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THE INTENTION TO SHARE:
PROFESSIONALS' KNOWLEDGE SHARING BEHAVIORS
IN ONLINE COMMUNITIES

by

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A Dissertation submitted to the
Graduate School-New Brunswick
Rutgers, The State University of New Jersey

In partial fulfillment of the requirements

For the degree of

Doctor of Philosophy

Graduate Program in Communication, Information, and Library Studies

Written under the direction of

Dr. Claire R. McInerney

and approved by

New Brunswick, New Jersey

May, 2011

ABSTRACT OF THE DISSERTATION

The Intention to Share:
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Since the 1990s, the rise of some online communities as well as the decline of others has caught the attention of academia as well as of practice. One assumption for the decline of some online communities is the lack of the rich knowledge content that is believed to be the source of competitiveness and sustainability of any online community. Online communities are increasingly acknowledging the value of knowledge and the knowledge sharing processes required for online communities to build and sustain their identity in this competitive and constantly changing online environment.

This research aims to provide an understanding of knowledge sharing behavior through the adaptation of two major theories imported from Social Psychology: the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TpB). Exploring knowledge sharing from a social psychological perspective provides an understanding of the process an individual goes through to make the decision to share his/her knowledge with others as well as the different psychological factors facilitating or hindering knowledge sharing behavior. Research findings are based on a web-survey of 158 group

members, and an observation of interactions of eight active groups in one online community of professional educators.

Proposing an extended theoretical model of knowledge sharing behavior in an online community, this research found that normative pressures, including subjective norms and descriptive norms, had a strong influence on the formation of the individual's intention to share in the online community. Knowledge sharing self-efficacy also was found to significantly account for explaining the individual's motivation to share his/her knowledge with other members. Attitude and controllability were not found to have significant impacts on the formation of intention.

The qualitative analysis of the interactions of members of eight active groups revealed that there were other implicit factors that motivated individuals to engage in online activities. The observation of 24 online sessions had generated beliefs related to knowledge sharing behavior. Those beliefs were related to normative beliefs and the pressure created by the expectations of others, control beliefs and the confidence of the individual's ability to behave, and finally, behavioral beliefs and individual outcome expectations.

Dedication

To the soul of my father, Moseeter Mohammad Alajmi: Thank you for holding my hands and never letting go.

Acknowledgements

My deepest gratitude goes to my country *Kuwait* for giving me this opportunity to learn and excel.

This dissertation could not have been possible without the guidance and support of my dissertation committee, Claire R. McInerney, Nick Belkin, Jennifer Gibbs, and Suliman Hawamdeh. I am heartily thankful for the support, advice, and encouragement from the preliminary to the concluding level of this dissertation. I owe my deepest gratitude to my supervisor, Claire McInerney, a mentor with a big heart who embraces and supports me in this academic and life journey. I am further grateful to Jennifer Gibbs for listening and engaging in many far-ranging discussions that triggered and improved my research skills. My special recognition goes out to all the scholars, staff, and student-colleagues in the School of Communication and Information at Rutgers University, many of whom have positively influenced me during the process of conducting my research. Special thanks to Anne W. Lee for her help, support, and encouragement.

I am grateful to my family—my mother, Hadiya, my sisters, Noura, Dima, and Aljazi, my brother, Mohammad, and the five little angels— for their encouragement, support, and prayers. I am especially thankful for my little girl, Wadha, for enduring living away from home and for her love that makes me survive and continue. We lived this journey together, and we shall reap the fruits of success together. I love you all.

My special recognition also goes to those who touched my life and believed in me. I would like to thank Dr. Adnan Alrefai, Dr. Majed Khashaba, Dr. Ali Nassar, and Prof. Sajjad Ur Remhan. Meeting you all touched my life and inspired me to move forward toward my dreams. I could not thank you enough. I would like also to recognize my friend, Fatima Al Salem. Our friendship came at the right time. I cannot thank you enough for making these years in United States of America endurable and enjoyable.

I am also grateful to the Tapped In community for opening its virtual doors for me to pursue my research and fulfill my academic curiosity. Especially, I would like to thank Judi Fusco, Patti Schank, B.J. Berquist, and Jeff Cooper for making my research possible. I would like also to extend my gratitude for all the Tapped In community members who participated in my research. Your contributions are highly valuable and most appreciated.

In 2006, I came with my little girl to the United States with fear and anxiety about this new life and learning experience; today, I leave the United States with confidence, maturity, and love. New Jersey, I thank you for embracing my daughter and me with kindness, friendship, and knowledge. Though we are leaving, we will be taking all the wonderful experiences we had in the Garden State with us.

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I. INTRODUCTION

Knowledge sharing has been identified as a major focus area within knowledge management. Unfortunately, knowledge sharing has been studied most extensively from a technological perspective, investing in technologies in hopes of motivating individuals to share their knowledge while neglecting the human, social, and communicative aspects of knowledge sharing. Although new tools and technologies offer unique opportunities to overcome barriers of space and time and to increase range and speed of information access ([Hendriks, 1999](#)), they do not always guarantee successful knowledge sharing practices ([Hislop, 2002](#); [Van den Hooff & Van Weenen, 2004](#)). McDermott (1999) asserts that information technology can inspire but cannot deliver knowledge. Zack (1999) concludes that knowledge sharing practices are 90% people and 10% technology. The aforementioned studies ([Hislop, 2002](#); [McDermott, 1999](#); [Van den Hooff & Van Weenen, 2004](#); & [Zack, 1999](#)) support [Tuomi's \(2000\)](#) argument that knowledge sharing is fundamentally social and that successful knowledge sharing practices require broad understanding of not only technical, but of social and psychological aspects of human organization.

Perceiving knowledge sharing as a social phenomenon corresponds significantly with contemplating knowledge sharing as a social dilemma. According to [Cabrera and Cabrera \(2002\)](#) knowledge sharing can be conceptualized as a social dilemma in which individual rationality leads to collective irrationality. This statement of knowledge sharing as a social dilemma reveals issues of cooperation and collaboration. In situations in which an individual contributes information and knowledge to his/her organization or community, problems of cooperation could hinder contribution rates. Individuals who put

forth cost and effort to produce and contribute information/knowledge expect returns, extrinsic or intrinsic, and assume they will receive benefits from their contributions. In addition, the contribution might be a result of pressures from the surroundings that encourage the individuals to contribute. The question that arises is what possible factors, returns, and benefits could influence individuals to behave and contribute information and knowledge to their community.

In order to understand why individuals contribute their knowledge and to suggest practical approaches for motivating them, it is necessary to examine their *knowledge sharing behavior*. Although several studies have examined factors influencing individual knowledge sharing and have suggested that positive knowledge sharing behaviors stem from enabling cultures, rewarding systems, and supportive management styles, surprisingly, few studies have employed theoretical frameworks to examine specifically the predictors of the decision to share knowledge among a group of individuals.

Moreover, knowledge sharing has been widely investigated in two main contexts—business and health care. Less attention has been directed toward other contexts. Online communities are one of the most promising contexts for studying knowledge sharing. Online communities are social aggregations that emerge from the net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace ([Rheingold, 1993](#), p.5). Today, more and more individuals turn to online communities, searching for information to make decisions, to solve problems, or to seek support from colleagues. According to a 2001 Pew Internet and American Life Project report, 84% of the Internet users said they have used the Internet to contact or get information from a group; 79%

identified at least one particular group with which they stay in regular online contact (Horrigan, 2001).

1.1 Research Significance

Although the explosive diffusion of information technology has caused the proliferation of online communities, the continuity of these online communities is neither guaranteed nor had it been predicted. Since the 1990s, the rise of some online communities, as well as the decline of others, has caught the attention of academic researchers to this new context as a promising research enterprise worthy of continuous investigation and theorizing.

The significance of this proposed research rises from the fact that knowledge sharing is the main constituent component of any online community, and that without the rich content (i.e. shared knowledge) online communities are of limited value (Chiu, Hsu, & Wang, 2006). Not only do online communities recognize the increasing value of *knowledge* as a source of competitiveness, growth, and continuity, but they have acknowledged and appreciated the *knowledge sharing processes* required to create the mutual engagement, joint enterprise, and shared repertoire (Wenger, 1999) necessary for developing resources for online communities to build their virtual identities. Resources could be routines, words, stories, symbols, ways of doing things that would facilitate the community to be grown, and the members' identities to be formed. Consequently, the participation of individuals is the most important factor for fostering a knowledge-based virtual community in which the number of knowledge providers and the level of contributions determines whether the community will grow or collapse.

Yet, even though knowledge has been characterized as sticky and difficult to be transferred (Szulanski, 2000), and even though the human tendency is to hoard and not share knowledge (Davenport & Prusak, 1998), these characterizations might be less true when it comes to online communities. There is a natural tendency, willingness, and eagerness to share and contribute to the community especially in professional online communities (Chiu, Hsu, & Wang, 2006). While individuals' willingness and eagerness to participate and engage in online communities have been noticed (Wasko & Faraj, 2000), few studies have reported from a theoretical perspective on the motivations of individuals who voluntarily contribute to these communities. The study proposed here will adopt a theoretical model developed in the Social Psychology field to help better understand how and why members in these online contexts share their knowledge and define what the real motivators are.

This research will contribute to the understanding of how and why individuals make the decision to participate in knowledge sharing practices in online communities. The research will focus on identifying social and psychological factors influencing the decision-making process by applying the Theory of Reasoned Action and the Theory of Planned Behavior; in addition, the research will assess the intention-behavior relationship by investigating the participants' intentional behaviors (their intentions to share knowledge) and their actual behaviors (actual contributions) as observed through their online contributions.

1.2 Problem Statement

This research proposes and employs a decision-making model developed from the successful studies of the motivational determinants of individual behavior—the Theory of

Reasoned Action (TRA) (Fishbein & Ajzen, 1975), and the Theory of Planned Behavior (TpB) (Ajzen, 1991). Even though researchers previously have adopted these two theories to study knowledge sharing, their studies have focused more on specific constructs of the TRA and the TpB model while neglecting other aspects. This study aims to apply the TRA and the TpB model as well as to bring in new constructs from the Knowledge Management field to build on these theories and to provide more factors to investigate knowledge sharing behavior in online communities. Thus, this research based on the TRA and the TpB theories will answer the two main research questions:

- 1. What are the major factors influencing an individual's intention to engage in knowledge sharing activities in online communities?***
- 2. Why does an individual make the decision to share his/her knowledge with other members in online communities?***

1.3 Overview of the Dissertation

Following the Introduction, which functions as Chapter I, this dissertation is organized into six main chapters. Chapter II consists of a review of previous literature investigating knowledge sharing as a main research area within the Knowledge Management field. The chapter discusses the main concepts of knowing and how knowledge develops, reviewing different perspectives on where knowledge resides, and who owns the knowledge. The chapter also provides a brief introduction of the Knowledge Management field, focusing on the main relevant definitions of the Knowledge Management and the main concepts upon which Knowledge Management stands. The last part of the chapter focuses on knowledge sharing as the focus of this dissertation. Particularly, a discussion of knowledge sharing in online communities is

presented based on previous research conducted to investigate knowledge sharing in virtual communities from different perspectives.

Chapter III focuses on the theoretical frameworks that explain and define knowledge sharing as a process. The chapter is divided into two main sections. The first section focuses on three main frameworks adopted from the Knowledge Management field that discuss the knowledge sharing process: 1) Hendrik's classic framework of knowledge sharing process; 2) Nonaka's dynamic framework of knowledge creations, and 3) Szulanski's framework of knowledge sharing and the problem of stickiness. Reviewing each of the three frameworks provides an understanding of knowledge sharing as individual, as well as social, phenomenon. It provides different perspectives on the knowledge sharing process and the different individual and social factors influencing this process.

The second section of Chapter III focuses on the theoretical background and hypotheses development based on the two Social Psychological theories—the Theory of Reasoned Action and the Theory of Planned Behavior—to investigate an extended theoretical model of knowledge sharing behavior. The section proposes different motivational factors influencing an individual's intention to share knowledge in an online community. The chapter concludes with developing an extended theoretical model to investigate knowledge sharing behavior in online communities.

Chapter IV presents an overview of the research approach and the context of the study. In addition, the chapter provides a general overview of the two main methodologies used to test the theoretical model of knowledge sharing behavior. Details of each methodology will be further discussed in the chapters that follow.

Chapter V presents the answer for the first research question by discussing the results of the web-survey of 158 group members investigating the different motivational factors influencing individuals' intentions to engage in knowledge sharing activities in an online community. The chapter discusses in detail the recruiting mechanism of the research subjects, research sample, respondent characteristics, and the research response rate. An overview of the survey instrument is presented in order to discuss the development of the theoretical model's major constructs and measures that have been validated by previous research focusing on knowledge sharing. Correlation, factor analyses, and multiple regression analysis are used to test the theoretical model and are presented in this chapter. The chapter concludes with an analysis of the open-ended question, and a conclusion of key findings based on the web-survey.

Chapter VI focuses on answering the second research question regarding the individual's decision to share his/her knowledge with other members in the online community. Based on the observation of eight active groups' online interactions, the data were collected and analyzed through a content analysis technique. The chapter provides a detailed overview of the content analysis technique used to analyze the collected data, the coding scheme, and the research sample. Based on the grounded theory approach, three main themes emerged from the analyzed data and shall be discussed in this chapter: First, the chapter discusses the different types of knowledge shared during the interactions among the members of the eight groups. Second, the chapter examines the different expected tangible and intangible returns motivating individuals' decisions to share their knowledge with other members of the groups. Third, the chapter develops a chronological development of the knowledge sharing process in

this specific online community. The chapter concludes with the key findings based on the content analysis of the members' interactions in the online community.

Finally, Chapter VII summarizes the research rationale and theoretical model, research context, and methodologies used to test the extended theoretical model of knowledge sharing behavior. The chapter highlights the research main findings and integrates the results of the web-survey and the content analysis by reflecting on the previous literature findings. The chapter ends with the main research implications, limitations, future research directions, and a general conclusion.

II. LITERATURE REVIEW

This section aims to provide an understanding of knowledge sharing as an individual as well as a social process by introducing different definitions, perspectives, and frameworks that will assist in understanding knowledge sharing from social and individual perspectives. Each of the perspectives and frameworks discussed in this chapter will shed light on a specific angle of knowledge sharing in online communities. Even though previous research on knowledge sharing in traditional settings has value regarding knowledge sharing in online communities, a specific section will be devoted to the findings developed from research investigating online communities. The main idea is to examine findings from real-life situations to explain knowledge sharing in online communities in which individual online contribution is the locus of the interest for the proposed research.

2.1 The Knowing Process

Usually, a discussion of knowledge sharing, or Knowledge Management in general, starts with defining knowledge and how it is different from or related to data and information. This research intends to take a different starting point: It is an inquiry into the individual's own experience regarding the use, discovery and sharing of knowledge. Thus, rather than focusing on knowledge per se, it becomes necessary to understand the knowing process that could shed light on different perspectives and on how different people perceive "knowledge" sharing and creation. According to [Karl Mannheim's \(1970\)](#) propositions of the sociology of knowledge, knowing is a social process in which the collective purposes of the group underlie the thoughts of the individuals (p.112). Mannheim's perspective takes us from the traditional, cognitive view of knowledge as a

thing, to the collective performative view of knowledge as socially constructed ([Heaton, Bergeron, Bertrand-Gastaldy, & Mercier, 2005](#)) and continuously re-produced and negotiated in interaction among members of a knowledge community.

[Weick \(1995\)](#) emphasized that knowledge creation and, consequently, sharing is grounded in human agency, and that it emerges in a reflexive monitoring of the stream of experience. As such, it is an unfinished construction that must continually be sustained in the ongoing flow of human work and interaction. Eventually, both perspectives—the cognitive and the performative—have important management implications. If an organization adopts the cognitive model, it is possible to argue for a “common cognitive ground” among employees to link seemingly disparate activities or businesses into a coherent whole; conversely, if an organization is to adopt the performative, there is never going to be a single common cognitive ground.

The role of management is not to impose a single conceptual framework but to construct bridges between communities of knowledge ([Heaton & Taylor, 2002](#)).

[Szulanski \(2000\)](#) discusses knowledge transfer as a decision-making process consisting of four main phases: initiation, implementation, ramp-up, and integration. Each phase can be linked to decisions made through enacting to external environments, selecting from enacted cues, and storing past experience to function as criteria for any new decisions to be made. Thus, Weick and Szulanski propose that knowledge sharing is a social, communicative, and decision-based process, and in order to understand the processes, all relevant social, cognitive, and communicative factors should be investigated.

2.2 Knowledge Management

In an attempt to define what Knowledge Management is; four dimensions are proposed that will shed light on major aspects of any Knowledge Management initiatives. The *first main* dimension is *knowing what another person knows* and where knowledge resides. This dimension highlights the different types of knowledge to be recognized and understood in order to locate, map, and leverage knowledge to benefit communities. Knowledge is divided into three main types: tacit, explicit (Polanyi, 1966), and cultural (Choo, 1998). Recognizing and understanding these three types of knowledge will eventually lead to the designing of better ways to identify “who knows what.” *Tacit knowledge* is the most controversial type of knowledge since it is not easily visible and expressible, and, thus, it is hard to articulate with formal language. *Explicit knowledge*, on the other hand, is expressed in words and numbers, and is easily communicated and shared in the forms of hard data, scientific formulas, and codified procedures (Ichijo & Nonaka, 2007). *Cultural knowledge* includes shared assumptions and beliefs that are used to make sense of reality, as well as the criteria and expectations that are used to assign value and significance to new knowledge (Choo, 1998). Although cultural knowledge is not documented, it is conveyed in stories, histories, values, and social norms.

Even though these three types of knowledge are not mutually exclusive, understanding these three types of knowledge will eventually lead to designing better ways to identify “who knows what.” Identification and elicitation of these three types of knowledge require the development of communicative processes of interactions that will allow the individual to communicate knowledge embedded in his/her mind and body and convert it into more of an explicit knowledge that could be converted into the norms and

values of the community he or she belongs to.

The *second dimension* is being able to gain *timely access* to such knowledge or representations of knowledge. According to the International Data Corporation (IDC), approximately 4.5% of knowledge is lost or hidden due to employee turnover, information mismanagement, and knowledge hoarding. In addition, staff members spend 25% of their workweek searching for information and then another 25% analyzing information (IDC, 2007). Research has provided clear evidence that social networks could function as a gateway for faster processes of finding and developing new knowledge. In addition, according to Granovetter (1982), weak ties between individuals tend to speed up the flow of diverse information and unusual resources by serving as bridges between cliques. Prusak and Cohen (2001) state, “If one has a dollar to spend on knowledge management, it is better spent on connection than capture.”

The *third dimension* is a *willingness to share and engage* in problem solving and decision-making. Sharing one’s individual knowledge is not simply carried out, nor can it be forced or mandated. People are not likely to share their knowledge unless they think it is valuable and important and they are able to overcome the intervening contextual conditions that might control their sharing behavior (Szulanski, 2000).

The *fourth dimension* is *enabling culture* that promotes learning and creativity. In general, the ability to create a knowledge enabling culture highly rests on mutual trust (McInerney & Mohr, 2007). Levin, Cross, Abrams and Lesser (2002) found that trust leads to effective knowledge sharing, but they distinguish between two kinds of trust: benevolence-based, in which an individual will not intentionally harm another when given the opportunity to do so, and competence-based in which an individual believes

that another person is knowledgeable about a given subject area. [Levin et al. \(2002\)](#) stressed that when it comes to knowledge sharing, trusting people's benevolence consistently matters, but trusting their competence is even more important when the knowledge is difficult to codify.

2.3 Knowledge Sharing

In order to understand knowledge sharing, many attempts have been made to define knowledge sharing from different perspectives and levels. [Lee and Hawamdeh \(2002\)](#) define knowledge sharing as the deliberate act in which knowledge is made reusable through its transfer from one party to another (p. 50). On the other hand, [Bordia, Irmer, Garden, Phair, & Abusah \(2004\)](#) classify knowledge sharing as an organizational citizenship behavior, and define knowledge sharing behavior as "an individual behavior that is discretionary, not directly or explicitly recognized by the formal rewards system, and that in the aggregate promotes the effective functioning of the organization" (p. 130).

[Lin \(2006\)](#) differentiates between individual and organizational knowledge sharing. Individual knowledge sharing concerns communicating with others to help them get something done more efficiently and effectively, while organizational knowledge sharing concerns capturing, organizing, transferring and making available experience-based knowledge that resides within an organization. The importance of knowledge sharing as an individual, as well as organizational, activity relies on the fact that knowledge sharing is often the basis of competitive advantage. It is important because it prevents "reinventing the wheel" ([Lee, Foo, Chaudhry, & Hawamdeh, 2004](#)). It is a communicative process that prevents "knowledge loss" once an expert leaves, and a process that ensures cultural stability and innovation.

While being recognized as an important pillar in Knowledge Management efforts, reports show that, in practice, knowledge sharing proves to be a complex phenomenon to study and difficult to understand. The complexity of knowledge sharing as a phenomenon is due to the controversies that surround knowledge sharing processes. Knowledge sharing is problematic and controversial for two reasons: The first reason is related to the type of knowledge with which individuals deal. Knowledge is difficult to conceptualize; it is ambiguous, and it is not necessarily virtuous. The second reason is related to individual conditions; knowledge sharing is difficult to implement because people are sometimes reluctant to share knowledge that is perceived to be valuable and important (Davenport & Prusak, 1998). Especially, in an intensively competitive environment knowledge is considered a valuable commodity that is not shared casually in order for individuals to preserve glory, authorship, and visibility in their community (Andrews & Delahaye, 2000).

2.4 Knowledge Sharing and Online Communities

In the last few years, there has been a turn toward investigating knowledge sharing in online communities. An online community is defined as a group of individuals who communicate and build social relationships with each other via Internet-based technology (Rheingold, 1993). And even though many turn to the Internet carrying on their preexisting social relationships from the real world to the online world, a great deal of interactions in online social communities occur among individuals without any pre-existing social ties (Butler, Sproull, Kiesler, & Kraut, 2002).

Online communities can be understood as one of the knowledge community types through which relationships are built and knowledge is exchanged via computer-

mediated communication (Koh & Kim, 2004). Thus, knowledge sharing and exchange is a basic aspect of any online community. Several questions remain, including: How does individual make judgments, form evaluations, and arrive at the decisions to share his/her knowledge with others? What are the information sources individuals rely on to make decisions? What are the individual and social factors motivating people to contribute and to share knowledge in these online communities?

Studies have identified *commitment, social norms, trust, an enabling community's structure, and leadership* as the main motivational factors influencing online community members to participate actively in the community knowledge generation and sharing activities. Each of the motivational factors will be discussed (Bieber, Goldman-Segal & Hiltz et al., 2002; Hwang & Kim, 2007; Usoro, Sharrat, Tsui, & Shekhar, 2007; Van den Hooff & Van Weenen, 2004; Wasko & Faraj, 2000).

Commitment to Share

Growing evidence has suggested that commitment has a significant influence on individuals' behaviors and positive consequences for organizations. Commitment is characterized by three attitudinal elements: a strong belief in and acceptance of the organization's goals and rules; a willingness to exert considerable effort on behalf of the organization; a strong desire to maintain membership in the organization (Eisenberg, Monge, & Miller, 1983, p.181).

Hwang and Kim (2007) have found that commitment characterized by an individual's feeling of emotional attachment to the online community (i.e. identification) is the most important factor for successful knowledge sharing activities in online communities. In fact, in other cases, the use of computer-mediated communication

(CMC) enhanced an individual's sense of commitment by overcoming barriers and creating a strong group orientation and collective behavior, which in turn influence an individual's willingness to both donate and collect knowledge – two main activities of knowledge sharing in online community ([Van den Hooff & Van Weenen, 2004](#)).

On the other hand [Wasko and Faraj \(2000\)](#) differentiate between knowledge as a private good—embedded in an individual or organization head—and as a public good—embedded in communities. In Wasko and Faraj's perceptions, knowledge is a public good, which, if accepted, will motivate community members by means of moral obligation and community interest rather than by narrow self-interest in their knowledge sharing behavior.

Social Norms

Norms consist of shared beliefs about behaviors that people ordinarily do and behaviors that are socially acceptable ([Constant, Kiesler, & Sproull, 1994](#)). Norms influence people's attitudes and behaviors because the process of psychologically belonging to a group involves categorization of oneself as a group member, which in turn transforms one's self concept, attitudes, feelings, and behaviors so that they are consistent with, or assimilated to, the group prototype ([Wellen, Hogg, & Terry, 1998](#)).

Norms can be conceived in different ways. According to the Theory of Reasoned Action, norms exist if a number of significant others endorse particular courses of action (subjective norms) ([Fishbein and Ajzen, 1975](#)). On the other hand, norms can be differently tied to salient membership in specific social groups. Thus, it is the support of the social group for a particular behavior which motivates the individual to follow the lead of others (descriptive norms) ([Cialdini & Trost, 1998](#)).

Subjective norms have been perceived as the main predictors of individual knowledge sharing behavior. For example, while adopting the TRA and the TpB models, researchers found that subjective norms have a significant effect on an individual's intention to share knowledge (Bock, Zmud, Kim, & Lee, 2005; Kuo & Young, 2008; Ryu, Ho, & Han, 2003). In a technology-based environment, Hwang and Kim (2007) emphasize the impact of subjective norms on knowledge sharing behavior while investigating the use of technology-mediated learning by business students. The authors found that social influence could change perceptions and attitudes toward the e-collaboration media.

Descriptive norms have been qualified as an additional variable for predicting individual behaviors (Norman, Clark, & Walker, 2005). Descriptive norms are based on the fact that individuals adopt certain attitudes or behaviors because they are influenced by their friends' and coworkers' behaviors. The impact of descriptive norms on an individual's behavior has been shown to be moderated by various factors, particularly an individual's attraction to a group and the expected benefits to being identified as a member.

Trust

It has been widely found that trust is a strong predictor in any knowledge exchange activities. Usoro, Sharrat, Tsui, and Shekhar (2007) investigated the impact of trust on online knowledge sharing activities on three main dimensions: competence, integrity, and benevolence. Interestingly, integrity-based trust, an individual's perceptions that the trustee adheres to a set of principles that the trustor finds acceptable (p. 201), has been found to be the most significant predictor of all three dimensions of trust investigated in

this study.

In another context, [Andrews and Delahaye \(2000\)](#) suggested an initial framework—the *psychological filter*— to describe the cluster of individual micro-processes that scientists who are engaged in a bio-medical consortium adopt to filter their knowledge sharing and importing. To share knowledge, scientists perceive trustworthiness of the receiver to be the major factor influencing their decisions to share. Trustworthiness is based on the perceptions of what the knowledge receivers are likely to do with sensitive information. Scientists' decisions to import knowledge are influenced by two main factors. First, the scientist's social confidence to initiate and approach the prospective importer which is determined by moving within his/her comfort zone and is mediated by the perceived approachability of the knowledge source (i.e. personal style, status of the information source). Second, the perceived credibility of potential knowledge suppliers which guarantees the quality of the information to be imported.

An Enabling Community's Structure

[Bieber et al. \(2002\)](#) emphasized that to carry out, motivate, and support knowledge sharing activities; the online community's structure must be designed to foster effective knowledge sharing and learning activities. They proposed a set of integrated tools for virtual community support that include hypermedia features to enable linking to other knowledge systems, digital video for collaboration and learning, and financial transaction support for better knowledge sharing and learning.

Tools that facilitate knowledge sharing activities are usually known as Knowledge Management systems (or tools). [Cabrera, Collins, and Salgado \(2006\)](#) investigated the importance of the availability and the perceived quality of these tools on individuals

engaging in knowledge sharing activities. Researchers found that both availability and the quality of the KM systems were significantly related to engaging in knowledge sharing activities.

Even though these tools make online interactions and participation possible, maintenance activities are essential in sustaining online interactions over time. Maintenance could be in managing software, updating files, and solving technical problems, in addition to managing members' behaviors when using tools provided by the online community to prevent misuse and to encourage effective contribution ([Butler et al., 2002](#)).

Leadership

[Butler et al. \(2002\)](#) defined a community's leader (e.g. owner, developer) in an online environment as a position reinforced and formalized through the community's structure and rules in which his/her role is to maintain the administration and technological infrastructure, to control and encourage participations, and to promote the online community to the outside world. Not only do an online community's leaders take the responsibility of community-building activities, but also they are active participants in contributing content to encourage other members' participation ([Butler et al., 2002](#)). Research emphasizes the role of an online community's leaders in coordinating activities and ensuring sustainability by developing measures for sustainability and identification of factors potentially influencing this sustainability ([Bieber et al., 2002](#)).

From a different perspective, [Connelly and Kelloway \(2001\)](#) concluded that community members' perceptions of their management support of knowledge sharing are significant predictors of a positive knowledge sharing culture. Consequently, members

tend to share more with their peers. [Cabrera et al. \(2006\)](#), in their study of a multinational organization, emphasized that perceptions of support from colleagues and supervisors are one of the most organizational variables influencing individual's knowledge sharing behavior due to the normative pressures these perceptions might have on an individual.

An interesting thought to consider here is the motivation behind leaders' engagements in online community-building activities as well as content contributions to the online discussions and interactions. [Butler et al. \(2002\)](#) found that while active members are driven and motivated by social, informational, and visibility benefits, which should be targeted by leaders to encourage members' online contributions, leaders, are highly motivated by the altruistic benefits derived from helping groups or supporting a cause, and thus emphasize the importance of the role of leaders in online communities.

2.5 Chapter Summary

While commitment, social norms, trust, an enabling community's structure, and leadership have been identified as significant motivational factors in online communities, this research is motivated by targeting the psychological explanations of individual motivations to share knowledge in an online community and is adopting social psychological models. This section aimed to set the stage for a better understanding of knowledge sharing from an individual as well as the social perspective. Individual perspective will be investigated through the psychological and cognitive processes; while the social perspective will be investigated through social norms and influences. A selected setting has been chosen to investigate knowledge sharing behavior, i.e. an online community. Online communities are emergent communities within which community-building activities should be maintained and promoted in order for the online community

to sustain and to grow. Understanding motivational factors that assist in increasing members' online knowledge sharing and contributions will eventually assist leaders in community building and sustainability.

In the following section, frameworks adopted from both Knowledge Management and Social Psychology will be visited for the purpose of providing more theoretical and process-based views of knowledge sharing, thus assisting in developing the extended model of knowledge sharing behavior in online communities.

III. THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

[Bordia, Irmer, Garden, Phair, and Abusah \(2004\)](#) have classified knowledge sharing as an organizational citizenship behavior, and have defined knowledge sharing behavior as “an individual behavior that is discretionary, not directly or explicitly recognized by the formal rewards system, and that in the aggregate promotes the effective functioning of the organization” (p. 130). Thus, knowledge sharing can be theoretically and empirically investigated like any other deliberate individual behavior (smoking, voting...etc). The following section aims to provide an understanding of knowledge sharing as an individual behavior by reviewing three major knowledge sharing frameworks as well as by examining and applying theories from Social Psychology. Theories from Social Psychology, most notably the Theory of Reasoned Action and the Theory of Planned Behavior have been used extensively to explain different individuals behaviors. This research follows a similar path, using the TRA and the TpB theories in order to investigate individual knowledge sharing behavior.

3.1 Knowledge Sharing Frameworks

In the following section, three of the most cited and influential frameworks in understanding knowledge sharing will be reviewed: [Hendriks' \(1999\)](#) view of knowledge sharing; [Nonaka and Takeuchi's \(1995\)](#) dynamic theory of knowledge creation, and [Szulanski's \(2000\)](#) framework of stickiness and knowledge sharing. The purpose of this section is to provide better understanding of knowledge sharing as a process. Once the process ingredients are established, identifying problems and difficulties and suggesting solutions for it will be achievable. The three frameworks will be discussed in logical order, starting with the classical view of knowledge sharing and continuing with the more

complicated ones, which involve the social and psychological aspects of knowledge sharing.

The Classical View of Knowledge Sharing

Hendriks' (1999) classical view of knowledge sharing perceives knowledge sharing as two main sub-processes: First, knowledge sharing presumes an act of “externalization” by those who have the knowledge (knowledge owners), and second, knowledge sharing presumes an act of internalization by those seeking to acquire knowledge (knowledge reconstruction).

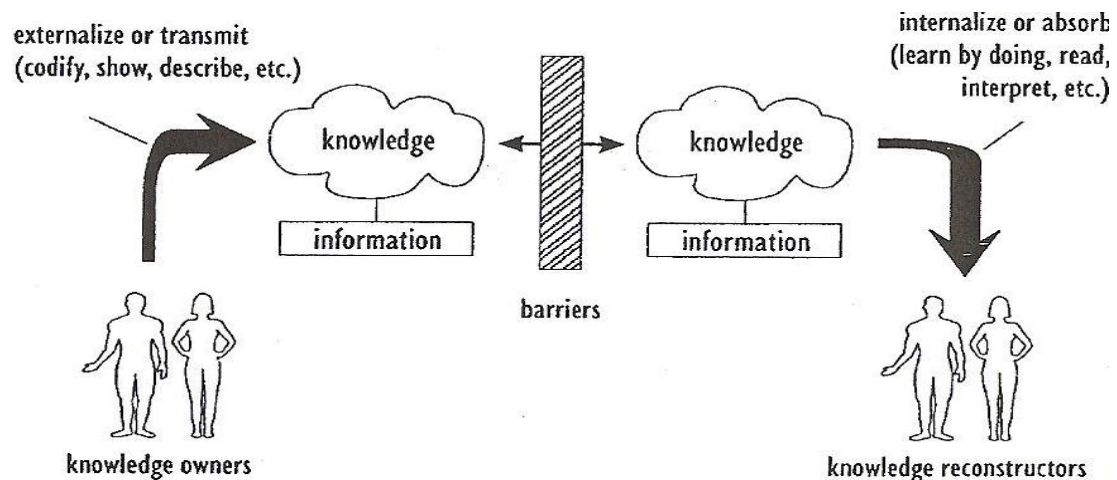


Figure 3.1. A Simplified Model of Knowledge Sharing Process

Source: Hendriks, P. (1999). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, 6(2), p.93.

The Dynamic Theory of Knowledge Creation

Nonaka and Takeuchi's (1995) dynamic theory of knowledge creation follows the cognitive model of knowledge which perceives knowledge as a symbolic transcription of individual understanding; once transferred into more explicit format, the communication of knowledge is relatively non-problematic. According to Nonaka and

Takeuchi (1995), organizational knowledge emerges from a series of ongoing transformations between two major types of knowledge: tacit and explicit. These transformations require that different individual ideas and skills be divulged and combined into collective routines and shared knowledge bases, that encoded knowledge be internalized by individuals, and that individuals share their skills with one another.

	Tacit K	To	Explicit K.
Tacit K.	Socialization		Externalization
From			
Explicit K.	Internalization		Combination

Figure 3.2. The Dynamic Theory of Knowledge Creation

Source: Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), p.19.

Knowledge Sharing Stickiness

Szulanski's (2000) framework of knowledge sharing stickiness sheds light on the difficulties encountered while transferring knowledge. Within this framework, knowledge transfer is classified into four main stages: initiation, implementation, ramp-up, and integration. In his model, Szulanski focuses on the stickiness of knowledge sharing by identifying problems related to the transfer process. The model is based on the general expectation that factors affecting opportunities to transfer are more likely to predict difficulties during initiation phases, whereas factors affecting the execution of the transfer are more likely to predict difficulties during subsequent implementation phases.

Szulanski's empirical findings suggest that factors such as motivation and perceived reliability are significant in the first three stages of the transfer. Traits of the

recipient unit, most notably their abilities to identify, value, and apply new knowledge (*absorptive capacities*) become significant during implementation. On the other hand, characteristics of the knowledge to be shared and the individual's understanding of the main factors composing the knowledge exchange process (*causal ambiguity*) have been found to be significant influential factors at all stages of the knowledge transfer. Causal ambiguity and the lack of a recipient's absorptive capacity appear to be the most important predictors of stickiness. Briefly, the empirical evidence indicates that organizations learn how to better transfer best practices—and eventually to cope with stickiness—by drawing on the lessons of previous knowledge transfers.



Figure 3.3. Stickiness and the Process of Knowledge Transfer.

Source: Szulanski, G. (2000). The process of knowledge transfer: A diachronic analysis of stickiness. *Organizational Behavior and Human Decision Process*, 82(1), p.13.

The three knowledge sharing frameworks, discussed above, shed light on the basic components of knowledge sharing processes by identifying the major individual and organizational factors influencing the knowledge sharing process. The following section will take a step further and discuss knowledge sharing processes from a social psychological perspective, providing in-depth analysis of factors influencing an individual's intention to share knowledge in online communities.

3.2 Social Psychology Models

The Theory of Reasoned Action (Fishbein & Ajzen, 1975) and the *Theory of Planned Behavior* (Ajzen, 1991, 2002) have been adopted extensively to specifically examine predictors of an individual's deliberate decision-making processes to engage in specific behaviors. However, few have applied these theories to investigate knowledge sharing behavior (Kuo & Young, 2008; Bock et al, 2005; Ryu et al., 2003). In the following sections, the two theories will be reviewed thoroughly in an attempt to develop an extended theoretical model of knowledge sharing behavior. The main purpose in adopting social psychological theories is to predict, understand, and explain knowledge sharing as a deliberate individual behavior.

The Theory of Reasoned Action (TRA)

The Theory of Reasoned Action conceptual model suggests that the performance or non-performance of a specific behavior with respect to some object can be predicted from knowledge of the person's intention toward that object. TRA studies *beliefs, attitudes, subjective norms, intentions, and behavior* in an attempt to draw structural relationships among these different constructs. Applying these constructs to understanding knowledge sharing will assist in analyzing motivational factors influencing individual's knowledge sharing behavior. In the following section, the TRA model main constructs will be discussed, focusing on developing hypotheses of what could motivate an individual to share his/her knowledge in online communities.

Intentions

Intentions are the most consistent predictor of behavior. According to Fishbein and Ajzen (1975), intention is assumed to capture the motivational factors that influence

behaviors; it is an indication of an individual's willingness and readiness to behave. Thus, an individual's intention to share knowledge highly determines his/her behavior to actually share knowledge with others. Research has shown that the best way to predict whether an individual will perform a specific behavior is by asking the simple question of if he/she intends to perform that behavior (Fishbein & Ajzen, 1975). That argument leads to the following hypothesis:

Hypothesis 1: The stronger the individual's intention to share knowledge, the more likely he/she will share his/her knowledge with other individuals.

Beliefs

According to the TRA model, a person's intentions are a function of certain beliefs directed to the behavior itself. Beliefs are formulated based on direct observation or information received from outside sources. Such information will eventually help an individual associate an object with various attributes. The totality of a person's beliefs serves as the informational base that ultimately determines his/her attitudes, intentions, and behaviors. Thus, this approach views humans as essentially rational organisms who use the information at their disposal to make judgments and arrive at decisions.

Three types of beliefs that guide the behavioral intention have been identified. First, there are beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (*behavioral beliefs*); second, beliefs about the normative expectancies of others and motivations to comply with these expectations (*normative beliefs*); third, beliefs about the presence of factors that may facilitate or impede performance of behavior and the perceived power of these factors (*control beliefs*).

Attitude (Behavioral Beliefs)

Attitude refers to a person's favorable or unfavorable evaluation of an object (Fishbein & Ajzen, 1975). Attitude, as a general behavioral disposition, has an impact on specific behaviors only indirectly by influencing some of the factors that are more closely linked to the behavior in question (Ajzen, 1991), which is an individual's intention to perform that behavior. Thus, an individual's attitude toward sharing his/her knowledge with others determines his/her intention to actually perform this behavior. Previous research has shown a strong significant relationship between an individual's attitude toward knowledge sharing and his/her intentions to share knowledge with others, in which attitude provides a satisfactory explanation of variance in knowledge sharing intentions (Kuo & Young, 2008; Bock et al., 2005). These arguments lead to the following hypothesis:

Hypothesis 2: The more favorable an individual's attitude toward knowledge sharing practices, the stronger his/her intention to share knowledge.

Subjective Norms (Normative Beliefs)

Subjective norms are based on how "significant others" are thinking about an individual's specific behavior and whether an individual should or should not perform that behavior in question. Research has provided significant evidence that in an individual's environment, certain referents' attitudes toward an object lead to normative pressure that motivates an individual to comply with those referents' attitudes.

Connelly and Kelloway (2001), when studying virtual communities, concluded that team members' perceptions of management support of knowledge sharing are significant predictors of positive knowledge sharing culture. Harder (2008) asserts the

aforementioned conclusion and found the impact of managerial support with an individual's autonomous motivation to share knowledge. [Lu, Leung, and Koch \(2006\)](#) found that co-worker collegiality has an indirect influence on knowledge sharing by lowering greed—enjoying other's contributions without cost—and raising self-efficacy.

[Liao \(2008\)](#) examined managerial social power and found significant impact regarding managers' social power on knowledge sharing behavior. In a nutshell, employees' perceptions of their managers and significant peers' acceptance and encouragement of knowledge sharing will yield positive knowledge sharing behavior because of the power to change or influence employees' behaviors and attitudes toward knowledge sharing. These arguments lead to the following hypothesis:

Hypothesis 3: The stronger the individual's perceived subjective norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.

Descriptive norms (Normative Beliefs)

Descriptive norms focus on the individual's perception of the behaviors or attitudes of other people. Accordingly, the actions of other people or their attitudes toward those actions provide information that individuals may use in deciding what to do themselves ([Rivis & Sheeran, 2003](#)). Even though the TRA model emphasizes the significant impact of subjective norms of "important people" on an individual for complying with a specific behavior, descriptive norms have been found to be a significant predictor of an individual's behavior. [Rivis and Sheeran \(2003\)](#) have conducted a meta-analysis research study hypothesizing the influential role descriptive norms have on an individuals' intention to behave. Their research findings supported the inclusion of descriptive norms as an additional predictor in the TRA model. In fact, the study showed a significant improvement in the predictive validity of the TRA when descriptive norms

was included as an additional predictor. Following the same path, this research supports the inclusion of descriptive norms as a predictor of knowledge sharing behavior.

Hypothesis 4: The stronger the individual's perceived descriptive norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.

Two aspect of this measure are worthy of comment: First, the measure of descriptive norms and subjective norms were focused on two different target groups. Subjective norms were measured in relation to “people who are important to me,” whereas descriptive norms were assessed in relation to “relevant groups.” The decision to focus on two different target groups is based on the importance of re-conceptualizing the normative influences defined by the TRA and the TpB models, as suggested by previous literature applying these two theories ([Terry & Hogg, 1996](#); [Norman et al, 2005](#))

Second, this study has employed measures of descriptive norms that focus on the perceived behavior of members in referent groups. Even though previous studies employed measures of both perceived attitude and perceived behavior of referent groups, the results of these studies have been less conclusive ([Norman et al, 2005](#)). In general, evidence suggests that focusing on the inclusion of perceived behavior of others is especially important for providing broader assessments of normative pressure.

The Theory of Planned Behavior (TpB)

Although some people may develop intentions to perform specific behaviors, they might not take any actual actions. This discrepancy has been labeled the “*intention-behavior gap*” ([Sheeran, 2002](#)). The Theory of Planned Behavior addresses this issue by bringing into the TRA model a new volitional factor that has an impact on an individual's intention to behave, and that is perceived behavior control (PBC).

Perceived Behavior Control (PBC)

Perceived behavior control is defined as an individual's confidence that he/she is capable of performing the behavior under investigation ([Ajzen, 1991](#)). According to the TpB, perceived behavior control together with behavioral intention can be used directly to predict behavioral achievement ([Ajzen, 1991](#)). In 2002, [Ajzen](#) demonstrated the conceptual and methodological ambiguity surrounding the concept of PBC.

Consequently, PBC was deconstructed into two major constructs: *self-efficacy and controllability*. *Self-efficacy* is defined as an individual's confidence in his/her ability to perform a behavior ([Bandura, 1994](#)). *Controllability* is defined as an individual's beliefs, based on the available resources, about the extent to which performing the behavior is up to him/her. Research studied the two-factor structure of perceived behavior control has yielded a significantly better fit when self-efficacy and controllability are included in the TpB model as separate latent variables rather than as the combined indicators of perceived behavior control ([Ryu et al., 2003](#)). Therefore, these two constructs will be used to investigate an individual's control over knowledge sharing behavior.

Self-efficacy beliefs function as one set of proximal determinants of how people behave, their thought patterns, and the emotional reactions they experience in taxing situations ([Bandura, 1982](#)). According to [Bandura \(1994\)](#), individuals with high levels of perceived self-efficacy approach tasks with efficacious outlooks, producing high levels of commitment, while individuals with low levels of self-efficacy will shy away from controversial activities. Knowledge sharing is one type of such controversial activities.

More recently, self-efficacy measurements have been applied to investigating and validating the effect of personal self-efficacy belief on knowledge sharing to produce

what is called *knowledge sharing self-efficacy* (KSSE) (Hsu, Yen, & Chang, 2007).

KSSE focuses on the different aspects and activities individuals should acquire and master in order to gain the confidence in their capabilities to share their knowledge.

KSSE is grounded in the four processes of knowledge creation developed by Nonaka (1994) and Nonaka and Takeuchi (1995). Thus, a knowledge producer must have the perceived capabilities to share, including the capability to author knowledge content, to codify knowledge into knowledge objects, to contribute and combine knowledge with existing knowledge, to socialize and interact to share knowledge with others, and most importantly, to understand the contextual values and norms necessary for performing successfully (Hsu et al, 2007, p.162).

Hypothesis 5: The greater the individual's perceived knowledge sharing self-efficacy, the stronger his/her intention to share knowledge.

Controllability can be related to infrastructure capabilities and available resources.

The assumption is that the stronger the individual's perception of the ease of sharing knowledge, the stronger his/her intention to share. This is to say that an individual's sense of control over his/her behavior will lead him/her to actually behave.

Hypothesis 6: The greater the individual's level of control over hi/hers knowledge sharing capabilities, the stronger his/her intention to share knowledge in online communities.

3.3 Motivational and Volitional Knowledge Sharing Model

The TRA and the TpB models emphasize viewing a person's behavioral intention as two complementary models—motivational and volitional. The motivational model is based on an individual's salient beliefs about the evaluative function of two main factors:

attitude toward the behavior and his/her subjective norms. The volitional model is based on perceived behavioral control regarding the ease or difficulty of performing a specific behavior. Thus, for motivated individuals, volitional processes mediate the effects of intentions and translate intentions into actual behaviors. While each construct is defined in Table 3.1, Figure 3.4. presents a visual representation of the different motivational and volitional factors influencing an individual's intention to share his/her knowledge in online communities.

Table 3.1 The Extended Theoretical Model Construct Definitions

Variable	Definition
Behavior	Observable act of the subject.
Intention	Person's subjective probability that he/she will perform certain behaviors.
Attitude	A person's general feeling (affect) of favorableness or unfavorableness toward some stimulus object.
Subjective norms	What significant others think the person <i>ought</i> to do.
Descriptive norms	what relevant others themselves <i>do</i> .
Knowledge sharing self-efficacy	Individual's judgment of his/her own capabilities to share knowledge.
Controllability	Belief about the extent to which performing the behavior is up to the actor.

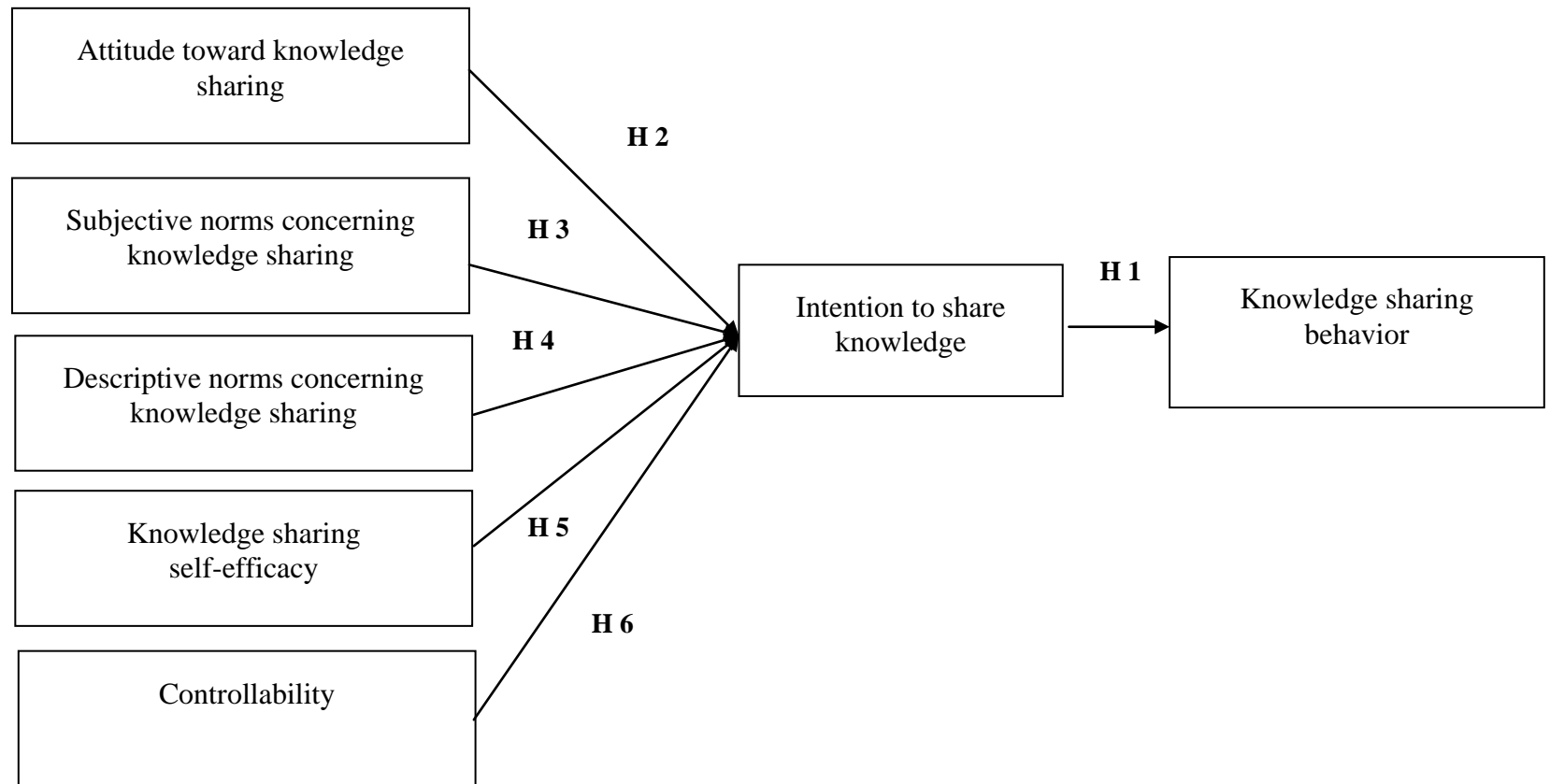


Figure 3.4. An Extended Theoretical Model Representing Motivational Factors Influencing Knowledge Sharing Behavior in Online Communities

IV. RESEARCH METHODOLOGY

This chapter provides a general overview of the research methodology employed to test the investigated research problems. Even though the standard methods used with the two selected theories, the Theory of Reasoned Action and the Theory of Planned Behavior, are quantitative in nature, a decision was made to adopt both quantitative and qualitative methods to seek an in-depth understanding of the knowledge sharing behavior in the online community as a promising context to investigate. The two research methods were developed and designed to answer the two major research questions.

- *What are the major factors influencing an individual's intention to engage in knowledge sharing activities in online communities?*
- *Why does an individual make the decision to share his/her knowledge with other members in online communities?*

4.1 Research Context

The context of this study is *Tapped In (TI)**, a professional online community developed and supported by the Stanford Research Institute (SRI International), and directed to enhancing the quality of teaching by developing web-based opportunities including online activities and contents that engage teachers in continuous professional development throughout their career. Tapped In is owned and operated by SRI International's Center for Technology in Learning (CTL). CTL's mission is to improve learning and teaching through innovation and inquiry in computing and communications.

*All references to the groups and individuals involved in this research will be represented by pseudonyms to protect the confidentiality of the participants.

For many years, Tapped In has been funded by the National Science Foundation (NSF), the SRI, and by tenant organizations.

Since it was launched in 1997 as a voluntary community developed by educators for educators, Tapped In has become the home for more than 10,000 members including education faculty, teachers, librarians, professional researchers, students, and other education staff. Through Tapped In, educators engage in different types of activities hosted by educators and/or education organizations. Members are allowed and encouraged to develop their own activities, take online courses, bring their students online, try out new ideas in a safe, supportive environment, mentor other educators or find a mentor, experiment with new ways to teach, or expand their circle of colleagues by participating in community-wide events.

Teacher professional development projects, university teacher education programs, and school districts become part of the community through tenant partnerships. Tapped In staff are volunteers from the education community to assist and orient new members and facilitate their visits and usage of the multiple online community's tools and activities. Tapped In staff are well-trained and are experts in both the education/teaching field as well as in the use of the different mediated communication technologies available through the community. Not only do the staff support users, but they actually participate and contribute to the far-ranging activities conducted online.

The Tapped In community has been selected as a knowledge-based community in which knowledge exchange is the most important activity the community stands on. Without members' contributions and participation, the online community is of limited value. The community's members are the greatest resource of rich content. Thus,

motivating participants to continue their contributions to the online community through posting contents, engaging in discussions, attending events is the most challenging task for the community team development.

In Tapped In, there is an eclectic mix of professional backgrounds in teacher education, language arts, technology education, science, social studies, library/media, etc. Most of the community members are located in United States of America; however, approximately 15% of the members are located around the world. A large number of the community members (35%-40%) are in the teacher occupation (elementary, middle, and high schools); while more than 50% can be categorized as university faculty, graduate students (Master and Ph.D. candidates). The rest are in technology-based occupations.

In addition to the various benefits available for the community members to socialize and network, Tapped In offers customized virtual buildings with public, group, and personal rooms to support the activities of organizations and agencies that selected Tapped In to be their virtual host. Each building has three main floors. The ground floor consists of the reception where help desk staff voluntarily assist online members and provide them with guidance and advice on how to best use and engage in the online community. The second floor consists of group rooms, which can be public allowing free access to the online community members, or private with limited access to permitted members. The third floor consists of personal offices for members affiliated with the organizations. Through this online platform, organizations can develop, implement, and manage online courses, workshops, seminars, mentoring programs, and other collaborative activities that supplement, or function in lieu of, face-to-face activities.

4.2 Data Collection

In order to collect data for the research, the researcher joined the Tapped In community and created a private room (office) for the purpose of the research. The private office consisted of different features that the researcher could use to assist in recruiting subjects and collecting data. As a courtesy of the Tapped In community team, the researcher's private office was featured as a passageway on the welcoming page of the TI website. Passageway, a virtual one-way tunnel between two rooms, indicates there is a special event going on in this specific private room; this passageway is a privilege that facilitates the researcher's work. By announcing it on the first page of the TI webpage; it was easier to attract attention, and, subsequently, research participants (see [Appendix A](#) & [Appendix B](#) for recruitment flyer and Informed consent form).

In addition, an introductory article to the research initiatives was published in the online community's monthly newsletter "*On The Tapis*" which is sent via email to all subscribed community members with updates on TI and related events. The purpose of the introductory article was to introduce the research topic to the TI members with an emphasis on the importance and significance of the study. The article was published once before starting the actual data collection, and a short reminder was posted on the newsletter a month later (see [Appendix C](#) for the Newsletter Introductory Article).

4.3 Methodology Approach

The theoretical constructs proposed by the TRA and the TpB models are latent variables. They cannot be directly observed but must instead be inferred from observable responses. Thus, intention, attitude, subjective norms, descriptive norms, and perceived behavioral control are usually assessed directly by means of standard scaling procedures

(Ajzen, 2006). Two major methodologies were implemented to test the theoretical model: Survey and Observation.

Survey Method

A web-survey was developed to test the knowledge sharing behavior theoretical model. The benefits of web-surveys are extensive, including overcoming time and space boundaries, ease of data entry, and low cost (Batinic, Reips, & Bosnjak, 2002). A decision was made to collect data through a web-survey because of the nature of the online community to be studied. The Tapped In community is a global online community in which there are more than 15% members located outside of the USA. TI members are geographically scattered around the world including Europe, Asia, South America, and the Middle East. Members found TI an appropriate virtual venue in which to meet, learn, and network with peers around the world. Thus, web-survey was the most convenient method to reach members all over the world.

The benefits of the web-surveys outweigh the drawbacks; however, the web-survey created a number of challenges for the researcher to consider. Maybe the most difficult challenge is the sample bias—something that has been raised as a challenge for web-surveys by many researchers (Batinic, Reips, & Bosnjak, 2002). Some of the sample bias (including multiple submissions) was solved by carefully programming and cleaning the data. Non-response bias, (one type of sample bias assuming that those who did not participate in the survey differ in major ways from those who did respond) has been addressed in the survey chapter by providing a comparison of non-respondents to respondents to ascertain key similarities and to ensure the quality of the sample of respondents participating in the survey.

The survey instrument was pilot-tested two different ways. First, the survey was sent to three graduate Ph.D. students in the School of Communication and Information, Rutgers University seeking their advice on how to improve the survey instrument to best suit the research sample. The main reason Ph.D. students were selected was because of their involvement in the field of education as well as the teaching field. All three Ph.D. students were working as Teaching Assistants and actually teaching undergraduate courses offered by the School of Communication and Information. Based on the feedback received, the survey instrument was modified and a new version was developed.

In addition, a group from the community sample, TI, consisting of 70 members, was selected to participate in the pilot study. An invitation was sent to the group leader to ask for permission to share the survey link with the group members. The survey was sent via email to the subscribed group members. In addition, the invitation to participate along with the survey link was posted on the discussion forum of the group. Only seven members participated in the pilot. However, the participants' feedback contributed to modifying questions posted in the survey instrument.

Observation Method

Observation of the individuals' online interactions also was used to investigate the salient beliefs that could motivate the individual to make the decision to participate in the online sessions by searching for objective measures to evaluate the individuals' knowledge sharing behavior. The main benefit of the qualitative nature of this method is to consider seriously the words and actions of the individuals studied and to be able to step back and critically analyze the situations (Strauss & Corbin, 1998).

Due to the self-reporting nature of the survey used to test the model, it was noticed that objective measures are needed to decrease the self-biased responses. The purpose of such analyses was to identify behavioral patterns, shared language, and communicative practices that could provide a better understanding of the online community's knowledge sharing behavior.

Community members' online postings, comments, and engagements in monthly online group sessions were considered to provide objective measures for evaluating the participants' knowledge sharing behaviors. Even though the focus of this research is the investigating of knowledge sharing on the individual level, the qualitative analysis shed light on other perspectives to assist in understanding the decision-making process an individual goes through in order to engage in these types of online meetings.

For this specific method, the researcher played the role of participant-as-observer entering the setting with an openly acknowledged investigative purpose. This approach enabled the researcher to study the context from the vantage point of different positions within its membership. Even though the TI community announced the role of the researcher and the purpose of the research, the researcher, to some degree, participated in the routine of the online community.

A pre-observation was conducted as a pilot on one selected group of 70 members. The researcher attended two online sessions with total of 10 attendees that produced 20 single-page transcripts. Microanalysis was done to search and develop categories of reasons and expected returns that motivate members to continue engage and contribute to the online sessions. Later on, categories were updated and modified once the actual

transcripts were coded due to the larger transcripts collected from research sample (eight active groups) and the different types of groups participated in the research.

4.4 Data Analysis

Data collected from the web-survey was analyzed using factor analysis, correlations, and multiple regression analysis. The main objective of factor analysis was to identify whether the correlations between a set of observed items per variable stem from their relationships to one or more latent variables in the data and to explore the inter-relationships that exist among the individual survey items for each variable in the research model ([Kachigan, 1991](#)). After conducting the factor analysis independent and dependent variables were found to load each on one factor, ensuring a strong correlation of the survey items with its designated factors. Details of the factor analysis are discussed in the survey chapter.

Correlations were also made to explore the different associations among the independent variables, and between the independent variables and the dependent variables. Running the correlation analysis was significantly important to prepare for the regression analysis. All variables, including independent and dependent variables, were correlated and thus all were included in the regression analysis equation.

After ensuring the reliability of the items and the type of associations among variables, multiple regression analysis was conducted. The overall objective of regression analysis was to assess the relative importance of the various predictor variables in their contribution to variation in the dependent variables ([Kachigan, 1991](#)). The decision to select multiple regression analysis, rather than other statistical techniques for modeling, was based on the previous research done applying theories of the TRA and the TpB in

different settings ([Bagozzi, Baumgartner & Yi, 1992](#); [Terry, 1993](#)). For the purpose of this study, stepwise multiple regressions were employed to identify the major TRA and TpB variables that would significantly predict the intention to share in the online community.

Data collected from the observation was analyzed using a micro-level content analysis approach. The main purpose of the microanalysis is to allow the research to consider the range of plausibility and to avoid taking one stand toward the data ([Strauss & Corbin, 1998](#)).

V. FACTORS INFLUENCING KNOWLEDGE SHARING BEHAVIOR: RESULTS FROM A WEB-BASED SURVEY

The theoretical constructs proposed by the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TpB) are latent variables. They cannot be directly observed but must instead be inferred from responses given by those who exhibit behavior related to the research questions. Thus, intention, attitude, subjective norms, descriptive norms, and perceived behavioral control (knowledge sharing self-efficacy and controllability) are usually assessed directly by means of standard scaling procedures (Ajzen, 2006). The survey was developed to answer the first research question (see [Appendix D](#) for description of research question, hypotheses, and survey items):

What are the major factors influencing an individual's intention to engage in knowledge sharing activities in online communities?

The web-survey was created and entered on SelectSurveyASP Advanced software provided by the School of Communication and Information at Rutgers, The State University of New Jersey. The SelectSurveyASP software allowed the development of a web-survey by creating a hyperlink that was sent to the participants to follow. From the many advanced features SelectSurveyASP provides, customized templates, advanced reporting, and data export were mainly used. After completing the data collection, the data were exported and saved as an Excel file which was then transferred into SPSS for further advanced analysis.

5.1 Methodology and Sample Overview

Recruiting Mechanism

Due to the large number of Tapped In members, an assessment was conducted on a two-month basis (January and February 2010) to search for active groups. Fifteen groups were selected based on how active they were. Active groups usually meet at least once a month for knowledge exchange and networking. In addition, groups should have had some activities related to uploading files, posting questions, leaving comments, etc. An invitation was sent to all fifteen-group leaders to request their participation in this research. Ten groups agreed to participate. However, two groups were excluded due to low participation. After receiving the leaders' approval to participate, the researcher joined the eight active groups' online meetings that were held in the period between March to May 2010 and invited all attendees to participate in the survey by sharing the survey link. All information regarding groups selected for this research is reported in [Appendix E](#).

In addition, the invitation and the survey link were posted in the eight TI groups' discussion forums. Two reminders were sent to encourage group members to participate in the survey. As an incentive for completing the survey, participants were told they would be entered in a drawing in which 20 participants would get \$20 gift certificates from amazon.com.

Research Sample

The sampling frame was eight groups (877 members) within the Tapped In online community that had agreed to participate in the study. After collecting 202 participants from the eight groups, data, including 44 incomplete surveys, were screened and cleaned.

Surveys were considered incomplete when participants failed to complete the major survey questions, which numbered 30. Incomplete surveys ranged from 23 participants who answered only 1 to 6 questions; 15 participants who answered 10 to 15 questions; and five who completed 16 to 25 questions. The 44th participant elected not to answer the survey at all. Overall, eliciting feedback from the respondents, it seemed that participants felt either that their contribution to the survey was limited due to their novice experience with the online community, or they were feeling quite fatigued. In the end, valid and complete results were gathered from 158 participants.

Response Rate

Twenty three percent of the members of the eight groups (877 people) participated in this research. This lower than expected response rate raises the possibility of a non-response bias—namely, that those who did not respond differ significantly from those who did on certain characteristics. A demographic comparison was conducted of those who responded and those who did not using the demographic information available through the TI groups' websites including information about gender, country, discipline, and occupation. The comparison shows that there are no significant differences in the demographics among those who participated and those who did not; however, there might be a significant difference on other levels. An overview of the eight participating groups shows that when it comes to level of participation and the role the members play, there is a significant difference between those who participated in the survey, and those who chose not to do so.

Overall, the comparison shows that during January-May 2010 only 523 members (of 877 members) logged in to Tapped In and had some activities by either sharing or

seeking knowledge. Of the 877, there were 314 members who had not logged in since 2009, and 40 members who had not logged in since 2008. Thus, focusing on the 523 members who logged in to Tapped In from January-May 2010 as the real research sample produces a 38.6% response rate. Generally, the survey respondents likely represent the most active participants in the community (see [Appendix F](#): A comparison of population characteristics and research sample).

The web-survey sample likely represents the entire active TI community. Except for three occupations and two disciplines the survey may have overrepresented including occupation of university faculty (19.5%), librarians (11.4%), and professional staff (10.7%) who participated in the survey, compared to 7.94%, 2.29%, and 2.09% as indicated on the total TI members demographic data. This could indicate a sampling error due to the selective groups participating in the survey. Only eight groups were selected based on their scheduled activities posted on the Tapped In calendar. Only those groups who announced their online sessions were invited to the survey. Thus, the selection process might have eliminated those who were not on the calendar to participate in the research.

Respondent Characteristics

The web-survey sample distribution was considerably broad. And even though the sample was dominated by participants from the USA (82%), there was a significant contribution from members around the world with 5.8% from South America; 4.3% from Asia; 3.6% from Europe; 2.2% from North America (Canada); 1.4% from the Middle East, and .7% New Zealand. Females outnumbered males with a 74.8% participation rate; the male participants consisted of only 25.2%. The age distribution in this sample

demonstrated that it is not just young people who participate in social media, and that a wide range of ages will participate in a web-survey. The range of participants' ages for this sample was: 24.6% under 35 years old, 16.1% from 36 to 45 years old, 30.3% between 46 and 55 years old, 27.1% from 56 to 65 years old, and only 1.9% over 66 years old.

Since the Tapped In community is directed toward improving the education professional, the sample consisted of 61.1% in the education domain; 11.4% in the language and science domain; 10.1% in library/media; 2.7% in social sciences; 1.3% in administration, and 2.1% in arts. The largest number of those who participated was school-teachers (42.3%). University faculty accounted for 19.5%; university students, 3.4%; graduate students, 8.1%; librarians, 11.4%, and professional development staff, 10.7%. The majority of the sample held graduate degrees—masters or equivalent, 62.6%, and doctorates 14.8%. College/university degrees accounted for 21.9%. See [Appendix G](#) for a profile of survey participants.

Survey Instrument

The survey instrument was used for testing the validity of the proposed knowledge sharing behavior model. The survey is based on the constructs developed in the TRA and the TpB models—behavior, intention, attitude, subjective norms, descriptive norms, and behavioral control, including self-efficacy and controllability. These constructs were measured and explicated by adopting items that have been developed and validated from [Ajzen \(2002\)](#), [Bock, Zmud, Kim, & Lee \(2005\)](#), [Hsu et al. \(2007\)](#), and [Norman, Clark, & Walker \(2005\)](#). Survey questionnaire is attached as [Appendix H](#).

The intent of the survey is to measure and understand the real motivational factors for engaging in a knowledge sharing practice in online community. In the survey, participants were introduced to the main definitions of knowledge and knowledge sharing. Knowledge includes know-what (factual knowledge —e.g. what tools best for a specific type of courses/teaching), know-how (skills and procedures— e.g. how to use these tools), and know-why (understanding cause and effect of relationships —e.g. understanding the impact of a certain teaching tool on teaching level, students' performance...etc). Knowledge sharing was defined to include two main actions: transmission (sending or presenting knowledge to a potential recipient) and absorption by that person or group. Knowledge sharing could include posting messages/comments, engaging in a dialogue, sending emails or feedback to the community members, downloading resources posted by peers, participating in a discussion, and responding to question requests by others.

Participants were asked to recall and discuss their experiences concerning their knowledge sharing behaviors in Tapped In online community. Presumably, based on the proposed scale, answers to the survey questions will capture an individual's strength of intention, willingness, confidence, and capability to share knowledge in online communities.

Data Analysis

Survey data were analyzed using descriptive statistics, correlations, factor analysis, and multiple regression analysis. When necessary, recoding was done to a number of the string-type variables to transfer them into more numeric variables that could be better used in the quantitative analysis. After screening and recoding the data,

frequencies and descriptive analyses were conducted and all variables were found to be normally distributed, and no errors or outliers were found within the collected data.

A number of indices were created to combine items measuring the same variables on similar scales: Knowledge sharing behavior index (ksbINDEX); Intention index (IntINDEX); Attitude index (AttINDEX); Subjective norms index (SubjINDEX); Descriptive norms index (DescINDEX); Knowledge sharing self-efficacy index (KSSEINDEX), and Controllability index (ConINDEX) (see Table 5.1 for all index reliabilities and summary statistics).

Table 5.1 All Index Reliabilities and Summary Statistics

INDEX	Items	N	Standardized Alpha*	Mean	Std. Dev
Knowledge sharing behavior	5	148	.90	2.35	1.33
Intention	3	157	.93	5.05	1.67
Attitude	6	156	.89	5.96	1.02
Subjective Norms	3	157	.84	4.65	1.44
Descriptive Norms	2	158	.75	4.40	1.10
Knowledge sharing self-efficacy	4	153	.94	5.39	1.39
Controllability	2	158	.84	6.36	0.90

*Standardized z-score was used since variable scale ranges differed

Measures Created

Knowledge sharing behavior. Influenced by the Hsu et al. (2007) study on knowledge sharing behavior, a five-item group of questions was created, consisting of the following: 1) In the past three months, how frequently have you shared your work observations and experiences with other members in the TI community?, 2) In the past three months, how frequently have you shared reports and other documents with other members in the TI community?, 3) In the past three months, how frequently have you shared tricks and tips on a specific work-related issue of interest to your group within the TI community?, 4) In the past three months, how frequently have you engaged in a

discussion about a critical issue of interest to your group within the TI community?, 5) In the past three months, how frequently have you downloaded resources posted by peers in the TI community? These survey items were rated based on a 7-point Likert scale from strongly disagree (1) to strongly agree (7). The reliability in this sample was .9 and factor analysis demonstrated that the items hung together as one factor, which explained 72% of the variance. The factor loadings, inter-item correlations, reliability are reported in [Table I.1](#) in Appendix I. These five items were thus combined into a Knowledge Sharing Behavior Index.

Intention. Three items were used to measure the intention to share knowledge produced and validated by the [Bock et al. \(2005\)](#) study on knowledge sharing behavior of physicians. The items were as follows: 1) I intend to share my knowledge with other members in the Tapped In community, 2) I try to share knowledge with other members in the Tapped In community, 3) I always make an effort to share knowledge with members in the Tapped In community. These items were rated on a 7-point Likert scale from strongly disagree (1) to strongly agree (7). A factor analysis of the three items yielded one factor solution, explaining 87% of the variance with .9 sample reliability. Factor loadings and statistical summary of these three items can be found in [Table I.2](#) in Appendix I. The three items were thus combined into an Intention Index.

Attitude. Six items were adopted from [Bock et al. \(2005\)](#) to measure attitudes toward knowledge sharing. These items were as follows: 1) If I share my knowledge with other TI members, I feel good about myself, 2) If I share my knowledge with other TI members, I feel disadvantaged, 3) If I share my knowledge with other TI members, I feel pleased, 4) If I share my knowledge with other TI members, I feel worthless, 5) If I share

my knowledge with other TI members, I learn new knowledge and skills, 6) I enjoy sharing my knowledge with other TI members. These six statements were rated based on 7-point Likert scale from strongly disagree (1) to strongly agree (7). For item (2) and (4) reverse coding was necessary. A factor analysis was done for these six items and produced a one factor solution that explained 65% of the variance and when combined it yielded a high sample reliability of .89. All factor loading, correlations, and statistical summary of this sample will be found in [Table I.3](#) in Appendix I.

Subjective norms. Three items were adopted from [Bock et al. \(2005\)](#) to measure the impact of the significant others' beliefs on the individual's intention to share knowledge. These items were as follows: 1) In TI, it is expected of me that I share knowledge with other members, 2) Close friends/colleagues in TI think I should share my knowledge with others, 3) Most TI members who are important to me think I should share my knowledge with other members. The three statements are rated based on a 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7). Factor analysis resulted with all items loading on a one-factor solution that explains 76% of the variance. These three statements were thus combined to produce the Subjective Norms Index with a sample reliability of 0.9. The factor loading, item correlations and reliability is reported in [Table I.4](#) in Appendix I.

Descriptive norms. Focusing on the behavior of the relevant others, two questions measuring the descriptive norms are adapted from the [Norman et al. \(2005\)](#) study on soccer fans' confrontation. Adjustments in the wording of the survey items were made in order to fit the context of knowledge sharing. The Norman et al. study found an independent significant impact of descriptive norms on the individual's intention and is

considered to be one of the early attempts in extending the TRA model by including a measure of descriptive norms. The two items were as follows: 1) Most of my group members within TI share their knowledge with other members, 2) How many of your group members, do you imagine, would share their knowledge with other members in TI. The first item was rated based on a 7-point scale from strongly disagree (1) to strongly agree (7). The second item was measured based on five-point scale in which 1=none, 2=few, 3=some of them, 4= many of them, and 5=all of them. The two items were combined to produce a Descriptive Norms Index with a sample reliability of .75. Factor analysis of this sample yielded only one factor solution that explained 80% of the variance. The Factor loadings and statistical summary of this sample can be found in [Table I.5](#) in Appendix I.

Knowledge sharing self-efficacy (KSSE). KSSE was measured based on the knowledge creation processes (SECI) developed by [Nonaka \(1994\)](#), including socialization, externalization, combination, and internalization. Socialization includes the process in which an individual shares his/her tacit knowledge through direct interaction with others. Externalization, on the other hand, requires the expressing of tacit knowledge into more comprehensible forms that can be understood by others. Combination refers to creating new explicit knowledge from existing explicit knowledge by collecting, processing, and delivering knowledge in a more usable form. Finally, internalization focuses on the learning process in which knowledge is embodied in action and practice. To emphasize this, the SECI model is a continuous, spiral, knowledge creation process in which the knowledge sharing and exchange processes are the central practices that interconnect to create new knowledge. Based on the SECI model, four main items were

developed to measure KSSE consisting of engaging in a discussion, authoring articles, giving tips and tricks, providing reports and other types of knowledge resources. Four items have been developed to measure knowledge sharing self-efficacy: 1) How confident are you in sharing your work observations and experiences with other group members in the Tapped In community, 2) How confident are you in providing reports and other knowledge resources to other group members in the Tapped In community, 3) How confident are you in giving some tips and tricks on specific work-related issues to your group members in the Tapped In community, 4) How confident are you in authoring an article or posting a message to the community discussion forum. A 7-point scale measuring self-confidence is adopted where 1= not at all confident, 5=moderately confident, and 7=totally confident. The factor analysis demonstrated only one factor solution that explained 86% of the variance. All four items were thus combined to create Knowledge Sharing Self-Efficacy Index with a sample reliability of .94. The Factor loadings and items correlations can be found in [Table I.6](#) in Appendix I.

Controllability: Measures of controllability were developed by adapting measures from the [Ajzen's \(2002\)](#) research on TpB which consists of two main survey questions: 1) It is mostly up to me whether or not I share my knowledge, 2) I believe that I have much control about sharing my knowledge with others. The two controllability items were measured based on a 7-point likert scale from strongly disagree (1) to strongly agree (7). Factor analysis indicated that the two items hang together producing only one factor solution explaining 86%. The two items were combined to create the Controllability Index with a reliability of .84. Factor loadings and items correlations are reported in [Table I.7](#) in Appendix I.

Coding of Open-Ended Question

One major open-ended question was asked at the end of the survey to seek in-depth understanding of the individual's experience in sharing his/her expertise in this specific online community. The question focused on the individual's feeling toward his/her knowledge exchange and inquired about the advantages and disadvantages of engaging in a knowledge-based online community. In total, 154 responses were collected and entered into ATLAS.ti, a qualitative analysis software. The open-ended question responses varied from a single word answer to more detailed descriptions of the individual's experience. Coding was iterative and dynamic, focusing on the microanalysis level. Each response was analyzed and major relevant concepts were identified and labeled. There were some cases in which only one concept was derived from the text; however, in other cases, there were more. All seemed dependent on the individual's response and his/her attitude and expectations of his/her own participation in the online community. Yet, if the concept was repeated in the same text, it was only coded once. Coding was done as 0 = not mentioned and 1 = mentioned. After completing all the data coding, based on the concepts identified, two categories emerged to represent the advantages and disadvantages of the knowledge sharing experiences in the online community.

5.2 Results

Descriptive Analysis

Even though the research focused on individuals' knowledge sharing behavior, three main questions were directed to elicit an in-depth understanding of individuals' general behavior and usage of this specific online community. The questions were

directed toward collecting answers regarding how long participants had been members of the online community; why they joined the community in the first place, and how many groups they have subscribed to as a member.

The first question asked how long the participant had been a member of this online community. Those who were members of the community from 1-11 months comprised 39.2%; for 1-3 years, 26.6%; for 4-6 years, 20.9%, and for over seven years, 13.3% (Median=3.0). Overall, the majority of this sample has been active members for more than a year that reflects a virtuous level of engagement of those members in the online community. Figure 5.1 demonstrates the research participants' length of membership in Tapped In.

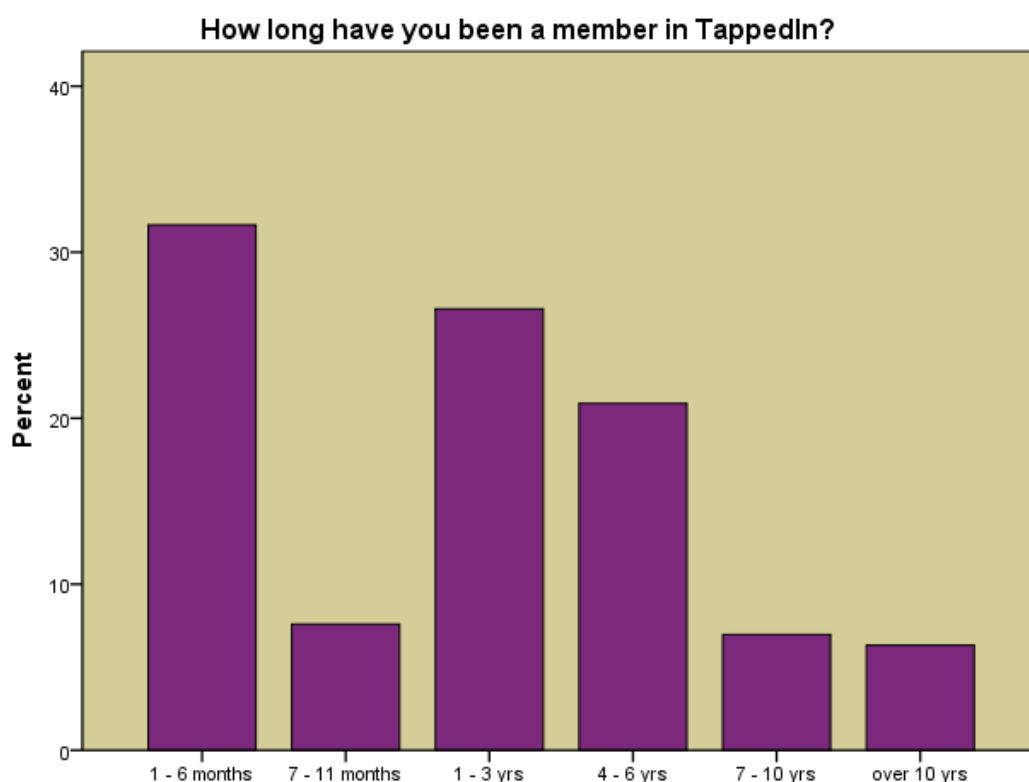


Figure 5.1. Research Participants' Length of Membership in Tapped In Online Community

A correlation analysis was conducted to explore the relationship between the first general knowledge sharing behavior variable and the independent and dependent variables of the extended model of knowledge sharing behavior. A significant correlation was found between length of membership in the online community and the entire extended theoretical model variables except for controllability. It has been found that the longer the participant is a member in the online community; the more likely to share his/her knowledge with other members of the community ($r=.313$, $p<.01$); the more likely to have a strong intention to share ($r=.330$, $p<.01$); the more likely to have a positive attitude toward knowledge sharing behavior ($r=.292$, $p<.01$); and the stronger his/her subjective norms ($r=.341$, $p<.01$) and descriptive norms ($r=.212$, $p<.01$). Finally, the longer the participant has been a member, the more confident he/she is to contribute to the community's online sessions ($r=.318$, $p<.01$).

Of the total survey subjects, 41.4% of participants said their main reason for joining the Tapped In online community was to learn new skills, adopt new approaches offered by the online community members. Others chose to engage in this specific online community to share experiences, provide advice and answers for others (18.5%); to post questions, collect information, and seek advice from other members (12.1%); to develop social networks, to obtain emotional support, and enhance feelings of belonging (6.4%). Other reasons for joining the online community included class requirements (13.4%); teaching an online class (3.8%), and out of curiosity or research (3.2%). Figure 5.2. shows the participants' main reason for joining the Tapped In.

The correlation analysis found two significant relationships with the reason to join the Tapped In community. First, it seemed that individuals who log in to TI to post

questions, to share experiences, and to learn new skills are more likely to have a strong positive attitude toward knowledge sharing ($r=163, p>.05$). On the other hand, those individuals who selected the above reasons as their main goals of joining the community are more likely to have strong descriptive norms, and thus experience more pressure from the referent groups to comply with group expectations ($r=.259, p>.01$).

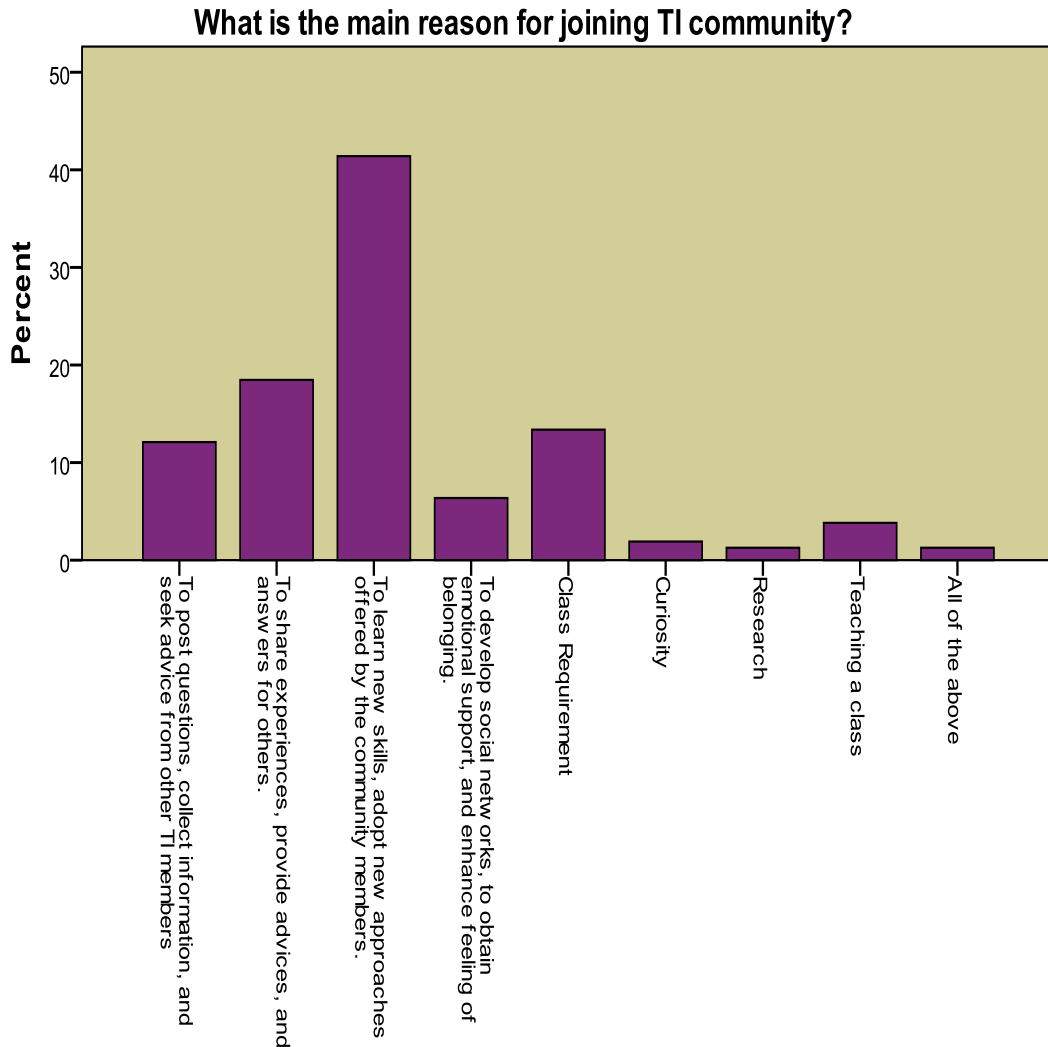


Figure 5.2. Research Participants' Main Reason for Joining Tapped In Community

Responding to the question about how many groups members were engaged with in the online community, 25.3 % said they were members of only one group; 55 % said they were members of two to five groups; 14% said they were members of over six

groups, and only 5.7% said they were not involved with any groups. This result indicates the high levels of engagement the members of the TI community have in in-order to cultivate a community that supports professionals through peer networks. Figure 5.3. shows the distribution of how many groups participants are members in.

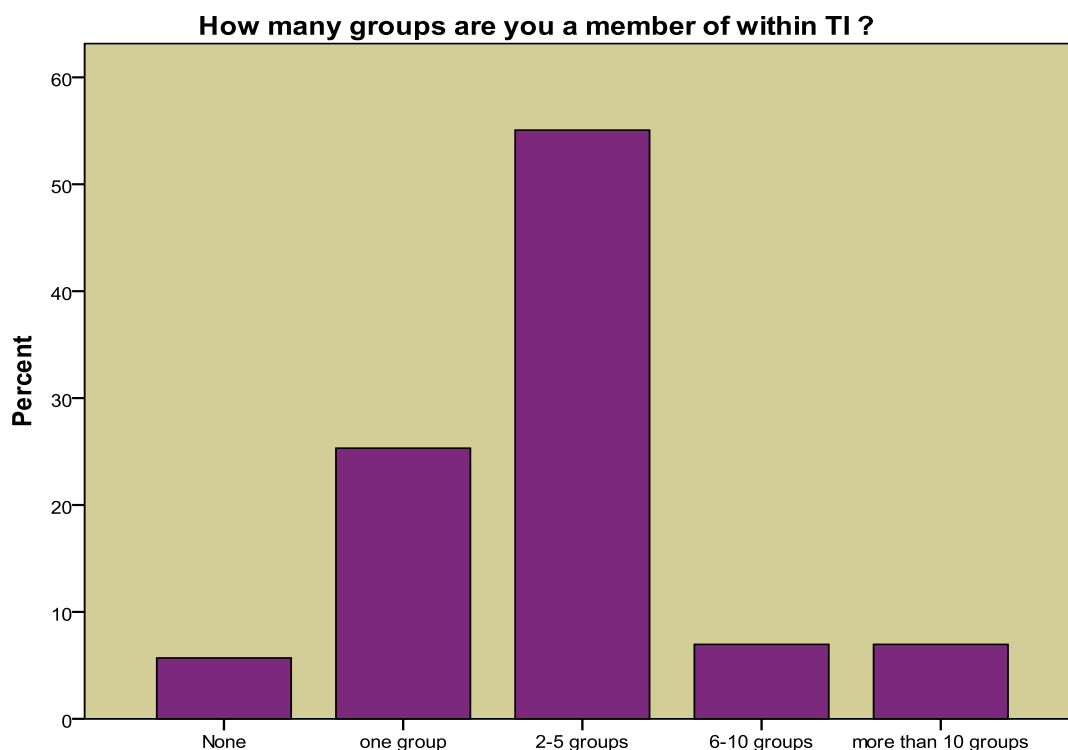


Figure 5.3. Number of Groups in which Research Participants Are Members

The correlation analysis found that the more groups the participants engaged in, the more likely they were to share their knowledge with other members of the groups ($r=.325$, $p<.01$); the more likely to have a strong intention to share ($r=.243$, $p<.01$); the more likely to have a positive attitude toward knowledge sharing behavior ($r=.305$, $p<.01$); the more likely to have a strong subjective norms ($r=.177$, $p<.05$) and descriptive norms ($r=.161$, $p<.05$), and the more likely to have confidence to share knowledge with the community's online members ($r=.232$, $p<.01$).

Key Correlations

The correlation analysis was conducted for two main reasons. First, the correlation matrix was useful in providing a clear idea of the relationships between the predictors and the outcomes. Second, the matrix also gave a preliminary look for multicollinearity. There were no substantial correlations between the predictors ($r < .8$); thus, there is no multicollinearity in the data (see [Table I.8](#) in Appendix I for correlations and significance levels).

The correlations were examined at two different levels. First, correlation was checked between the intention (*predictor*) and the knowledge sharing behavior (*outcome*). Second, correlations were assessed between attitude, subjective norms, descriptive norms, knowledge sharing self-efficacy, controllability (*predictors*), and intention (*outcome*).

Knowledge sharing behavior was significantly correlated with intention ($r = .613$, $p < .01$). The correlation demonstrates that the stronger the individual intention to share his/her knowledge in the online community, the more likely he/she will share his/her knowledge with other members in the online community.

Correlations between the individual's intention to share knowledge in an online community (outcome) and all the five predictors were conducted. Intention and attitude were found to be significantly correlated ($r = .526$, $p < .01$). Thus, individuals who perceived knowledge sharing as enjoyable, pleasant, and a learning experience were also likely to have a stronger intention to share their knowledge in the online community.

It has also been also found that the intention is significantly correlated with the individual's perceived subjective norms ($r = .561$, $p < .01$) and descriptive norms ($r = .514$,

$p < .01$). Such correlation indicates that the stronger the individual perceived subjective and descriptive norms, i.e. what significant others believe and how others actually behave, the stronger the individual's intention to share knowledge in the online community.

When it comes to investigating the correlation between the intention to share and the two items composing the perceived behavior control variables—knowledge sharing self-efficacy and controllability— Knowledge Sharing Self-efficacy was found to be correlated with the intention ($r = .542$, $p < .01$) indicating that the stronger the individual's confidence in sharing knowledge with other members in the community, the stronger his/her intention to share. Correlation analysis did not show any significant relationship between controllability and the intention to share.

Multiple Regression Analysis Results

Whereas correlation analysis provided a summary of coefficient of the extent of relationship between variables in the extended theoretical model of knowledge sharing behavior, multiple regression analysis aimed to estimate the value of the dependent variables by using the value of several predictor variables to account for more of the variance of the dependent variables ([Kachigan, 1991](#)). Multiple regression analysis main goal is to explain the nature of the relationship between the independent and the dependent variables. In addition, the analysis allowed us to assess the accuracy and the relative importance of the various predictors and their contribution to the variation in the dependent variables.

The multiple regression analysis was done in two main stages. First, regression analysis was conducted to test the path from intention to knowledge sharing behavior.

Second, a multiple regression analysis was conducted to search for the predictive relationships between attitude, subjective norms, descriptive norms, knowledge sharing self-efficacy, and controllability and the individual intention to share knowledge.

Stage One: Regression Analysis Predicting Behavior

At the first stage of testing the extended theoretical model, the significant standardized coefficient offered support for hypothesis (1). Results indicate that an individual's intention to share knowledge positively affects the likeliness to perform that actual behavior. The intention was found to account for 38% of variance in the knowledge sharing behavior ($\beta=.613$, $p<.01$).

Stage Two: Regression Analysis Predicting Intention

For the analysis predicting intention, measures of attitude and subjective norms were entered in the first step of the multiple regression procedure due to their significant contribution to the model reported in previous literature. The measure of descriptive norms was entered into the second step of the analysis, and measures of knowledge sharing self-efficacy and controllability were entered into the third step of the analysis. These procedures allowed the investigating of the influence of each of the independent variables on the intention to share after controlling the effects of the other variables.

The three-step regression analysis procedure yielded a significant contribution to the prediction of the intention to share. Hypothesis (2)—investigating the predictive power of attitude on intention—was not supported. Contrary to previous literature that described studies of the power of attitude in predicting individual intentions, in this study attitude did not have any significant power to predict the intention to share knowledge in the model regression analysis. Interestingly, when attitude and subjective norms were

entered into the first step of the regression analysis procedure, there was evidence of the power of attitude to predict intention ($\beta=.310$, $P<.05$). However, when all the independent variables were included in the regression equation, attitude power was not significant ($\beta=.045$). The predictive power of attitude on intention was suppressed due to the strong influence of descriptive norms and knowledge sharing self-efficacy.

The multiple regression analysis supported hypothesis (3). Subjective norms were found to be the strongest predictor of the individual's intention to share ($\beta=.338$, $p<.01$). Subjective norms and attitude were entered into the first step of the regression analysis.

Descriptive norms were added into the second step of the regression analysis. Hypothesis (4)—presenting the impact of descriptive norms on the prediction of the intention— was supported ($\beta=.261$, $p<.001$). The fact that descriptive norms explained a relatively small amount of the variance in the intention to share (4.4%) was partially a function of the type of analysis performed.

In the third step, knowledge sharing self-efficacy and controllability were entered into the regression equation. Knowledge sharing self-efficacy proved to have a strong power to predict the individual's intention to share confirming support for hypothesis (5) ($\beta=.267$, $p<.01$). Thus, participants are more likely to intend to share their knowledge—not only if they have strongly perceived subjective and descriptive norms, but also if they have a strong confidence in their abilities to share. Yet, the path from controllability toward intention to share showed no significant correlation.

The three-step regression analysis procedure contributed significantly to the prediction of the intention. In this online community, the effect of subjective norms, descriptive norms, and knowledge sharing efficacy was evidentially strong on the

individual's intention to share knowledge with other members online. The R^2 value for this model shows subjective norms, attitude, descriptive norms, and knowledge sharing self-efficacy to account for 52% of the variance of knowledge sharing intention model. Figure 5.4. presents a visual representation of the regression analysis results of the knowledge sharing behavior extended theoretical model. For more details, see [Table I.9](#) in Appendix I for regression results and statistical data.

To determine whether the effects of the predictor variables were dependent on other variables, additional sets of analysis were figured into the regression equation. First, a three-set of analysis including (age, gender, and education level) were entered in the regression equation. In these analyses, each demographic variable was entered into the regression equation in the first step while all the theoretical model predictor variables were controlled. For the prediction of the intention, both gender and education level were non-significant. However, for age, there seemed to be a significant effect on the prediction of intention. Age accounted for 13% of the variance of intention ($F = (1, 144) 21.853, p < .05$) when entered first in the regression equation. Thus, age contributes to the TRA and the TpB models in that the older the individual is, the more likely he/she will intend to share his/her expertise in this online community (see Table 5-3 for hypotheses results and research findings).

Due to the strong correlations between the TRA and the TpB variables and the two categorical variables representing the members' general behavior in the online community, an additional set of analysis was conducted to include participants' length of membership and the number of groups participants are engaged in in the regression equation. Apparently, the length of membership contributed to the prediction of intention

when entered first in the regression equation accounting for 12% of the intention variance; however, the power of prediction is suppressed once the TRA and the TpB variables are entered. Number of groups did not show any significant contribution.

Table 5.2 Knowledge Sharing Behavior Hypotheses and Research Findings

Path	Hypothesis	Findings
Intention→ Behavior	The stronger the individual's intention to share knowledge, the more likely he/she will share his/her knowledge with other individuals.	<i>Supported</i>
Attitude→Intention	The more favorable an individual's attitude toward knowledge sharing practices, the stronger his/her intention to share knowledge.	<i>Not Supported</i>
Subjective norms→Intention	The stronger the individual's perceived subjective norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.	<i>Supported</i>
Descriptive norms→Intention	The stronger the individual's perceived descriptive norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.	<i>Supported</i>
KSSE→Intention	The greater the individual's perceived knowledge sharing self- efficacy, the stronger his/her intention to share knowledge.	<i>Supported</i>
Controllability→Intention	The greater the individual's level of control over his knowledge sharing capabilities, the stronger his/her intention to share knowledge with others.	<i>Not Supported</i>

Summary of Key Research Findings

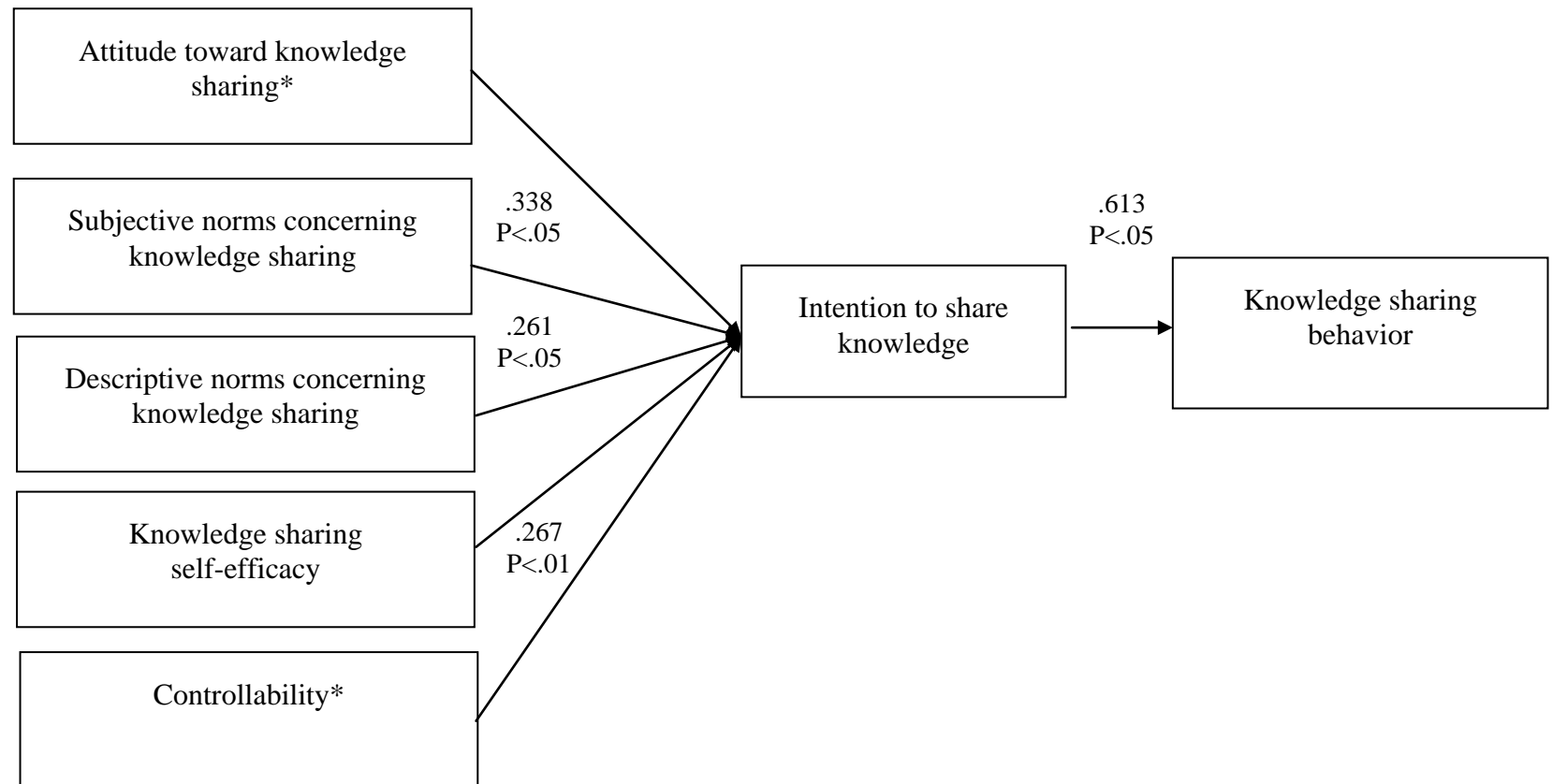
The research findings significantly emphasized the impact of social norms – including subjective and descriptive norms, on the prediction of an individual's intention to share knowledge in online community. Subjective norms were the most significant factor influencing the Tapped In community members to engage in the online discussions and share their expertise and knowledge. Interestingly, the predictive power of the subjective norms reflects the type of the sample that has been studied, i.e. educators. Educators look to each other for motivation; teachers motivate their students to engage and learn from these free educational online sessions, and coworkers, colleagues, and

friends also influence others to perform an action and actually log in and participate in these online discussion forums. Descriptive norms, representing how other people in the community behave, significantly contribute to the understanding of the intention to share.

Knowledge sharing self-efficacy was found to be the second significant factor to predict the individual's intention to share. This finding corresponds to Bandura's conviction that most human motivation is cognitively generated. Thus, self efficacy, the individual's belief about his/her capabilities to produce designated level of performance, in fact enhances human accomplishment and play a key role in the self-regulation of motivation.

In this study of an online community, with the inclusion of the other TRA and TpB variables, attitude did not have any significant impact on the prediction level of intention to share. This fact might be related to the strong correlation attitude has with subjective norms, descriptive norms, and knowledge sharing self-efficacy, suppressing the predictive power of attitude which was evident in the earlier stage of the regression equation. Furthermore, controllability did not show any significant predictive power with the individual's intention to share in this specific online community. This could be related to the fact that if there is a willingness to share knowledge, being in control of the behavior (or not) does not make a huge impact on the individual's intention to share.

Finally, as predicted by the TRA and the TpB models, intention was found to be the most significant factor in predicting behavior confirming all previous studies that emphasized the power of the intention to predict behavior.



* Attitude and Controllability did not show any significance predictive power in the regression analysis model.

Figure 5.4. Results of the Multiple Regression Analysis Testing the Predictive Power of the TRA and the TpB Independent Variables

*Advantages and Disadvantages of Engaging in a Knowledge-Based Online Community:
Information Collected from Open-Ended Questions*

Participants were asked, at the end of the survey, about their feelings toward the experience of using the TI online community as a tool for sharing knowledge and expertise with broader group of people. Apparently, answers to this question varied due to the dispersed research sample in age, experience, and expertise. However, the answer to the question yielded two main categories: Advantages and Disadvantages. Each category included sets of reasons and expectations that determined each participant's feelings toward his experience in the online community. The frequency of codes and sample quotes can be found in [Table I.10](#) and [Table I.11](#) in Appendix I.

Eliciting the advantages of engaging in an online community and the use of the online community to share knowledge provided an understanding of the individuals' expectations and beliefs toward the online community. Ten advantages were derived from the responses representing expectations and beliefs of those who share their knowledge in the online community.

The ten expected advantages identified in this study included: *Learning, information and knowledge sharing, networking, seeking information, seeking resources, seeking different perspectives, class requirement, convenience, support, and enjoyment*. Comparing the ten advantages, *information and knowledge sharing* stood out as the main advantage from engaging in a knowledge-based online community with the highest percentage of (45.6%) of the total comments. The high frequency of information and knowledge sharing as an advantage might have been due to the fact that more than 75% of the research sample hold a graduate degrees (61% with master's degrees, and 14% with a doctoral degrees) which would explain their willingness and motivation to share

with other members of the community.

Learning and *networking* were mentioned as the second highest advantages of engaging in TI as a knowledge-based online community (37.3%). Answers provided by the open-ended questions assert the fact that leaning is the ultimate goal and outcome as well as advantage of their engagement in the online community. Members of TI log in looking for new ideas and tools to improve their performance and develop new skills and knowledge. On the other hand, networking is also a significant advantage to learning and improving the profession. The advantage was described as going beyond “normal” networking in the sense that TI is a global network, and members enjoy meeting members from all around the world.

Among the total comments of those surveyed, 23.4% reported *convenience* as a significant advantage of participating in online sessions based on the ease of use, privacy, and the friendly-based interface and tools (including archive) available on the community website. *Information seeking* was identified as one of the main expected advantages of their own engagement by 22.8%. *Support* was mentioned as an advantage based on the 19% score it received in the total comments, and three types of support were noted: professional, technical, and emotional. Professional support is based on the different information, knowledge, and skills the community members contribute that assist other in improving their performance. Technical support entails providing assistance by facilitating the use of online tools and programs the community offers, providing answers to questions, or providing solutions for technical problems. Emotional support has been defined as the development of a sense of community in which individuals identify themselves as members and enjoy the benefits of being part of a community.

Enjoyment scored 15.8% of the total comments, indicating the positive feeling an individual receives when he/she contributes to the community. Sources of enjoyment varied, however, for those who contributed; acknowledgment and appreciation, as well as reciprocity, were mentioned as major sources of enjoyment.

Members also identified their needs of resources, online and offline, that would assist them in better developing new tools and strategies for their classrooms. Seeking resources was highlighted by TI members with 12.7% pointing to the different Web 2.0 tools shared by the members of the TI. Not only did members of TI emphasize the importance of knowledge, information, resources, and support, but they also noted the different perspectives they receive once they engage in this specific type of online community. Among the respondents, 11.4% mentioned the advantage of finding different perspectives from different people around the world and how it motivates them to participate and engage in the online community. Finally, a small number of the respondents (7.6%) indicated that their engagement was merely for class requirements.

The second category identified in the open-ended question included disadvantages individuals associated with their participation in the online community in general, and their knowledge sharing practices in particular. Eight disadvantages emerged from the data. The disadvantages were categorized in relation to the use of the online community, as well as in relation to the knowledge sharing practice. The three main usage-related disadvantages were *technical issues*, *lack of time*, and *lack of skills*. Five items were identified as knowledge sharing-related disadvantages: *lack of reciprocity*, *lack of common ground*, *lack of encouragement*, *knowledge validity*, and finally *insecurity*. A third category was added with “I see no disadvantage.”

Regarding the usage-related categories, technical issues stood out as the main limitation that discouraged the community members from continuing their engagement in the community (25.3%). Technical issues related to the use of online community included java problems, interface design, and lack of Web 2.0 tools including audio and video facilities. Lack of time was brought by the survey participants (15.8%) of the total comments. Lack of time could be due to the geographic constraints and time difference, as well as busy schedules for group members that make it hard for them to attend specially with the synchronous nature of the online meetings. On the other hand, lack of skills for using the online features scored 3.8%, preventing members from fully participating in the online sessions—especially when the sessions were text-based and required speed to keep up with the discussions.

Limitations related to the knowledge sharing practice focused on the issues and problems that arise when an individual decide to share his/her knowledge with other members. These limitations are considered to be sources of discouragement as well as negative attitudes toward knowledge sharing. Lack of encouragement was repeatedly mentioned by the participants (9.5%) as an impediment for their contributions, based on experiences with lack of participation from other members, as well as shared ideas not acknowledged or addressed, and suggestions not taken. Significantly, lack of reciprocity was named as one of the main problems causing the decline of the individual involvement (5.7%). Lack of common ground among the members of the community (2.5%), validating of knowledge shared (1.3%), and insecurity caused by giving expertise and knowledge (1.9%) also might be considered to be another reasons for not continuing participation in these types of online sessions.

Post-Hoc Analysis of Open-Ended Question Results

The categories that emerged from the open-ended question were included in a correlation analysis with the main variables of the knowledge sharing extended theoretical model and demographic variables. Descriptive norms were found to be negatively correlated with learning ($r=-.175$, $p<.01$) and lack of encouragement ($r=.167$, $p<.01$). That is, participants who have strongly perceived descriptive norms, are less likely to mention learning as an advantage of their contribution, as well as less likely to mention lack of encouragement as an impediment of their involvement.

Controllability was found to have a significant correlation with the “no disadvantage” response ($r=.170$, $p<.05$). Thus, participants with strong control over their knowledge sharing behavior were more likely to see no disadvantages in sharing their knowledge as well as in using the online community. Knowledge sharing self-efficacy was found to be correlated with information and knowledge sharing as main advantages for the usage of the online community ($r=.179$, $p<.05$).

When compared to demographic variables, participants who cited education as their discipline were found to be more likely to report networking ($r=.207$, $p<.05$) and support ($r=.212$, $p<.01$) among the main motivational factors for engaging in this specific online community. In addition, education levels was also found to be correlated with support as a major advantage motivating online members to participate ($r=.168$, $p<.05$), that is respondents with higher degrees are more likely to mention support as an advantage of logging in the online community. In addition, those respondents were more likely to find no disadvantage related to their knowledge sharing practices ($r=.240$, $p<.01$).

Finally, age was found to be correlated with “seeking information” as the main advantage of participating in the online community ($r = -.212, p < .001$). It has been found that the younger the participants are, the more likely they are to engage in online sessions to seek information and answers for their questions.

5.3 Chapter Summary

This chapter reported the results of a web-survey conducted to test the extended theoretical model of knowledge sharing behavior by adopting two theories from social psychology: the Theory of Reasoned Action and the Theory of Planned Behavior. The regression analysis found that intention is an important factor influencing directly the individual’s knowledge sharing behavior. By identifying the individual’s intention to share knowledge, actual behavior can be directly predicted.

Social norms, including subjective norms and descriptive norms, were found to be the strongest predictors of the individual’s intention to share knowledge in the Tapped In online community. Knowledge sharing self-efficacy was also found to be an influential strong motivational factor for an individual to form his/her intention to share expertise and knowledge in the online sessions. Contrary to what has been previously reported in the literature, attitude and controllability did not show any significant influence on the individual’s intention to share knowledge in the online community. The effect of attitude on predicting intention appeared to be suppressed due to the influence of other key variables that retained a strong correlation with attitude. Demographic variables including age, level of education, discipline, and nationality seemed to provide more information about the knowledge sharing behavior in online community.

VI. THE KNOWLEDGE SHARING DECISION-MAKING PROCESS: AN ANALYSIS OF A COMMUNITY'S INTERACTIONS

In the previous chapter, the quantitative analysis of the data collected through the survey method emphasized the influential role “significant others” could play in the decisions individuals make to share their knowledge with other members of the online community. The significant influence of normative pressures and self-efficacy on the intention to share resulting from the web-survey focuses on two aspects of psychological motivations that might influence someone to share what he/she knows. There are other influential factors implicitly embedded in the theories, which this study aimed to investigate through qualitative methodology. Both quantitative and qualitative measures and their analysis can be effective in studies of this kind. This chapter is devoted to answer the second research question:

Why does an individual make the decision to share his/her knowledge with other members in online communities?

Generally, to test the extended theoretical models of the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TpB) focusing on knowledge sharing behavior, quantitative methodologies have been used and implemented. This research added to the previous research about the TRA and the TpB models, by implementing both quantitative as well as qualitative techniques to test and explore the theoretical models. Qualitative analysis is conducted to enhance the understanding of the decision-making process an individual engages in to share knowledge through adaptation of objective measures by eliciting and coding of accessible behavioral, normative, and control beliefs which, according to the TRA and the TpB models, would direct the

individual's behavior ([Ajzen, 2002](#)). Behavioral beliefs involve the individual's outcome expectations and evaluations that may produce a favorable or unfavorable attitude toward the behavior in question. Normative beliefs are the expectations of others and the motivation to comply with these expectations. Finally, control beliefs, which are related to the factors that may facilitate or impede performance of behavior.

In combination, survey results have shown that subjective and descriptive norms, knowledge sharing self-efficacy are the major motivational factors to predict the individual's intention to share. Qualitative methodology is implemented to provide more understanding of these three major factors as well as other factors implicitly impeded in the theory that could represent salient beliefs for motivating knowledge sharing in online community.

6.1 Methodology and Sample Overview

To collect qualitative data, observation was used to gather data about the individuals' online interactions and their knowledge sharing behavior. The main purpose of qualitative analysis is to provide an in-depth understanding of the salient beliefs motivating the individuals' decisions to share ([Fishbein & Ajzen, 2010](#)). Thus, categories were developed that represent the reasons behind the decision to share. In addition, a chronological description of the major stages of the knowledge sharing decision-making process emerged as the individuals went through the knowledge sharing life cycle.

After identifying eight active groups in the Tapped In online community (TI) to participate in the research, members were invited individually to be part of the observation. The eight participating groups had been created as far back as 2003, and each has conducted regular online sessions to support the education and teaching

profession since being created. Each group has a leader, who carries the responsibilities of setting the online sessions, inviting speakers, and maintaining the group page with up-to-date information. A list of those TI members who were willing to be observed during their engagements in the online sessions was developed.

After completing the survey (Total of 158 participants), a request for participants to be observed was posted at the end of the survey. Seventy members, from the eight participated groups, agreed to be individually observed while engaging in online sessions conducted by their groups (44% of the 158 survey participants). However, only 36 members actually participated and contributed to the online sessions which were the focus of the analysis (22% of the total research sample). Thus, content analysis focusing on what the 36 members contributed to the online discussions provided an understanding of their knowledge sharing behaviors, and consequently what motivated them to make the decision to share.

Among the 70 members, more than 50% logged in at least one time during the study period (from March through May, 2010). Overall, during the three-month observation, the frequency records of the 70 approved-to-be observed members shows that 24% of them logged in at least once a week; 35.8% logged in at least once a month; 29.6% logged in only one time, and only 9.8% did not log in at all. Thus, it can be concluded that those who participated in the study are considered active members in the online community, and those who did not participate are either less active or not active at all.

Twenty-four transcripts, totaling 342 double-spaced pages, were collected from 24 online sessions that took place within the sample groups (eight groups). Usually, a

leader in each group assigned a topic for the scheduled session beforehand and sent an invitation and a reminder to the subscribed members to join the online session. Topics varied depending on the type of the group. All the topics discussed during sessions had to do with education/teaching domains. These sessions are considered the best place to share knowledge, learn lessons, or find solutions to problems; these sessions are believed to enhance, enrich, and provide support for those who seek to share.

Content Analysis

A grounded theory approach, suggested by [Strauss and Corbin \(1998\)](#), was followed to allow the theory to emerge from the data, rather than imposing the theory on the data. Grounded theory approach involved two main stages as suggested by [Lindlof and Taylor \(2002\)](#). The first stage involved coding as many categories as possible from the data based on open coding technique that inductively allowed generating open coding categories to represent what has been said in the transcripts. The second stage focused on the integration as a way of reshaping and categorizing the codes to produce a deeper meaning relevant to the research goal.

The examination and interpretation of the collected transcripts were done on the micro level. Microanalysis involves looking analytically at the details rather than just glancing at the data in a general way. This type of analysis allows the researcher to step away and listen closely to what the participants are saying and to the contributions, they add to the interpretation of the data.

To take advantage of the data collected, some quantitative indicators will be reviewed to provide more objective measures to the phenomena being studied. Quantitative measures were both developed and measured manually and/or using

ATLAS.ti. Measures were based on observing the individuals' login behaviors during the period of study as well as the general behavior collected for the purpose of comparison. Other quantitative measures were collected through words count using the ATLAS.ti software such the significant value of learning as an expected return of the individual's online contributions.

Coding Scheme

Based on the microanalysis examination, data were coded using ATLAS.ti qualitative analysis software, which offers a powerful environment that facilitates working with unstructured data. Each of the 24 transcripts was coded to identify major themes and actions relevant to the salient beliefs implicitly embedded in the decision-making process an individual undertakes in order to share his/her knowledge. Coding was an iterative process in that coding and recoding was done to include new codes and categories. At the beginning, open coding was done to develop as many categories to represent the different themes in the transcripts. The open codes that arose from open coding were collapsed into broader categories to produce deeper meaning for them. Two major categories were developed to introduce the different outcomes influencing individuals to share their knowledge in online sessions: tangible and intangible returns. Each category consisted of different outcomes that met individual expectations and motivated participants to be engaged in the online community (see [Table J.1](#) in Appendix J for sample codes and quotations).

And even though the focus was on the motivational factors influencing the decision to share, other themes emerged and will be reported to provide an in-depth understanding of the decision-making process of knowledge sharing in online

communities. Another category, types of knowledge, emerged from the data to provide an overview of the type of knowledge being shared during the interactions among individuals in the online sessions. Four types of knowledge were identified: know-what, know-how, know-why, and know-who. Even though each type of knowledge seems to have distinctive characteristics, combining these types of knowledge guarantees a better learning experience—which is the ultimate objective of attending and participating in online communities.

While searching for factors influencing individual's decision to engage in online sessions, a theme emerged which focused on the exact process of knowledge sharing rather than on the content of knowledge or the motivations to share. Each of the 24 online sessions seemed to follow one unique and similar chronological process from when the session began until it ended. Thus, including the process and life cycle of knowledge sharing in online communities is a significant contribution to understanding online communities in general, and knowledge sharing behaviors in particular.

6.2 Descriptive Analysis

The qualitative analysis of the data collected provided a distinctive demonstration of the process of knowledge sharing within each of the observed groups. Knowledge sharing does not occur robotically, or without human intervention. There are different stages an individual goes through in order to engage in the knowledge sharing process during the online session's discussion. In addition, there are specific important roles the group members play in order to have a successful knowledge sharing experience. These specified roles assist in motivating the participants' knowledge sharing activities.

In a regular online meeting, members join the session after receiving an invitation and a reminder from the session leader. The session timing and topic to be discussed also are scheduled in the online calendars available to subscribed members through the TI website. The session is usually opened on time by either the session leader or one of the TI technical support staff volunteers. Members join the session, welcoming each other and starting casual chats about different topics of interest to them, e.g. weather, vacations, national/global news, etc.

Usually, the session begins with an introduction of each member, what he/she does, where he/she works, his/her country, and his/her interests. Usually, the session would have new members every time; yet, there are frequent members who are dedicated to regularly attend the online sessions. The most significant question that is asked during the beginning of a session is “what brought you to this session?” The leader introduces the objective of the session and how he/she wants to lead the session. From then on, the focus is on the topic itself.

After the members get to know each other, the session’s leader starts to introduce the topic to the attendees and shares information about the topic. Topics vary every session. Usually, members would make suggestions for future sessions, or the group leaders decide to continue the discussion of the topic in the coming session or start new topic, all depends on how the session goes on. Major topics discussed during the research period were online teaching, cultural competencies, latest innovations of ebooks, transliteracy, and Web 2.0 resources.

Once the audience gets familiar with the topic, the session leader starts to probe the audience to encourage participation by posting questions and seeking information

from the attendees. This point of discussion is mainly about information sharing and seeking. Thus, rather than just lecturing and feeding information to the attendees, the leader makes sure to get the audience engaged in the discussion and to motivate them to share what they know at the beginning of the session. Once the familiarity with the topic increases, the leader starts to take the session to another level, one that focuses more on the individuals' own experiences with the topic. The role of the leader here is to work as a facilitator to get as much understanding of the issues the participants are struggling to solve.

After going back and forth between sharing and probing experiences, the leader will take the session to another level, in which he/she provides solutions, tips, and tricks to assist members in solving the issues brought up during the session. The participants will have their say in shaping up these solutions and tailoring them to meet their needs by seeking more information (i.e. examples) to be shared by the leader. In some cases, the participants actually try some of the solutions provided during the session, especially if they concern online programs or available tools that the leader can demonstrate.

The session usually ends with a regular reminder of the timing and topic of the next session. The leader always asks the participants if they have anything specific they would like to discuss in the coming sessions. By this time, new participants form an attitude toward these sessions, and their attitudes regarding whether they favor the knowledge shared will determine their likeliness to return to the next session. Usually the participants do come back to a session that follows, seeking to learn and explore new knowledge.

6.3 What Is Shared: Four Types of Knowledge

By observing knowledge sharing during online sessions, four types of knowledge were emerged based on the content analysis and the categorization of the discussion: know-what, know-how, know-why, and know-who. Considering these four types as knowledge is based on the fact that what is being shared is not considered merely to be information; it is knowledge because it is reflected in the discussion that ensues. Sharing the what, how, why, and who always conveys the individual's own values, opinions, cultures, and beliefs, which are reflected and constitute the knowledge transferred.

Each of the four types of knowledge has its own descriptive highlights. And even though they are distinctive, they do depend on each other and relate to the creation and discussion of the others. In the following paragraphs, each of the four types will be discussed and real examples of each type will be provided.

An audience engaging in the first type of knowledge, “*know-what*,” seeks to know more about a specific topic. Know-what is based on the facts and information individuals carry regarding specific topics or problems. The introduction and discussion of “know what” is emphasized mainly when introducing a new concept with which the members are not familiar. For example, in one of the TI online sessions about “ebooks,” the discussion was directed toward understanding the value of ebooks and the reasons to embrace them in the workplace. The discussion on ebooks led to the introduction of a new concept, transliteracy, which the “Transliteracy Notes” website (<http://transliteracy.ning.com>) defines as the ability to “read, write and interact across a range of platforms, tools and media from signing and orality through handwriting, print, TV, radio and film, to digital social networks.” These exchanges on ebooks and

transliteracy within the TI group shows that not only does the session leader introduce a new concept, but that the group starts to share what its members find relevant to the understanding of this new topic.

“Know-how,” the second type, is an essential part of the online sessions. Know-how consists of the practical skill-based knowledge of how to accomplish a task, how to apply a procedure, and/or how to use a resource or a tool. Usually, in online sessions leaders provide tips, tricks, and solutions on how to better accomplish tasks. The session leader points members toward the first steps that will assist them in their learning processes. Members learn how to use mediated communication tools available free on the Web to support the teaching profession. For example, in one of the sessions discussing online resources for students in K-12, members learned how to download ebooks for iPods and discussed how to use those downloads to create a positive experience in the classroom. Usually, the discussion is started by a question or a comment and will lead to a fruitful dialogue from different perspectives. Everyone will share his/her experience and give feedback and advice on topics such as ways to help others formulate opinions—or in many cases, make decisions.

Know-why is the third type of knowledge being shared among the online community members. “Know-why” exhibits an advanced understanding of the principles and theories underlying a specific issue or a phenomenon. The discussion of the “know-why” usually concludes with an innovative synthesis of insights that enables exploring new ideas and developing new knowledge. In one of the online sessions, there was a discussion evaluating the formal classroom assessment that caused parents to be frustrated by the final results of their children’s performances. Parents expressed their

disgruntlement by discussing the reasons behind the dissatisfying outcomes. The discussion resulted in new ideas and suggestions, for both parents and teachers, on how to improve student performances.

Know-who is the fourth type of knowledge discussed during the online sessions. Know-who is based on interpersonal networks and the information individuals carry about who knows what in a specific field or organization. In these sessions, attendees are introduced to each other and have the opportunity to get in touch with experts and professionals in the education field. Knowing who these experts are in the field, what they know, and what they can offer assists the online community as its members pursue their missions as professionals and in the development and improvement of the education field. Group members usually bring in names and iconic experts, and they discuss their latest works and the benefits of applying and implementing their findings within the education profession.

The combination and overlap of these four types of knowledge is a key success factor that makes this specific online community a rich mediated place to create and use innovative knowledge to help fulfill the mission of providing professional development to key personnel in education domains around the world. [Table J.2](#) in Appendix J contains the four knowledge types, as well as definitions and sample quotes.

6.4 The Decision to Share: Salient Beliefs

The Tapped In online community consists of educators from all around the world who seek information, knowledge, and resources. Yet, there are other implicit factors that motivate individuals to actually log in and engage in online activities in this community. The observation of 24 online sessions has generated codes and beliefs related to

knowledge sharing behavior. Those beliefs are either related to normative beliefs and the pressure created by the expectations of others and their actual behaviors, control beliefs and the confidence of the individual's ability to behave, and finally, behavioral beliefs and individual outcome expectations.

Normative Beliefs & the Pressure to Comply

One of the major salient factors that motivated individuals to engage was the expectations of significant others. Significant others are important people with whose expectations the individuals feel motivated to comply. The strongest and most significant belief that motivated individuals to participate frequently in the online sessions was the strong personal and professional relationship they have with each other. Within the Tapped In online community, it seemed as though there were major numbers of members who had been there since the development of the community and who had developed strong ties among each other. Developing these strong ties enhanced commitment to the community and motivation to be part of online sessions. Not only did those members join the sessions, but because they had developed strong skills as educators, they actually shared their expertise and contributed to the benefit of the community.

Another example of the pressure arising from acknowledging the significant others was encountered in the professor-student relationship explicated in the professor's expectation of his/her students to join the sessions. Obviously, adopting TI as a learning platform, students joined online sessions led by their professors whether it is a class requirement, or to meet the professors' expectations. A good example was shown in the following transcript in which the session leader, a professor teaching a class at one of the California State University campuses, announced that she was expecting to have her

students attending the session. Such participation was very common, especially in groups led by professors or college teachers.

Session 16-Member 1: Hi, Dr. F. Are you expecting others to join the discussion?

Session 16-Leader: We'll see how many people come today -- there may be more of my students.... and I just emailed my class so they know that today is the one and only time this month with me.

In this specific session (session 16), students joining the session were likely to identify themselves with their professors. As stated by one of the students attending the sessions: "I am a student of Dr. F. and looking forward to learning about Tapped-In. What I've seen thus far is a wealth of information." Or how the professor herself identified another student attending the same session: "K. is another student of mine." In general, feeling of emotional attachment to the group leader develops a sense of commitment, which leads to successful knowledge sharing activities.

In the education field, it seems that social norms, and how other group members behave, are actually influencing the individual's decision to behave. For example, friendship and collegiality put pressure on the individual to behave as others are behaving. Individuals attending the same classes or teaching at the same institutions were obviously under pressure to behave how their colleagues did so they can enhance friendships or be identified as colleagues. In Tapped In online sessions, it was very common for friends, or colleagues, to log in at the same session. Expectations of the others urged individuals to behave as one member announced once she logged in one of the online sessions: "yes I missed it the last time, my friend B. is suppose to log in also." In fact, there had been incidents in which attendees promised, since they enjoyed the session, to bring more people to attend these kinds of learning venues as one member stated after attending an online session, which focused on "Free Tech Goodies for

Educators”: “See you all next time...and I plan on bringing a lot of friends with me.”

Even though most of the groups observed were constantly having new members, with few frequent attendees, one participating group met every Sunday with the same individuals every time, and few new members joining. The NetHeads, consider themselves as a world-wide, cross-cultural community of practice which meets online regularly to explore the latest synchronous and non-synchronous communications technologies and to demonstrate new innovative ideas for e-learning and classroom curriculum. NetHeads are highly identified with their group inside and outside the Tapped In community. And even though the group meets regularly on Tapped In, there are many other venues where Netheaders meet face-to-face or virtually to socialize and exchange knowledge and expertise. Interestingly, the group provides a workshop for new members on “how to be a netheader.”

The increasing feeling of identification with the group puts pressure on the group members to join the Sunday session, and other meetings, to socialize and exchange updates about the community members and relevant social and technological news. The only topic the Netheaders are not interested in is politics as one members stated: “the only thing we don’t discuss in NetHeads is politics -- we have members from all over the world.” Interestingly, statements such as “I am a netheader” or “are you a netheader” are commonly used by the group members to represent a strong connection between the members and their group. This group in particular provides a good example of a community of practice and the pressure the normative beliefs put on the members that motivate them to engage and contribute.

Control Beliefs: Self-Efficacy

The 24 sessions observed had significant contributions from both session leaders and attendees. Leaders, as well as members of the sessions, showed positive and strong self-efficacy manifested in the knowledge the members have about the topic and the skills to transfer the knowledge they have to others attending the session. Obviously, many of the members attending the online sessions come from the education field and carry knowledge relevant to what is being discussed online. The individual's level of knowing influenced his/her contributions. For example, those who are experts in the topic of the session tend to share more, and those who are less knowledgeable tend to seek more by posing questions. This is especially relevant to the eight moderators who led the observed sessions and who had been in Tapped In for a long time. They were educators, coaches, trainers, and scholars confident of their abilities to share, teach, and train others to enhance their knowledge and skills and to improve their professional performance. Their confidence motivates them to be part of the Tapped In community, and the community welcomes and embraces them.

On the other hand, as noted by [Bandura \(1982\)](#), self-efficacy is not only a matter of knowing; it involves a generative capability in which component cognitive, social, and behavioral skills must be organized into integrated courses of action to serve innumerable purposes ([Bandura, 1982](#), p. 122). Thus, the skill to engage, transfer, and share what the individual knows is a very important part of the knowledge sharing process. The skills are manifested from different angles. The first is the skill to use the different technologies and tools provided by the online community to facilitate sharing. At the beginning of the each session, the moderator takes the time to introduce the interface and help the

attendees get acquainted with the tools available for them. The second is the skill to socialize online and to build common ground and good relationships with others that eventually facilitate the knowledge exchange. The third is the skill to cognitively identify what to share, to organize the thoughts, and to present them in understandable formats. All these skills are especially necessary during online interactions.

Interestingly, the online community welcomes and embraces confident members and encourages them to continue participating and contributing to the community. For example, while this research was being conducted, one eager member of the TI community, who frequently attends the online sessions, started her own online session. Because of the expertise she had gained being a K-12 teacher, the training and skills she got from attending TI online sessions and her participation in other venues, she was able to start transferring her knowledge to other members of the community. During her sessions, she gets support from her colleagues and friends in the TI community, as well as from her friends at the school where she teaches.

Behavioral Beliefs: Tangible & Intangible Returns

Through observing members' interactions during online sessions of the TI community, it was found that members are motivated to engage and participate in these types of sessions due to their expectations of return. This research identified two types of expected returns: tangible and intangible. Tangible returns are defined as substantial benefits with intrinsic monetary value such as promotions and grades. Intangible returns, on the other hand, are benefits such as learning and enjoyment that cannot be measured in monetary terms. Six tangible returns and three main intangible returns were identified. Each of the expected tangible and intangible returns are discussed and explicated.

Tangible Returns

Class Requirement / Class Assignment

Many courses are held in TI—either through affiliated universities or schools or by teachers offering online courses— and they are likely to be dedicated to motivating students in the use of technology for enhancing and improving their learning levels. This research has identified two types of participation. In the first type, students may join their own classrooms and “sit in” for an hour or so to listen to their teachers, discuss specific topics, and participate as class members, or they may join public online sessions, required by instructors, so they can complete individual assignments or group projects. In the second type, students decide on their own to join TI’s public online sessions in order to search for new ideas and information, or because they are curious about specific topics. In both cases, the expected returns are that students effectively complete class requirements and earn better grades by using the resources the online community provides for facilitating group meetings and discussions.

Searching for New Ideas

In this specific community, teachers and students join sessions to look for new ideas to generate creative approaches for improving the levels of education and of teaching styles so that they can be more effective in their jobs. Members will explicitly announce that the main purpose for joining these types of sessions is to search for new ideas. This specific online community is considered an enabling platform for creativity based on the diverse backgrounds and knowledge the members carry that supports the individual creativity levels. Members meet new people and exchange fresh ideas coming from members from different location, cultures, and backgrounds. The following posts

exemplify the directed goal for seeking new ideas:

Session2-Member1: “Hello everyone! I am currently a student teacher and am looking for any ideas that can help me become the best teacher possible. Today I am mainly here to observe how this works and get some new ideas.”

And, the following post:

Session-11-Member3: “I want to add something new to my knowledge of teaching using the technology.”

Seeking Examples

In order to grasp and learn about new topics or ideas, participants in the online sessions look for examples to help them understand how to improve their teaching styles. Below is the record of a session focusing on classroom assessment. The participants ask for examples of better assessment tools, illustrating how members look for new ways to improve their classroom assessment tools.

Session2-Member1: What other assessments are you all using?

Session-2-Leader: formal and informal.

Session2-Member2: I really like walking around the classroom and seeing how the students are doing because with math it's hard to see if they understand until they do problems on their own.

Session2-Member3: I teach elementary Spanish and we do not give grades, so I do a lot of informal assessment.

Session-2-Leader: yes, the walking around also allows students to talk to you about what they get or do not get.

Session2-Member1: yes, just today I saw 2 kids copying each others' homework so how could a teacher know if their teaching is effective?

Session-2-Leader: the conversation is where we find out what is missing and what is moving well.

Session2-Member4: I'm currently volunteering with third grade, and we do a lot of "thumbs up or thumbs down" and walking around as well.

Session2-Member5: I try to look at if the objective is asking the students to identify, describe, explain, or compare and create questions for the objectives to fit what the students will be asked to do.

Session-2-Leader: well, that with the copying. That tells me that they are unsure of what they are doing and they don't own the learning.

Session2-Member2: What would you guys think about after a lesson, giving a simple question for them to do before they start on homework, the teacher grades that question right then to see if they should explain more or let them work on homework?

Session2-Leader: I think that a lesson should be very interactive, so the questions should be back and forth. What you are doing is trying to get thinking going, comprehension, what makes sense, what does not.

Sharing between online members often occurs after members are asked to discuss problems and to help others get ideas and assistance for addressing their concerns. The discussion below concerns online learning and professional development.

Session11-Leader: OK ... now Professional Development (let's abbreviate it to PD) is a BIG topic. Where would you like to take this . . .let's narrow it down a bit.

Session11-Member1: We're doing an online PD in our district this year, but it's being implemented very poorly and not really working.

Session11-Member1: I'm interested in how to find good PD to learn more about designing online learning -- both theory and practice.

Session11-Leader: Member1. Tell me, please, why is it not working . . .what is poor about the design?

Session11-Member2: My district has never done an online PD

Session11-Member3: Member1, could you give some more details about it?

Session11-Member1: It has videos on different topics. We were told we could choose which topics we wanted to focus on, but all year we have been told which one to do. The entire faculty is required to watch the same set of videos (on differentiation).

Session11-Member1: Then we get together every month to discuss what we watched.

Session11-Member2: that hardly seems like it is being done online.

Session11-Member1: The information in the videos is outdated and unhelpful for the most part.

Session-11-Leader: Member1. Good example of what not to do in PD . . .do not design for one thing and then do another. Never give choices unless one is willing to 'live' with them in the classroom as well as online.

In these online sessions, tools or techniques often are presented and introduced to the audiences to help them solve problems, improve situations, or facilitate better

learning. For example, in the conversation below, a session leader presents the ADDIE design system for online courses by introducing the group to its main component and giving a brief explanation on how to implement it. After the introduction, members join the discussion, weighing in on how to best fit ADDIE into their own contexts and objectives.

Session11-Leader: I'm going to give you a simple design system now. It's called ADDIE (like a person's name) It's very easy to remember.

Session11-Leader: A - Analyze the situation, students, what is needed; D = Design the learning objectives and instructional activities that you wish to engage students with in order to meet those objectives. D = Develop the entire design and BE specific. I = Implement the development in all its phases with the students. E = Evaluate the learning outcomes as result of the implementation.

Session11-Leader: Then . . .go back and analyze the results and go through the entire process again, tweaking where necessary, to improve results the next time you teach the lesson, course.

Session11-Leader: Use the Evaluation to modify your instructional activities so they more closely meet the learning objectives.

Session11-Leader: Always remember. What we're after is LEARNING, not just students memorizing and getting the right answer. If you're teaching ESL, then students have to 'use' the language and not just 'know' isolated works. (I'm using this example as we have ESL teachers here.)

Session11-Member2: What type of assessment is best in an online course ?

Session11-Leader: Member2, the assessment is based on the learning outcomes. These have to be clearly and specifically stated. Without that, creating an effective evaluation will fail.

Session11-Member1: I'm working on designing online modules to supplement my instruction within my English 11 course. I think I'm bogged down in the first D -- my goals might be a bit ambitious for having never done it before.

Session11-Member4: the design you have talked about can be used during the teaching and learning process but how can i use ADDIE at the beginning of my teaching process for an effective teaching.

Session11-Leader: Member1. Well, we always have to start with where the learners are...where are they? What ages . . .what do we know about cognitive development of students at those ages? What are they capable of? And not? Asking questions is where we start with the design.

Looking for Useful Resources

Among the major advantages of belonging to this online community are the members' dedication to sharing online and offline resources, to introducing resources to the members, and to assisting each other on how to integrate resources into their daily work routines and their classroom settings. Usually session leaders, or sometimes members themselves, share resources to introduce new ideas, topics, or events that are just happening or that have happened recently. The main purpose is not the introduction, but the discussion that follows the introduction of these types of resources. Members will give their opinions and input on how to use these resources to support their profession at either the classroom or administrative level or how to support the concept of learning in general (see [Table J.3](#) in Appendix J for examples of online resources shared during the online sessions).

Sharing Resources varies depending on the types of session. Resources are brought into the sessions to enhance classroom activities by including information and communication tools that will motivate students' learning experiences. In addition, there is a huge emphasis on online reading, audio books, and ebooks. Students engaged in these types of online reading venues are motivated to read because their reading skills are enhanced and because they have been introduced to different online resources to which they can log in and download without any charge.

Also, online resources enhance information literacy levels by improving student searching skills. Usually, teachers introduce students to new search engines, thus motivating them to learn how to conduct online searches, to evaluate blogs and websites, and to learn how to be active online members.

Searching for Solutions

In many cases, members are identified themselves with specific types of groups in order to search for solutions for a problem they are facing. Solution can be simple, as the following dialogue indicates:

Session21-Member1: We were just discussing using this resource today . . . is there such a device that allows a teacher to connect an ipod to her projector. I had suggested placing the iPod under the document camera.

Session21-Leader: I believe it depends on the equipment. I have always used a document camera.

In other cases, members look for real solutions to real problems that they face in their work. The search for solutions is underscored in this request by a member attending an online session in Tapped In: “With the cut in budgets some schools are doing away with books and want to reduce paper...i would like to learn more about online teaching to deal with these cuts (*Session11-Member5*). Attending online sessions and talking with people in the same education field allow the attendees to discuss problems they are facing and to seek solutions and answers for their questions.

Pursuing Different Perspectives

Some people log into these types of online sessions to hear other perspectives, so they can think about what they might do if they were in similar situations. One good example concerns the implementation of a new design system. Mainly, members want to hear the experts talking about their own perspectives, how to do things, and how to learn new ways to improve their own work.

Session11-Leader: If I were to use ADDIE (a design system introduced in the session) to design a course, I would start by ‘thinking’ (that’s the analysis part) of where I want to go, and where the learners are now. The first part is always ‘inquiry’ asking yourself lots of questions and when you do not have the answer, go find out, like join TI and ask, ask other teachers. AND ask the students.

Intangible Returns

Professional Development

Tapped In is a volunteer-based community offering high-quality online professional development experiences and support to teachers in a cost-effective manner. Experts in the education field are committed through their online sessions—training, workshops, and meetings— to share their expertise for the benefit of the education professional. They are keen to provide advice, tips, and resources to community members. Knowing that people attend these types of online sessions, contributing, engaging with each other, and actually applying what they have learned, is the true intangible return of participating in this online community.

Enjoyment

Especially for people with expertise, participation is mainly voluntary. They have a mission to improve the education profession, and they are committed to fulfilling this mission. Thus, participating and committing to engage in online sessions bring members the enjoyment of helping others and contributing to the profession in general. Other sources of enjoyment are the continuous participation and the discussions that take place during sessions, which give meaning to the members' contributions – especially when considered as indicators and as recognition of the value of the knowledge contributed and the effort put into the online meetings.

Learning

Learning is the ultimate outcome every member seeks. Whether they are looking for tips or advice, examples, sites or resources, members are actually seeking learning to improve their knowledge and skills. In any case, the whole experience of being part of

this online community educates the members. As one member once stated: “I log on just about every Sunday and I always learn something new.” Running a simple word count through ATLAS.ti, shows that “learning” has been repeated 340 times during the 24 sessions; the sessions totaled 26 hours. The emphasis on “learning” is much expected from professionals in the education field who are searching for new and up-to-date knowledge to assist them in improving performance as well as overcoming barriers and problems that might prevent them from achieving their goals.

Summary of the Key Observation Findings

According to the TRA and the TpB models, individual’s behavior is a matter of his/her beliefs that determines the individual’s willingness and intention to perform that specific behavior. According to the observation of 24 online sessions in Tapped In online community, three types of salient beliefs were identified and explicated through the interactions of individuals in the online sessions. Normative beliefs were found to have a significant influence on the individual’s decision process to participate and contribute to the online sessions. The normative beliefs were explicated in the professor-students relationships, friends-friends relationships, and colleague-colleague relationships. These types of relationships, and the individual’s objective to maintain it, put pressures for the individual to comply with expectations and lead to better knowledge sharing behavior.

Control beliefs, explicated by the individuals’ confidence to share their expertise with others, were another type of beliefs contributing to the successful knowledge sharing decision-making process in this online community. The idea is that the individual’s level of confidence motivated the individual to share because he/she has the knowledge and the skill to share, and consequently are rewarded for their sharing which eventually develop a

strong commitment and lead to better knowledge sharing behavior.

Finally, behavioral beliefs, revealed by the different outcomes the individuals expected, were found to contribute to the individual's decision to engage and share knowledge in the online sessions. Returns were classified into tangible and intangible return. Tangible returns focused on sharing and seeking information, knowledge, and resources, as well as grades. Intangible returns consisted of non-monetary outcomes such as learning, enjoyment, and professional development.

6.5 The Knowledge Sharing Life Cycle in Tapped In Online Sessions

While describing how a regular online session is held in TI, a knowledge sharing life cycle emerges from the group interactions. Thus, knowledge sharing is not mandated or forced; it has to go through a process interaction in which the roles of leadership and facilitation have significant impacts on the group's level of knowledge sharing. Figure 6.1. illustrates the knowledge sharing life cycle in Tapped In online community.

1. Starting Up: Knowing Me & Knowing You

The knowledge sharing life cycle starts with a preparation phase in which members begin to know about each other, the leader of the session, and the topic of the session, as well as the structure of the session. Succeeding in the introduction phase sets the stage for motivating participants to engage in the conversation. This success is tremendously important because knowledge sharing is a voluntary process that cannot be mandated or forced.

The session leader plays a significant role in understanding the audience, their backgrounds, and the expected outcomes. In addition, the leader's role extends to motivating others to know each other and engage in the conversation. Knowledge sharing

is all about interactivity among the group members.

2. Grounding: Sharing Information & Seeking Information

During the grounding stage, the leader, as well as the participating audience, works collaboratively to assure the process of knowledge sharing is conducted in an orderly way by sharing as well as seeking information. Sharing information is mainly directed toward introducing the session topic—definitions, characteristics, and major points. Seeking information, on the other hand, is directed toward probing and searching for common ground between the session leader and the participating members on the discussion topic.

This type of online session is not typical of classroom teaching in that the teacher feeds the students information, whether they need it or not. The session is tailored to the members' needs and is considered to be a learning process in which the audience is motivated to engage, in which specific questions have to be answered, and in which ideas have to be discussed. At the end of this stage, the audience will be informed sufficiently about the topic, and the leader will be updated about audience needs. At that point, the leader can take the knowledge sharing process to the following stage.

3. Sharing: Transferring Knowledge & Seeking Knowledge

The leader takes the group to this next stage in which knowledge is what the members seek. They come to these types of sessions mainly because they want to learn from the experiences of others, to listen to past lessons learned, and to seek advice, tips, and solutions for their own issues and problems. Thus, at this stage, individuals start to transfer their experiences, problems, and emotions – in many cases, hoping for solutions and assistance from others. Usually the transfer is faced with another transfer, through

which a solution is provided, an answer is given, or an example is shared.

4. Learning: Utilizing Knowledge & Creating New Knowledge

At this point, knowledge is transferred, and it is time to learn from it by applying it. Since the sessions typically last an hour or so, members try to learn how to apply what they learned theoretically. However, when resources and tools are shared, usually members are given the time to use them, learn their basics, and develop some knowledge on how to better use them in real situations. Yet, the discussion is always open, and members are encouraged to go forward and apply what they learned and to come back and share their experiences with others.

Identifying the knowledge sharing life cycle seems to provide an understanding of how knowledge is exchanged and about the motivation to share; however, this model is not exclusive to TI. Different groups might have different life cycles. In general, seven of the participating groups are following the same hierarchical discussion; the eighth group, which is more of a community of practice, though is following a different life cycle in which the structure is looser and flatter.

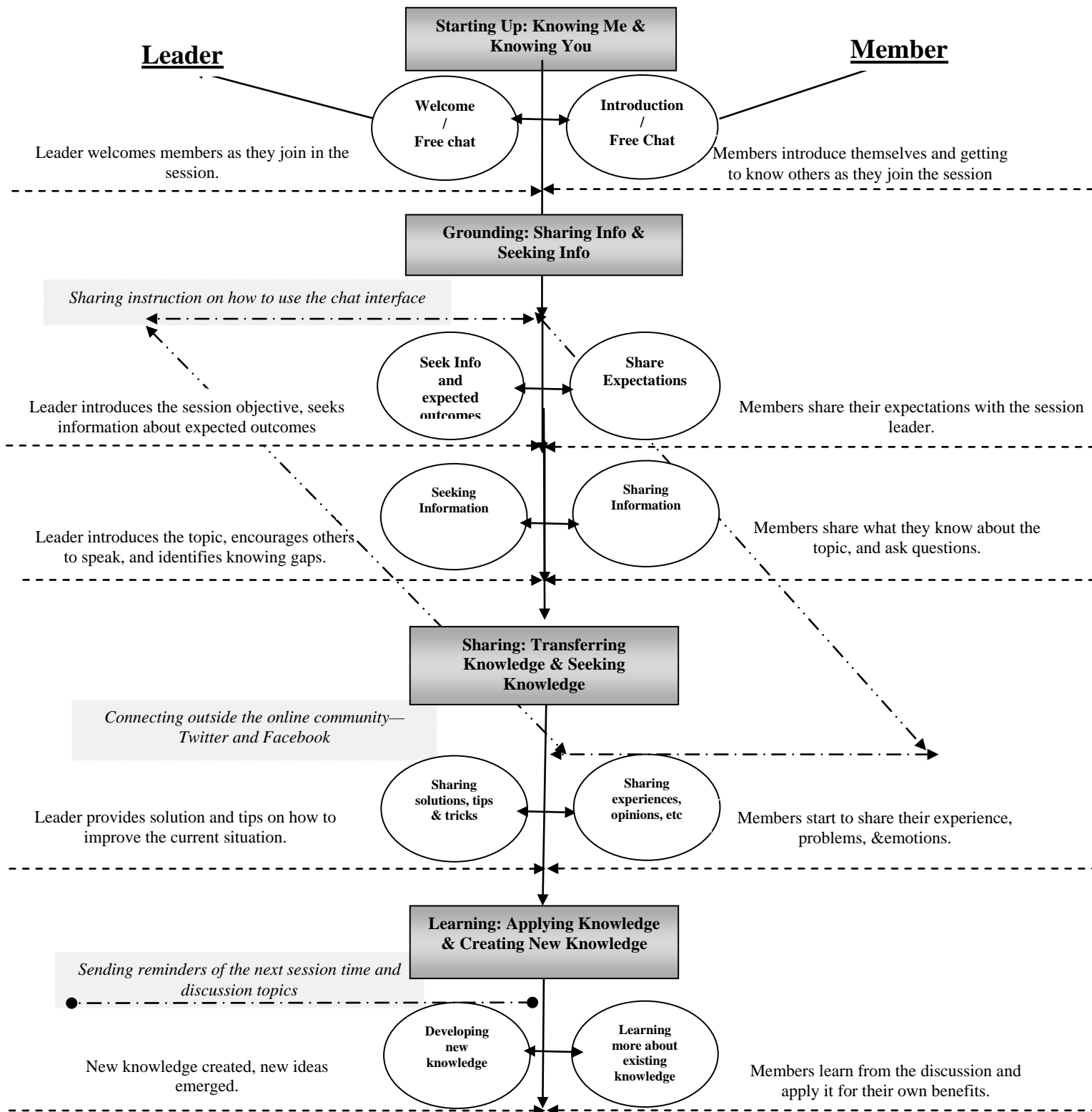


Figure 6.1. The Knowledge Sharing Life Cycle in the Tapped In Online Community

6.5 Chapter Summary

This chapter discusses the different salient beliefs and factors implicitly motivating the decision to share knowledge. Three types of beliefs were identified. First, normative beliefs and the influence of the significant others on the individual's decision to share were highlighted in the observation as a motivation for the individuals to engage and share. Significant others could be professors, friends, or colleagues, their expectations and their actual behaviors had proved to have an influence on the individuals' behaviors.

Second, Control beliefs reflected in the individuals' confidence to share what they know with others seemed to inspire and prompt the individual to participate and share their knowledge either in a structured session, or by joining other sessions led by colleagues or friends. In this specific online community, a great number of the members are experts in the education field, and they proved their willingness and eagerness to support the community in general, their groups, and their friends and colleagues in particular by contributing their expertise, insight, and knowledge.

Third, behavioral beliefs and the individuals' expected outcomes were reflected in the two types of anticipated returns: tangible and intangible returns. The qualitative analysis of the participants' interactions during the online sessions showed that when it comes to tangible returns, individuals make the decision to engage and contribute to the online sessions in order to seek new ideas and examples to learn from, to look for different perspectives to motivate their thinking, to search for online and offline resources, and to get answers for specific questions they have, as well as to earn better grades for classes they are part of.

On the other hand, individuals make the decision to contribute and engage for the benefit of the education profession. Individuals, especially those who are experts in the education field, believe it is part of their mission to enhance the profession by sharing what they learn and by helping others to learn. Learning is another intangible return individuals consider to be part of their expected outcomes. Individuals attend and engage in online sessions expecting each others to reciprocate and share what they learn, eventually enhancing the discussion and improving the learning process. In a nutshell, members do enjoy these types of online sessions in general, and the process of knowledge sharing in particular. Whether they be for tangible or intangible returns, enjoyment and learning are the major contributing factors influencing decisions to share.

Finally, a chronological description of how the knowledge sharing process occurred during the online sessions is presented. The main purpose of the chronological presentation is to provide an understanding of how knowledge is being shared and transferred during online interactions. And even though the knowledge sharing process is studied in this study unique to Tapped In online sessions, the details gathered can be applied to different situations in which members interact online. Knowing what members are sharing, how they are sharing, and what is motivating them to share better assists in enhancing groups' performance and contributions to benefit the entire online community as well as the individuals who participated in the community.

VII. GENERAL DISCUSSION

This chapter aims to provide an overview of the research rationale, theoretical model, and context of the research, as well as the two major methods adopted to investigate the research problem. A discussion of the research's main findings will be presented, offering a complete overview of the theoretical model. In addition, the chapter will conclude with the theoretical as well as practical implications of the research and its limitations, and a discussion of future research directions.

7.1 Research Rationale and Theoretical Model

Knowledge sharing has been conceptualized as an overt behavior that can be observed and researched. The importance of examining knowledge sharing practices specifically in online communities is reinforced by the role knowledge plays as a significant valuable resource for any online community to sustain and continue. Thus, it is a fact that the lack of knowledge shared and the lack of expertise and opinion exchanged might cause online communities to drift into non-existence. [Gongla and Rizzuto \(2004\)](#), in their longitudinal research of seventy communities of practice within IBM Global Services, found that the lack of contribution and participation, especially from core members of these communities, would eventually lead to fewer new members joining the communities. Thus, as participation decreases, members stop identifying themselves with their communities and feel less obliged to share or participate. Eventually, at some point, the communities disappear.

Online communities are facing a challenge to motivate their members to participate and contribute to the community through sharing and exchanging knowledge.

The challenge lies in the fact that the virtual environment is a radically changing environment and for a community to sustain itself, members have to constantly add, update, and modify their knowledge and expertise bases (Cheung, Lee, & Rabjohn, 2007; Gongla & Rizzuto, 2004). Once knowledge becomes outdated or obsolete, members of the community leave to seek other virtual environments where knowledge is more up-to-date, and where members feel their contributions are highly valued.

This study adopted a social psychological perspective to investigate knowledge sharing behavior. Two theories were employed to provide an in-depth understanding of individuals' knowledge sharing behavior in online communities: the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TpB). Both social psychological theories are based on the fact that an individual behavior is determined by his/her intention to perform that behavior which is moderated and influenced by other direct and indirect influential variables (Fishbein & Ajzen, 1975). Among the variables taken into account for predicting an individual's intention to perform specific behaviors are attitude, subjective norms, descriptive norms, self-efficacy, and controllability.

Understanding knowledge sharing from a social psychological perspective provides some measures for predicting levels of contribution from members of online communities. According to the TRA and the TpB theories, the simplest and probably most efficient way to know whether an individual will share his/her knowledge is to ask him/her if he/she intends to share (e.g. will share). However, in the interval between measurement of intention and observation of behavior, certain events might occur that produce changes in an individual's intention, and consequently, result in an intention-behavior gap. Thus, to predict behavior from the initial measure of intentions, it is

necessary to consider other variables. Knowing these variables and their power of predicting the individual's intention to share his/her knowledge will definitely provide a clear answer about why an individual makes the decision to share his/her knowledge with other members in the online community. The performance of knowledge sharing is hypothesized to be dependent on the individual's own beliefs in the expected outcomes of sharing, the impact of other people or events, the availability and ease of obtaining of resources, and finally, the personal attributes that would encourage him/her to share his/her knowledge in a specific online community ([Bock et al. 2005](#); [Bock & Kim, 2002](#); [Hsu et al., 2007](#); [Kuo & Young, 2008](#)).

7.2 Research Context and Methodology

An online community was chosen as a promising research context to investigate knowledge sharing behavior. Online communities carry a revolutionary potential to change us as humans as well as communities; thus, trying to understand online communities in every important context is a demanding necessity. Not only does this research present a unique case study of an online knowledge-based professional community, it also investigates the community members' general-usage behaviors as well as their knowledge sharing practices.

The Tapped In community was chosen as an interesting example of a voluntarily managed virtual community directed toward professional development in the education field. Through its available resources, tools, and forums, members are capable of learning through knowledge exchange. Tapped In has distinctive online workshops, training sessions, and networking events, all dedicated to developing the education professional in not only the United States but also all around the globe. The fact that Tapped In has more

than 15% of its members located on the other continents makes it an interesting community to study because of the geographical/global diversity of its members.

Due to the large dispersion of Tapped In members, a web-survey, developed using the TRA and the TpB theoretical models, was used to collect quantitative research data. In order to distribute the survey, the researcher joined eight online groups within Tapped In. In addition, the researcher attended online sessions scheduled for the eight groups during the period from March to May, 2010. The web-survey link was demonstrated during the online sessions, as well as posted on the discussion forum of each group. Two reminders were sent to all group members, inviting them to participate in the research.

The survey sample was mainly from the education/teaching discipline. Participants are highly educated; more than 70% of the sample has graduate degrees (Master/Ph.D.). Even though respondents from the U.S. dominated the sample, the sample is considered diverse, with more than 18% of those sampled living in different countries. Interestingly, the age distribution of the research sample is quite broad, demonstrating a positive claim that online communities are not dominated by the younger generation; in fact, the older generations make important contributions, especially in these types of professional online communities.

The observation method also was used to provide an in-depth understanding of knowledge sharing behavior, including the collection of data about the individuals' interactions and their online contributions to the groups' online sessions. A total of 24 online sessions were attended, transcribed, and coded as individuals' knowledge sharing behaviors were observed.

7.3 Discussion of Research Findings

This research was conducted to answer two main questions related to understanding knowledge sharing behavior in online communities. The first question was directed toward eliciting answers for the major factors influencing an individual's intention to engage in knowledge sharing activities in online communities. The second research question aimed to extract the implicit reasons and salient beliefs that motivate the individual to make the decision to share.

RQ1. What are the major factors influencing an individual's intention to engage in knowledge sharing activities in online communities?

RQ2. Why does an individual make the decision to share his/her knowledge with other members in online communities?

To answer the two research questions, data were collected through a web-survey distributed to eight active groups and an observation of the interactions of 36 members attending 24 online sessions in the Tapped In online community. In an attempt to predict and understand Tapped In members' future knowledge sharing behaviors, it was necessary to know the individuals' intentions to share and exchange in future events.

However, even though the intention to share can predict an individual's actual behavior toward sharing and exchanging in this specific online community, there are external factors that either enhance the prediction level of the individual's intention – or perhaps increase the gap between intention and behavior. This research found that social norms, including subjective norms – what significant others believe, and descriptive norms – how others are actually behaving, are the major external factors that motivate the individual to share and engage in online knowledge sharing activities. In addition, the

individuals' confidence of their ability to share knowledge with other members in the online community has a significant impact on their intention to share. In the following section each of the main motivation factors will be discussed to provide more understanding and explanation of reasons behind the significant findings of this research.

The Impact of Significant Others

According to the TRA and the TpB models, an individual's intention to share his/her knowledge in online communities is a function of certain beliefs. Major beliefs influencing knowledge sharing behavior are of a normative nature in which certain referents think the person should or should not share his/her knowledge. The normative beliefs and motivation to comply lead to normative pressure. The totality of normative pressures may be termed "subjective norms." In this research, subjective norms are found to be the major determinant of the individual's intention to perform knowledge sharing in this specific online community.

Supporting the survey findings, the observation of 24 online sessions confirmed the influence of significant others on the individual's knowledge sharing behavior. Significant others are professors teaching classes in different institutions around the world, friends and colleagues attending the same classes or work in the same institutions. The content analysis showed that there are an implicit belief that in order to gain those significant others' approval or to be identified with them there are a pressure to engage in these types of online sessions and to exchange knowledge with others.

To explain the significant impact of the significant others, it stands to reason that a person's motivation to comply with a given referent would increase with that referent's power over the person (Fishbein & Ajzen, 1975). The significance of subjective norms

has been supported and explored from different perspectives in previous studies. For example, subjective norms were explained in relation to “power” which is defined as the ability of an individual to change or control the behaviors, opinions, attitudes, goals, or needs of an individual (French & Raven, 2001; Liao, 2008). French and Raven identify five bases of power that might determine the individual-referent relationship and, consequently, influence an individual’s behavior: reward power, coercive power, legitimate power, expert power, and reference power. Reward and coercive powers are determined by the referent’s ability to either reward or punish the individual. Legitimate power is the individual’s belief that a referent has the right to control and administer behavior. Expert power is the belief that a referent has knowledge, expertise, skills, or abilities in a given area. Finally, reference power is the subordinate’s desire to admire or identify with the manager, and to want to gain the referent’s approval.

Cultural and contextual values constitute a common basis for normative pressures in this specific online community. Specifically, the context and culture of online classes conducted on Tapped In entail the instructor to have the power to influence the students’ knowledge sharing behavior. For example, students have to attend the online course, contribute, and participate in return for better grades at the end of the online class. On the other hand, class teachers might ask the students to participate in the online sessions of other groups in the Tapped In community, and then to return and share their learning experiences with other classmates. Thus, in both cases, the reward and coercive powers increase the normative pressure and thus, the motivation to comply.

In other cases, when an individual is attracted to a person or a group, he/she is motivated to share his/her knowledge to get the approval of that person or group and be

associated with and identified by them. Consequently, when identification increases, and the individual develops a sense of belonging, he/she will behave as the referent or group behaves. Thus, the stronger the identification with a referent or a group, the greater the referent power to influence the individual's behavior to perform.

Thus, the power teachers have entitles them to play significant roles in motivating their students to share their knowledge. Even if it is the reward that eventually motivates them, the impact of subjective norms is obviously clear in this specific context.

The Impact of the Community

This research sought to expand the assessment of normative influences by including the descriptive norms as a new normative variable, thereby increasing the predictive power of the normative component. The addition of the descriptive norms, focusing on the perceived behaviors of others, produced a significant addition for the variance of the knowledge sharing behavior model.

The research results show that even though the impact of “significant others” on the individual's intention to share had been proven to be the most significant predictor of knowledge sharing intention; the impact of the community at large contributes to increasing the predictive power of the normative components. This leads to supporting the suggestion that the normative components of the TRA and the TpB models should be expanded to measure both subjective as well as descriptive norms.

The influence of the community was explicitly presented in the two different ways in this research. First, there are the professional communities of educators working in different institutions and distributed in different locations that shows an impact on how the members to behave. Second, there are communities of practice consisting of members

sharing the same interests and obviously behaving as expected by their community. In general, the behaviors of other members of the community situate the member in a place in which he/she should respond and reciprocate in return to continue being a member in the community.

The role of descriptive norms identified in this study supports earlier research that has demonstrated the importance of social and group norms. The significance of the social and group norms affecting members' behaviors stems from the fact that for an individual to adopt a particular role and to be identified as a group member, the individual has to learn the group's norms, values, and expected behaviors and also has to comply with them.

Identification is defined as the individual's perception of oneness with or belongingness to some human aggregate ([Ashforth & Mael, 1989](#)). Focusing on the influence of identification on adopting group norms and values and consequently influencing the individual level of knowledge sharing, previous research has found that identification increased the individuals' level of knowledge sharing in online communities ([Chiu et al., 2006](#); [Wasko & Faraj, 2005](#)).

In an online environment where change is the constant variable, commitment to a group's norms is an essential factor influencing an individual's behavior, especially for sharing knowledge. Yet, it is a fact that an individual does not follow social norms for their own sake. There must be some incentives provided for members to comply with the social norms. This puts pressure on the group itself to continue communicating with the group members in order to enhance and motivate their contributions and engagements, which will sustain their continuation in the online world.

These findings have important practical implications especially for motivating individuals to share their expertise in online communities. Sharing knowledge in online communities may be effective mainly for those individuals who are strongly identified with their groups, or with the whole online community. As it was found by the survey results those members of the online community, who have been there for more than four years shared their work experiences and observations more than those who were there for less than three years. This results was supported by the observation results which found that mostly those who lead and share in the online sessions are those who were there since the beginning of the online community. Others identified themselves as a member of the community and took the responsibility to share and benefit the online community and the education profession.

Individual Attributes: Self-Efficacy

According to [Bandura \(1982\)](#), self-efficacy beliefs function as one set of proximal determinants of how people behave, of their thought patterns, and of the emotional reactions, they experience in taxing situations. This research emphasized the determinant power of self-efficacy beliefs by including it as a major predictor of an individual's intention to share knowledge.

In this research, self-efficacy was measured on a specific level by focusing on the individual's confidence to share knowledge. Grounded in [Nonaka's \(1994\)](#) process of knowledge creation, Knowledge sharing self-efficacy (KSSE) has been found to be the second major factor predicting an individual's intention to share knowledge in this specific online community ([Hsu et al., 2007](#)). The assumption is that the greater the

individual's perceived knowledge sharing self-efficacy, the stronger his/her intention to share knowledge with other group members in the online community.

KSSE has been identified as the individual's confidence in sharing his/her work observations and experiences; in providing reports and knowledge resources; in giving tips and tricks on specific work-related issues; in authoring articles or posting messages to the community discussion forum. The research found that KSSE is determined by the level of experience identified by an individual's age.

Emphasizing what previous research has found, this research found that gaining expert status increases an individual's confidence and consequently, leads to greater levels of participation and contribution to the group. For example, in the research sample, the longer the participant has been a member of the TI community, the stronger his/her knowledge sharing self-efficacy ($r=.318$, $p<.01$). In addition, participants who are members of more than two groups have a stronger perceived knowledge sharing self-efficacy. In general, participants older than 46 showed more confidence about sharing their work experiences, advice, and articles they had authored with other members of the group. Those 45 and younger – and more specifically, those under age 35 – indicate a high level of knowledge sharing intention, but their self-efficacy level is lower due to novice teaching experiences that limit their efficacy to share.

Previous research has emphasized this point. For example, [Thomas-Hunt, Ogden, and Neale \(2003\)](#) found that those members perceived to be experts participate more in discussions than those who are perceived to be non-experts. On the other hand, the individual's level of self-efficacy has an indirect effect on his/her attitude toward knowledge sharing. [Hsu et al \(2007\)](#) found that knowledge sharing self-efficacy not only

has a direct effect on the individual's knowledge sharing behavior, but also has an indirect effect on the individual's outcome expectations and, consequently, on his or her attitude toward that behavior.

Beliefs and Expected Outcomes

Based on his/her evaluation of a specific behavior, an individual forms a set of beliefs, which allow him/her to acquire an attitude toward that behavior. The significant power of attitude in predicting an individual's intention to share knowledge, which has been identified in previous research, was not evident in this research. This research found that in an early stage of the regression model, attitude predicted the individual's intention to share in the online community, but the predictive power of attitude was suppressed when normative pressure and individual levels of confidence were included into the regression equation.

Yet, we cannot say that these results differ with what the TRA and the TpB hypothesized. The TRA and the TpB models confirm the assumption that the predictive power of each factor of the two theories varies from one behavior to another and from one context to another. In this study of an online community, attitude was not found to have a significant effect on intention. The lack of predictive validity merely indicates that when studying knowledge sharing behavior in this specific online community, attitude was not considered to be an important consideration in the formation of the intention.

Overall, individuals participating in this online community described their experiences as enjoyable, enriching, beneficial, productive, worthwhile, and positive. These feelings have, in many cases, brought about strong positive attitudes toward knowledge sharing in this specific community. Individuals reported being motivated by

the positive experiences they had while engaging in the online activities.

Beliefs too are based on the outcomes an individual expects from participating and engaging in knowledge sharing activities in this online community. Results, from the observation of 24 online sessions of eight active groups in the selected online community, emphasized the power of behavioral beliefs and their influence on the individual's decision to share. One set of beliefs are behavioral which consists of the expected outcomes and the evaluation of these outcomes. Identifying tangible and intangible returns provided evidences of the significant value of outcome expectancies for cognitively motivating individuals to share knowledge and expertise in online communities.

This research found that advantages and disadvantages, as well as expected tangible and intangible returns of participating in knowledge sharing activities, all serve, when existing, as a motivation for sustaining individual's participation and contribution in the online community; and when lacking as an impediment and barrier for knowledge sharing. Mostly, the motivations and impediments found in this study were evident in earlier work on knowledge sharing and online communities. Motivation derived from the qualitative analysis varies based on the individuals' main objective of engaging in the online community. For example, participants acknowledged information seeking, represented in tips, advice, answers to questions, different perspectives, and online tools and resources as a main reason for their participation in this specific online community. This finding supports the fact that online communities are developed mainly for exchanging information and knowledge ([Ridings & Gefen, 2006](#); [Wellman et al. 1996](#)).

This research found that sharing information, knowledge, and expertise with other members is an advantage in itself. Interestingly, in this study the advantage of sharing information and knowledge was correlated with knowledge sharing self-efficacy (.179, $p < .05$), which indicates that individuals with higher levels of self-efficacy for share knowledge are more likely to perceive knowledge sharing as an advantage. This result is confirmed in the previous literature in which self-efficacy has been perceived as a major factor promoting knowledge sharing specifically in online community (Cheung & Lee, 2007). Another positive explanation for the positive attitude toward knowledge sharing in an online community is the ultimate expected return that might influence knowledge sharing. Lampel and Bhalla (2007), in their study of virtual communities, found that status and status seeking are sustained by gift giving in the form of information, opinions, and advice.

Apparently, participants are taking an advantage of the facilities the online community provides in which it connects people with the same interests from all over the world. One of the benefits of engaging in this specific online community is the building of networks with experts from different countries and cultures, which provides different perspectives and brings out new opportunities for collaboration and learning. This benefit is not new but it has been carried along since the development of online communities.

Aside from the tangible returns the participants seek to fulfill, including information, knowledge, and expertise, the participants reported in this study that there are major intangible returns motivating them to contribute to the online sessions. Professional development, Learning, enjoyment, convenience, and support were mentioned as major intangible returns that motivate participants to exchange knowledge

in online community. Identifying professional development, as the main expected returns of contributing knowledge and expertise online was consistent with previous literature in which organizational benefits function as a major incentive for participation. For example, [Butler, Sproull, Kiesler, and Kraut \(2002\)](#) explained that some people are highly altruistic and contribute in order to help a group or a cause. Such people are gratified when the group benefits, and that explains their willingness and eagerness to share. Altruism and eagerness to help occur when general organizational benefits are more favored than just self-benefits ([Constant, Kiesler, & Sproull, 1996](#)). Thus, contributing to the professional development serve as a major incentive and motivational factor for individuals' knowledge sharing behavior.

Learning was stated by the research participant as their ultimate goal of engaging in the online sessions. Whether they are looking for tips or advice, examples, sites or resources, members are actually seeking learning to improve performance and to bring new knowledge and skills to their classes. In any case, the whole experience of being part of this online community educates the members. Enjoyment, on the other hand, has been found to be an advantage and expected return by individuals participating in online sessions. [Bagozzi and Dholakia \(2002\)](#) found that positive anticipated emotion as an individual determinant functions as a strong factor influencing an individual's intention to participate in online communities.

Convenience facilitated by the online community was also found to be an advantage for participation in the online community. The facilitating conditions, including accessibility, of the online communities are important factors for continuing knowledge contribution behavior ([He & Wei, 2009](#); [O'Reilly, 1982](#)). Different aspects of

support were reported as a positive outcome of knowledge sharing behavior in this online community. Participants in this research, reported that the availability of three types of support encouraged them to continue engaging in the online community. *Professional support, technical support, and emotional support* were identified as the great benefits of being members of the online community in general and of their knowledge sharing behavior in particular. Significantly, these results also were reported in previous research examining online communities; each or all types of support were acknowledged and supported by the research results. For example, [Ridings and Gefen \(2006\)](#), in their study of 27 online communities, found that people join online communities for both feelings of affiliation and of belonging. Specifically empathy as a benefit of joining online community was underscored by [Preece and Ghozati \(2001\)](#) who reported that empathy functions as a motivation to join communities, which seem to have an especially strong sense of purpose. Once a member is identified with the community's purpose, he/she is encouraged to contribute and engage especially when his/her needs are met.

This study found that disadvantages such as *technical issues, lack of time, lack of skills, lack of reciprocity, lack of common ground, lack of encouragement, knowledge validity, and finally, insecurity*, could function as barriers to knowledge sharing in online communities. As found in previous literature, common barriers for participation in online communities are lack of time, lack of technical knowledge and skills ([Curran, Curran, Murphy, Abidi, et al., 2009](#)), lack of reciprocal relationships ([Bock et al, 2005](#)), and lack of encouragement, knowledge validity, and insecurity ([Szulanski, 2000](#)). All of these factors could function as impediments and barriers to knowledge sharing in an online community.

The collective understanding provided by the content analysis of this research in terms of expected returns and advantages of joining the online community assists in understanding other relevant motivational factors that influence the individual's knowledge sharing behavior. Social psychological theories adopted in this study, as well as motivational factors emerged from the content analysis emphasized the major needs and expectations of individuals in the online communities that once fulfilled behavior patterns change.

Ability and Availability

This research investigated the impact of controllability on the individual's intention to share knowledge and expertise in online communities. The assumption made in this research is that the stronger an individual's perception of his/her control over their knowledge sharing behavior, the stronger his/her intention to share. This is to say that an individual's sense of control over his/her behavior will lead him/her to actually behave.

The importance of actual behavioral control is based on the evidential. According to the TpB model, the resources and opportunities available to a person must to some extent dictate the likelihood of behavioral achievement ([Ajzen, 1991](#)). In the knowledge sharing context, control beliefs of an individual's ability to share knowledge are based on that individual's perception of his/her ability to control the means to knowledge rendering, retrieval, and reuse ([Hansen & Avital, 2005](#)). Any condition inhibiting these control factors will influence the individual's perceived control of knowledge sharing behavior.

However, as previously stated, each of the TRA and the TpB factors' predictive power is determined by the sample and the context in which it was investigated. In this

research, controllability, hypothesized to be a motivational factor to predict the intention to share knowledge, did not seem to make any significant impact in predicting an individual's intention to share knowledge in an online community. Although more than 85% of the sample responded that they believe they have much control over their actual knowledge sharing behaviors, and that whether to share or not is mostly their own decision, the power of perceived controllability did not predict their intentions to share knowledge in the online community.

This result confirms previous research findings that perceived ease or difficulty related to the use of information technology does not play a central role in successful Knowledge Management implementations ([Kuo & Young, 2008](#)). The less successful results might be due to the strong belief that when it comes to knowledge sharing, it is 95% people and only 5% technology ([Zack, 1999](#)). Obviously, in the virtual environment, the influence of an individual's social norms, and the influence of the individual's knowledge sharing self-efficacy might prevail the influence of the individual's perceived control of his/her behavior for sharing knowledge in an online community.

The sample of this research is comprised of educators on different levels, who are trained to share their knowledge, who are willing to help and to advise, and who are motivated to learn. Thus, any difficulty on their paths to sharing and learning will not pose extreme obstacles. On the other hand, the online community in this research works hard to provide the most efficient tools and techniques to assist members in overcoming technical problems. One major factor of the success of this online community is the almost 24/7 availability of volunteers and expert staff to assist members all over the world to perceive this virtual environment as an easy-to-use online community.

7.4 Research Implications

Reflected from different lenses, this research makes a significant contribution to the collective understanding of knowledge sharing. In this research, knowledge sharing was identified as an individual overt behavior that can be explored and understood from different perspectives. The research applied different models to understanding knowledge sharing in an online community. First of all, social psychological theories were adopted to investigate the different motivation factors influencing the individual's intention to share. Second, major concepts of Knowledge Management and knowledge sharing were used to extend the social psychological theories. To extend the understanding of knowledge sharing, Knowledge Management models also have been visited and reviewed, though not tested, to provide a better quality understanding of knowledge sharing in an online community.

The research contributes to the previous literature investigating knowledge sharing in many different ways. First, adopting the Social Psychological theories is by itself an addition to the literature of knowledge sharing, as well as the Knowledge Management through investigating knowledge sharing from psychological aspect. This addition sheds light on the major factors influencing the individual's knowledge sharing decision-making process. In general, the research confirmed the value these two theories could add to the understanding of knowledge sharing. In fact, this attempt could inspire the adaptation of other psychological theories to investigate knowledge sharing as a behavior. Moreover, this research extended the TRA and the TpB models by bringing new constructs to the theoretical model, i.e. descriptive norms and knowledge sharing self-efficacy, which proved to be a significant contribution to the prediction of the

individual's intention to share. The theoretical extensions have filled in the gap of previous research adopting the TRA and the TpB in general, as well as investigating knowledge sharing in particular. In many ways, the research findings provide significant contributions to theory as well as to practice.

Implications for Theory

For Knowledge Management Theories

Knowledge sharing is considered by many to be the most important aspect of Knowledge Management. Thus, by understanding knowledge sharing practices and the factors influencing them, Knowledge Management tools and processes could be better designed and customized to suit the context in which knowledge sharing is motivated.

Adopting and supporting [Tuomi's \(2000\)](#) argument that knowledge sharing is fundamentally social and that successful knowledge sharing practices require broad understanding of not only technical, but of social and psychological aspects of human organization. This research emphasized knowledge sharing as a social process embedded in the interactions with others. The social aspects of knowledge sharing reflected in the normative components resulted in a significant impact on the decision an individual makes to engage in knowledge sharing activities in online communities. Especially combined with tacit knowledge, the role of social beliefs and pressures contribute to the decision-making process.

These findings support and extend previous conceptual models that explained the complex and controversial nature of knowledge sharing ([Nonaka & Takeuchi, 1995](#); [Szulanski, 2000](#)). Knowledge sharing is a complicated process that requires an in-depth understanding in order to encourage it. The controversial aspect could rise from the fact

that for an individual to transfer his/her tacit knowledge into an explicit form, a motivation factor is necessary. Knowledge is power; it is sticky, and it is difficult to transfer. Thus, for an individual to spend time and effort to exchange his/her knowledge, there have to be motivation and rewards that encourage him/her to be engaged, committed, and willing to share. Another factor that brought into attention in this research is the availability of control over the behavior reflected on the resources necessary to facilitate the knowledge sharing. Especially in online environments, having the knowledge does not guarantee a successful knowledge sharing, in some cases, the need for the technical skill to use the available resources is a requirement for a better knowledge sharing behavior.

Finally, the research findings presented in this paper confirm the adage that Knowledge Management is 95% managing people and 5% technology ([Zack, 1999](#)). Thus, even though understanding the technology aspect is significant, investigating knowledge sharing from an individual/social perspective contributes to the collective understanding of how to motivate individuals to engage in the knowledge sharing practices of online communities.

For Virtual Communities Theories

Focusing on a virtual context, this research refutes the conviction that focuses on information technology as the solo motivational factor influencing individuals to engage in online communities, guaranteeing, “If you build it, they will come.” This research found that for online communities to succeed, sustain, and continue in this competitive virtual environment, online communities may possibly want to think about, when necessary, members’ general behaviors, and more specifically, the knowledge sharing

behavior that constitutes the knowledge core necessary for the development and continuation of the community.

As for researchers interested in investigating online communities, knowledge sharing activities have to be included as facets in their explorations. The understanding of individuals' motivations to continue contributing to the community, found in this study, will shed light on the main factors influencing their levels of engagement. In addition, new methodologies can be explored to assist in understanding knowledge sharing in online communities and in bringing to light new perspectives, quantitative and qualitative, to add to the understanding of knowledge exchange in the online world.

Even though this research focused on investigating knowledge sharing in a knowledge-based community, the findings of the research can be extended to other types of online and corporate communities, as well as specialized communities of practice. The idea is that online and corporate communities, as well as communities of practice are all based on the rich content members are exchanging. Whether to seek or share knowledge, to develop social networks, or to search for emotional support, understanding the members' motivation to continue contributing to the community is a vital requirement for the community to sustain in this constantly changing and competitive environment.

For Social Psychology Theories

This study is another example of adopting the TRA and the TpB models and testing the validity of using these theories in investigating human behavior. Previous research has adopted these two theories to investigate human behaviors such as drug abuse, exercising, and voting (Glasford, 2008; Laflin, Moore-Hirschl, Weis, & Hayes, 1994; Sniehotta, Scholz, & Schwarzer, 2005). This research extends the use of these

social psychological theories to investigate other types of human behavior, i.e. knowledge sharing behavior. The adaptation produced fruitful results for the understanding of knowledge sharing as a phenomenon in general, and knowledge sharing in online community, in particular.

While the TRA and the TpB have been extensively adopted to investigate motivational factors mainly in physical environment, knowledge-based online communities have seldom been addressed. This research confirms the appropriateness and significant contribution these two theories could play in understanding motivation factors relevant to knowledge sharing and knowledge management issues.

While adopting the main predictors in the TRA and the TpB theories, an extension has been conducted to investigate the influence of the existing TRA and TpB variables with the inclusion of new variables. Descriptive norms have been added to the extended model to investigate the normative pressure on the formation of intention from a different perspective. The TRA and the TpB theories focused on the influence of “significant others’ beliefs,” but the inclusion of descriptive norms expanded the width of the model to include the impact of the “community’s behavior” and how the behaviors of others influences the formation of the intention. Including the descriptive norms was important—and the extension was significant—because of the strong impact, social norms could have on the individual behavior. There also was the benefit to escaping the narrow conceptualization of the normative components of the TRA as hypothesized by other researchers ([Norman et al., 2005](#); [Rivis & Sheeran, 2003](#)).

Implications for Practice

From a pragmatic standpoint, the findings of this research have many implications for online communities striving to sustain and continue their contribution to the online world. Online communities have to acknowledge the influential role active members participating in the online community have on the behaviors of other members. This study has provided empirical evidence that individuals contribute to the content of the online community because they are motivated by others' beliefs and behavior. Thus, online communities should identify those who are motivation drivers and should acknowledge the influential role they play in motivating and encouraging others to participate and contribute.

In this study, knowledge sharing self-efficacy was found to be significant in contributing to the formation of the intention to share knowledge in this study. Thus, online communities, similar to this investigated community, could develop set of strategies to boost members' knowledge sharing self-efficacy so that members have the confidence in their abilities to share knowledge. This is important for online communities to contemplate especially with the increasing numbers of new younger members frequently joining online communities. In the case study presented in this research, new teachers were signing up in the community to seek knowledge more than to share. The main reason for not sharing, as presented in the qualitative analysis, was basically because of the lack of teaching experiences due to being new to the profession. Thus, online communities could pay attention to this specific group of new teachers and plan carefully to encourage them and to enhance their confidence in the valuable contributions they would make if they participated. Finally, as presented in this case study, knowledge

sharing self-efficacy was found to significantly correlate with information and knowledge sharing as an expected advantage of engaging in the online community. This correlation could be extended to similar online communities and build on the knowledge members possess for the benefits of online communities.

Even though controllability did not show any significant influence on predicting the individual's intention to share, qualitative analysis emphasized the importance of online resources and tools to enhance the individual's participations. The lack of Web 2.0 tools, for example, was brought out as an impediment for better knowledge sharing. Thus, online communities could consider including Web 2.0 tools such as audio, video, wikis, podcasting, blogging, RSS, IM, to assist in creating a better knowledge-based community.

As for practitioners, although there is no guaranteed recipe for a successful and sustainable community, an online community's developers can influence the way it develops by carefully acknowledging knowledge as a competitive source and clearly communicating the significant value of members' contribution to the knowledge base of the community.

7.5 Research Limitations

Even though generalizability has been taken for granted as a canon and standard for judging the merit of quantitative research, for this specific research the limitation of observations drawn from a single online community is recognized and so cannot show how far these observations can be generalized. However, testing the extended model of knowledge sharing behavior by adopting the TRA and the TpB theories has brought out a significant understanding of the general behavior of this specific community which

endorse the real merit of a theory that lies in its ability to speak specifically for the populations from which it was derived and to be applied back to them (Strauss & Corbin, 1998). It is worth noting that even though the Tapped In online community is a unique community in itself, lessons learned from this research can provide insight for researchers interested in investigating online communities, virtual interactions, and knowledge sharing behavior. Also, general rules of data collection and analysis implemented by this research can be followed and replicated.

The main method of testing the theoretical model raises some issues related to self-report bias validity. Self-report bias is of concern primarily when asking the participants about their past behavior and future intentions. Participants may not be able to accurately bring to mind their past behaviors, or choose not to report it truthfully. The researcher attempted to resolve this issue by applying a second methodology to investigate the same phenomenon. Observation was used to extend the investigation process by including objective measures to evaluate the predictive variables. However, limitations came about when access to some individuals' online knowledge sharing behavior log was withheld due to privacy rules and regulations of the online community under investigation which was overcome by focusing on observing individuals' behaviors in a specific period of time that was done simultaneously while distributing the survey. Observation and content analysis provided considerable explanations for the survey's final results and supported the main results of the quantitative analysis which eventually prevailed over the self-reporting limitations.

Another issue is the lower-than-hoped for response rate for this research which raised a question of how to motivate online communities to participate in these types of

studies. Five hundred and twenty three members were active members in 2010. From the 523 active members, two hundred and two members filled out the survey with a 38.6% response rate. Participants were offered a gift certificate from Amazon.com to encourage them to participate in the Web survey. Other types of incentives could offered to increase the participation rate in online context.

7.6 Future Research

This research investigated knowledge sharing behavior from a social psychological perspective in one specific online community. Beyond the questions raised in this research, several future research directions are promising. Though this research context focused on a knowledge-based online community of educators, other professional online communities seem to be promising contexts to investigate knowledge sharing behavior in and to provide better understanding of the differences in knowledge sharing behavior among online professional communities. In addition, potential motivation factors could arise that are similar or different from the factors found in this study, which would give different perspectives of motivational factors in different contexts.

The theoretical model of knowledge sharing behavior presented and investigated in this research can be extended in several directions. First, knowledge sharing behavior can be divided into subcategories and tested based on the type of knowledge shared. One suggestion is to include different types of knowledge (e.g. tacit and explicit) to determine if there is a significant difference between individuals' behaviors for sharing different types of knowledge and to investigate if there are different types of motivation for each type of knowledge sharing behavior. In addition, each of the motivational factors found in this study could be explored in more depth by adopting different research

methodology, e.g. interviews, to provide more understanding of the implicit and salient beliefs that motivate the formulation of the intention to share.

In this study, there is a general assumption, based on evidential literature, that knowledge sharing behavior has a positive consequence for individuals and communities. This assumption should be extended and tested in such a way to evaluate the different consequences of knowledge sharing behavior. One extension would be to evaluate the participants' performances. For example, in online classes where students are required to participate and share knowledge, the influence of the knowledge exchange with other students on their performance and final grades could be used as a context for evaluating the consequences of knowledge sharing behavior. This suggestion also could be applied to other context.

One example of the knowledge sharing life cycle was presented as a model in this study. It would be interesting to investigate the different models of knowledge sharing life cycles and how each model influences knowledge sharing practices. The idea is that the norms of a group or community are reflected in the life cycle of knowledge sharing, and these norms have definitely had an influence on the motivation to share with others.

Some new out of the ordinary themes that came up in the online discussions are worthy of being reported in this research. One interesting new theme is transliteracy, which is an individual's ability to interact across a range of platforms, tools, and media. Investigating transliteracy and how it could influence the learning experience is an interesting topic for future research. The online sessions have also brought to the attention new Web 2.0 applications that could be used for learning and knowledge exchange. One fascinating example is "glogster," a website that encourages members to

create “glogs” to express themselves, to share their stories, or to merely present ideas. Glogs are simply posters designed through the usage of text, image, music, and video. Glogsters, as described by educators in the Tapped In community, could have tremendous educational and learning possibilities. It would be interesting to study what types of learning experience this Web 2.0 application is being used to support. From a knowledge management perspective, it is interesting to ask what could be the potential usage of these types of Web 2.0 tools for creating, sharing, and using knowledge in online environments.

7.7 Conclusion

The research reported in this paper revealed that knowledge sharing can be studied just like any other individual overt behavior that is motivated by individual as well as social factors. Two theories from Social Psychology, the Theory of Reasoned Action and the Theory of Planned Behavior were adopted and employed to investigate knowledge sharing behavior in an online community. An extended model of knowledge sharing behavior was developed to include the existing predictors of the TRA and the TpB variables as well as to include variables from other fields of study. Descriptive norms and knowledge sharing self-efficacy have been included in the extended theoretical model to improve the predictive power of the motivational factors, providing better understanding of the factors influencing an individual’s intention to knowledge sharing in online communities.

Two different alternative approaches were used to measure and evaluate the extended theory constructs. Survey was the major method for testing the extended theoretical model using correlation analysis, factor analysis and multiple regressions

analysis to analyze the collected data. Observation was conducted as the second supportive method to provide an objective overview of the participants' knowledge sharing behaviors; collected data were analyzed qualitatively through content analysis.

The study found that the influence of normative pressures, including subjective norms and descriptive norms, has a high influence on the formation of the intention to share. Knowledge sharing self-efficacy, on the other hand, was also found to significantly account for explaining the individual's psychological motivation to share his/her knowledge with other member in the online community. Attitude and controllability were not found to have significant impacts on the formation of intention.

By acknowledging social norms as the main motivational factor for the formation of intention, online communities could invest in identifying, recognizing, and motivating the "significant others" and benefit from their strong and influential relationships with others. "Significant others" could work as the connectors that bring "others" to use the online community, to share their expertise and knowledge, and to learn from what is offered by others. The "rich content" is the online community's main resource to maintain competitiveness and to ensure sustainability.

In studying the decision-making process of knowledge sharing, qualitative analysis of individuals' online interactions presented different salient beliefs that had an impact on the individual's decision to engage in online activities and share knowledge. Normative beliefs shed light on the impact of others' expectations and actual behavior on the individuals' intention to behave. This research identified different members of the community who have an important role in motivating other to share. Not only the influence of other was brought into the attention in the content analysis, but also the

individual's confidence of his/her ability to share was emphasized by individuals sharing their knowledge in the online community. Gaining knowledge and skills to share the knowledge improves the individual's level of confidence and inspire him/her to contribute more. Finally, the observation identified beliefs that influence the individual's formulation of their attitude toward the behavior. Major tangible and intangible expected returns that motivate individuals to share were identified. As expected, participants coming from the education field are significantly motivated to engage in this online community to share, seek, and create information, knowledge and resources. Learning, enjoyment and working for the benefit of professional development were intangible returns for the decisions made. Different types of knowledge were shared including know-what, know-how, know-why, and know-who.

Overall, investigating knowledge sharing in online communities from a social psychological perspective has opened up new windows for investigating this phenomenon. This research added to the knowledge management field a motivation study that investigated the factors embedding the knowledge sharing decision-making process, an addition to the knowledge management field with a social psychological touch.

APPENDICES

Appendix A: Informed Consent Form

You are invited to participate in a study conducted by Bibi Alajmi, a Ph.D. candidate in the Rutgers University, School of Communication & Information (SC&I). The study aims to determine the intention of individuals to share knowledge and expertise in online communities. We also aim to identify motivational factors that might influence individuals' intentions to share.

The research is seeking approximately 200-250 subjects between the ages of 20 and 80 to participate in the study. If you chose to be a respondent, you will be asked to fill out a short online survey about your intentions to share your knowledge with others, and you will be requested to be observed through your online contribution during a specific period. Answering the survey should take approximately 15 minutes. While we believe we have written the questions in a manner that should spare you discomfort, please know that you may refrain from answering any questions that make you uncomfortable.

All information obtained through the survey will remain confidential. Confidentiality means no information will be revealed or reported about you that could identify you in the final document and access to the data will be limited to the principal investigator and the research team. Your name will not appear in the final research. A pseudonym will be used for any quotes included and other potentially identifying factors, such as the name of your organization or department, will be changed in the final report. If you are interested, you may receive a copy of the research findings. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you.

There are no apparent risks involved in this research process. In fact, the benefits to subjects outweigh the risks. And because motivating and enhancing knowledge sharing practices is the heart of this research, we will be happy to present the results of this study to your online community to assist in improving members' level of participations and online contributions.

If you choose to participate, please click on the URL below and complete the survey within a week of receiving the URL. Follow-up emails will be sent to remind you of your agreement to participate in the survey. Once we collect the data, we will save it in an Excel format and transfer it to SPSS for further analysis.

If you participate, your name will not appear in any part of the study. In the final report, pseudonyms will be used for all potentially identifying factors such as the names of your online community. No proprietary information will be collected during this study, and there are no apparent risks involved in the research process.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. All study data will be kept for three years.

By clicking the agree icon you acknowledge that your participation is voluntary and that you grant us your permission to use the result of the survey for analysis.

Thank you for your interest and participation in this research project. As stated previously a copy of the research results will be available to your online community. If you have any questions or concerns, feel free to contact us at the Department of Library and Information Science, SC&I.

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Tel: 732-932-0150 ext. 2104
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By clicking on the following <url> you agree to participate in this research as described in this form

Agree to participate (Please click and begin survey) Disagree (please click and end your session)

Appendix B: Recruitment Flyer

Dear Ms/Mr.,

You are invited to participate in a study conducted by Bibi Alajmi, a Ph.D. candidate in the Rutgers University, School of Communication & Information (SC&I). The study aims to determine the intention of individuals to share knowledge and expertise in online communities. We also aim to identify motivational factors that might influence individuals' intentions to share.

All information obtained through the survey will remain confidential. Confidentiality means that information recorded about you will not identify you and only group results will be stated in the final research. You are not expected to share any information that would make you feel uncomfortable. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you.

There are no apparent risks involved in this research process; in fact, the benefits to subjects outweigh the risks. If you agree to participate, you will be asked to fill out a short online survey about your intention toward knowledge sharing. Approximately 250 subjects between the ages of 20 and 80 years old will participate in the study, and each individual's participation will last approximately 15 minutes. All information obtained through the survey will remain confidential.

If you agree to participate in this research, please click on the following URL. The first page of the survey is the informed consent form, please read it carefully. Once you agree to participate please click on the agree button and start your survey. If you decided not to participate please click on disagree and this will end your session. The consent form will document your consent to participate in this survey. Contact information is available in this consent form for your future reference and inquiries.

The following email will be sent through the online community development team. Thus, the researchers have no control on who will receive the survey email. If you don't wish to participate please just ignore the email. Email title will indicate "knowledge sharing behavior—survey participation".

We really appreciate your participation and apologize for any inconvenience.

Sincerely

Principal Investigator: Bibi Alajmi, Ph.D. Candidate
School of Communication and Information SC&I
Rutgers, The State University of New Jersey
4 Huntington Street
New Brunswick, NJ, 08901
Phone: 732-777-7342
Email: bmalajmi@eden.rutgers.edu

If you agree to participate please click on the following <url>.

Appendix C: Newsletter Article

“On the Tapis”

Invitation to participate in a survey on “Knowledge Sharing Behavior in Online Communities”

Although the explosive diffusion of the information technology has caused the proliferation of the online communities, the continuity of these online communities was not guaranteed neither predicted. Since the 1990s, the rise of some online communities as well as the decline of others has caught the attention of the academic researchers to this new context as a promising research enterprise worthy of continuous investigation and theorizing.

You are invited to participate in a study conducted by Bibi Alajmi, a Ph.D. candidate in the Rutgers University, School of Communication, Information (SC&I). The study aims to determine the intention of individuals to share knowledge and expertise in online communities. The significance of this proposed research emerges from the fact that knowledge sharing is the main composite of any online communities, and that without the rich content (i.e. shared knowledge) online communities are of limited value.

Online communities have recognized the increasing value of *knowledge* as a source of competitiveness, growth, and continuity, and have acknowledged, and appreciated the *knowledge sharing processes* required for maintaining the continuity. Consequently, the participation of individuals is the most important factor for fostering a knowledge-based virtual community in which the number of knowledge providers determines whether the community will grow or collapse.

The research is seeking approximately 200-250 subjects between the ages of 20 and 80 to participate in the study. Five After School Online sessions will be scheduled to introduce Tapped In members to the research topic. If you chose to attend, you will be asked to fill out a short online survey about your intentions to share your knowledge with other members in the Tapped In, and you will be requested to be observed through your online contributions during a specific period. Please be advised that participating in this research is voluntary. No proprietary information will be collected during this study, and no apparent risks involved in the research process. As an appreciation, participants will be entered into a raffle drawing in which 20 participants will get a 20\$ gift certificates.

For more inquiries, please contact me at:

Bibi Alajmi,

Email: bmajmi@eden.rutgers.edu

Appendix D: Description of Research Questions, Hypotheses, and Survey Items

Research Questions	Hypotheses	Survey Items
RQ What are the major factors influencing an individual's intention to engage in knowledge sharing activities in online communities?	Knowledge sharing Behavior	<ul style="list-style-type: none"> In the past three months, how frequently have you shared your work observations and experiences with other members in the Tapped In community. In the past three months, how frequently have you shared reports and other documents with other members in the Tapped In. In the past three months, how frequently have you shared tricks and tips on a specific work-related issue of interests to your groups within the Tapped In community. In the past three months, how frequently have you engaged in a discussion about a critical issue of interests to you groups within the Tapped In community. In the past three months, how frequently have you downloaded resources posted by peers in the Tapped In community.
	H (1): The stronger the individual's intention to share knowledge, the more likely he/she will be to share his/her knowledge with other individuals.	<ul style="list-style-type: none"> I intend to share knowledge with other online community members. I will try to share knowledge with other online community members. I will always make an effort to share knowledge with other online community members.
	H (2): The more favorable an individual's attitude toward knowledge sharing practices, the stronger his/her intention to share knowledge.	<ul style="list-style-type: none"> If I share my knowledge with other community members, I feel disadvantaged. If I share my knowledge with other community members, I feel pleased. If I share my knowledge with other community members, I feel good about myself. If I share my knowledge with other community members, I feel worthless. I enjoy sharing my knowledge with other community members.
	H (3): The stronger the individual's perceived subjective norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.	<ul style="list-style-type: none"> In this specific online community, it is expected of me that I share knowledge with other members. Close friends in this specific online community think I should share knowledge with others. Most online community members who are important to me think I should share my knowledge with other members.
	H (4): The stronger the individual's perceived descriptive norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.	<ul style="list-style-type: none"> Most of my group members within Tapped In share their knowledge with other members. How many of your group members, do you imagine, would share their knowledge with other members in Tapped In?
	H (5): The greater the individual's perceived knowledge sharing self-efficacy, the stronger his/her intention to share knowledge.	<ul style="list-style-type: none"> How confident are you in sharing your work observations and experiences with other group members in the Tapped In community. How confident are you in providing reports and other knowledge resources to other group members in the Tapped In community. How confident are you in giving some tips and tricks on specific work-related issues to your group members in the Tapped In community. How confident are you in authoring an article or posting a message to the community discussion forum.
	H(6) The greater the individual's level of control over his knowledge sharing capabilities, the stronger his/her intention to share knowledge with others.	<ul style="list-style-type: none"> I believe that I have full control of my decision to share knowledge. It is mostly up to me to whether or not I share my knowledge

Appendix E: Profile of Active Groups Participating in the Study

Group ID	Purpose of Creation of Groups	Date Created	Subscribed Members	Frequency of Meetings
1. LFL	Using lyrics to engage students in classroom activities.	2006	48	Once a month
2. CYB	Sharing information of interest to librarians.	2006	107	Once a month
3. WEB2.0	Introducing Web 2.0 online tools for using in schools.	2006	126	Once a month
4. OTL	Sharing strategies for integrating technology into teaching.	2005	66	Once a month
5. K3Rs	Sharing resources to enhance teaching.	2003	217	Twice a month
6. WHA	Learning language through online participation.	2003	157	Every Sunday
7. CRA	Exploring the relationship among assessment, learning, and teaching.	2006	36	Once a month
8. SEF	Sharing resources and best practices for special education.	2005	120	Once a month

Appendix F: A Comparison of Population Characteristics and Research Sample

Demographic Variables	Variables Categories	TI Members (N=9677)	TI Members %	Web-Survey Sample* (N=158)	Web-Survey Sample %
Gender	Male	NA	27.41%	39	25.2%
	Female	NA	72.58%	116	74.8%
Country	USA	NA	84.78%	114	82.0%
	Others	NA	15.19	25	18%
Occupation	School teacher (k-12)	NA	39.47%	63	42.3%
	University faculty	NA	7.94 %	29	19.5%
	University student	NA	NA	5	3.4%
	Graduate student (MS/Ph.D.)	NA	7.52%	12	8.1%
	Librarian/Media specialist	NA	2.29%	17	11.4%
	Professional development staff	NA	2.09%	16	10.7%
	Others	NA	39.4%	7	4.7%
Discipline	Education	NA	36.43	91	61.1%
	Science	NA	10.12	17	11.4%
	Language	NA	18.46	17	11.4%
	Social studies	NA	3.98	4	2.7%
	Library media	NA	3.85	15	10.1%
	Administration	NA	2.36	2	1.3%
	Arts	NA	2.08	3	2.1%
	Others	NA	22.63		

* Results in this table do not represent the completely participated subjects, since some of the participants did not fill the demographic questions.

Appendix G: A Profile of Survey Participants

Measure	Item	Frequency =N*	Percent (%)
Gender (N 155)	Male	39	25.2%
	Female	116	74.8%
Age (N 155)	Under 25 yrs old	8	5.2%
	26-35 yrs old	30	19.4%
	36-45 yrs old	25	16.1%
	46-55 yrs old	47	30.3%
	56-65 yrs old	42	27.1%
	Over 66 yrs old	3	1.9%
Occupation (N 149)	School teacher (k-12)	63	42.3%
	University faculty	29	19.5%
	University student	5	3.4%
	Graduate student (MS/Ph.D.)	12	8.1%
	Librarian/Media specialist	17	11.4%
	Professional development staff	16	10.7%
	Others	7	4.7%
Discipline (N 149)	Education	91	61.1%
	Science	17	11.4%
	Language	17	11.4%
	Social studies	4	2.7%
	Library media	15	10.1%
	Administration	2	1.3%
	Arts	3	2.1%
Education Level (N 155)	High school or below	1	.6%
	College/university	34	21.9%
	Master level/equivalent	97	62.6%
	Ph.D. level	23	14.8%
Nationality (N 139)	US	114	82.0%
	Asian	6	4.3%
	European	5	3.6%
	South American	8	5.8%
	North American	3	2.2%
	New Zealander	1	.7%
	Middle Eastern	2	1.4%

* Results in this table do not represent the completely participated subjects, since some of the participants did not fill the demographic questions.

Appendix H: Web-Survey Codebook

The research is seeking to investigate individual knowledge sharing behaviors in online communities. In this context, we would like you to recall and discuss your experience concerning your knowledge sharing behavior in this specific online community (TI).

Knowledge sharing involves two actions: transmission (sending or presenting knowledge to a potential recipient) and absorption by that person or group. Knowledge sharing could include posting messages/comments, engaging in a dialogue, sending emails or feedback to the community members, downloading resources posted by peers, participating in a discussion, and responding to question requests by others.

Knowledge includes **know-what** (factual knowledge —e.g. what tools best for a specific type of courses/teaching), **know-how** (skills and procedures— e.g. how to use these tools), and **know-why** (understanding cause and effect of relationships —e.g. understanding the impact of a certain teaching tool on teaching level, students' performances...etc).

For coding purposes: GBHV=general behavior; KSB=knowledge sharing behavior; INT=intention; ATT=attitude; SbN=subjective norms; DsN=descriptive norms; KSSE=knowledge sharing self- efficacy; CON=controllability.

Q1- GBHV1

How long have you been a member in TI?

1. 1- 6months
2. 2. 7-11 months
3. 3. 1-3yrs
4. 4. 4-6 yrs
5. 5. 7-10 yrs
6. 6. over 10 yrs

Q1-GBHV2

What is the main reason for joining TI community? (Check the most important)

- 1 To post questions, collect information, and seek advice from other TI members.
- 2 To share experiences, provide advices, and answers for others.
- 3 To learn new skills, adopt new approaches offered by the community members.
- 4 To develop social networks, to obtain emotional support, and enhance feeling of belonging.
- 5 Others, please specify_____

OthersR

=Class Requirement=5

Curiosity=6

Research=7

Teaching a class=8

All of the above=9

Q1- GBHV3

How many groups are you a member of within TI ?

- 1 None
 - 2 one group
 - 3 2-5 groups
 - 4 6-10 groups
 - 5 more than 10 groups
-

Q2-KSB

Please indicate how frequently have you shared knowledge with other members in the TI community in the past three months. **For the questions below, please use the following scale. 1=Not at all, 2=very rarely, 3=rarely, 4=occasionally, 5=frequently, 6=very frequently.**

(Not at all=zero, very rarely= one time throughout the past 3 months, rarely= 2-3 times, occasionally= 4-6 times, frequently= 7-10 times, very frequently= more than 10 times)

KSB1 – In the past three months, how frequently have you shared your work observations and experiences with other members in the TI community?

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

KSB2-- In the past three months, how frequently have you shared reports and other documents with other members in the TI community?

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

KSB3-- In the past three months, how frequently have you shared tricks and tips on a specific work-related issue of interests to your groups within the TI community?

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

KSB4-- In the past three months, how frequently have you engaged in a discussion about a critical issue of interests to your groups within the TI community?

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

KSB5-- In the past three months, how frequently have you downloaded resources posted by peers in the TI community?

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
-

Q3-INT

Please indicate the extent to which you agree with each of the following statements, using the following **scale: 1=Strongly Disagree, 2=Disagree, 3=Disagree Somewhat, 4=Undecided, 5=Agree Somewhat, 6=Agree, 7=Strongly Agree.**

INT1--I intend to share my knowledge with other members in the TI community.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

INT2--I will try to share knowledge with other members in the TI community.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

INT3--I will always make an effort to share knowledge with members in the TI community.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

Q4-ATT

Please indicate the extent to which you agree with each of the following statements, using the following **scale: 1=Strongly Disagree, 2=Disagree, 3=Disagree Somewhat, 4=Undecided, 5=Agree Somewhat, 6=Agree, 7=Strongly Agree**

ATT1-- If I share my knowledge with other TI members, I feel good about myself.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

ATT2R--If I share my knowledge with other TI members, I feel disadvantaged.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

Reverse Coded

ATT3--If I share my knowledge with other TI members, I feel pleased.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

ATT4R--If I share my knowledge with other TI members, I feel worthless.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

Reverse Coded

ATT5— If I share my knowledge with other TI members, I learn new knowledge and skills.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

ATT6--I enjoy sharing my knowledge with other TI members.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

Q5-SbN

Please indicate the extent to which you agree with each of the following statements, using the following scale: 1=Strongly Disagree, 2=Disagree, 3=Disagree Somewhat, 4=Undecided, 5=Agree Somewhat, 6=Agree, 7=Strongly Agree.

SbN1--In TI, it is expected of me that I share knowledge with other members.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

SbN2--Close friends/colleagues in TI think I should share my knowledge with others.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

SbN3--Most TI members who are important to me think I should share my knowledge with other members.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

Q6-DsN

Please indicate the extent to which you agree with each of the following statements, using the following scale: 1=Strongly Disagree, 2=Disagree, 3=Disagree Somewhat, 4=Undecided, 5=Agree Somewhat, 6=Agree, 7=Strongly Agree.

DsN1--Most of my group members within TI share their knowledge with other members.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
☐ 7

DSN2— How many of your group members, do you imagine, would share their knowledge with other members in TI?

☐ None ☐ Few ☐ Some of them ☐ Many of them ☐ All of them

Q7-KSSE

Please indicate the extent to which you agree with each of the following statements*, using the following scale: **1=not at all confident, 2=not confident, 3=somewhat not confident, 4=Undecided, 5=moderately confident, 6=confident, 7=totally confident.**

KSSE1--How confident are you in sharing your work observations and experiences with other group members in the TI community.

Not at all confident				Moderately confident			Totally confident
1	2	3	4	5	6	7	

KSSE2--How confident are you in providing reports and other knowledge resources to other group members in the TI community.

Not at all confident				Moderately confident			Totally confident
1	2	3	4	5	6	7	

KSSE3--How confident are you in giving some tips and tricks on specific work-related issues to your group members in the TI community.

Not at all confident				Moderately confident			Totally confident
1	2	3	4	5	6	7	

KSSE4--How confident are you in authoring an article or posting a message to the community discussion forum.

Not at all confident				Moderately confident			Totally confident
1	2	3	4	5	6	7	

Q8-CON

CON1-- It is mostly up to me whether or not I share my knowledge.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
<input type="checkbox"/> 7					

CON2--I believe that I have much control about sharing my knowledge with others.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
<input type="checkbox"/> 7					

Q8-

Please give your answer to the following questions.

1. How would you describe your knowledge exchange experience in TI? What can you tell us about the advantages and disadvantages of engaging in an online knowledge-based community?

2. Do you have any other comments?

Demographic Information

Please answer the demographic questions by checking your answer.

Q9**Age**

- 1 Under 25 yrs old
- 2 26-35 yrs old
- 3 36-45 yrs old
- 4 46-55 yrs old
- 5 56-65 yrs old
- 6 Over 66 yrs old

Q10**Gender**

- 1 Male
- 2 Female

Q11**Education level**

- 1 High school or below
- 2 College/university
- 3 Master level/equivalent
- 4 Ph.D. level

Q12**Occupation**

- 1 School teacher
- 2 University Faculty
- 3 School student
- 4 University student
- 5 Graduate student (MS/Ph.D.)
- 6 Librarian/Media specialist
- 7 Professional development staff
- 8 Other (please specify _____) Recoded to fit it to other previous items EXCEPT for irrelevant occupation

Q13**Discipline**

- 1 Education
- 2 Science
- 3 Language
- 4 Social studies
- 5 Library media
- 6 Administration
- 7 Arts (Recoded Others)

Q14

Nationality _____

1=American

2=Asian

3=European

4=South American

5=Canadian

6=New Zealander

7=Middle Eastern

8=Tajik

Q15

Job Title _____

By completing the survey, you are eligible for entering a raffle drawing; you must choose to be included in a raffle by providing your email _____

1 Agree to participate

0 Disagree

The researcher is attempting to observe online interactions within the TI community to seek in-depth understandings of members' knowledge sharing behaviors. If you would be willing to participate, please provides us with your name and then click on the "agree-to-participate" link.

Your Name _____

Agree to Participate <link>

1 Agree to participate

0 Disagree

Thank you for your participation

Appendix I: Survey Tables

Table I.1. Statistical Results for Knowledge Sharing Behavior including Factors Analysis Results, Correlation Matrix, Reliability, Mean, and Std Deviation

Knowledge Sharing Behavior Index

In the past three months, how frequently have you:

Factor 1

Shared your work observations and experiences with other members in the TI community?	.929
Shared reports and other documents with other members in the TI community?	.840
Shared tricks and tips on a specific work-related issue of interests to your groups within the TI community?	.896
Engaged in a discussion about a critical issue of interests to your groups within the TI community?	.925
Downloaded resources posted by peers in the TI community?	.629

Principal component analysis, with Eigen values set at 1. Factors entries are loading without rotation. One factor solution explained 72% of the variance.

N=148

Correlation Matrix

(N=148)

	1	2	3	4	5
Shared your work observations and experiences with other members in the TI community?	-				
Shared reports and other documents with other members in the TI community?	.722	-			
Shared tricks and tips on a specific work-related issue of interests to your groups within the TI community?	.803	.696	-		
Engaged in a discussion about a critical issue of interests to your groups within the TI community?	.868	.723	.782	-	
Downloaded resources posted by peers in the TI community?	.490	.378	.467	.496	-

Cronbach's alpha = .9

Scale Mean = 2.3

Standard Deviation = 1.35

Table I.2. Statistical Results for Intention including Factors Analysis Results, Correlation Matrix, Reliability, Mean, and Std Deviation

Intention Index

	Factor 1
I intend to share my knowledge with other members in the TI community.	.911
I will try to share knowledge with other members in the TI community.	.958
I will always make an effort to share knowledge with members in the TI community.	.937
Principal component analysis, with Eigen values set at 1. Factors entries are loading without rotation. One factor solution explained 87% of the variance. N=157	

Correlation Matrix

(N=157)

	1	2	3
I intend to share my knowledge with other members in the TI community.	-		
I will try to share knowledge with other members in the TI community.	.811	-	
I will always make an effort to share knowledge with members in the TI community.	.753	.876	-
Cronbach's alpha = .93	Scale Mean = 5.05	Standard Deviation = 1.67	

Table I.3. Statistical Results for Attitude including Factors Analysis Results, Correlation Matrix, Reliability, Mean, and Std Deviation

<u>Attitude Index</u>	Factor 1
If I share my knowledge with other TI members, I feel good about myself.	.872
If I share my knowledge with other TI members, I feel disadvantaged.	.704
If I share my knowledge with other TI members, I feel pleased.	.899
If I share my knowledge with other TI members, I feel worthless.	.680
If I share my knowledge with other TI members, I learn new knowledge and skills.	.775
I enjoy sharing my knowledge with other TI members.	.879

Principal component analysis, with Eigen values set at 1. Factors entries are loading without rotation. One factor solution explained 65% of the variance.
N=156

Correlation Matrix

(N=156)

	1	2	3	4	5	6
If I share my knowledge with other TI members, I feel good about myself.	-					
If I share my knowledge with other TI members, I feel disadvantaged.	.458	-				
If I share my knowledge with other TI members, I feel pleased.	.905	.491	-			
If I share my knowledge with other TI members, I feel worthless.	.455	.627	.474	-		
If I share my knowledge with other TI members, I learn new knowledge and skills.	.570	.470	.605	.374	-	
I enjoy sharing my knowledge with other TI members.	.736	.475	.780	.476	.714	-

Cronbach's alpha = .89

Scale Mean = 5.9

Standard Deviation = 1.02

Table I.4. Statistical Results for Subjective Norms including Factors Analysis Results, Correlation Matrix, Reliability, Mean, and Std Deviation

Subjective Norms Index

	Factor 1
In TI, it is expected of me that I share knowledge with other members.	.784
Close friends/colleagues in TI think I should share my knowledge with others.	.924
Most TI members who are important to me think I should share my knowledge with other members.	.909
Principal component analysis, with Eigen values set at 1. Factors entries are loading without rotation. One factor solution explained 76% of the variance. N=157	

Correlation Matrix

(N=157)

	1	2	3
In TI, it is expected of me that I share knowledge with other members.	-		
Close friends/colleagues in TI think I should share my knowledge with others.	.574	-	
Most TI members who are important to me think I should share my knowledge with other members.	.534	.820	-
Cronbach's alpha = .84 Scale Mean = 4.6 Standard Deviation = 1.44			

Table I.5. Statistical Results for Descriptive Norms including Factors Analysis Results, Correlation Matrix, Reliability, Mean, and Std Deviation

Descriptive Norms Index

	Factor 1
Most of my group members within TI share their knowledge with other members	.895
How many of your group members, do you imagine, would share their knowledge with other members in TI	.895
Principal component analysis, with Eigen values set at 1. Factors entries are loading without rotation. One factor solution explained 76% of the variance. N=158	

Correlation Matrix

(N=158)

	1	2
Most of my group members within TI share their knowledge with other members	-	
How many of your group members, do you imagine, would share their knowledge with other members in TI	.601	-
Cronbach's alpha = .75	Scale Mean = 4.4	Standard Deviation = 1.1

Table I.6. Statistical Results for Knowledge Sharing Self-Efficacy including Factors Analysis Results, Correlation Matrix, Reliability, Mean, and Std Deviation

Knowledge Sharing Self-Efficacy Index

	Factor 1
How confident are you in sharing your work observations and experiences with other group members in the TI community?	.943
How confident are you in providing reports and other knowledge resources to other group members in the TI community?	.953
How confident are you in giving some tips and tricks on specific work-related issues to your group members in the TI community?	.936
How confident are you in authoring an article or posting a message to the community discussion forum?	.882

Principal component analysis, with Eigen values set at 1. Factors entries are loading without rotation. One factor solution explained 72% of the variance.
N=153

Correlation Matrix

(N=153)

	1	2	3	4
How confident are you in sharing your work observations and experiences with other group members in the TI community?	-			
How confident are you in providing reports and other knowledge resources to other group members in the TI community?	.871	-		
How confident are you in giving some tips and tricks on specific work-related issues to your group members in the TI community?	.866	.872	-	
How confident are you in authoring an article or posting a message to the community discussion forum?	.763	.793	.735	-

Cronbach's alpha = .94

Scale Mean = 5.39

Standard Deviation = 1.39

Table I.7. Statistical Results for Controllability including Factors Analysis Results, Correlation Matrix, Reliability, Mean, and Std Deviation

Controllability Index

	Factor 1
It is mostly up to me whether or not I share my knowledge.	.943
I believe that I have much control about sharing my knowledge with others.	.953
Principal component analysis, with Eigen values set at 1. Factors entries are loading without rotation. One factor solution explained 72% of the variance. N=158	

Correlation Matrix

(N=158)

	1	2
It is mostly up to me whether or not I share my knowledge.	-	
I believe that I have much control about sharing my knowledge with others.	.727	-

Cronbach's alpha = .84

Scale Mean = 6.36

Standard Deviation = .905

**Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Table I.9. Knowledge Sharing Behavior Regression Model*

Stage/Step	Variable	Standardized Beta*	R2	<i>Sig</i>	<i>df</i>	F
<u>Stage (1): Predicting Knowledge Sharing Behavior</u>						
Step (1)	Intention	.613	.376	.000	2	87.257
<u>Stage (2): Predicting The Intention To Share</u>						
Step (1)	Subjective Norms	.594	.353	.000	1	80.044
Step (2)	Attitude Subjective Norms	.310 .457	.430	.000 .000	2	54.999
Step (3)	Attitude Subjective Norms Descriptive Norms	.152 .411 .275	.474	.062 .000 .001	3	43.598
Step (4)	Attitude Subjective Norms Descriptive Norms Knowledge Sharing Self-Efficacy Controllability	.045 .338 .261 .267 .035	.524	.580 .000 .001 .000 .561	5	31.460

* Standardized regression coefficients are reported since variable scale ranges differed

Table I.10. Summary Results for the Open-Ended Question Regarding the Advantages of Knowledge Sharing Experience while Engaging in the Online Community

	Frequency (154)	% of total comments	Sample Quote
Information & Knowledge Sharing	72	45.6	<p>“Sharing my point of view and seeing the feedback of others allows me a variety of perspectives to utilize as I continue to learn and grow in my profession.”</p> <p>“I often provide how-to guides or project examples which contain screen-shots (using SnagIt) of each step of the project.”</p>
Learning	59	37.3	<p>“The advantage is that something new is learned with every login experience!”</p> <p>“I have exchanged many ideas and I have learned a lot about online communities and technology.”</p>
Networking	59	37.3	<p>“Being able to network with a large and diverse population has been very stimulating and fulfilling for me both professionally and personally.”</p> <p>“As a resource for myself TappedIn has provided me with contacts throughout the learning community who have helped me maintain a professional network.”</p>
Convenience	37	23.4	<p>“Another is that it is a relaxed and friendly environment in which even a new comer feels comfortable in sharing ideas and opinions. “</p> <p>“The ease of engagement online is a big plus for me.”</p>
Seeking Information	36	22.8	<p>“I also consider it as a place full of reasonable answers to my questions as I can get replies from members there.”</p> <p>“The advantages are the availability of world class professionals to answer questions and give advice.”</p>
Support	30	19.0	<p>“It's been the source of enriched content knowledge and professional</p>

			support.” “It is helpful and I find it comforting (for lack of a better word) to communicate with others who can give me advice and share their own experiences in helping me cope with finding a teaching job under these bad economic times.”
Enjoyment	25	15.8	“I have enjoyed being part of communities of practice on Tapped in.” “I enjoy having many people to share with and collect information from.”
Seeking Resources	20	12.7	“As a teacher myself I've found the online sessions have given me access to resources that I could never have had in other circumstances.” “TappedIn has allowed me to discover new Web 2.0 tools that I can use in my classroom.”
Seeking Different Perspectives	18	11.4	“Sharing my point of view and seeing the feedback of others allows me a variety of perspectives to utilize as I continue to learn and grow in my profession.”
Class Requirement	12	7.6	“Positive for school, have not really taken advantage of it beyond classes yet.” “Was required to join TappedIn as part of a course.”

Table I.11. Summary Results for the Open-Ended Question Regarding the Disadvantages of Knowledge Sharing Experience while Engaging in the Online Community

	Frequency (154)	Percentage %	Sample Quote
Technical issues	34	21.5	“The only disadvantages are that the community is text based and not very graphically pleasing.” “Most of the difficulty communicating within TappedIn centers around the limitations of written language.”
Lack of time	25	15.8	“The challenge is finding time to participate more.”
Lack of encouragement	15	9.5	“The groups I'm in don't seem to post much, so I don't either. If the groups were more active, I would participate more.”
Reciprocity	9	5.7	“I find that most of my communication is one-sided, except for a few people who tend to be the administrators. I seem to know much more and share much more, which has led to a decline in my involvement at this point.”
Lack of skills	5	3.2	“It takes effort to organize my knowledge and experience.” “I have the knowledge to share- I just needed to build skills in terms of using the technology in TI.”
Lack of common ground	4	2.5	“The disadvantage could be not knowing who you are really exchanging information with.”
Validating of knowledge	2	1.3	“The only disadvantage I am aware of is having to independently validate the facts of the issues discussed.”
Insecurity	3	1.9	“There is an element of exposing one's weaknesses.”
I see no advantage	6	3.8	

Appendix J: Content Analysis Tables

Table J.1. Results of Content Analysis: Sample Codes and Quotations

Codes	Sample Quotations
<i>Tangible Returns</i>	
Classroom assignment/requirement	<p>“I’m a sophomore in college for elementary ed. This is a requirement for class.”</p> <p>“Thanks for experiencing this. Enjoy the 3 extra points for class.”</p>
Searching for new ideas	“I am currently a student teacher and am looking for any ideas that can help me become the best teacher possible. Today I am mainly here to observe how this works and get some new ideas.”
Seeking examples	<p>“ I’d be especially interested in examples of school libraries connecting.”</p> <p>“ Let me show you an example or two of public libraries that have ebook download/checkouts ... http://califa.lib.overdrive.com/4EE6DFEF-BD47-48E4-918C-416106594156/10/350/en/Default.htm .“</p>
Seeking resources	“ As Technology/Instructional facilitator in our parish, I look for neat sites in which to share with fellow teachers to help them integrate technology in our Pre-K to 12th grade settings.”
Looking for solutions to a problem	“I installed Skype and I used it with a private student yesterday, no problem until I tried plugging the headset in and then I lost the sound? How can that be?”
Asking for tips & advice	<p>“May I ask for some advice? I am going to buy an iPod for my daughter... Do you recommend getting the \$99 AppleCare--is that worth it? I usually don't buy extended warranties?”</p> <p>“Do you know if those inexpensive laptops made for international use can access ebooks? The ones that are intended for Internet access - can't remember the name they were promoted under right now.”</p>
<i>Intangible Returns</i>	
Professional development	<p>“I am the Founder and President of [REDACTED] in [REDACTED] VA. I am interested in training my staff on how to use more Tech when working with our students.”</p>

Enjoyment	“I have enjoyed everyone’s comments and suggestions...thxs.”
Learning new things	“I think technology has great potential for individualizing education for students; that's why I want to learn more about online learning options.” “With the cut in budgets some schools are doing away with books and want to reduce paper...I would like to learn more about online teaching to deal with these cuts.”

Table J.2. Knowledge Types, Definitions, and Sample Quotations

Codes	Definition	Sample Quotations
Know-what	Facts and information individuals have regarding a specific problem or issue.	<p>“Do any of you recognize the concepts of single loop and double loop learning?”</p> <p>“Good example of what not to do in Professional Development . . .do not design for one thing and then do another. Never give choices unless one is willing to “live” with them in the classroom as well as online.”</p>
Know-how	The practical skill-based knowledge of how to accomplish a task, how to apply a procedure, or/and how to use a resource or tool.	<p>“How do we analyze and design so that we can reach the learners though “intrinsic” (motivation) means?”</p> <p>“If I were to use ADDIE to design a course, or a class within a course, I would start by “thinking” (that's the analysis part) of where I want to go, and where the learners are now. The first part is always ‘inquiry,’ asking yourself lots of questions . . .and when you do not have the answer . . .go find out . . .like join TI and ask . . .ask other teachers . . .OHHHH AND ask the students/learners:-)”</p>
Know-why	Cause-and-effect relationships and the hypothetical explanations behind any problems or issues.	<p>“This week of our group discussion I thought we might explore the question “Why do we assess in classrooms?”</p>
Know-who	An interpersonal network and information about who knows what in a specific area.	<p>“Recently read Gladwell's Outliers and he had some interesting information about why some cultures excel in certain disciplines.”</p> <p>“SO, the two associations that have the most developed Sister Library initiatives are ALA (the International Relations Round Table) and IFLA's Children and Young Adult Section. I'll show you both, OK?”</p>

Table J.3. Examples of Online Resources Shared During Group Online Sessions

Types of Resources	Resources	Description
Quiz-Types Resources	www.thatquiz.org	Free site, works for JK-K-12, covers multiple subjects.
Technology Class Support	http://www.apple.com/education/reachall/learn/ http://www.teachscienceandmath.com http://www.fix8.com	Use of APPLE tech in Classroom. K12 Science/Math and Technology. Interactive communication application
Audio Books for Kids	http://www.ictineducation.org/free-stuff/ http://www.digitalbookmobile.com/	Free ebooks for children
Online Discussion Board	http://www.quicktopic.com/	A private forum just for those invited by instructor or teacher
Search Engine for Students	http://www.sweetsearch.com/ http://www.justspotted.com/	Search engine allows you to simultaneously search Delicious, Digg, Twitter, and Flickr in one place.
Language & Reading Enhancement	http://www.starfall.com/	Free Online site to motivate reading.
Brainstorming tool	http://www.wordle.net/ http://clifmims.com/blog/archives/2626 http://www.tagxedo.com/	A graphic representation of the most frequently used words in a blog. Forty-eight interesting ways to use Wordle in the classroom. Turns words into a visually stunning tag cloud
Learning from Lyrics	http://www.learningfromlyrics.org/ http://snurl.com/musicvideotoo	Use songs to motivate my students and as a way to introduce content
Digital Libraries	http://en.childrenslibrary.org/ http://www.tumblebooks.com/ http://storynory.com/	A library for the world children. An online collection of animated books. A collection of audio books. Collection of FREE audio books for kids
News Updates	http://www.tweentribune.com/ http://www.icurrent.com/about	Daily news sites for teens and tweens A personalized news aggregator
Blogs	http://cuonline.blog-city.com/ http://mirrors.creativecommons.org/getcreative	PK-12 Ed Tech News and Resources A video explanation of copyright and creative commons licensing
Collaborative tools	http://voicethread.com/about/features/ http://www.walkers.co.uk	Group conversations are collected and shared in one place from anywhere in the world
Music resources	http://www.jamendo.com/en/top/listen	Copyright music resources for students to download
Inspirational Resources	http://www.adorasvitak.com/Blog.html	Adora Svitak, a 12-year-old girl's personal blog.
Supporting websites	http://givinggetting.com/content/?id=1	Allows people to give unwanted items and get free stuff
Social Media tools for Education	http://www.c4lpt.co.uk/socialmedia/twitterrl.html	Demonstrates how to use Twitter for Social Learning

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