The Intention to Share: Psychological Investigation of Knowledge Sharing Behavior in Online Communities

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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.

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.

1. Introduction

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

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.

This research 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 main research question:

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

2. Theoretical Background & 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). 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.

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.

Intentions

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.*

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. 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

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. For example, 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. 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.*

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: s*elf-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.

Table 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 *ought* to do.
Descriptive norms	what relevant others themselves *do*.
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.
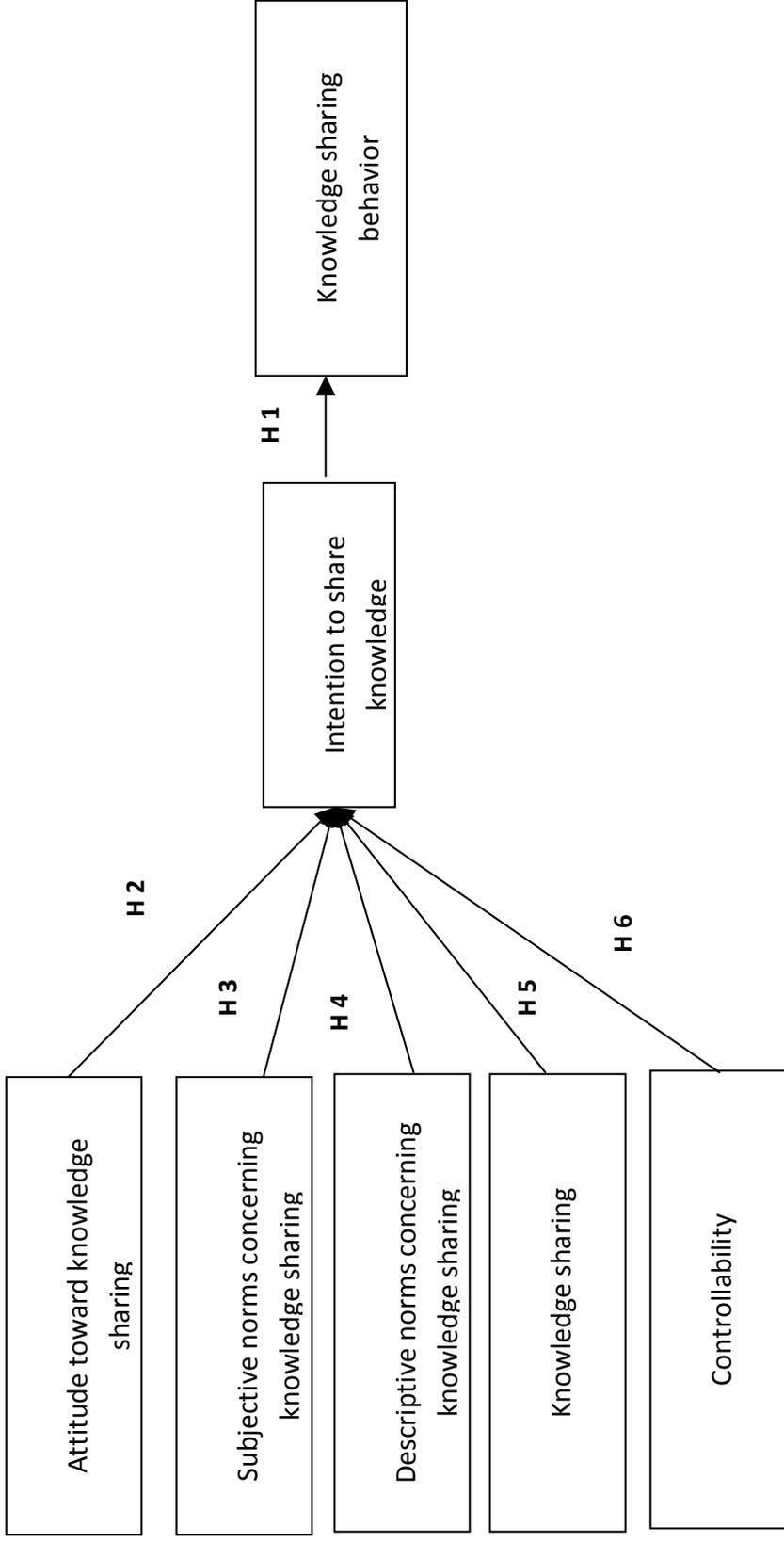
Figure 1. An Extended Theoretical Model Representing Motivational Factors Influencing Knowledge Sharing Behavior in Online Communities

3. Methodology

3.1 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.

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.

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 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.

3.2 Research Procedures

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.

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

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. 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.

3.3 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).

4. Results

4.1 Sample Description

The sampling frame was eight groups (523 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 produces a 38.6% response rate.

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%.

4.2 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 2. for all index reliabilities and summary statistics).

Table 2. 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

To assess the predictive validity of the components of the TRA/TpB model, a multiple regression analysis was performed. Key variables tested were knowledge sharing behavior, intention, attitude, subjective norms, descriptive norms, knowledge sharing self-efficacy, and controllability (independent variables). The multiple regression analysis was done through two main stages. First a regression analysis was conducted to search for the predictive relationships between attitude, subjective norms, descriptive norms, knowledge sharing self-efficacy, and controllability on the individual intention to share knowledge. Second, another regression analysis was done to test the power of intention to predict the individual's knowledge sharing behavior.

4.3 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 2. demonstrates the research participants' length of membership in Tapped In.
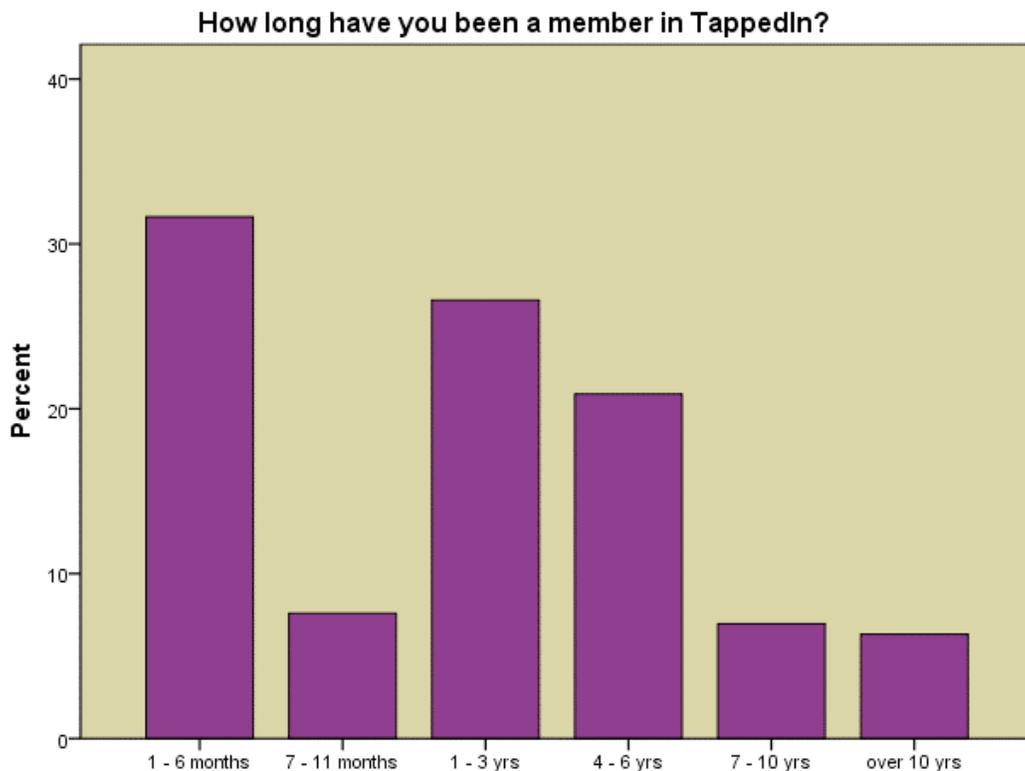

Figure 2. Research Participants' Length of Membership in Tapped In Online Community

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 3. 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).

What is the main reason for joining TI community?

Percent

Categories:
- To post questions, collect information, and seek advice from other TI members
- To share experiences, provide advices, and answers for others.
- To learn new skills, adopt new approaches offered by the community members.
- To develop social networks, to obtain emotional support, and enhance feeling of belonging.
- Class Requirement
- Curiosity
- Research
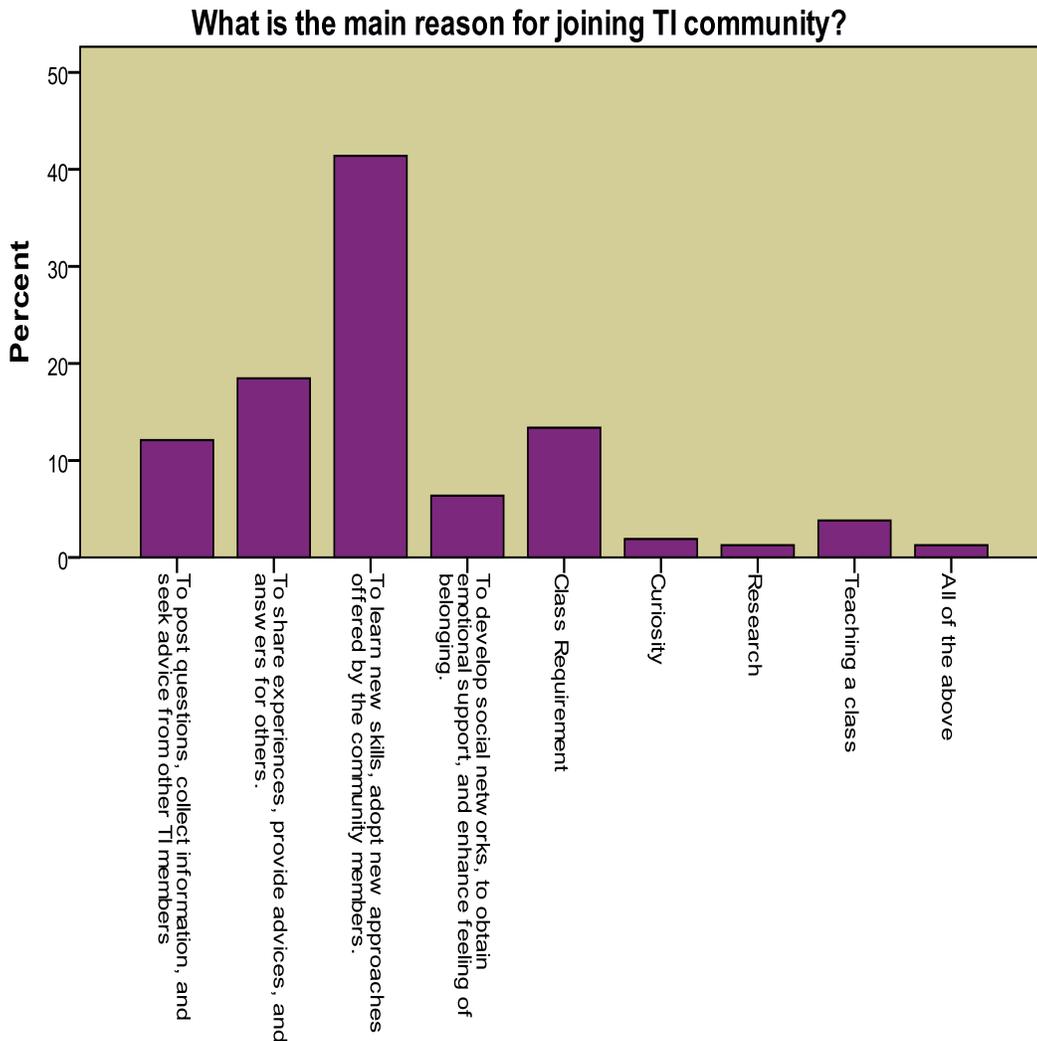- Teaching a class
- All of the above

Figure 3. 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 4. shows the distribution of how many groups participants are members in.
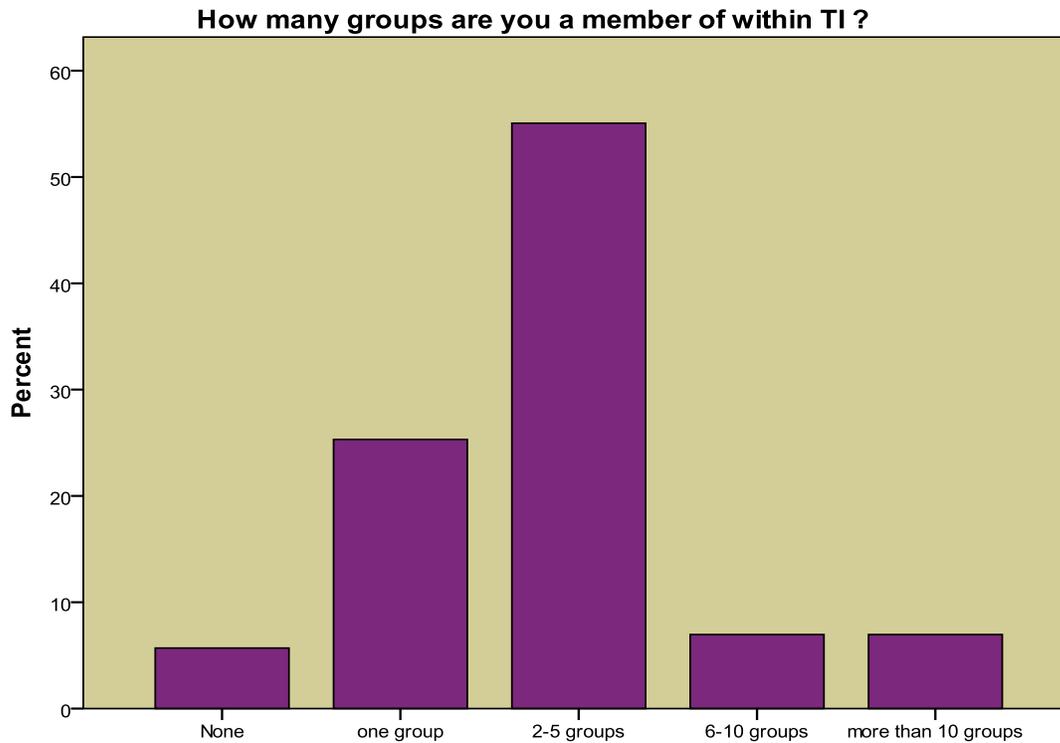
Figure 4. Number of Groups in which Research Participants Are Members

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).

4.4 Correlations & Multiple Regression Analysis

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 3.for correlations and significance levels).

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 (r=.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.

Table 3. Key Model Variables Correlations Including KSB, INT, ATT, SUB, DES, KSSE, CON

	1	2	3	4	5	6	7
Knowledge Sharing Behavior	-						
Intention	.613**	-					
Attitude	.275**	.526**	-				
Subjective Norms	.433**	.561**	.435**	-			
Descriptive Norms	.301**	.514**	.623**	.399**	-		
Knowledge Sharing Self-Efficacy	.378**	.542**	.531**	.481**	.426**	-	
Controllability	.064	.139*	.210**	.052	.125	.238**	-

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

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

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 (r=.310, P<.05). However, when all the independent variables were included in the regression equation, attitude power was not significant (r=.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 (r=.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 (r=.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) (r=.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. For more details, see Table 4. 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. for hypotheses results and research findings).

Table 4. Knowledge Sharing Behavior Regression Model*

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

* Standardized regression coefficients are reported since variable scale ranges differed

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. 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.	*Supported*
Attitude→Intention	The more favorable an individual's attitude toward knowledge sharing practices, the stronger his/her intention to share knowledge.	*Not Supported*
Subjective norms→Intention	The stronger the individual's perceived subjective norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.	*Supported*
Descriptive norms→Intention	The stronger the individual's perceived descriptive norms toward knowledge sharing practices, the stronger his/her intention to share knowledge.	*Supported*
KSSE→Intention	The greater the individual's perceived knowledge sharing self- efficacy, the stronger his/her intention to share knowledge.	*Supported*
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.	*Not Supported*

5. Discussion

This research was conducted to answer the research main question related to understanding knowledge sharing behavior in online communities. The research question was directed toward eliciting answers for the major factors influencing an individual's intention to engage in knowledge sharing activities in online communities. 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.

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.

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.

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.

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.

6. Research 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. 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.

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