

# Not Just Silly Cat Videos: Exploring Student Knowledge Sharing via Social Media

*Completed Research Paper*

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## Abstract

Social media have been widely used to share and exchange information for a variety of reasons. Students can use social media to exchange everything from cat videos to important information including Internet knowledge sources for learning. This study seeks to develop a better understanding of how and why students use social media to share Internet knowledge resources for learning. It builds on the theories of social capital and social cognition to develop a model for examining the influence of different dimensions of social capital (i.e., structural, relational, and cognitive) on students' knowledge sharing via social media. Based on a survey of students at New Jersey Institute of Technology (NJIT), we find that the critical influencers of knowledge sharing are identification and outcome expectations. Results of this research can guide educators seeking to encourage knowledge sharing between learners by identifying the critical issues that motivate and limit such sharing.

## Keywords

Knowledge sharing, social media, social capital, social cognition

## Introduction

Knowledge is perceived as an important asset for individuals and organizations, and plays an important role in improving individual and organizational productivity and competitive advantages (Panahi et al. 2012). The rapid growth of social media has greatly changed the way we obtain and share knowledge. As of June 2014, it is reported that the top three social media sites with active users are Facebook (1.28 billion users), Twitter (1 billion users), and Google+ (1.6 billion users) (Blair et al. 2014). With ubiquitous mobile and web-based technologies, social media can create highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content (Kietzmann et al. 2011).

Social media have permeated most domains including education. There is a growing interest in applying social media as instructional tools in the brick-and-mortar college classroom as well as in online courses. Social learning is defined as a method of learning through social media technology (Blair et al. 2014). It is believed that these new emerging tools might be useful in knowledge sharing by providing interactive and collaborative technologies (Panahi et al. 2012). Widén-Wulff and Ginman (2004) suggest that social capital dimensions and knowledge sharing should be studied based on different contexts because the output of social capital and knowledge sharing is affected by the context in which it is conducted. Also, Brazlton and Gorry (2003) point out that technology may support a knowledge sharing environment, but the key is to get users to participate in effective ways. Therefore, as college and university students comprise a substantial segment of social media users, it is crucial to understand the patterns of their knowledge sharing via social media, identify the factors that influence their knowledge sharing behaviors, and investigate to what extent they use social media to share knowledge for learning.

Previous studies have reported the effects of different factors, such as social interaction ties, identification, reciprocity and expectation outcomes, etc., on knowledge sharing in different settings.

However, there have been relatively few empirical investigations of knowledge sharing for learning using social media. The purpose of this study is to examine different factors contributing to knowledge sharing via social media, and also understand the perception of knowledge sharing among these social media users. Our research questions are:

*RQ1: How do students share knowledge resources for learning via social media?*

*RQ2: What are the barriers preventing students from using social media to share knowledge?*

*RQ3: What factors can influence knowledge sharing via social media in terms of quality and quantity of shared knowledge?*

We first introduce the theoretical background along with related work. Then, we apply theories of social capital and cognition to develop a research model for examining the effects of social capital and outcome expectations on knowledge sharing. We test the model empirically through survey data collected from students at New Jersey Institute of Technology (NJIT), an urban university in the United States, focusing on students who used one or more of the social media platforms. Finally, we discuss the major findings derived from this study and conclude with some implications and recommendations for future research in this area.

## **Literature Review**

Knowledge is different from information although the two terms are often used interchangeably. Information is regarded as a necessary medium or material for initiating and formalizing knowledge, and can be viewed from the syntactic (volume) and semantic (meaning) perspectives (Nonaka 1994). Distinct from information, knowledge is defined as a fluid mix of framed experience, values, contextual information, and expert insight (Davenport et al. 1998), which is created and organized by the very flow of information, anchored on the commitment and beliefs of its holder (Nonaka 1994). Human knowledge can be classified into two categories (Polanyi 2012): tacit knowledge resides in individuals' minds in the form of experience, know-how, insight and so on; explicit knowledge is transmittable in formal and systematic language.

Knowledge sharing can be defined as disseminating and sharing acquired valuable knowledge with others (Ryu et al. 2003). Collins and Deek (2012) point out that learning theories and their supporting learning technologies fall into two broad categories: those that support individual learning and those that support communal knowledge building. With the rapid development of Web 2.0 technologies, there is a culture of participation, sharing and collaboration. Social networking sites, originally developed to help people initiate new connections and maintain existing ones, are now being used to share knowledge resources for learning or work. In fact, millennial students report sharing information from both their personal and academic lives with others through social media (Lippincott 2012).

A considerable body of recent research has applied social cognitive theory and social capital theory to explain a variety of pro-social behaviors, such as collective action, community involvement, and differential social achievement (Coleman 1994). For instance, Chiu et al. (2006) construct a research model for investigating the motivations behind people's knowledge sharing in virtual communities. Their study suggests that three dimensions (structural, relational, and cognitive) of social capital, including social interaction ties, trust, norms of reciprocity, identification, shared vision and shared language, as well as outcome expectations can influence individuals' knowledge sharing in virtual communities. Wasko and Faraj (2005) apply theories of collective action to examine how individual motivations and social capital foster knowledge contribution in electronic networks.

Prior studies have been conducted to examine knowledge sharing activity or behavior in virtual communities (Ardichvili et al. 2003; Chang et al. 2011; Chen et al. 2010; Chiu et al. 2006; Hsu et al. 2007; Koh et al. 2004; Lin et al. 2009; Panteli et al. 2005), and in electronic networks of practice (Wasko et al. 2005). Hwang and Kim (2007) investigate the influence of social norms, individual-level cultural orientation, and affective commitment on system users' attitudes toward sharing knowledge by email in the Technology Mediated Learning (TML) environment. Panali et al. (2012) conduct a systematic literature review to develop a conceptual model, which suggests that social media have abilities to support some of the main requirements of tacit knowledge sharing in five dimensions, including social interaction, experience sharing, observation, information relationship/networking, and mutual trust. However, there

has been little empirical research conducted on knowledge sharing in the domain of education, especially via social media.

## Hypotheses

In previous studies, social capital is defined as the interpersonal relationships of a person and the sum of the actual or potential resources embedded in those relationships (Bourdieu et al. 1992; McFadyen et al. 2004). Social capital strongly influences the extent to which interpersonal knowledge sharing occurs. Social capital can be conceptualized as having three different dimensions (Nahapiet et al. 1998): structural (the overall pattern of connections between actors); relational (the kind of personal relationships people have developed with each other through a history of interactions); and cognitive (those resources providing shared representation, interpretations, and systems of meaning among parties) (Chiu et al. 2006; Widén-Wulff et al. 2004).

### **Structural Dimension of Social Capital**

For the structural dimension, social interaction is examined, which refers to the overall pattern of relationships found in a community (Chang et al. 2011). Social interaction ties are regarded as channels for information and resource flows (Tsai et al. 1998) which provide the opportunity to combine and exchange knowledge. Since the quality and quantity of knowledge shared among people are related to the frequency of interaction between them, we hypothesize that:

**H1a.** *Social interaction is positively associated with the quality of shared knowledge.*

**H1b.** *Social interaction is positively associated with the quantity of shared knowledge.*

### **Relational Dimension of Social Capital**

For the relational dimension, identification and reciprocity for knowledge sharing are examined. Identification is defined as one's conception of self in terms of the defining features of a self-inclusive social category (Bagozzi et al. 2002) and a process whereby individuals see themselves as one with another person or group of people (Nahapiet et al. 1998). Norm of reciprocity suggests knowledge exchanges that are mutual and perceived by the parties as fair (Chiu et al. 2006), which is regarded as one of the factors that drive knowledge sharing (Davenport et al. 1998). We hypothesize that:

**H2a.** *Identification is positively associated with the quality of shared knowledge.*

**H2b.** *Identification is positively associated with the quantity of shared knowledge.*

**H3a.** *Reciprocity is positively associated with the quality of shared knowledge.*

**H3b.** *Reciprocity is positively associated with the quantity of shared knowledge.*

### **Cognitive Dimension of Social Capital**

In order to focus on the investigation of factors that most likely influence knowledge sharing on a university campus, we did not include trust and cognitive dimension of social capital. As a key aspect of relational capital, trust can facilitate collective action. Much research (Abrams et al. 2003; Bakker et al. 2006; Chow et al. 2008; Hsu et al. 2007; Panteli et al. 2005) has been conducted to understand how trust can promote effective knowledge creation and sharing in different networks. In our study, we don't take the role of trust into consideration, because trust might have been built among these participants who already know each other from on-campus contacts. Furthermore, in virtual communities where individuals don't know each other, it is important to understand the impact of the cognitive dimension of social capital, i.e. shared language and shared vision (Chiu et al. 2006). In our research, we ignore the cognitive dimension, because students who participated in this study come from the same university and share similar cognitive factors.

Instead, in this research we apply social cognitive theory which defines human behavior as a triadic, dynamic, and reciprocal interaction of personal factors, behaviors, and the social network (Chiu et al. 2006). According to social cognitive theory, a person's knowledge is acquired not only through personal

cognition but also by observing and learning from others (Bandura 1989). Outcome expectations, including personal and social network-related outcome expectations, are defined as an individual's belief that task accomplishment leads to a possible outcome (Chiu et al. 2006). In this study, personal outcome expectations refer to an individual's judgment of possible consequences that his or her knowledge sharing behavior will produce. Social-network related outcome expectations refer to an individual's judgment of possible consequences of knowledge sharing behavior via social media for his or her social networks. Outcome expectations play important roles in explaining knowledge sharing via using social media, so we hypothesize that:

**H4a.** Outcome expectations are positively associated with the quality of shared knowledge.

**H4b.** Outcome expectations are positively associated with the quantity of shared knowledge.

## Research Methods

### Data Collection

An online survey was conducted on SurveyMonkey, an online survey hosting site, mainly among NJIT students. In return for their participation, students who completed the survey were entered into a drawing for a \$50 Amazon gift card; one winner for every 50 responses was drawn. A snowball sampling method was used to recruit participants, with the researchers recruiting directly by word of mouth, through in-class announcements, and via university-sponsored mailing lists (with the list manager's approval). In the sampling frame for this study, both undergraduate and graduate students were included. The survey was available for about two months and the questionnaire and procedures were reviewed and approved by NJIT's Institutional Review Board. In total, 411 people participated in the online survey over two months, yielding 366 usable responses.

### Participants

Table 1 presents demographic information for the respondents. The majority of participants (92.1%) were under 30 years old. They were almost evenly divided between males and females. A little more than half stated English was their first language; this result reflects the significant population of international students at NJIT who were invited to participate through a dedicated mailing list. The diversity of respondents allows us to understand the perceptions of students with different backgrounds, majors and cultures.

	<b>Characteristics</b>	<b>Percentage</b>
<b>Gender</b>	Male	46.2%
	Female	53.8
<b>Age</b>	<21	26.8
	21-30	65.3
	31-40	5.2
	41-50	1.1
	I prefer not to answer	1.6
<b>Level of Study</b>	Undergraduate	47
	Graduate	53
<b>Field of Study</b>	College of Computing Sciences	37.4
	College of Engineering	31.4
	College of Science and Liberal Arts	17.2
	College of Architectural and Design	5.2
	School of Management	4.9
	Others	3.8
<b>Is English Your First Language?</b>	Yes	54.4
	No	45.6

## **Research Tools**

The survey included 43 questions in three categories: 1) personal information, 2) background information on social media use, and 3) perception and experience of knowledge sharing via social media. Social media as perceived by the participants in this study not only include the traditional social networking platforms, such as Facebook, Twitter, etc., but also other platforms specifically targeted to education or knowledge sharing, like Moodle, Blackboard, and Dropbox, etc. This broad definition reflects the fact that students have diversified options to share knowledge for learning in an academic environment. In the survey, questions included “Which social media platform do you use most often to share Internet knowledge resources for learning (when not required by a course or instructor)” and “How often do you share internet knowledge resources for learning that you have found on social media”. To understand different intentions of sharing knowledge, students were allowed to select whether they share knowledge required by a course or instructor or on a voluntary basis. Students who use social media to share knowledge were asked about social interaction ties, identification, personal outcome expectations, social network-related outcome expectations, quantity of shared knowledge, and quality of shared knowledge. If students responded that they did not use social media to share knowledge resources, they were instead shown several questions asking why they did not share and what other ways they used to share knowledge, if any.

The measures were adapted from relevant prior studies wherever possible. All scale items were measured on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). To accurately assess knowledge sharing, we examine two independently measured dependent variables: 1) quality of shared knowledge, and 2) quantity of shared knowledge. Quality of shared knowledge is assessed with measurement items adapted from prior studies (Chiu et al. 2006; Delone 2003; McKinney et al. 2002), which include relevance, ease of understanding, accuracy, completeness, reliability, and timeliness. Adapted from Tsai and Ghoshal (1998), the items used to measure social interaction include social interaction ties and frequency of interaction, with a focus on time spent interacting and frequency of communication. The items used to measure reciprocity are focused on the fairness of knowledge sharing, adapted from related works (Chiu et al. 2006; Wasko et al. 2005). Adapted from previous research (Bagozzi et al. 2002; Chiu et al. 2006; Coleman 1988; Grootaert 2004; Hendriks 1999; Nahapiet et al. 1998), the items used to measure identification are focused on an individual’s sense of belonging and feeling of togetherness or closeness in his or her social network. Personal outcome expectations and social-network related outcome expectations are measured with items based on previous studies (Bock et al. 2001; Chiu et al. 2006; Kolekofski Jr et al. 2003; Lesser 2000).

## **Data Screening**

We assessed missing values, outliers, and normality to ensure quality data for analysis. The total number of usable responses was 366 after removing 45 incomplete responses. All usable responses were complete, with a few missing values replaced by the median of nearby records since these variables are ordinal (5-point Likert-scale). There were no extreme value outliers because of the ordinal data. Because kurtosis may affect the analysis results due to insufficient variance, the item for personal outcome expectations (POE\_1) was removed because the test for kurtosis showed that it had a kurtosis value greater than 2.0 (Sposito et al. 1983).

## **Data Analysis**

SPSS Version 22.0.0.1 was used for most of the statistical analyses. Confirmatory factor analysis and model testing were conducted using IBM SPSS Amos Version 22.0.0.0.

## **Findings**

In this section, the study results are presented according to the three research questions.

**RQ1: How do students share knowledge resources for learning via social media?**

The usage frequency of social media platforms is shown in Table 2. As two of the most popular course management systems, Moodle and Blackboard were also included in the questionnaire. Results suggest that Facebook, WhatsApp, and Dropbox are the three most frequently used social media platforms.

	<b>Several times a day</b>	<b>Several times a week</b>	<b>About once a week</b>	<b>Several times a month</b>	<b>About once a month</b>	<b>Do not use</b>
<b>Facebook</b>	52.7%	22.1%	4.6%	5.5%	7.9%	7.1%
<b>WhatsApp</b>	36.6	7.9	2.2	7.7	4.6	41.0
<b>Moodle</b>	35.8	35.2	11.5	4.9	4.1	8.5
<b>Dropbox</b>	11.2	14.8	10.4	18.0	22.7	23.0
<b>Twitter</b>	9.3	7.7	10.1	6.0	19.9	47.0
<b>WeChat</b>	8.5	2.2	1.9	1.6	2.7	83.1
<b>Google+</b>	6.6	9.3	6.6	8.5	24.0	45.1
<b>Weibo</b>	3.8	1.1	1.1	1.6	1.6	90.7
<b>Blackboard</b>	3.0	6.8	3.6	2.7	3.3	80.6

There are 286 participants, accounting for 78.1% of all respondents, who responded that during the last year they informally and voluntarily interacted with their friends or classmates to share, receive, comment on or respond to knowledge via social media. Table 3 indicates the frequency of interaction among these respondents in conducting these knowledge sharing activities via social media. It is interesting to note that students tend to receive knowledge shared by others more frequently than they share knowledge with others; but this makes sense because each posting is shared with many “friends”.

	<b>How often do you share knowledge that you found on social media?</b>	<b>How often do you receive knowledge shared by others via social media?</b>	<b>How often do your friends comment or respond to your shared knowledge?</b>
<b>Only when required by instructor</b>	4.2%	7.0%	4.9%
<b>Several times a day</b>	2.1	24.8	17.8
<b>Several times a week</b>	21.3	11.5	10.1
<b>Once a week</b>	10.1	26.2	25.5
<b>Several times a month</b>	22.7	16.8	14.7
<b>Once a month</b>	16.8	11.5	19.6
<b>Less than once a month</b>	22.4	2.1	6.6
<b>None of the above</b>	0.3	0.0	0.7
<b>Total</b>	100%	100%	100%

Table 4 shows that the top three social media platforms that are voluntarily used by these 286 participants for knowledge sharing include Facebook, WhatsApp, and Dropbox. The other social networking sites or platforms mentioned include GroupMe, Skype, Tumblr, YouTube, W3schools, Quora and Zhihu, Kakao talk (Korean SNS), Google Drive, Emails, and text messages.

<b>Table 4. Frequency of Use of Social Media Platforms to Share Knowledge (N = 286)</b>	
	<b>Percentage</b>
<b>Facebook</b>	38.70%
<b>WhatsApp</b>	11.8
<b>Dropbox</b>	10.1
<b>Moodle</b>	8.7
<b>Google+</b>	7.3
<b>WeChat</b>	4.2
<b>Twitter</b>	3.8
<b>Blackboard</b>	0.8
<b>Weibo</b>	0.7
<b>Other</b>	13.9
<b>Total</b>	100%

***RQ2: What are the barriers preventing students from using social media to share knowledge?***

To address this question, the 80 respondents who indicated that they had not shared knowledge resources informally were asked why they chose not to share, via a question in which they were instructed to check all reasons that applied. The most frequent reason selected was because they did not feel social media are the proper venue for that type of activity. Although this is not surprising considering that social networking sites such as Facebook are typically used to maintain social connections, rather than for learning and teaching purposes, this represents a critical barrier for educators seeking to integrate knowledge sharing through social media into their coursework. There are also many other reasons selected, but it is notable that a total of over 16% (the total percentages of reasons 5 and 8) are related to not wanting to “give away” resources that took effort to find and might give other students an “advantage” in terms of grades, without their expending the effort to find the resources themselves.

<b>Table 5. Reasons Why Not to Share Knowledge via Social Media (N=80)</b>	
<b>Reasons</b>	<b>Percentage</b>
1. I don't think social media is the right place for sharing learning resources.	22.7%
2. I don't think anyone would look at the resources so why bother?	14.4
3. The resources address my personal knowledge gap, but I don't think it will be helpful to others.	14.4
4. I think people are already too overwhelmed with information on social media.	12.1
5. The resources I find are for my personal use and take a lot of effort to find.	11.4
6. I don't want others to see that I need help to understand a particular topic.	6.8
7. I used to share useful resources but no one ever responded so I stopped.	5.3
8. I don't want to give other students an advantage by giving them my resources.	5.3
9. None of the above.	7.6
<b>Total</b>	<b>100%</b>

Following the previous question, we also asked these 80 participants if they had any other ways that they did share knowledge with others. About one third (36.2%) of them stated that they preferred to discuss knowledge on the phone or face-to-face, 33.7% of them share via emails, and another 30.1% of them share via text messages.

### **RQ3: What factors can influence knowledge sharing via social media in terms of quality and quantity of shared knowledge?**

To address this research question, we analyzed the data in a two-step approach as suggested in the literature (Anderson et al. 1988; Chiu et al. 2006), which includes the analysis of the measurement model and the structural model. First, we conducted an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (using Maximum Likelihood) in order to establish the reliability and validity of our construct measurements before their use in the model. The pattern matrix of item loadings is shown in Appendix I. During the EFA, some items were dropped due to poor loadings or failure to load with the expected factor. For instance, reciprocity and quantity of shared knowledge both suffered from very low factor loadings as well as cross loadings and therefore were removed from the structural model prior to testing. Personal outcome expectations and social-network related outcome expectations loaded together; we combined them into a single factor labeled outcome expectations.

Furthermore, we calculated composite reliability (CR), Average Variance Explained (AVE), Average Shared Variance (ASV), Maximum Shared Variance (MSV) for each of the variables in the model. The values are presented in Table 6, along with the correlations between factors and the square root of the AVE in bold on the diagonal. The CFA confirmed the factor structure established during the EFA and provided additional measures for validity and reliability. To establish convergent validity, we meet the threshold of the AVE, because all four factors are greater than 0.500. To establish reliability, we meet the threshold of reliability, because the CRs of all factors (ranging between 0.77 and 0.88) are greater than 0.700. To establish discriminant validity, we meet the threshold, because the square root of the AVE of all factors is greater than any correlation with another factor in the model (Fornell et al. 1981). Therefore, we can conclude that all the conditions for convergent validity and discriminant validity of the remaining factors were met. The items measuring these constructs are shown in Appendix II.

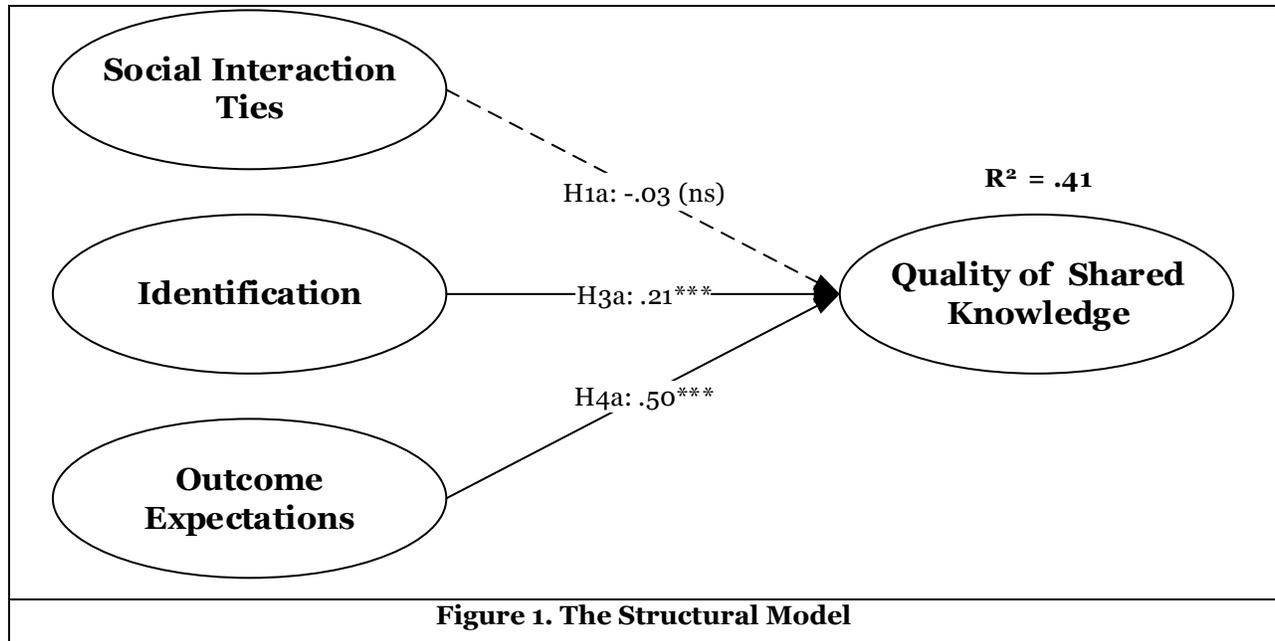
<b>Construct</b>	<b>CR</b>	<b>AVE</b>	<b>ASV</b>	<b>MSV</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
1. Outcome Expectations	0.84	0.52	0.25	0.32	<b>0.72</b>			
2. Identification	0.88	0.65	0.3	0.38	0.57	<b>0.81</b>		
3. Quality of Shared Knowledge	0.88	0.64	0.2	0.29	0.54	0.46	<b>0.8</b>	
4. Social Interaction Ties	0.77	0.54	0.21	0.38	0.39	0.62	0.3	<b>0.73</b>

\*Diagonal elements (in bold) are the square root of the average variance explained (AVE). Off-diagonal elements are the correlations among the constructs.

To ensure that our measurement model had sufficiently good model fit, we calculated CMIN/DF, CFI, RMSEA, PCLOSE, and SRMR. The goodness of fit statistics for the final measurement model are shown in Table 7. All thresholds show that we have adequate model fit.

<b>Metric</b>	<b>Observed Value</b>	<b>Ideal Threshold</b>
CMIN/DF	2.774	Between 1 and 3
CFI	0.968	>0.950
RMSEA	0.079	<0.060
PCLOSE	0.077	>0.050
SRMR	0.017	<0.090

To test our hypotheses, the data collected from validated measures were analyzed to investigate the relationships among these constructs. The total variance explained is satisfactory for the variables in the structural model (R-square = 0.41), suggesting that social interaction ties, identification and outcome expectations account for 41% of variance of the quality of shared knowledge (shown in Figure 1).



\*\*\* $p < 0.001$ , \* $p < 0.05$ , (ns) not significant

Figure 1 depicts the results of hypotheses tests. Two of the eight hypotheses (H3a and H4a) were supported empirically, while the remaining six hypotheses were not significant at the 0.05 level. Identification has a significant and positive effect on the quality of shared knowledge, supporting hypothesis 3a. Outcome expectations also have a strong positive effect on the quality of shared knowledge, supporting hypothesis 4a. On the other hand, the results show no significant positive relationship between social interaction ties and quality of shared knowledge, which means hypothesis 1a was not supported.

## Conclusion

### Conclusion and Discussion

After testing our hypotheses, we can draw the conclusion that the critical influencers of knowledge sharing are identification and outcome expectations. The theoretical model in this research is derived from a model that was valid for knowledge sharing in virtual communities (Chiu et al. 2006) where people join because of a shared interest and an expectation of benefit through membership. This research tests the model in a physical university setting where students are brought together simply because they are attending the same university, although certainly some of them may become friends. Consistent with the findings of related work (Chiu et al. 2006; Wasko et al. 2005), it is obvious that social capital dimensions can provide a useful framework explaining knowledge sharing mechanisms. On the other hand, the fact that membership in the university community was not founded on an expectation of some benefit (as in the case of virtual communities) may explain why personal and social network outcome expectations merged into a single factor. Meanwhile, because students know one another, they may have less dependence on virtual interaction factors as these are supplemented by physical interactions, explaining the lack of significance of the social interaction ties factor. Identification is a significant indicator of individuals' knowledge sharing in terms of quality, suggesting that even when students are connected physically, their sense of belonging to an online community can foster the desire to share knowledge with their connections. The result is consistent with another study (Pi et al. 2013) which suggests that identification significantly influenced the intention to share knowledge.

The results of our study indicate that the majority (78.1%) of students are sharing knowledge via social media. These users report that they receive knowledge shared by others more frequently compared to sharing knowledge with others. Facebook is the most widely used social networking site for students to

share knowledge. Previous studies (Pi et al. 2013) suggest that Facebook users know each other through a series of interactions, which is easier to identify themselves as one of the community. On the other hand, about 5% of all the participants do not consider social media as the right platform to share knowledge for learning. There is a need to propose a user interface and functionality in the popular social media specifically, to facilitate knowledge sharing more efficiently and effectively. In addition, further research should be conducted to understand how users utilize shared knowledge and to propose strategies to help users manage shared knowledge to avoid information overload.

### ***Contributions***

To the best of our knowledge, this is the first study that applies social capital and social cognitive theories to investigate how and why students use social media to share knowledge resources for learning. The major contributions of this paper are to present a framework for factors that influence knowledge sharing via social media in the context of education, and the preliminary results of the empirical investigation of knowledge sharing for learning via social media. The empirical study is useful to researchers who are interested in understanding knowledge sharing via social media in the educational domain. Also, educators can get a better understanding of how learners perceive and behave in knowledge sharing by using social media, so that they can decide whether and how to motivate or limit such sharing among learners. For instance, educators can integrate the application of social media into the traditional classroom practice as a means to encourage students to explore research ideas or share references in a collaborative learning. Meanwhile, such kind of sharing activity can be limited or guided by instructors to promote students' creativity and critical thinking. In addition, practitioners such as social media service providers can gain more insights into the needs and concerns of users who intend to share knowledge via social media for learning and educational purposes.

### ***Limitations***

Although there are some interesting findings, there are several limitations in this study. Since the survey was conducted among students on a single university campus, the generalizability of the findings is limited. It would be worthwhile to conduct further research on a large scope or in different settings, so as to understand how different groups of people share knowledge for different purposes. Also, the survey questionnaire is based on self-reported perceptual measures rather than behavioral observations, or measuring performance on a specific task, which might cause perceptual biases in the measures. Moreover, some important factors, such as trust, motivation, and satisfaction, etc. that affect knowledge sharing behaviors in social media are not considered in this study. For future research, it would be valuable to examine a broader set of psychological and personal factors to determine their effects on knowledge sharing via social media in the educational domain.

### ***Future Research***

Despite the fact that social media have become important channels for students to share knowledge, there are still many questions that remain under-researched. More research can examine how the user interface and design structures in social media can be improved to support knowledge sharing activities for learning. Future studies can be done to examine the construction and distribution of different kinds of shared knowledge on social media, and how they are utilized and managed by these learners. In addition to knowledge sharing, it is worth investigating if and how social media can be used to support other learning and teaching activities in order to encourage student engagement and achieve improved learning outcomes.

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## Appendix I. Pattern Matrix

**Pattern Matrix<sup>a</sup>**

	<b>Factor</b>			
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
SIT_1				.966
SIT_2				.616
SIT_3				.465
ID_1		.887		
ID_2		.992		
ID_3		.672		
ID_4		.577		
POE_2	.826			
POE_4	.601			
POE_6	.806			
SNOE_1	.652			
SNOE_4	.600			
QL_1			.805	
QL_3			.975	
QL_5			.590	
QL_6			.516	

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

SIT = Social Interaction Ties

ID = Identification

POE = Personal Outcome Expectation

SNOE = Social Network-Related Outcome Expectations

QL = Quality of Shared Knowledge

## Appendix II. Measures of the Research Variables

Variables	Label	Items
<b>Social Interaction Ties</b>	SIT_1	I maintain close social relationships with the people in my social network.
	SIT_2	I spend a lot of time interacting with the people in my social network.
	SIT_3	I know the people in my social network on a personal level.
<b>Identification</b>	ID_1	I feel a sense of belonging towards my social network.
	ID_2	I have the feeling of togetherness or closeness in my social network.
	ID_3	I have a strong positive feeling toward my social network.
	ID_4	I am proud to be a member of my social network.
<b>Outcome Expectations</b>	POE_2	Sharing my knowledge will help me make friends with other people in my social network.
	POE_4	Sharing my knowledge can build up my reputation in my social network.
	POE_6	Sharing my knowledge will strengthen the tie with other people in my social network and me.
	SNOE_1	Sharing my knowledge will be helpful to the successful functioning of my social network.
	SNOE_4	Sharing my knowledge will help my social network grow.
<b>Quality of Shared Knowledge</b>	QL_1	The content of shared knowledge is relevant.
	QL_3	The content of shared knowledge is accurate.
	QL_5	The content of shared knowledge is reliable.
	QL_6	The content of shared knowledge is timely.