



# Factors influencing knowledge-sharing intention on social network sites: An empirical study in Vietnam

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## Abstract

This study aims to explore what factors influence Internet users' willingness to share knowledge on social network sites. With the success and popularity of social network sites such as Google +, Facebook, Line, or Zalo, people realize that collective collaboration has become the cornerstone of the website's success. More and more Internet users are using social network sites for knowledge-sharing, which is playing a vital role in developing collective and collaborative knowledge. The research model in this study is based on Reasoned Action Theory (TRA) with a sample of 310 Vietnamese Internet users. A path analysis was used to test all the hypotheses using AMOS. We found that Absorptive Capacity and Organizational Self-Esteem have a positive and significant influence on Knowledge-Sharing Attitude. However, there is no positive and significant influence of Expected Return on Knowledge-Sharing Attitude. Besides, Knowledge-Sharing Attitude expectedly has a positive and significant influence on Knowledge-Sharing Intention. It is worth noting that although Expected Return has no positive and significant influence on Knowledge-Sharing Attitude, this finding helps to prove that in such an open online environment, Expected Return becomes an unimportant predictor for Knowledge-Sharing Behavior among Internet users.

**Keywords** Social network sites · Knowledge-sharing · Reasoned action theory · Collaborative knowledge

## 1 Introduction

In the past decades, almost all information on the Internet was provided by website operators, such as Yahoo! News, the stock market, and knowledge about computer technology on the Microsoft website. Almost all of these website operators use centralized methods to fully control the production and management of website content, and users can only silently accept these standardized website contents. Today, these website operators have gradually realized that user participation is also an important factor in the success of the website (Horng 2016; Huttner 2007). As a result, they began to change from centralization to decentralization, and based on trust, the power to edit website content was delegated to these originally controlled users. In the era of Web

2.0, website content is now dominated by users, and website operators only provide an online technology platform through which users can communicate with each other and share personal knowledge (Ahmad 2017). The success of the website operation depends on the willingness of users to share their knowledge and experience on it, such as on Twitter, Facebook, Google +, etc.

Users post articles, logs, and photos, and communicate with each other through the sites provided by the website operators. These virtual behaviors on the Internet have gradually affected the consciousness, thought, and culture of real people (Zhang et al. 2019). Over time, these users with the same preferences become a kind of social group called virtual groups/communities, such as Yahoo Groups, Google Groups, Facebook Groups, etc. The so-called virtual group/community refers to a group of Internet users who have reached a critical mass, and participate in discussions in discussion forums on the Internet due to the same interests or emotions (Ma, Lee, & Goh, 2014). They interact with others, and interpersonal relationships result from the exchange of information. However, sharing knowledge on social network sites will definitely cost users a lot of time and energy (Xia et al. 2021). What factors will affect users' willingness

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to share knowledge on social network sites are worthy of discussion. Based on the discussions above, this study intends to explore the factors that affect personal knowledge-sharing on social network sites. By sorting out the relevant research literature in the past, this study proposes three influencing factors: Expected Return, **Knowledge Absorptive Capacity**, and **Organizational Self-Esteem**. We hope to find out the relationship between these factors and Knowledge-Sharing Attitude through statistical methods and find out the influence of "Knowledge-Sharing Attitude" on "Knowledge-Sharing Intention". The purpose of this study is shown as follows:

- To explore whether individuals' Expected Return for knowledge-sharing (KS) influences their attitudes towards knowledge-sharing on social network sites.
- To explore whether an individual's ability to absorb new knowledge has an influence on their attitudes to share knowledge on social network sites.
- To explore whether individuals' Organizational Self-esteem has an influence on their attitudes to share knowledge on social network sites.

## 1.1 Theoretical background

The formation of knowledge is formed by human beings absorbing information from the outside world and continuously learning with value cognition (Jarvilehto 1999). Knowledge can be divided into tacit and explicit knowledge. Activities related to knowledge retrieval, acquisition, learning, and integration can be regarded as knowledge management. Knowledge management is the active and effective management of the identification, creation, mastery, use, sharing, and dissemination of knowledge possessed by individuals (Smith 2001). The first step in knowledge management is to transform personal tacit knowledge into explicit knowledge, and then preserve the explicit knowledge. The stored explicit knowledge is aggregated into a knowledge base, and the knowledge in the knowledge base needs to be continuously updated to ensure that the stored knowledge can be shared continuously and efficiently (Battistutti & Bork 2017). Sometimes the knowledge base is skipped and replaced by an ongoing act of knowledge-sharing. Knowledge-sharing is the transfer of knowledge through information dissemination media, sharing knowledge through the process of the recipient's interpretation of new knowledge or the interaction among them (Coakes 2006). With the rapid development of information technology, the Internet has become the fastest and most common information dissemination medium. Knowledge-sharing through the Internet can not only speed up the circulation of knowledge more effectively, but also enable Internet users with the same preferences to gather on social network sites through

knowledge-sharing (Yu et al. 2010). The online community members can not only share knowledge with each other but also create new knowledge value through the shared knowledge. It can be seen that successful knowledge-sharing is very important. However, knowledge is a private asset for users. Thus, why users share existing knowledge and what the intention of sharing is worthy of discussion.

This study is based on Reasoned Action Theory (Ajzen 1980), and past studies to propose three aspects: individuals' expected return for knowledge-sharing, individuals' ability to absorb new knowledge, and individuals' organizational self-esteem as factors that an individual's influence Knowledge-Sharing Intention on social network sites.

## 1.2 Knowledge-sharing (KS)

KS is a process of knowledge transfer through information dissemination media, and the process of knowledge receivers interpreting new knowledge or interacting with each other by means of existing knowledge, and points out that KS can be carried out in different spaces and times (Wijnhoven 1998). KS is regarded as a communication process, and when learning knowledge from others, there must be an act of reconstruction (Hendriks 1999). Reconstruction refers to the knowledge receivers using the known knowledge to learn and share knowledge. Therefore, there are two indispensable subjects for KS: (1) Knowledge owners with externalization, for example, giving speeches, writing a knowledge system, building archives or knowledge databases, etc., to communicate and share knowledge with others; (2) Knowledge reconstructors with internalization, for example, learning by doing, reading books, trying to understand the knowledge in the knowledge base, etc., to recognize and understand knowledge. In addition, Davenport and Prusak (1998) established a KS formula:  $KS = \text{transmission} + \text{absorption}$ . This concept coincides with Hendriks' idea of externalization and internalization (Hendriks 1999).

In addition, Eriksson and Dickson believe that different KS processes will cause differences in job performance (Eriksson & Dickson 2000). In addition, people create new knowledge in the process of sharing knowledge, that is, when knowledge is shared or used, new knowledge is also created. The knowledge and experience will grow linearly through the sharing behavior among knowledge sharers. If you continue to share knowledge with others and extend the problem, you will get exponential growth of knowledge (Quinn, Anderson, & Finkelstein, 1998). For businesses, KS can also contribute significantly to organizational productivity. In the era of the Internet, the trend of globalization and internationalization has enhanced the necessity of communication and KS.

### 1.3 Social network sites

With the rise of the Internet, most scholars begin to focus their studies on social network sites that use the Internet as a communication medium. The most common activity of virtual community members using the Internet as a communication medium is to browse and publish information and knowledge. In other words, a social network site is a virtual space composed of many KS behaviors. Rheingold (2000) defined it as "Social aggregation". It occurs when there are enough people on the Internet, after long public discussions, and with sufficient human feelings, the network of relationships will be formed in cyberspace (Boyd & Ellison 2007).

After the mid-1990s, the Internet has touched every corner of the world, and its open architecture attracts like-minded users to communicate, discuss, and express opinions on the same topic. Until now, this kind of openness, freedom, and privacy has enabled social network sites to flourish. Boyd and Ellison (2007) believe that social network sites are "computer-mediated" spaces with the ability to integrate content and communication and to emphasize content from the members, which refers to the data, information, and arguments generated by members' discussions, expressions, and emotions. Ellison and Boyd (2013) define social network sites as "a group of people who share common interests through electronic media rather than face-to-face communication". Parks (2010) define the characteristics of virtual groups/communities: (1) an aggregation of people; (2) Rational members; (3) Interaction in cyberspace; (4) Social exchange process; (5) Shared goals, a sense of identity, or member interactions. From the definitions above, we can summarize three characteristics of virtual groups/communities: (1) Social network sites use electronic space or network technology as a medium of communication; (2) members on social network sites come together because of interests or common goals; (3) content on social network sites is generated by the members discussing and communicating with each other.

Therefore, we conclude that a social network site is defined as "using a computer and network technology as a bridge of communication to provide a Cyberspace platform, which calls on members with the same interests or common goals to discuss specific topics or interests. The members share information and generate creative content". The KS in social network sites mentioned in this study means that members of social network sites use various interactive mechanisms (including asking questions, answering questions, posting comments, expressing opinions, evaluating knowledge, instant messaging, etc.,) to share personal explicit knowledge with other members via the Internet.

### 1.4 Theory of reasoned action

In this study, the theory of Reason Action (Ajzen 1980) is used as a theoretical model to explore the factors that influence personal KS on social network sites. The theory of Reasoned Action states that "an individual's behavior is determined by an individual's behavioral intention. An individual's behavioral intention is determined by an individual's attitude toward the behavior and subjective norm". Reasoned Action Theory has two basic assumptions: (1) Most of an individual's behaviors are subject to Volitional control and are rational. (2) An individual's behavioral intention is the immediate determinant of the behavior. The constructs of Reasoned Action Theory are described: (1) Attitude toward a particular behavior: Attitude refers to the positive or negative evaluation an individual has about a particular behavior. (2) In addition to attitude to a particular behavior, another factor that affects behavioral intention is subjective norm. Subjective norm refers to whether an individual feels that important others agree with his behavior when he performs a certain behavior. (3) Behavioral intention refers to an individual's subjective probability of engaging in a specific behavior, indicating the degree of effort an individual is willing to make to engage in a specific behavior. The theory of Reasoned Action assumes that an individual's behavioral intention is the immediate determinant of the behavior. Other influencing factors indirectly affect behavior through behavioral intention. Other influencing factors in this theory are attitude toward a behavior and subjective norm.

The theory of reasoned action was first applied in social psychology and later widely used in other fields. The explanatory ability of Reasoned Action Theory has a considerable degree of certainty, such in marketing, medical care, management, etc. (Bandawe & Foster 1996; Bang et al. 2000; Yousafzai et al. 2010). A meta-analysis of 86 studies on the application of reasoned action theory published in eight well-known journals found that the average correlation between behavioral intentions and behaviors was 0.54, confirming that in Reasoned Action Theory, behavioral intentions do have a considerable predictive influence on actual behaviors. Therefore, this study will construct a research model based on Reasoned Action Theory (Ajzen 1980), and propose three factors that may affect KS in social network sites based on relevant literature.

## 2 Factors influencing KS

We conducted an extensive literature analysis on KS intentions and found that KS expected return, knowledge absorptive capacity, and organizational-based self-esteem are three of the most accepted by many researchers. More than 70% of the literature confirms these three items. This section will

organize the literature and describe each of the three proposed factors that may affect KS.

## 2.1 Expected return for KS

KS is a social interaction between people, which can be explained by Economic Exchange Theory. According to Economic Exchange Theory, individuals will rationally consider self-interest and then decide whether to take action. Sharing knowledge with others has to pay a cost (such as time, power, advantages, etc.), and people usually do not give away the precious things they have (including knowledge) without expectations (G. W. Bock & Kim 2002). Therefore, people are willing to share knowledge with others when they think that KS can bring them more returns than the cost (Constant et al. 1994; Hansen 1982; Kelley 1984). This is why many scholars emphasize that the successful introduction of knowledge management in organizations requires an incentive system (Bartol & Srivastava 2002; Davenport & Prusak 1998). The incentive system is an objective performance measure that provides fairly high returns and rewards the majority of employees (O'Dell & McAdams 1987). Therefore, expected return means that employees believe that through KS, they can obtain extrinsic benefits, such as substantial bonus returns, promotion, and further education opportunities.

## 2.2 Knowledge absorptive capacity

Senge (1997) proposed that KS is not just about obtaining something from others, and this form of KS can only be called information sharing at best. True KS occurs only when one party is willing to help the other develop and absorb a new capacity for action. Therefore, he defined KS as "assisting the other party to develop effective actionability, and KS must interact with the other party and successfully transfer the knowledge to the other party to form the other party's actionability". From this point of view, the act of KS is to help others learn, that is, the "teaching" activity of the knowledge owner. Senge (1997) believes that KS is not only limited to the knowledge owner sharing knowledge with others, but more importantly whether the owner can activate the receiver's actionability. Therefore, the KS process pays special attention to the level of the assisted party's ability to absorb knowledge. Davenport and Prusak (1998) also established a KS formula:  $KS = \text{transmission} + \text{absorption}$ , which explains that the process of KS includes not only the "preaching" of knowledge owners but also the absorption process of knowledge rebuilders (that is, knowledge receivers).

From the above-related literature, it can be clearly found that in the success or failure of KS, the receiver's knowledge absorptive capacity accounts for a considerable degree of

influence, but what is the knowledge absorptive capacity. The term "absorptive capacity" of knowledge was first proposed by Cohen and Levinthal (1990). They believed that the absorptive capacity of knowledge includes the ability to absorb, understand and use knowledge. An individual's ability to evaluate or apply external knowledge is influenced by the amount of prior relevant knowledge that gives the individual the ability to assess the value of new knowledge, as well as the ability to assimilate knowledge and apply it in new situations. Specifically, prior relevant knowledge includes basic skills, the language of KS and communication, and even the latest technological developments in the related field (Duchek 2015; George et al. 2001; Xie et al. 2018; Žemaitis 2014). Absorptive capacity is related to the structure and amount of previous relevant knowledge. Learning performance is best when what is learned is related to what we already know. Therefore, a person's absorptive capacity can be predetermined by his prior relevant knowledge.

Based on the discussion above, it can be concluded that the act of KS can be regarded as a learning process, which occurs between the knowledge owner and the knowledge receiver. This process begins when the knowledge owner shares knowledge with the receiver, and the receiver learns knowledge from the owner through KS behavior, but whether the receiver can use this knowledge depends on whether the receiver can absorb knowledge. If the recipient cannot learn the knowledge and understand its value, it is even less likely that the shared knowledge can be used to solve problems and share the knowledge with other recipients.

## 2.3 Organizational self-esteem

The concept of Organizational Self-esteem (OBSE) was first proposed by Pierce et al. (1989). Organizational Self-esteem is defined as an individual's belief that he is unique, capable, and valuable as an organizational member. People with high organizational Self-esteem can get their needs met by playing a good role in the organization (Korman 1971). Members of high self-esteem in organizations agree with statements such as "I have considerable influence in the organization," "I am important in the organization," or "I am admired by other members of the organization." Research on organizational self-esteem includes the impact of organizational self-esteem on employee motivation, job-related attitudes (such as turnover intention, organizational commitment, etc.), and behavior (such as turnover behavior, job performance, citizenship behavior, etc. (Pierce & Gardner 2004). Self-esteem in an organization is part of employee beliefs (Pierce et al. 1989).

The purpose of this study is to explore the intention of community members to share knowledge on social network sites. From the above-mentioned review of the literature

related to organizational Self-esteem, it can be found that self-esteem in organizations affects the motivation, attitude, and behavior of members to share knowledge.

### 3 Method

#### 3.1 Research model

This study aims to apply the theoretical model of reasoned action to the field of KS, and based on the relevant literature, it proposes three variables (expected return, personal knowledge absorptive capacity, and organizational self-esteem) that affect individuals' intention to share knowledge on social network sites.

Azjen (1980) proposed a complete theory of Reasoned Action, in which individual behavioral intentions will affect individual actual behaviors. Although actual knowledge behaviors are not easily measured, many past studies have demonstrated that individual behavioral intentions are highly correlated with individual actual behaviors (Sheppard et al. 1988; Venkatesh & Davis 2000). According to this theoretical assumption, this study uses individual behavioral intentions as a proxy for the individual's actual behavior (Fig. 1) and Fig. 2.

#### 3.2 Research hypothesis

According to the research purpose and the sorting out of relevant research literature, this study puts forward four research hypotheses and explores the factors that influence personal KS on social network sites. This section

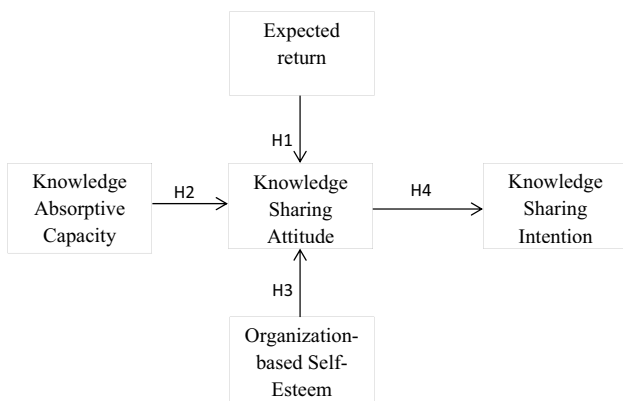


Fig. 1 Research model

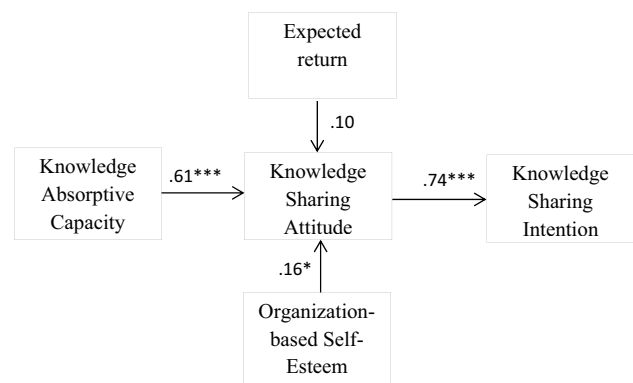


Fig. 2 Path analysis

will introduce the inference process of the four hypotheses as follows:

#### 3.3 Expected return and attitude to KS

KS is a kind of social interaction between people, sharing knowledge with other people must spend time and other costs, people usually do not give away the precious things they have without expectations (Davenport & Prusak 1998). Therefore, when people think that the KS behavior can bring them more rewards than the cost, they are willing to share it with others (Constant et al. 1994; Hsu et al. 2007). In the context of an organization, to build a long-term KS culture for the company, it is necessary to use valuable rewards, such as substantial monetary remuneration, salary increases, or promotions to motivate employees' sharing behaviors (Davenport & Prusak 1998). Sharing knowledge with other members on social network sites also requires costs. According to the concepts and Economic Exchange Theory, this study proposes hypothesis 1:

H1: Individuals' expected return for KS has a positive and significant influence on their KS attitudes.

#### 3.4 Knowledge absorptive capacity and KS attitude

KS occurs between the knowledge owner and the knowledge receiver, and such sharing behavior can be regarded as a learning process. Therefore, an individual's ability to absorb new knowledge will affect the effectiveness of KS (Hendriks 1999). People with high knowledge absorptive capacity, or with a lot of previous relevant knowledge, will be more able to learn, absorb and apply the knowledge they have learned, they will feel that KS is an efficient way of learning, and they will also have a more positive attitude (Kwok & Gao 2005). Therefore, hypothesis 2 is proposed:



H2: Individuals' knowledge absorptive capacity has a positive and significant influence on their KS attitudes.

### 3.5 Organizational self-esteem and KS attitude

KS is a self-expression activity that enhances an individual's worth, increases personal identification with other community members, gains respect from others and a better reputation, reduces feelings of alienation, or increases a sense of obligation. Therefore, if community members feel that sharing knowledge can give them a sense of self-esteem, as well as the identification of members in the organization and a more positive performance. Hall (2001) pointed out that intangible rewards, such as improving reputation and increasing personal satisfaction, are one of the incentives that enhance KS. Knowledge providers feel honored and affirmed when being consulted by other people. Therefore, hypothesis 3 is proposed:

H3: Individuals' organizational self-esteem has a positive and significant influence on their KS attitudes.

### 3.6 KS attitude and KS intention

Expectancy-Value Theory mentions that when an individual believes that engaging in a certain behavior will bring relative performance or reward, it will lead to a more positive attitude towards the behavior, thereby enhancing the intention to engage in the behavior and vice versa. In the reasoned action theory, attitude is an individual's evaluation of a particular behavior and is an important factor in determining behavioral intentions. Many previous studies have also confirmed that attitude is an important factor in determining behavioral intentions, and individuals' attitudes toward behaviors affect their behavioral intentions (G. W. Bock & Kim 2002; Kwok & Gao 2005; Tohidinia & Mosakhani 2010). Therefore, hypothesis 4 is proposed:

H4: Individual's KS attitude has a positive and significant influence on their KS intention.

### 3.7 Constructs' definition and measurement

*Expected return:* According to the relevant research literature, this study defines expected reward as "the degree to which individuals believe that they will receive tangible rewards through KS". Expected rewards are measured based on a study by G. W. Bock and Kim (2002) and G.-W. Bock, Zmud, Kim, and Lee (2005). The five items were modified to suit the context of this study. For example, "when sharing knowledge on social network sites, I want to increase my credits" or "Overall, I want social network sites to reward me for sharing knowledge". The measurement scale adopts the Likert (1932) 7-point scale, and the participants answer

their degree of agreement with the range from 1 = strongly disagree, to 7 = strongly agree.

*Knowledge Absorptive Capacity:* In this study, according to the relevant research literature on knowledge absorptive capacity, the absorptive capacity of knowledge is redefined as "the ability of an individual to absorb and use knowledge". The five measurement items refer to those proposed by Kwok and Gao (2005) and were modified to suit the context of this study. For example, "I can know the value of the knowledge I have learned" or "I can use the knowledge I have acquired to solve problems". The measurement scale adopts the Likert (1932) 7-point scale, and the participants answer their degree of agreement with the range from 1 = strongly disagree, to 7 = strongly agree.

*Organizational Self-esteem:* This study refers to the definition of self-esteem in organizations by Pierce et al. (1989), which is "the degree to which individuals believe that through KS will maintain or enhance the value of individuals on social network sites". We referred to Chattopadhyay (1999) for a six-item scale to measure organizational self-esteem, and then modified it to suit the context of this study. For example, "I am part of the social network sites" or "Other members on the social network sites trust me". The measurement scale adopts the Likert (1932) 7-point scale, and the participants answer their degree of agreement with the range from 1 = strongly disagree, to 7 = strongly agree.

*Knowledge-Sharing Attitude:* Based on the aforementioned research literature on KS, this study defines attitudes to KS as "an individual's evaluations of KS". The five-item scale of KS attitude refers to the items developed by Bock and Kim (2002) and Bock et al. (2005), and were modified to suit the context of this study. For example, "I think my KS behavior is good" or "I believe my KS behavior is harmful". The measurement scale adopts the Likert (1932) 7-point scale, and the participants answer their degree of agreement with the range from 1 = strongly disagree, to 7 = strongly agree.

*Knowledge-Sharing Intention:* Bock and Kim (2002) and Bock et al. (2005) pointed out that KS intention refers to the degree to which individuals believe that they will engage in KS behaviors. This study refers to the definition of KS intention by Bock and Kim (2002) and Bock et al. (2005), and redefines the KS intention as "the subjective probability of an individual to engage in KS behavior". The six measurement items of KS Intention refer to the items proposed by Jarvenpaa and Staples (2001) and were modified to suit the context of this study. For example, "I would like to share knowledge often on social network sites" or "I frequently try to share knowledge on social network sites". The measurement scale adopts the Likert (1932) 7-point scale, and the participants answer their degree of agreement with the range from 1 = strongly disagree, to 7 = strongly agree.

### 3.8 Research design

The first part of this research questionnaire is personal basic information, the second to fourth parts measure the factors that affect an individual's KS Attitude; the fifth and sixth parts measure an individual's KS Attitude and Intention. The designed questionnaire is designed into an online questionnaire system through the online questionnaire design platform provided by Google. The research participants are users who have shared knowledge on social network sites. The purpose of using the online questionnaire system is to allow members on social network sites to fill out the questionnaire directly online. Before the formal questionnaire, this study conducted a pre-test analysis on the initial design questionnaire and deleted inappropriate items to improve the reliability and validity of the formal questionnaire. The questionnaire data was collected for three weeks, and the total number of questionnaires was 361. After deducting 51 invalid questionnaires, a total of 310 questionnaires remained, and the proportion of valid questionnaires was 85.87%. In addition, invalid questionnaires including random filling (all filled with 1 or 7) and missing data will be removed in this study and will not be used for statistical analysis.

For the analysis of the data, this study uses two sets of statistical software, SPSS 20.0 and AMOS 20.0 as analysis tools for statistical analysis.

## 4 Results

### 4.1 Pre-test analysis

The pre-test participants of this study are Internet users who have "experienced in sharing knowledge on social network sites". In this study, 20 users with this experience were requested to assist in the pre-test analysis. The pre-test of this study was conducted in the form of an online questionnaire. We used instant messaging software (e.g. Facebook Messenger, Zalo, Line, or WeChat) to pass the questionnaire URL to the subjects and asked them to fill in the answers. It took three days to complete the pre-test. The pre-test sample data were analyzed using SPSS software. To achieve the consistency and stability of the items, this study used Cronbach's alpha coefficient as the index of the reliability analysis (Cronbach 1951). Guilford (1950) considered Cronbach's coefficient greater than 0.7 to be a high confidence value, and between 0.7 and 0.35 was acceptable. If it is lower than 0.35, it will be rejected. After the pre-test analysis of the study and the deletion of inappropriate items, the reliability of the formal questionnaire of this study already has a certain level (Table 1). After that, the formal questionnaire

**Table 1** Reliability after the pretest

Constructs	Number of Items after the pretest	Cronbach's Alpha after the pretest
ER	3	.730
AC	5	.803
SE	6	.933
KS	5	.924
SI	5	.934

*ER* Expected Return, *AC* Absorptive Capacity, *ES* Self-Esteem, *SA* Knowledge-Sharing Attitude, *SI* Knowledge-Sharing Intention

was translated into Vietnamese before sending to Vietnamese participants.

### 4.2 Sample structure analysis

This study uses descriptive statistics to illustrate the distribution of sample data characteristics: including the most frequently participated social network sites, gender, and time spent there every week. Table 2 illustrates the basic characteristics of the samples.

In terms of the most frequently participated social network sites, Facebook accounted for 60% of the total samples, and the others accounted for 40.0%. The proportion of males in the sample was 59%, and the proportion of females was 41%. In terms of the time of using social network sites, 38.6% of users have used it for more than two years, followed by users who have used it for one to two years, with 35.9%. Judging from the daily time of using social network sites, 37.8% of the users used it for less than 1 h per day, followed by 1 h to 3 h, with 34.5% (Table 2).

This study further analyzed whether demographic variables such as gender, time spent on the social network sites, and weekly use time would have differences in research constructs, to avoid sample characteristics affecting the results of the research model. This study used analysis of variance (ANOVA) for testing. From the analysis results (Table 3, Table 4, and Table 5), none of the three demographic variables had significant differences in the study construct, indicating that the sample in this study was not affected by factors such as gender, time spent with the social network sites, and weekly use time, that is, the research model is not influenced by factors such as gender, time spent on the social network sites, and weekly using time.

### 4.3 Reliability analysis

Reliability refers to the reliability of each variable measurement, and also refers to the consistency or stability of the measurement results. In this study, Cronbach's  $\alpha$  coefficient was used to measure the consistency between

**Table 2** Descriptive statistics

Characteristics of the sample data	Types	Number of participants	Percentage
The most frequently used social network sites	Facebook	186	60%
	Others	124	40%
Gender	Male	182	59%
	Female	128	41%
Years of using social network sites	Under one year	78	24.9%
	One to two years	113	35.9%
	Over two years	119	38.6%
Using time per day	Under one hour	117	37.9%
	From one to three hours	107	34.5%
	From three to five hours	58	18.9%
	Over five hours	28	8.8%

**Table 3** The effect of gender on the constructs

Constructs	Mean		<i>F</i> -value	<i>P</i> -value
	Male	Female		
ER	4.57	4.52	.010	.916
AC	5.30	5.33	.070	.791
SE	3.91	3.94	.059	.808
KS	5.53	5.51	.101	.751
SI	5.04	5.05	.001	.971

Accepted value for null hypothesis:  $F > 3.087$ ;  $p > 0.05$

ER Expected Return, AC Absorptive Capacity, ES Self-Esteem, SA Knowledge-Sharing Attitude, SI Knowledge-Sharing Intention

**Table 4** The effect of Years of using social network sites on the constructs

Constructs	Mean			<i>F</i> -value	<i>P</i> -value
	Under one year	One to two years	Over two years		
ER	4.55	4.57	4.43	.687	.602
AC	5.17	5.44	5.33	.483	.748
SE	3.77	3.87	4.05	1.373	.245
KS	5.34	5.55	5.61	.659	.623
SI	4.98	5.34	5.10	1.564	.184

Accepted value for null hypothesis:  $F > 3.087$ ;  $p > 0.05$

ER Expected Return; AC Absorptive Capacity, ES Self-Esteem, SA Knowledge-Sharing Attitude, SI Knowledge-Sharing Intention

items in the same construct. In this study, except for the expected return construct whose reliability is only 0.771, the Cronbach's  $\alpha$  values of other constructs are all higher

than the reliability level of 0.8, indicating that the questionnaire in this study has good reliability, with a high degree of internal consistency, as shown in Table 6.

#### 4.4 Validity analysis

Validity analysis is used to test the degree to which the measurement tool can measure the trait or function of the constructs, among which convergent validity and "discriminant validity" are mainly used to test the construct validity of the questionnaire. Scholars usually use factor analysis to test the validity of questionnaires, but before factor analysis, it is necessary to test whether the constructs are suitable for factor analysis (Bartlett 1951; Kaiser 1974). To determine whether a construct is suitable for factor analysis, researchers often use the Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) proposed by Kaiser (1974). The KMO value is between 0 and 1, and the value of the KMO coefficient must be higher than 0.8 to be suitable for factor analysis. In addition, if Bartlett's test of sphericity reaches significance, it indicates that factor analysis is suitable (Bartlett 1951; Kaiser 1974). The KMO value of this study was 0.898, which was in line with the standard proposed by Kaiser (1974), and the significance of Bartlett's sphere test was also significant ( $p < 0.05$ ), indicating that the items in this study are suitable for using factor analysis to judge the validity of the questionnaire in this study.

Convergent validity means that measures in a study classified as the same variable have a high correlation with each other. In this study, the factor structure matrix of each item of the scale was obtained by factor analysis, and then the validity was determined by the factor loadings listed in the factor structure matrix. The larger the factor loading value, the higher the convergent validity. Discriminant validity refers to items from different variables, and the correlation between each other is low. When the factor load of measuring the item in other variables is smaller (usually less than



**Table 5** The effect of daily using time on the constructs

Constructs	Mean				F-value	P-value
	Under one hour	From one to three hours	From three to five hours	Over five hours		
ER	4.66	4.63	4.46	4.07	1.118	.348
AC	5.25	5.25	5.16	5.64	1.898	.113
SE	3.84	3.93	4.08	4.14	.717	.582
KS	5.47	5.44	5.47	5.93	1.926	.106
SI	4.96	4.92	5.22	5.48	2.154	.074

Accepted value for null hypothesis:  $F > 3.087, p > 0.05$

ER Expected Return, AC Absorptive Capacity, ES Self-Esteem, SA Knowledge-Sharing Attitude, SI Knowledge-Sharing Intention

**Table 6** Reliability analysis

Constructs	Cronbach's alpha	Number of items
ER	.711	3
AC	.863	5
SE	.922	6
KS	.882	5
SI	.934	5

ER Expected Return, AC Absorptive Capacity, ES Self-Esteem, SA Knowledge-Sharing Attitude, SI Knowledge-Sharing Intention

**Table 7** Exploratory factor analysis

Constructs	Factor loadings
ER	.855
	.853
	.835
AC	.821
	.786
	.727
	.697
	.674
SE	.908
	.898
	.882
	.805
	.734
SA	.571
	.785
	.771
	.746
	.724
SI	.522
	.826
	.808
	.7942
	.724
	.687

Extraction method: principal component analysis

Rotation method: Kaiser's normal varimax

ER Expected Return, AC Absorptive Capacity, ES Self-Esteem, SA Knowledge-Sharing Attitude, SI Knowledge-Sharing Intention

0.5), it means that the discriminant validity is higher. Table 7 is the post-rotation factor analysis matrix of this study. For the scale items, the factor loadings are all between 0.5 and 0.90. The factor loadings of each construct's items in other constructs are also lower than 0.5. This indicates that the items in this study have good convergent and discriminant validity.

### 4.5 Structural model fit

The model fit index is to evaluate whether the model is compatible with the collected data. It can help to confirm that the research model has variability that reflects the observed data. This study uses Measures of Absolute Fit and Incremental Fit Measures to measure the fitness of the structural model. "Absolute fitness" measures the degree to which a theoretical model can predict an observed covariate matrix or correlation matrix. The absolute fitness indicators used in this study, including 2/df, GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index), and RMSEA (Root Mean Square Error of Approximation), are all higher than

the lowest standard value. The value-added fitness is the result of the comparison between the benchmark model and the theoretical model. The benchmark model is usually called the Null Model. The value-added fit indexes IFI (Incremental Fit Index) and CFI (Comparative Fit Index) are both greater than 0.9. It can be seen that the research model in this study has a good fit (Table 8).

**Table 8** Structural model fit

Statistical test	Results	Standard indices of Model Fit	Model Fit Judgement
$X^2/df$	2.046	< 3	Good Fit
GFI	.85	> .80	Good Fit
AGFI	.83	> .80	Good Fit
RMSEA	.071	< .10	Good Fit
IFI	.95	> .90	Good Fit
CFI	.95	> .90	Good Fit
PGFI	.67	> .5	Good Fit
PNFI	.76	> .5	Good Fit

#### 4.6 Hypothesis testing and path analysis

In terms of hypothesis testing, the four hypotheses proposed in this study will use the Maximum Likelihood Estimates to obtain the path coefficient value. Except for "H1: Individuals' Expected Return for KS has a positive and significant influence on their KS Attitudes", all the others are supported (Fig. 2).

According to the results of path analysis, *T*-value of Expected Return to KS Attitude is 1.61, which is not significant due to *p*-value > 0.05, indicating that the sample does not have sufficient evidence to support a positive and significant relationship between the two constructs. Thus, hypothesis 1 is not supported.

*T*-value of Absorptive Capacity for KS Attitude is 8.17, which is significant at the 0.001 confidence level, indicating that there is a positive and significant relationship between the two relationships. Thus, hypothesis 2 is supported.

*T*-value of Organizational Self-esteem to KS Attitude is 2.54, which is significant at the 0.05 confidence level, indicating that there is a positive and significant relationship between the two constructs. Thus, hypothesis 3 is supported.

*T*-value of KS Attitude to KS Intention is 10.31, which is significant at the 0.001 trust level, indicating that there is a positive and significant relationship between the two constructs. Thus, hypothesis 4 is supported.

## 5 Conclusions

KS is an interactive process between knowledge contributors and knowledge recipients. In addition to the recipients being able to understand and apply knowledge, it is more important to make contributors willing to share their knowledge. This study aims to explore the factors that influence individuals to share knowledge on social network sites. The research framework and hypotheses were proposed based on a literature review, and the research hypotheses were verified

after collecting data through a questionnaire survey. The analysis results and discussions are as follows.

Expected return has no positive and significant influence on KS Attitude. To measure the concept of Expected Return, this study refers to the scale developed by Bock and Kim (2002) and Bock et al. (2005). The context in these studies is in real organizations, where bonuses and promotion systems are used as rewards. However, the context of this research is on social network sites. To match the context of this research, some modifications have been made to the questions by Bock and Kim (2002) and Bock et al. (2005). For example, removing the promotion system and adding rewards such as virtual currency and shopping discount coupons may not encourage users to engage in KS behaviors on social network sites. This results in an insignificant result. The finding seems to be opposite to our expectations. However, the explanation should come from the sample that was collected on social network sites where the members are not looking for monetary profits for their KS.

To measure the construct of Absorptive Capacity, this study refers to the scale developed by Kwok and Gao (2005). According to the analysis results in this study, the absorptive capacity of individuals has a positive and significant influence on their KS Attitudes. As previously described, absorptive capacity refers not only to an individual's ability to understand and absorb new knowledge, but also to apply new knowledge to solve problems. KS is a dynamic interactive process between knowledge contributors and knowledge recipients. If recipients have a strong absorptive capacity, they can quickly learn and use the knowledge shared by contributors. Then both parties will feel that KS is efficient, and they feel that they have the ability to share knowledge. Therefore, it is not difficult to understand that having a high absorptive capacity will lead individuals to have a more positive attitude towards KS, and this result is also consistent with the findings of Kwok and Gao (2005).

To measure the construct of Self-esteem in organizations, this study refers to the scale developed by Chattopadhyay (1999). According to the analysis results of this study, individuals' organizational self-esteem has a positive and significant influence on their KS attitudes. That is to say, people with higher self-esteem in the organization will have a more positive attitude towards sharing knowledge on social network sites. KS is an expression of self-seeking, enhancing personal worth, increasing identification with other members, gaining respect from others, and a better reputation. Therefore, to maintain the image of wise men, members on social network sites will express themselves through KS behaviors, hoping to improve their reputation and increase their satisfaction.

To measure the construct of KS Attitude, this study refers to the scale by Jarvenpaa and Staples (2001). According to the finding of this study, individuals' KS attitudes have a

positive and significant impact on their KS intentions. This result is consistent with the findings of Bock and Kim (2002) and Bock et al. (2005), and also in line with the reasoned action theory that behavioral intentions are influenced by attitudes towards the behavior (Azjen 1980). In addition, many past studies have demonstrated significant and strong associations between behavioral intentions and target behaviors (Sheppard et al. 1988; Venkatesh & Davis 2000). Based on the discussions above, we can conclude that when people have a more positive attitude towards sharing knowledge on social network sites, the more willing they are to share knowledge and then engage in KS behaviors.

## 5.1 Limitations and future research

Furthermore, the findings in this study can be applied not only in Vietnam but also in other countries such as China, Japan, and Korea. These countries share the same Confucian cultural values, which respect altruistic behaviors among people in society. For other societies without respecting altruistic behaviors, the results in this study can be hardly applied. Therefore, future research should be conducted to explore the differences and similarities among different societies in terms of KS on social network sites.

This study strives to be as rigorous as possible, but due to the lack of time and financial resources, there are still limitations in research, such as the selection of influencing factors. This study takes users who have shared knowledge on social network sites as the research object and aims to explore the factors that may influence personal KS. However, many factors affect personal KS, but this study cannot examine them due to the limitations of cost and time. This study only explored three research variables, Expected Return, Absorptive Capacity and **Organizational Self-esteem**, and has limited ability to explain individuals' attitudes toward KS. Future research should build on the framework of this study and propose possible influencing factors for KS attitudes or intentions.

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