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FACTORS INFLUENCING KNOWLEDGE SHARING IN HIGHER EDUCATION: AN EMPIRICAL STUDY OF STUDENTS IN VIETNAM

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ABSTRACT

Diffusion of knowledge is a real significant factor for students also it is the most important role of universities. To diffuse knowledge, sharing is an important activity. This paper examines factors influencing knowledge sharing in higher education. Knowledge sharing is measured through knowledge transferring and knowledge reception. A quantitative survey was conducted with 517 undergraduate students in Vietnam. Statistical Package for the Social Sciences version 28.0 (SPSS 28.0) software was used to analyse data. The internal consistency reliability was tested by Cronbach's Alpha coefficient and the factor reduction was analyzed by exploratory factor analysis (EFA) model. The results of the study revealed that there is evidence of a positive relationship between factors including trust, knowledge self-efficacy, university support, lecturer support, physical environment, technology infrastructure, and ICT tool use and knowledge sharing. These findings are significant, as understanding these factors would help to stimulate knowledge sharing among students in higher education.

Keywords: *Factors influence knowledge sharing, Higher education, Knowledge, Knowledge sharing, Students.*

INTRODUCTION

Knowledge is one of the most important driving factors of the development process of a country, especially those undergoing transformation processes. Knowledge is considered a valuable asset, as a production's factor, together with capital, land, and labor (Nassuora, 2011). As the world heads for a 'knowledge-based economy', knowledge is considered as this new economy's main driver (Nassuora, 2011). Nowadays, since Industry 4.0 is regarded as a driver of technology development (Pawłyszyn *et al.*, 2020), knowledge is becoming more important than ever. Owning and applying the knowledge is the key to sustainable development.

Knowledge can be classified in several ways. The distinction between explicit and tacit knowledge has caught the attention of several researchers. Considering the importance of knowledge, Prusak (1996) became conscious of the fact that "the only thing that gives an organization a competitive edge—the only thing that is sustainable—is what it knows, how it uses what it knows, and how fast it can know something new". If a person knows something and he or she does not share it with others or apply it to their work to create added value, the known

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thing will disappear without adding any value. Human resource know that knowledge is power. (Hanh *et al.*, 2021), and are therefore recognizing the importance of knowledge sharing. Several studies have aimed to find the determinants of knowledge sharing behavior (Wangpipatwong, 2009; Nassuora, 2011; Rehman *et al.*, 2011; Zia-ur-Rehman *et al.*, 2011; Bulan & Sensuse, 2012; Huy, 2012; Supar, 2012; Areekkuzhiyil, 2016; Baig & Waheed, 2016; Alhawary *et al.*, 2017; Nguyen *et al.*, 2019; Ariati *et al.*, 2020; Pawłyszyn *et al.*, 2020). Nam *et al.* (2021) mentioned we need apply IoTS in education field. Thi Hoa *et al.* (2021) stated training and education is good for entering EVFTA. And Dat *et al.* (2020) stated skills is important for corporate governance, also emphasize by Hang *et al.* (2020) and by Huy (2015). While Huy *et al.* (2020) stated bank can transfer knowledge to public, also by Huy and Hang (2021). And Hien *et al.* (2021) specified importance of training human resource and also by Huy (2021).

Students come to higher education institutions to acquire knowledge. Recognizing factors that impact knowledge sharing in learning communities is critical since a critical step in knowledge acquisition is knowledge sharing. Alongside the research on knowledge sharing among teachers and academic staff (Bulan & Sensuse, 2012; Supar, 2012; Haque et al., 2015; Areekkuzhiyil, 2016; Alhawary *et al.*, 2017), several studies have investigated knowledge sharing among students (Wangpipatwong, 2009; Zia-ur-Rehman *et al.*, 2011; Ghadirian *et al.*, 2014; Baig & Waheed, 2016). However, the framework for knowledge sharing in higher education seems incomplete, as some factors, such as university support and the physical environment, have not been taken into consideration. Hoa *et al.* (2021) stated universities need to enhance students' research activities and alos confirmed by (Hien *et al.*, 2021; Huy *et al.*, 2021; Huy *et al.*, 2021; Tram & Ngoc Huy, 2021).

The goal of this study was to evaluate factors influencing knowledge sharing among undergraduate students in Vietnam. First, we reviewed the literature regarding knowledge and knowledge sharing. We then focused on knowledge sharing among students in higher education. A questionnaire survey was conducted to find the factors influencing knowledge sharing among students. Among these influences, two new constructs were introduced, including university support and the physical environment. We end with some implications for higher education institutions to strengthen the knowledge-sharing process among students.

Research Model and Hypotheses

Knowledge is an important resource of organizations as it provides a sustainable competitive advantage in the economy (Davenport & Prusak, 1998; Wang & Noe, 2010). Mohajan (2016) stated that "knowledge is considered as a collection of experience, appropriate information, and skilled insight which offers a structure for estimating and integrating new experiences and information". According to this author, knowledge is developed from data, information, and previous knowledge. While information is organized data, knowledge is organized information. It is from information, but it is more than information. Knowledge is not easily observed, but it can be assessed through sources such as test results and answers to questions (Hunt, 2003). For people working in organizations, knowledge helps solve problems and make decisions (Mohajan, 2016).

Recognizing the importance of knowledge, the sharing of knowledge is essential within an organization as it brings benefits to both individuals and organizations. Knowledge sharing is a set of behaviors involving the exchange of assistance or to information others. Knowledge

sharing is also considered the process of understanding, experience, and exchanging skills among people. Jackson *et al.* (2006) stated that knowledge sharing is how employees can contribute to knowledge applications, innovation, and the competitive advantage of their organization. Although people tend to hoard knowledge, it should be shared as, unlike physical materials, which decrease if used, knowledge increases with use. When a donator gives knowledge, he or she still retains it, and it also enriches the receiver. Shared knowledge could contribute to ideas and solutions, leading to improvements in individual performance and also the organization as a whole. Moreover, it could help to reduce costs and contribute to organizational success by preventing people from repeating the mistakes made previously (Gruenfeld *et al.*, 2000). Regarding knowledge sharing in higher education, students benefit from the creation of new knowledge, improved ability to solve problems, and better performance and creativity (Shahzadi & Ahmad, 2011; Lee, 2018).

Knowledge Sharing

In the knowledge-sharing process, there are two flows: knowledge donating and collecting. To share knowledge, one party must transfer knowledge to another. The transferring process can also be known as knowledge donating or giving. In the opposite direction, receiving knowledge can be known as a collecting, getting, or gathering process. Thus, the knowledge sender, donator, or carrier and the knowledge receiver, collector, or requester both exist. Knowledge transferring is to convey and diffuse knowledge among different individuals or organizations or within one organization. Hooff and Ridder (2004) stated that it is the process of "communicating to others what one's personal intellectual capital is", whereas the opposite process is "consulting colleagues in order to get them to share intellectual capital". Telling stories, emails, discussions in forums, comments in social networks, regular meetings, training, and personal contact are ways to convey knowledge. Given the fact that the two processes happen simultaneously, the knowledge sharing process is illustrated by the processes of knowledge transferring and knowledge receiving. Huy *et al.* (2021) mentioned knowledge is important for good human resource, and reemphasized by (Huy *et al.*, 2020; Lan & Huy, 2021; Ngu *et al.*, 2021).

Trust

Trust is placing one's confidence in the other party to the relationship (Li & Betts, 2003). It is an antecedent of cooperation and an important factor in relationships. When people trust others in relationships, they tend to engage in social exchange and cooperative interactions. In creating a favorable environment for knowledge sharing, interpersonal trust is critical (Chang & Chuang, 2011). Trust is considered a cost-effective technique to enhance knowledge sharing within organizations (Dyer & Singh, 1998), and is believed to influence the knowledge sharing of people (Bulan & Sensuse, 2012), even in virtual teams or virtual communities (Chang & Chuang, 2011). It affects the processes of knowledge donating and collecting (Nguyen *et al.*, 2019). Thus, we postulated that the more people trust others, the more people share knowledge with others.

H1: Trust has a positive relationship with knowledge sharing.

Enjoyment in Helping Others

Enjoyment in helping other stems from the altruism concept, which believes that knowledge workers may be inspired by altruism to help others (Lin, 2007). The inner motivation of individuals stimulates knowledge sharing with others (Osteroh & Frey, 2000). An organization's success is associated with workers' motivation and a strong desire to share knowledge with customers. Individuals may be motivated to share knowledge as they enjoy helping others (Alhawary *et al.*, 2017; Nguyen, *et al.*, 2019). Considering these views, it was hypothesized that:

H2: Enjoyment in helping others has a positive relationship with knowledge sharing.

Knowledge Self-Efficacy

According to Bandura (1995), self-efficacy is the "belief in one's capabilities to organize and execute the courses of action required to manage prospective situations". Self-efficacy is about the perception or judgment of being able to accomplish a specific goal. It is the level of effectiveness that one person believes he or she has in handling and performing specific tasks. In other words, it is the belief one person has in his or her abilities and competencies. This is not only the knowledge and skills one has but also the judgment of what one can do with their knowledge and skills.

Knowledge self-efficacy is the ability to apply knowledge in solving problems in the workplace (Asllani & Luthans, 2003) and re-emphasized by Hang and Huy (2021). Knowledge self-efficacy can help motivate people to share knowledge with colleagues (Ling *et al.*, 2010; Bulan & Sensuse, 2012; Haque *et al.*, 2015; Alhawary *et al.*, 2017; Nguyen *et al.*, 2019). In higher education, self-efficacy has been proven to affect knowledge sharing among students in research with a small scope of the study (Kalu & Usiedo, 2019; Zohra & Mustapha, 2019). Accordingly, it was hypothesized that:

H3: Knowledge self-efficacy has a positive relationship with knowledge sharing.

Perceived Benefits

Gutman (1982) believed that the perceived customer value of an offering is the combination of both the benefits that a customer experiences, expects or seeks, and the unexpected consequences that come with the benefits. The perceived value, thus, is the benefits that a person receives when carrying out an activity. Researchers believe that perceived benefits influence knowledge-sharing behavior. This is an important factor for people in deciding to share knowledge, as he or she may expect to receive benefits from others who share something with him or them in the future. Expecting that the knowledge receiver will help or will not harm the knowledge giver, or will give back to them in the future, is the motivation for knowledge transferring (Moghavvemi *et al.*, 2018; Kalu & Usiedo, 2019). When the knowledge-sharing behavior is stimulated in both the knowledge giver and receiver, people who expect reciprocal benefits tend to increase their sharing behaviors and feel more confident in the workplace. Thus, it was hypothesized that:

H4: Perceived benefit has a positive relationship with knowledge sharing.

University Support

Organizational factors, such as organization policy and management support, may influence its members' knowledge sharing. In higher education, university policy and support may influence students' exchange of ideas. For example, if encouraged by the university, group work may allow students to learn from each other (Webb *et al.*, 2002). In addition, assigning an academic supervisor to students could also stimulate knowledge sharing, as students would have opportunities to exchange their ideas or consult their supervisors during their time at the university. Thus, it was proposed that:

H5: University support has a positive relationship with knowledge sharing.

Lecturer Support

In learning environments, the way lecturers conduct classes may influence how the students behave in terms of knowledge-sharing behavior (Yogeesha & Krishna, 2013). Stimulation of questions and answers from students by lectures in question-and-answer sessions may help students test their knowledge (Shanmugavelu *et al.*, 2020) and internalize knowledge while allowing others to receive knowledge by listening to the answers. Course group work and/or discussion could also motivate knowledge sharing as in discussion, students exchange their ideas or reach decisions together. Accordingly, the following hypothesis was proposed:

H6: Lecturer support has a positive relationship with knowledge sharing.

Physical Environment

The physical environment may affect the knowledge-sharing process in an organization (Appel-Meulenbroek, 2009; Weijs-Perrée *et al.*, 2019). The layout of organizational settings could influence interactions among employees, and knowledge sharing could be stimulated. People in close collocation interact more because they bump into each other when moving around in the areas of their workplace (Appel-Meulenbroek, 2009; Sankhayeva *et al.*, 2020). In higher education, the university layout, including the class layout, meeting areas, cafeteria, canteen, parking lot, dormitory, and floor arrangement may encourage students to communicate and exchange information. Thus, we proposed the following hypothesis:

H7: Physical environment has a positive relationship with knowledge sharing.

Technology Infrastructure and the Use of ICT Tools

To share knowledge, people require ways to transfer and receive knowledge. Technology has been recognized as a significant factor for sharing knowledge, as it provides the means to achieve this. Two technology sub-factors mentioned the most in knowledge sharing by researchers are technology infrastructure (Wangpipatwong, 2009; Ling *et al.*, 2010; Wang & Noe, 2010; Rehman *et al.*, 2011; Zia-ur-Rehman *et al.*, 2011; Bulan & Sensuse, 2012; Ghadirian *et al.*, 2014; Razmerita *et al.*, 2016) and ICT tool use (Ling *et al.*, 2010; Bulan & Sensuse, 2012; Supar, 2012; Alhawary *et al.*, 2017; Nguyen *et al.*, 2019).

García Carreño (2014) stated that "the health of the learning ecology of the organization depends on effective nurturing of information flow". Connectivity helps such flows to run

smoothly, using information technologies. In higher education, technology building connectedness among students could act as a facilitating factor for knowledge sharing. We, therefore, proposed the hypotheses as follows:

H8: Technology infrastructure has a positive relationship with knowledge sharing.
H9: The use of ICT tools has a positive relationship with knowledge sharing.

The above factors can be grouped into three dimensions: individual factors, organizational factors, and technology factors. **Figure 1** illustrates the research model.

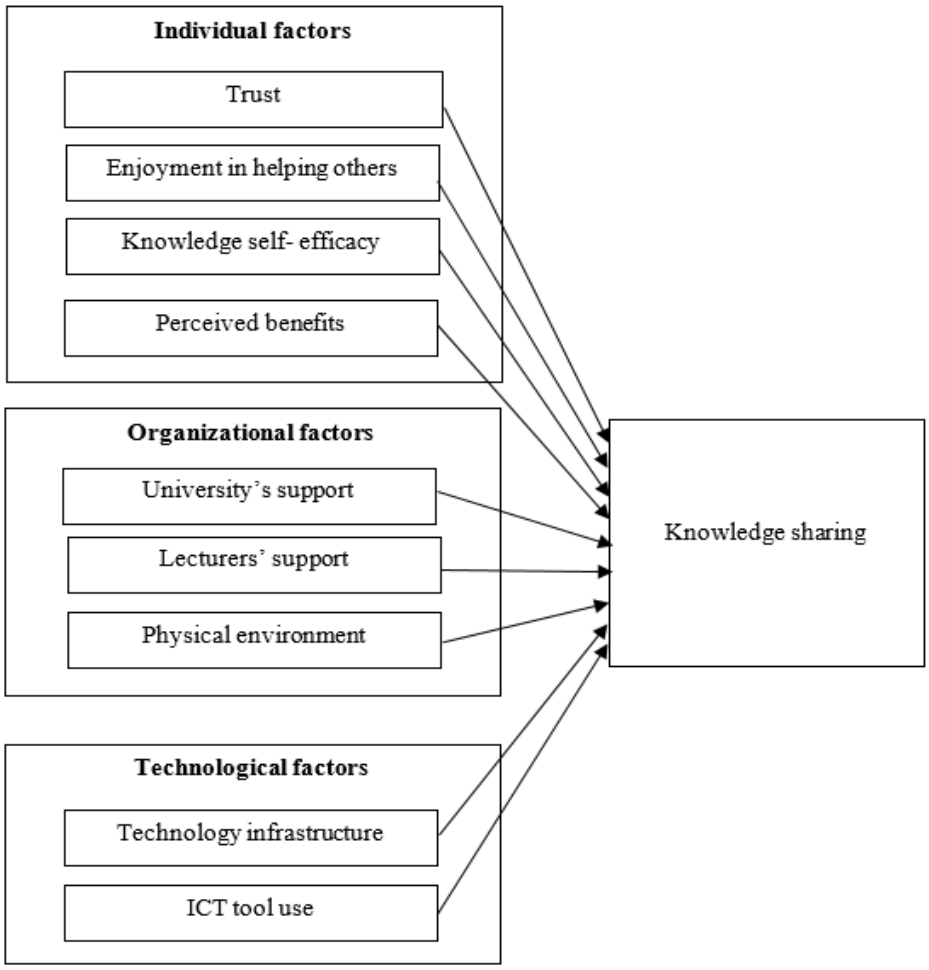

Figure 1. Research model

MATERIALS AND METHODS

Sample and Procedure

Questionnaires were distributed through Google forms. Among 532 collected questionnaires, 15 were excluded as they were incomplete. Accordingly, the sample for the final research analysis included 517 students in Vietnam. SPSS 28 was used for data processing and analysis.

Measurement

The multi-item method was used to design the questionnaire. A five-point Likert scale, ranging from "strongly disagree" to "strongly agree", was applied to measure each item. As illustrated in **Figure 1**, there were nine independent variables and one dependent variable in the research model. The nine independent variables belonged to three dimensions: technology factors, organizational factors, and individual factors. The individual factors included four variables; namely, trust, knowledge self-efficacy, enjoyment in helping others, and perceived benefits. Trust, enjoyment in helping others, and knowledge self-efficacy were based on the studies of Nguyen *et al.* (2019), whereas perceived benefits were modified from the study by Chang and Chuang (2011). The organizational factors consisted of three variables, including university support, lecturer support, and the physical environment. Lecturer support was adapted from the 'instructor support' variable in a study by Wangpipatwong (2009). University support and physical environment were new items and were self-developed. Two variables belonged to the dimension of technological factors, including technology infrastructure and ICT tool use. Both were modified from variables of IT support, end-user focus, and smart device utilization variables by Lee (2018), and information and communication technology by Nguyen *et al.* (2019). Lastly, knowledge sharing was measured through knowledge transferring and knowledge receiving activities. They were constructed based on studies by Lee (2018) and Nguyen *et al.* (2019). The table of measurements is presented in **Table 1**.

Table 1. Survey Items

Factors	Label	Items
Trust (trust)	Trust1	When I tell other students something, such as in a lesson, or share a method for learning improvement, I believe in that student.
	Trust1	Other students will not take advantage of me for the knowledge that I share with them.
	Trust3	I am sure that the knowledge that I share with other students will not be manipulated.
	Trust4	Other students are truthful in sharing knowledge with me.
	Trust5	Other students will not use the knowledge I share to oppose me.
Enjoyment in helping others (enj)	Enj1	I feel happy when I help other students with their learning.
	Enj2	If sharing something helps others, I often do that.
	Enj3	I like sharing knowledge, learning materials, and experiences with other students.
	Enj4	Sharing knowledge with other students is my pleasure.
	Enj5	I feel happy when I share knowledge with anyone.
	Selfe1	I am confident to share knowledge with other students.
	Selfe2	I am confident to share learning resources with other students.

Knowledge self-efficacy (selfe)	Selfe3	I am confident to share skills and experiences with other students.
	Selfe4	I think I am able to provide valuable knowledge to other students.
Perceived benefits (perbe)	Perbe1	My knowledge sharing would help other students solve their problems.
	Perbe2	My knowledge sharing would help other students and me solve our problems.
	Perbe3	My knowledge sharing would help other students and me improve our learning.
	Perbe4	Other students respect and admire me because I share knowledge with them.
	Perbe5	I share knowledge with other students so that in the future they will share knowledge with me.
University's support (unisup)	Unisup1	My university encourages students' knowledge sharing.
	Unisup2	I can easily join students' clubs and associations in my university.
	Unisup3	Group performance often is a part of course assessment in my university.
	Unisup4	In my university, whenever I have a problem, I can consult my academic supervisor.
	Unisup5	My university has a forum or social networks for exchanging information among students and teachers.
Lecturers' support (lecsup)	Lecsup1	Group work is often a part of our lesson.
	Lecsup2	Lecturers organize discussions among students in our lessons.
	Lecsup3	Whenever a student has a question, lecturers repeat the question to the class.
	Lecsup4	Lecturers create sharing platforms, such as Facebook, zalo, Viber, Messenger, etc.
	Lecsup5	Teachers raise questions for students to answer in lessons.
Physical environment (Phys)	Phys1	There are places, such as meeting rooms, canteens, cafeterias, gardens, and benches, for students to discuss or chat in my university.
	Phys2	I meet with many students in the classrooms, corridors, elevators, stairs, parking lots, etc., each day at university.
	Phys3	It is easy to observe and talk to other students in my classroom.
Technology infrastructure	Techin1	I am provided a student account for exchanging information by my university.
	Techin2	Wi-Fi is free in our university buildings.

	Techin3	My university uses critical information infrastructure, such as data, databases, computer systems, communication networks, communication software, etc.
	Techin4	Information infrastructure in my university is updated frequently.
ICT tool use	Icttol1	I have digital communication tools, such as a mobile phone, tablet device, smartwatch, or computer.
	Icttol2	I find and/or exchange information in social media networks such as Facebook and Instagram.
	Icttol3	I find information through Google searches.
	Icttol4	There is a computer to access online resources in our classroom.
	Icttol5	We can learn online through such applications as Team, Zoom, Skype, Skype for business, etc.
Knowledge sharing (knosha)	Knosha1	I tell my university friends about the new things that I learn.
	Knosha2	I share new or interesting things on social media.
	Knosha3	I advise my university friends based on my knowledge.
	Knosha4	When my university friends do not understand the lesson I explain it to them.
	Knosha5	I explain how to solve problems to my university friends.
	Knosha6	I ask my university friends to explain the lesson if I don't understand it.
	Knosha7	I do not hesitate to ask my university friends to share their knowledge and expertise.
	Knosha8	When I find it difficult to solve problems, I ask my university friends for help.
	Knosha9	When I find it difficult to do something, I share it with my university friends and ask for their advice.

RESULTS AND DISCUSSION

Characteristics of the Sample

The demographic characteristics of the participants are shown in **Table 2**.

Table 2. Demographic characteristics of the respondents

Characteristics	Frequencies	Percentage (%)
Gender		
Male	220	42.6
Female	297	57.4
Major		
Engineering	51	9.9

Natural science	112	21.7
Economics and management	100	19.3
Social science	96	18.6
Pharmacology, medicine, biomedical engineering	101	19.5
Others	57	11.0
Studying year		
1st year	132	25.5
2nd year	166	32.1
3rd year	111	21.5
4th year	107	20.7
5th year and above	1	0.2

The sample consisted of 220 male students (42.6%) and 297 female students (57.4%). Respondents studying natural science accounted for the largest proportion, at 21.7%. Following this were those in pharmacology, medicine, and biomedical engineering (19.5%), economics and management (19.3%), social sciences (18.6%), and engineering (9.9%). The other 57 respondents (11%) were studying in several fields, including art, forestry, military, and security. With regards to study year, sophomores constituted 32.1% of the sample, followed by freshmen (25.5%), juniors (21.5%), and seniors (20.9%).

Cronbach's Alpha Reliability Test and Exploratory Factor Analysis

The internal consistency of each variable was assessed by Cronbach's Alpha reliability test. Three items, trust1, perbe5, and unisup5, were discarded as their presence made the Cronbach's Alpha value of the variable less than the Cronbach's Alpha value if the item was deleted. After deleting these three items, the value of Cronbach's Alpha ranged from 0.639 to 0.794. The results of the internal consistency assessment are shown in **Table 3**.

Table 3. Analysis of internal consistency.

Variables	No. of items	Cronbach's Alpha
trust	4	.813
enj	5	.831
selfe	4	.800
perbe	4	.818
unisup	4	.859
lecsup	5	.809
phys	3	.829
techin	4	.855
icttol	5	.651
knosha	9	.794

Exploratory factor analysis (EFA) was applied to test whether the data could be reduced to a smaller set of summary variables. Three items, enj1, icttol1, and icttol2, were discarded as they were loaded in two factors, and the subtractions of their two loading values were less than 0.3. After removing these three items, the remaining were loaded into nine variables. Means were

computed to find the representative of each variable. Ten variables, including nine independent and one dependent variable, were tested for correlation. The result showed they were correlated **(Table 4)**. Finally, the regression was run to test the hypotheses.

Table 4. Table of Pearson correlations.

	trust	enj	selfe	perbe	unisup	lecsup	phys	techin	icttol	knosha
trust										
enj	0.397**									
selfe	0.359**	0.415**								
perbe	0.267**	0.453**	0.471**							
unisup	0.224**	0.347**	0.216**	0.308**						
lecsup	0.168**	0.332**	0.245**	0.275**	0.430**					
phys	0.218**	0.265**	0.169**	0.234**	0.251**	0.300**				
techin	0.216**	0.288**	0.241**	0.170**	0.359**	0.459**	0.148**			
icttol	0.216**	0.250**	0.247**	0.237**	0.272**	0.330**	0.306**	0.274**		
Pearson Correlation	0.342**	0.350**	0.330**	0.263**	0.381**	0.400**	0.302**	0.393**	0.383**	
Sig.(2-tailed)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

**. Correlation is significant at the 0.01 level (2-tailed).

Hypotheses Testing

The detailed hypothesis testing results are presented in **Table 5**. Of the nine hypotheses, seven were supported. The results of the regression analysis showed that there is evidence of the existence of positive relationships between the independent variables, including trust, knowledge self-efficacy, university support, lecturer support, physical environment, technology infrastructure, and ICT tool use with knowledge sharing. For the remaining independent variables, comprising enjoyment in helping others and perceived benefit, the null hypotheses were supported. In other words, H2 and H4 are rejected.

Table 5. Results of regression analysis for knowledge sharing

Variables	Beta	t	Sig.	H	Results
trust	.144	3.536	<.001	H1	Supported
enj	.056	1.263	.207	H2	Not supported
selfe	.109	2.513	.012	H3	Supported
perbe	–.014	–.322	.748	H4	Not supported
unisup	.133	3.142	.002	H5	Supported
lecsup	.123	2.767	.006	H6	Supported
phys	.099	2.499	.013	H7	Supported
techin	.160	3.801	<.001	H8	Supported
icttol	.158	3.941	<.001	H9	Supported

limitations

Our results are similar to those of some researchers who have studied higher education students' knowledge sharing behavior, and its influencing factors. Trust is recognized as an influencing factor that impacts knowledge sharing. The study by Kalu *et al.* (2019) revealed that 100% of surveyed students thought trust motivates this behavior. Zia-ur-Rehman *et al.* (2011) contended students share knowledge when they trust others. If the intensity and quality of knowledge sharing are also taken into account, there is empirical evidence that social trust influences both (Lee, 2018). Some studies have focused on employees in companies (Nguyen *et al.*, 2019) or other situations (Areekkuzhiyil, 2016), and have also found a positive relationship between trust and knowledge sharing. Regarding knowledge self-efficacy, Kalu *et al.* (2019) also found it is motivating for knowledge sharing. Similarities were found in the result of studies in terms of relationships between technology factors and knowledge sharing. Lee (2018) concluded, after a study of 213 students, that there is a relationship between IT support and smart device use with the intensity of knowledge sharing, and between end-user focus and quality of knowledge sharing. However, according to this researcher, IT support and smart device use did not have any relationship with quality of knowledge sharing, whereas end-user focus did not relate to the intensity of knowledge sharing. In online platforms, technology factors are also found to have an impact on knowledge sharing. Baig and Waheed (2016) reported that both engagements in online social networking sites and involvement in an online community affect online knowledge sharing. However, a study by Wangpipatwong (2009) with a sample of 207 university students in Bangkok found the reverse. Technology availability, including technology tools, was not proven to have a correlation with knowledge sharing.

Several studies have found evidence to support the relationship between enjoyment in helping others and perceived benefits with knowledge sharing, however, this study did not find the same. For instance, in a study by Kalu *et al.* (2019), 81% and 52% of surveyed students thought enjoyment in helping others and perceived benefits, respectively, were motivation to engage in knowledge sharing. Enjoyment in helping others affects two main processes of knowledge sharing; namely, knowledge donation and knowledge collection (Nguyen *et al.*, 2019). Two aspects of knowledge sharing, quality, and quantity, are impacted by altruism and reciprocity. In addition, previous research by Wangpipatwong (2009) denied the relationship between instructor support and students' knowledge sharing, while this study proved it.

One contribution of this research is that it developed the constructs of organizational support and the physical environment in the context of higher education. The results found evidence for the relationship between university support and the physical environment and knowledge sharing among students. University policies, such as resource allocation for knowledge sharing, regulations around course assessment that require group work, and policies of academic advisors can stimulate knowledge sharing. The arrangement of places such as lecture rooms, canteens, cafeterias, corridors, and benches can stimulate students' knowledge sharing.

This study has several limitations. Firstly, the sample size was limited in comparison to a large number of students in Vietnam. Future work could include a larger sample to increase the representativeness. Secondly, some factors, such as competition, rewards, and student-university fit, and demographic factors like gender, major, and studying year and location should also be taken into consideration in future work, to identify if there is any relationship between them and knowledge sharing.

Despite these limitations, the research results have potentially important implications for knowledge sharing in higher education. These results are different from those of previous studies. There is evidence for the positive relationship between students' trust and knowledge self-efficacy, university support, lecturer support, technology infrastructure, and ICT tool use, and knowledge sharing of students. The results, thus, suggest that paying attention to these factors could lead to the enhancement of students' knowledge sharing. It implies that for higher education institutions, support for knowledge sharing could be enhanced by the universities and lecturers, the arrangement of the physical environment, and access to information technology.

CONCLUSION

This article investigated the factors, which influence knowledge sharing in higher education. The findings of this quantitative research revealed sufficient empirical evidence to reject the hypotheses of the positive correlation between perceived benefits and enjoyment in helping others and knowledge sharing. The study empirically evidenced the positive and significant relationship between trust, knowledge self-efficacy, university support, lecturer support, the physical environment, technology infrastructure, and ICT tool use and knowledge sharing. The study provides a framework, discusses the issues, and identifies practical implications and research needs for the future regarding knowledge sharing.

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