11	0.256			
CT12	0.248			

Information-based trust (3 items)		0.721	316.848*	76.187
IT2	0.826			
IT3	0.838			
IT4	0.825			
Knowledge sharing (11 items)		0.812	1024.526*	64.715
KS1	0.757			
KS2	0.848			
KS3	0.76			
KS4	0.822			
KS5	0.681			
KS6	0.848			
KS7	0.745			
KS8	0.252			
KS9	0.281			
KS10	0.862			
KS11	0.916			

*p < 0.001

5.3 Hierarchical multiple regression analysis

After the exploratory factor analysis testing, the thesis conducted the test of correlations between variables and then all hypotheses would be tested using hierarchical regression analysis. The computed averages of each scale are named accordingly ABT for average composite of affect-based trust, CBT for cognition-based trust, IBT for information-based trust, and KNOWLEDGE SHARING for knowledge sharing.

The results from table 7 presented that there are several significant correlations between all variables, with two-tailed significant at 0.000 which is satisfactory for lowering than the recommended 0.01 level. The rule of thumb when testing whether independent variables occur multicollinearity or not depends on the Pearson correlation being lower than 0.75 (García-Cabrera & García-Barba Hernández 2014, 455). When looking at the results in table 7, the Pearson correlation showed that the highest correlation was between affect-based trust and information-based trust at 0.496, suggesting that multicollinearity is not a problem because it is lower than the recommended 0.75.

As multicollinearity was in concern, it was analyzed using variance inflation factor (VIF). The VIF scores for all independent variables should be smaller than 2, which is

well below the multicollinearity level of 10 (Chowdhury 2005, 318). Moreover, the tests showed that the VIF ranges from 1.378 to 1.596 which are all less than 2 and are less than the recommended score of 10 (García-Cabrera & García-Barba Hernández 2014, 455). In addition, the condition number for the regressions estimating affect-based trust was 12.9, cognition-based trust was 16.255, and information-based trust was 18.57, which are all lower than the recommended cutoff of 20 (García-Cabrera & García-Barba Hernández 2014, 455) (see table 7). These statistics confirmed that multicollinearity did not happen in the data.

Regarding the correlations between dependent (knowledge sharing) and independent variables (ABT, CBT, IBT), the highest correlation was between knowledge sharing and affect-based trust at 0.534 value. This means that affect-based trust has the most influence on the sharing of knowledge out of the three independent variables. Cognition-based trust had the second highest correlation value and information-based trust came in last, with 0.437 and 0.413, respectively.

The relationship hypotheses were examined using hierarchical regression analysis. Table 8 presents the regression tested to examine the hypotheses. The significance of each hypothesized relationship in the research model and the variance explained by each path were analyzed. The R squared coefficient for this model is = 32.9%, which means the additional trusts significantly explained almost 33% of the knowledge sharing between project teams. Moreover, the coefficients of this model were significant at the 0.000 level (lower than 0.01) which confirms the fit of the model.

To test hypothesis 1 (Affect-based trust will have a positive effect on sharing knowledge), knowledge sharing was regressed on affect-based trust. The analysis presented in table 8 provided that the beta coefficient (β) for affect-based trust is positive at 0.299 value, and significant ($p < 0.01$). This is evidence that the affect-based trust contributes positively to knowledge sharing. Therefore, hypothesis 1 is supported.

Hypothesis 2 states that the level of cognition-based trust has a positive relation with knowledge sharing. Results, shown in table 8, presented that the beta coefficient (β) for cognition-based trust is positive at 0.14 value and significant at 0.003 (lower than 0.01). This evidence proved that cognition-based trust and knowledge sharing are positively parallel, which means those who have a higher cognition-based trust are more likely to share knowledge more. Therefore, hypothesis 2 is supported.

Lastly, hypothesis 3 indicates that information-based trust positively influences knowledge sharing. Results showed that the beta coefficient (β) for information-based

trust is positive at 0.102 value and significant at 0.008 ($p < 0.01$) (see table 8). This proved that information-based trust will contributes positively to the sharing of knowledge. Therefore, hypothesis 3 is supported.

Table 7 Correlations between variables

	ABT	**CBT**	**IBT**	**KNOWLEDGE SHARING**
ABT	1	0.528**	0.496**	0.534**
CBT	0.528**	1	0.406**	0.437**
IBT	0.496**	0.406**	1	0.413**
KNOWLEDGE SHARING	0.534**	0.437**	0.413**	1

**p < 0.01

Table 8 Hierarchical regression results

Model 1					
	Model summary	**Constant**	**ABT**	**CBT**	**IBT**
Unstandardized β		1.893	0.299	0.14	0.102
Sig.		0.000	0.000	0.003	0.008
R2	32.9%				
VIF			1.596	1.441	1.378
Condition index			12.9	16.255	18.57

After analyzing the collected data, the results and findings of the data analysis were discussed in this chapter. Then, moving on to the next chapter of this research is the discussion of the results in which this research shall make connections to previous literature and present the final look of the model.

6 DISCUSSION

As the results discussed in chapter 5, table 9 summarizes the hypotheses results after analyses. In general, all hypotheses were confirmed which also confirmed the literature of trust and knowledge sharing. While previous research found trust crucially predicts knowledge sharing in project teamwork environment and has an impact on knowledge sharing directly and significantly (Chang & Chuang 2011, 16; Wickramasinghe & Widyaratne 2012, 229), results from Tamjidyamcholo et al. (2013, 230) demonstrated that trust can have an impact, explicitly or implicitly, on knowledge sharing in a positive manner. Simililar to Tamjidyamcholo et al.'s research (2013), the results of this research suggest that the function of trust in all of the three forms including affect-based trust, cognition-based trust, and information-based trust is very important and has encouraging influence on knowledge sharers.

Out of the three constructs, affect-based trust has the most influence on knowledge sharing. This means that team members shall trust others to engage in the act of sharing knowledge when they have stronger emotional links, they care and concern about the well-beings of others based on knowing each other's identity (Cheung et al. 2016, 1509; McAllister 1995, 25). The results of this research are similar to that of the previous ones about participants in a team that team members would be more enthusiastic and engaging in communication more when they trust each other (Tamjidyamcholo et al. 2013, 230; Huang et al. 2011, 569). Similarly, previous research about the functional diversity in teams also suggest that knowledge sharing would be negative when the level of team affect-based trust was low and would be less negative when the affect-based trust raised (Cheung et al. 2016, 1520-1521). In fact, the genuine and deep mutual understanding of members towards each other would help them to be able to acquire specific knowledge and apprehend it; thus, members would participate in sharing their knowledge effortlessly (Tamjidyamcholo et al. 2013, 231). The results of this research show that affect-based trust significantly and directly impacts knowledge sharing at the score of 0.299 as shown in the figure 2.

Secondly, cognition-based trust is the runner-up in term of influencing knowledge sharing. The results show evidence that an individual will more likely to trust others if he or she is aware of the competence of the other party in completing an activity based on the other party's records of education and professionalism (Lau & Cobb 2010, 910). In Huang et al.'s study (2011), the authors found that cognition-based trust did not impact

knowledge sharing intentions significantly (Huang et al. 2011, 569) providing an explanation that the large degree in cognition-based trust would generate free-riders from the team works because an individual may think that others are reliable of contributing to the group work, and are capable of finishing the tasks successfully without receiving help (Huang et al. 2011, 569; Ng & Chua 2006, 59). However, the current research proves cognition-based trust significantly and directly influences knowledge sharing at the score of 0.14 (figure 2) which is similar to the result of Ridings et al. (2002). This proves that when an individual trust in other team member's ability, he or she will more likely to share knowledge.

Lastly, information has the least impact on knowledge sharing out of the three constructs, but it still has a positive influence on the willingness of individuals in sharing their knowledge. Information-based trust relates to the quality and the assurance of the information shared between parties (Tamjidyamcholo et al. 2013, 225) and it is proven from survey respondents that it has the least importance in terms of forming trust to share knowledge. However, the results are similar to previous research studies of Tamjidyamcholo et al. (2013) and Chang & Chuang (2011). Previous research provided evidence that knowledge sharers are more concerned about the quality and content of the shared knowledge which in turn, has positive influence on generating comprehensive trust between sharers (Tamjidyamcholo et al. 2013, 230; Chang & Chuang 2011, 16). This research's results also show that information-based trust significantly and directly affects knowledge sharing at the score of 0.102 (figure 2).

Table 9 Hypotheses results

Hypothesis	***Relationship***	***Result***
H1	Affect-based trust → Knowledge sharing	Supported
H2	Cognition-based trust → Knowledge sharing	Supported
H3	Information-based trust → Knowledge sharing	Supported

Moreover, figure 2 provides the relationships between constructs with numeric data retrieved from results analysis (see table 8). Mathematically, the regression model is in the form A = Bx + y. Therefore, the results imply the regression model should be written as according:

KNOWLEDGE SHARING = 1.893 + 0.299(ABT) + 0.14(CBT) +0.102(IBT)

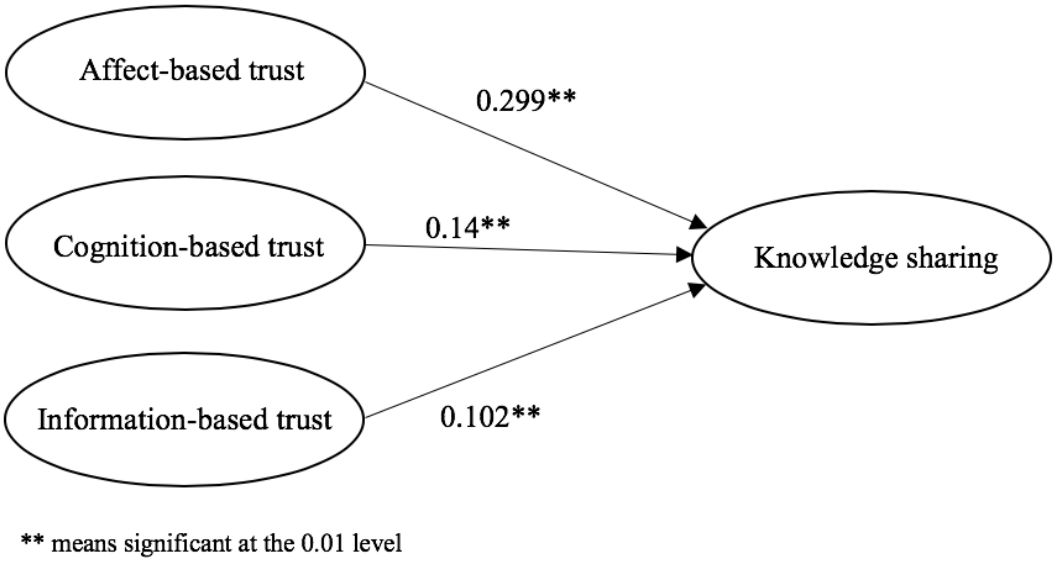

Figure 2 Research model with SPSS coefficients

The results were discussed in this chapter. Then, the next chapter is the conclusion in which this research shall provide implications for academics and practitioners, as well as the limitations for future research consideration.

7 CONCLUSION

The aim of the current research is to examine the connection between the extent of trust and the sharing of knowledge which in turn, increase the understanding of knowledge sharing in project teams. Members of project teams in various organizations were invited to participate in the process of testing the proposed framework of this research. The results of data analysis, including reliability, convergent and discriminant validity, and factor analysis, were all acceptable. Corresponding to the concepts and theories from review of previous studies, three forms of trust namely affect-based trust, cognition-based trust, and information-based trust, were examined. These variables are found to strengthen and encourage the share of knowledge between project teams. The results found that all the three forms of trust have a significant positive relationship with knowledge sharing.

7.1 Theoretical and managerial implications

Managers desire knowledge sharing, especially in the project team context, as a part of the organizational outcome. Hence, the results and findings found in this research will be beneficial to both scholars and practitioners with the following theoretical and managerial implications.

7.1.1 Theoretical implications

The findings of this research shall contribute to knowledge sharing literature by examining generally accepted notions in the context of project teams. It should be mentioned that both knowledge sharing and trust are multi-dimensional concepts themselves which makes the impact of trust on the extent knowledge sharing in the context of project teams needs to be studied more adequately. Hence, there is still a need for future empirical work to examine this research's proposed hypotheses and to replicate, broaden or negate the findings shown of this research.

Firstly, previous literature conducted examination on various forms of trust, most common forms are affect-based trust, cognition-based trust, and information-based trust on knowledge sharing. However, previous research did not focus on the trust and knowledge sharing in the context of project teams, but rather, they focused on examining manager level as well as senior positions. Therefore, this present research examined affect-based trust, cognition-based trust, and information-based trust on knowledge

sharing again, but focused on the context of project teams, especially, focused on examining individual members in project teams as the unit of analysis. Hence, participants in the questionnaire survey could be contributors in project teams who are not necessarily managers or people holding high managerial positions.

Secondly, previous empirical research did not provide enough data to tackle all the features of trust as well as the factors influencing knowledge sharing, including the context, the actors who involve in knowledge sharing, the information technology used in knowledge sharing, and the shared knowledge. In order to cover all the aspects discussed in the literature chapters, this research combined various questionnaires from previous studies as shown in Appendix 1. Thus, the author of this research proposes that the results of this research shall deliver basic information and data and the research shall be a general guide in aiding future research in this area.

7.1.2 Managerial implications

For the encouragement of the share of knowledge between project teams, practitioners need to use accurate information as a guidance for their actions. This is necessary because team members of project teams are often appointed by management (Wickramasinghe & Widyaratne 2012, 231). Because there are project teams are temporary in nature, which means they often form and operate until the project is finished, knowledge sharing shall be temporary in nature as well. Hence, organizations that use these type of temporary project teams would concern about the willingness that members would share their knowledge when the project is under operation, also, managers would take into account the shared knowledge among members in teams for using it in future projects.

Drawing from the results, it is suggested that organizations should concern more on how well team members fit each other, established from the results of affect-based trust and cognition-based trust being more important than information-based trust. Consequently, trust should be imported instead of being created as suggested by Wickramasinghe & Widyaratne (2012, 231). With this regard in mind, it is advised that managers should feel the necessity to create an approachable workplace in which team members can engage in an interaction in order to familiarize and understand individual's wishes and affections to increase members' affect-based trust (Tamjidyamcholo et al. 2013, 231). These amiable environments could be occasional face-to-face meetings, online interaction enhancement, and communication enrichment between members.

Additionally, new members who have the chance to communicate and work closely with experienced colleagues, such as through tutoring programs, job positioning procedures, can establish more powerful affect-based trust in their colleagues (Cheung et al. 2016, 1524). Also, managers should arrange a process of ranking team members based on their information, experience, education, and other qualities and occasions for them to display their knowledge which consequently, the high and low ratings of team members show their levels of knowledge validity (Tamjidyamcholo et al. 2013, 231). Consequently, this helps strengthen team members' cognition and information-based trust.

7.2 Research limitations

The limitations of this research shall be discussed next. Firstly, this research was conducted using a cross-sectional study applying survey methodology which was only conducted one time, so the results do not explain the changes of the respondents over an amount of time. Moreover, this research based on self-motivated questionnaire and survey method implemented in this research made the collected data less objective because the author had to personally contacted the participants, which in turn, compromise the anonymity of participants. In addition, because participants may act differently when they engage in different forums, such as electronic based versus face-to-face knowledge sharing which may create bias regarding how they would answer the surveys. Therefore, future research should be conducted using different samples which endorsed from various data sources including data when interviewing the related person, data gathered from questionnaire responses, in addition to data collected from literature and documents to confirm the proposed hypotheses. While questionnaire surveys shall deliver the broadness of respondents' experience, interviews shall deliver the intellect insight incorporated with surveys results. Secondly, because this research's results received a massive number of Vietnamese participants comparing with Finns and other nationalities, the generalizability of this research does not cover all demographics, such as Finnish. Thus, there is still a need for more researchers to examine the phenomenon in order to retrieved better generalized results. Thirdly, this research has taken the team members as units for examination, hence, the broader properties of organizations that teams function in is out of the study breadth. Fourthly, as an exploratory research, this thesis has not covered the distinctions between knowledge types, such as tacit and explicit knowledge, so future research could include such distinction. In addition, this research

has evaluated precedents of knowledge sharing using constructs of trust, but these constructs of trust are not all-inclusive dimensions because trust is multidimensional which makes the possibilities of other constructs were not included due to the difference in the context of study. Hence, future researchers should consider other predictors, such as content-based trust (see Tamjidyamcholo et al. 2013), economy-based trust (see Hsu, Ju, Yen & Chang 2007), as well as other factors affecting trust in knowledge sharing culture (see Zaglago et al. 2013). Lastly, this research has not examined the influences of moderating variables, such as socio-demographics, on the relationship between dependent and independent variables. Thus, future researchers could consider moderating variables in future examination.

8 SUMMARY

Trust plays important roles in sharing the information and knowledge between teams. However, managers often engage difficulty in creating a work environment that members in teams can manifest trust in order to engage in knowledge sharing between project teams. Trust, therefore, has important roles in whether the team members share or conceal their knowledge from each other as it is defined to be one of the several crucial precedents of the share of information and knowledge.

The aim when conducting this research is to examine how trust has an influence on knowledge sharing between project teams. In order to accomplish the goal of the research, three different sub-research questions were implemented: one revealed the features and factors of knowledge sharing, one revealed the features and forms of trust, and the last one revealed how trust impacts knowledge sharing between project teams.

The initial framework and the hypotheses of the research were proposed based on existing literature. This research investigated three forms of trust in project team knowledge sharing: affect-based trust, cognition-based trust, and information-based trust. The initial framework was built with the hypotheses reflecting the relations of each trust forms towards knowledge sharing. By applying quantitative method to the sample of 256 responses, this research examined the relations between independent variables which are the three forms of trust (affect-based trust, cognition-based trust, information-based trust) and knowledge sharing as consequence. The data was analyzed using SPSS through a series of steps: reliability, confirmatory factor analysis, correlation, and hierarchical multiple regression in order to test the hypotheses of the proposed theoretical framework.

The results indicated that all the three forms of trust have significant, positive impact on knowledge sharing with affect-based trust being the most significant influence. Moreover, this research provides an insight of different forms on trust on knowledge sharing based on individual members' perspectives as the team contributors, not just as managers, by covering different aspects of trust as well as aspects of knowledge sharing. However, this research is limited for applying cross-sectional study. Further investigations into the other factors of trust and the socio-demographics variable are necessary. Lastly, the research delivers in-depth insight for managers and organizations about benefits of trust and how it is important to encourage trust in the share of knowledge and proposes instructions for improvement.

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10 APPENDICES

Appendix 1 Measurement Scales and Abbreviations

References	*Code*	*Items*	*Scale*
AFFECT-BASED TRUST			
Huang 2011, 576.	AT1	I have a sharing relationship with the members of my work team. We can all freely share our ideas.	5-point Likert
	AT2	I can talk freely with my colleagues about difficulties I am having with my work.	
	AT3	If one of the members of my work team was transferred to work in a different team, I would feel unhappy because I enjoy working with them all.	
	AT4	If I share problems with my team members, I know that they will respond constructively and caringly.	
	AT5	I believe that the members of my work team have made considerable emotional investments in our working relationship.	
Ridings et al. 2002, 290.	AT6	The other team members are very concerned about the ability of people to get along.	
	AT7	The other team members would not knowingly do anything to disrupt the conversation.	
	AT8	The other team members are concerned about what is important to others.	
	AT9	The other team members will do everything within their capacity to help others.	
	AT10	The other team members try hard to be fair in dealing with one another.	
	AT11	The other team members do not behave in a consistent manner.	
COGNITION-BASED TRUST			
Huang 2011, 576.	CT1	My colleagues approach their work with professionalism and dedication.	5-point Likert
	CT2	I believe that my colleagues are well prepared and competent to do their work.	
	CT3	I can rely on my colleagues not to make my job more difficult by careless work.	
	CT4	I trust and respect my colleagues.	
	CT5	I consider my colleagues to be trustworthy.	
McAllister 1995, 37.	CT6	If people knew more about this individual and his/her background, they	

		would be more concerned and monitor his/her performance more closely.	
Ridings et al. 2002, 290.	CT7	I feel very confident about the skills that the other team members have in relation to the topics we discuss.	
	CT8	The other team members have much knowledge about the subject we discuss.	
	CT9	The other team members have specialized capabilities that can add to the conversation.	
	CT10	The other team members are well qualified in the topics we discuss.	
	CT11	The other team members are very capable of performing tasks in the topics we discuss.	
	CT12	The other team members seem to be successful in the activities they undertake.	
INFORMATION-BASED TRUST			
Tamjidyamcholo et al. 2013, 228.	IT1	Information security virtual community (ISVC) has enough safeguards to make me feel comfortable to divulge personal information.	5-point Likert
	IT2	ISVC does not use personal information for any purpose unless it has been authorized by the stakeholder.	
	IT3	ISVC never sells members' personal information kept in its computer databases.	
	IT4	ISVC protects personal information from unauthorized access.	
Ridings et al. 2002, 290.	IT5	The discussions on virtual community often contain personal information.	
	IT6	People seem willing to reveal private information about themselves to other team members.	
KNOWLEDGE SHARING			
Bock et al. 2005, 107.	KS1	I will share my work reports and official documents with members of my organization more frequently in the future.	5-point Likert
	KS2	I will always provide my manuals, methodologies, and models for members of my organization.	
	KS3	I will share my experience or know-how from work with other organizational members more frequently in the future.	
	KS4	I will try to share my experience from my education or training with other	

		organizational members in a more effective way.	
Chowdhury 2005, 316.	KS5	The extent of knowledge that I have gained from a team member that can NOT be easily expressed by words or numbers (abstract knowledge and/or ideas).	
	KS6	The extent of knowledge that I have leveraged from a team member that is practical know-how, trick-of-the-trade (cannot be found in a manual or a text).	
	KS7	The extent of knowledge that I have gained from a team member through experiential learning (learning by being with a member NOT from any document written by him/her).	
	KS8	The extent of knowledge that I have gained from a team member is dependent on other knowledge possessed by him/her (for instance, knowledge of calculus is dependent on knowledge of algebra).	
	KS9	The extent of knowledge that I have gained from a team member is dependent on the specific situation in which it was created (how to handle a particular situation or situational problem).	
	KS10	The extent of knowledge that I have gained from a team member is dependent on his/her culture (he/she acquired this knowledge from the way he/she grew up, values, beliefs, traditions, etc.).	
	KS11	The extent of knowledge that I have gained from a team member is dependent on his/her personality (unique individual perceptions).	
DEMOGRAPHIC QUESTIONS			
Gender	1	Male	Nominal
	2	Female	
Age	1	18-25	Nominal
	2	26-30	
	3	31-40	
	4	Over 40	
Work experience	1	0-5 years	Nominal
	2	5-10 years	
	3	More than 10 years	
Education	1	Bachelor	Nominal
	2	Master	

	3 4	Doctor Other	
Nationality	1 2 3	Vietnamese Finnish Other	Nominal

Appendix 2 Operationalization of the Research

Research Problem	***Sub-problems***	***Themes***	***Concepts***	***Concepts in literature (chapter number)***	***Surveyed questions***
How trust influences on knowledge sharing between project teams?	What are the features and factors of knowledge sharing between project teams?	Features of knowledge sharing	Four stages of knowledge sharing	2.1.2	
			Solicited and voluntary knowledge	2.1.2	
		Factors influence knowledge sharing between project teams	Context	2.2.1	CT1 to CT5
			Actors	2.2.2	AT1 to AT5, CT7 to CT12, KS1 to KS4
			Information technology	2.2.3	IT1 to IT6
			Knowledge	2.1.1	KS5 to KS11
	What are the features and forms of trust?	Features of trust	Cooperation	3.2	AT6 to AT11
			Identity	3.2	CT6
		Forms of trust	Affect-based trust	3.3.1	AT1 to AT11
			Cognition-based trust	3.3.2	CT1 to CT12
			Information-based trust	3.3.3	IT1 to IT6
	How does trust impact knowledge sharing?	Trust associated with knowledge sharing		3.4	KS1 to KS11