Essays in Education

Volume 28 Article 2

December 2021

Factors Affect Students' Satisfaction In Blended Learning Courses In A Private University In Vietnam

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Cover Page Footnote

We acknowledge that this study has not been published anywhere else.

Introduction

The development and exploitation of BL in tertiary education were acknowledged as the "new normal" (Norberg, Dziuban, & Moskal, 2011) these days, since it is known for its multi-faceted benefits, namely access and convenience, faculty and learner satisfaction, learning outcomes, and cost reduction (Graham, 2013). Similarly, Vaughan (2007) postulated the potentially conducive result of BL implementation when it is blended successfully. Although the use of blended learning in higher education and associated studies has risen in recent years, more study is needed to determine student satisfaction and effectiveness for this learning approach (Wu, Tennyson, & Hsia, 2010). According to Shee and Wang (2008), several previous studies regard student satisfaction as the level of pleasure and contentment a student experiences, to evaluate and measure their enjoyment of attending the system. These studies have shown that satisfaction indicates students' contentment and comfort obtained from their performance throughout the learning course and their attitude towards the knowledge they expect to achieve from that mixed learning method (Wu et al., 2010). However, the measurement and the investigation that has been considerably conducted on such online learning, whereas studies on blended learning are still scarce (Arbaugh, 2014).

In the current study, we investigated students who studied blended courses where students study in Coursera and/or FUNiX in the Summer semester in 2021. These courses require students to self-study online and have some offline meetings with mentors to review their online learning and to answer students' query about their study. This learning mode raises a need to identify what factors influence their learning satisfaction which is considered as an indicator of their learning success (Gao, Jiang, & Tang, 2020).

The aim of the current study is twofold: a) to examine the relationships of students' learning styles, their E-learning self-efficacy and their satisfaction when studying in blended learning environment; and b) to identify the interrelationship of students' learning styles and their E-learning self-efficacy. To obtain these aims, the following questions are proposed:

1. To what extent do social environment and cognitive factors (independent variables) affect students' satisfaction (dependent variable) when they study in blended learning environment?
2. What are the relationships of these independent variables?

Research model and hypotheses

Definitions of blended learning (BL)

Despite the fact that BL is being used in higher education all over the world, there is no unanimous definition of these words (Graham, 2019). A simple definition proposed by Porter and Graham (2014) defining BL as a combination of online and offline experiences "to generate effective, efficient, and adaptable learning" (p. 12). To Clark and Mayer (2016), BL is not just about the learning modes, it also involves the combination of diverse teaching methods (e.g., asynchronous online learning, in-person meetings in class, virtual classroom discussions, discussion boards) to enhance learners' learning outcomes. In a similar vein, Garrison and Vaughan (2008) supposed that BL brings up major improvements such as course restructuring, classroom hour reductions, and useful online and offline integration.

Based on the definitions from the aforementioned scholars and educators, blended learning in this study is understood as the integration of students' learning in MOOCs and their face-to-face meetings with instructors. In spite of the fact that these courses are delivered through MOOCs, students must attend obligatory in-class meetings with their teachers and pass an end-of-course.

Theory of Reasoned Action (TRA) and Social Cognitive Theory (SCT)

Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) defines a behavior as a result of a person's attitude toward an action, along with the influence of subjective norms. The subjective norm is considered as a person's belief on the behavior which that behavior is approved or disapproved of by themselves and society. These two form the behavioral intentions, and the intentions will lead to the actual behavior. Behavioral intentions motivate a person to perform certain action or behavior under the influence of their thoughtful intentions. The stronger they are motivated, the more likely the behavior will be performed.

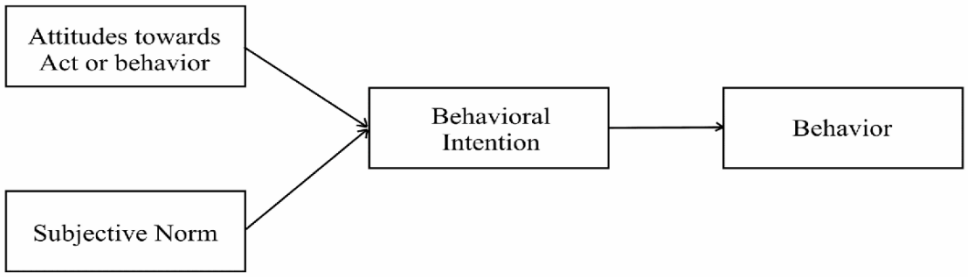

Fig. 1: Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975)

Social cognitive theory (Bandura, 1989) is the initial basis of this study to examine determinants of satisfaction in a blended learning system. This theoretical theory proposed that a specific behavior is the result of a reciprocal interaction between cognitive factors, social environment factors and behavior. Students' behavior towards BL environment is influenced by their acceptability to participate, their cognitive and environmental knowledge, on what they are going to perform.

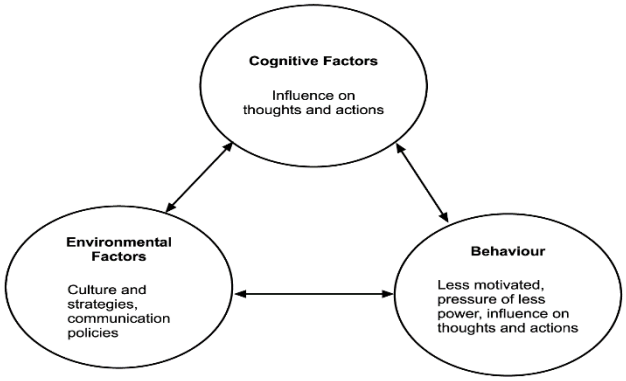

Fig. 2: Social Cognitive Theory model by Bandura (1989)

Technology Acceptance Model (TAM)

Based on the two theories above, Davis (1989) developed a Technology Acceptance Model (TAM) to predict users' willingness when using a specific technology. The model is used to understand the attitudes of individuals towards their specific action. The key variables in this model are the perceived usefulness (PU) and the perceived ease of use (PEOU) which influence user behavioral intentions on using technology. This model researches the acceptability of a particular technology (Tarhini, Hassouna, Abbasi, & Orozco, 2015). Based on this model, the researchers found that built-in factors show how closely they are linked to users' attitudes and behavioral intentions. Therefore, studies have applied the model to show user acceptance of technology through media platforms, e.g., e-mail, computer-based learning, blended learning, Page Summary rich web (RSS) and online learning (Gefen & Straub, 1997; Ong & Lai, 2006; Liu, Chen, Sun, Wible, & Kuo, 2010; Tarhini et al., 2015).

In this study, the preceding Davis's TAM is expanded into a version that investigates the influence of external factors on internal beliefs, actions, and satisfaction. Furthermore, in this TAM extension, we examined social environment elements and cognitive aspects on how satisfied students feel when studying in this

mixed setting. In particular, learning environment and learner's E-learning self-efficacy were aided to the model.

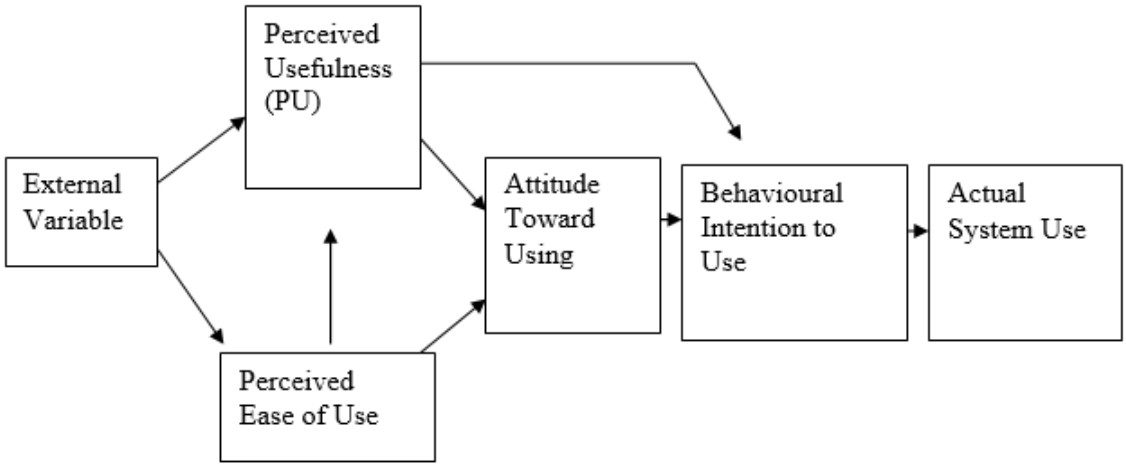

Fig. 3: Technology Acceptance Model (TAM) by Davis (1989)

Social environment factors

The social environment factors concentrate on successfully operating an online environment with virtual interaction and offline meetings between instructor and students. From that point, elements such as collaborative learning, learning climate, and social interaction are significant variables of a typical e-learning system. According to previous research (Pituch & Lee, 2006), social interaction directly affects the use of the e-learning system. The effectiveness of the learning process is determined by interactions between faculty and students, plus the collaborative activities. Furthermore, students' performances tend to have higher outcomes when they have the opportunity to experience emotional learning environments.

Instructor's performances

In a context that dignifies the use of online learning, the teachers are required to prepare proper skills to fully adapt with the new technological advancements, as well as to correctly guide the students (Jones, 2003). The teacher's role of being a knowledge deliverer has transformed into the manager of the learning materials resources (Romiszowski, 2004). Furthermore, instructors are the key factor in determining the success of an online learning environment, not only supporting the technological aspects but also the practical function, generating certain impacts on learning outcomes (Collis & Smith, 1997).

Instructors have a specific role to play in contributing to the success of the online environment. For this purpose, instructors must ensure the necessary level of interaction and discussion with their students (Hong et al., 2003). However, there are differences when it comes to interacting in this environment with more emphasis on the instructor's role as a mediator between the student and the material (Beaudoin, 1990) or between students and technology. Along with the increasing diversity of learners, instructors must understand that diversity, thereby identifying test forms, measurement practices, and assessment strategies (Banerjee & Brinckerhoff, 2002). Therefore, it is also possible to persuade and motivate students to accept the e-learning environment. As consequence, we examine the following hypotheses:

H1a: Instructor's Performance (IP) positively affects Perceived Satisfaction (PS).

Student-instructor interaction

Based on students' opinions about blended learning environments, there is finding that students have positive feedback toward this blended learning approach. The high interaction between learners and instructors is clearly demonstrated in the result of this study; Then, the study acknowledged the findings of Akkoyunlu and Soylu (2006) which prove that high demands for a face-to-face meeting is essential.

According to Fresen (2007), the student-instructor interaction is a crucial factor in determining the success of students' performance. Therefore, in the need of enhancing student's activation with their mentor, Volery & Lord (2000) suggested a participation mark should be added into the program. Furthermore, instructors should take the role of a stimulator, inciting learners to earnestly participate in the course. Understanding about a student's characteristics is a must, it strongly boosts students' confidence, generating positivity from side to side, as well as keeps them interacting.

In another perspective, one of the theorists of BL emphasized that designing courses in blended learning is a flexible approach. It provides some conveniences of fully online courses without leaving face-to-face contact. It can be concluded that the benefits of face-to-face interaction is undeniable and its presence can promote the quality of pure online or traditional classes. Accordingly, we suggest the following hypotheses:

H1b: Student-Instructor Interaction (SII) positively affects Perceived Satisfaction (PS).

H1c: Student-Instructor Interaction (SII) positively affects Learning Climate (LC).

Learning climate

Learning climate is a factor affecting learner's satisfaction by encouraging and inspiring students to communicate to one another, to participate in giving and

receiving information, and to internalize the diverse knowledge throughout the course. Moreover, in a study conducted by Wei, Chen, and Kinshuk (2012), social factors such as instructor's performance and interaction between students and instructor strongly affect the effectiveness inside a learning classroom's atmosphere. According to Naaj, Nachouki, & Ankit, 2012), their study indicates that the learning climate in which social interaction and collaborative work are encouraged, the learning outcomes are considered to be positively influenced. As a result, the more effective they feel when experiencing the learning climate, the more satisfied they are inside the blended learning system. Consequently, we hypothesize that:

H1d: Learning Climate (LC) positively affects Perceived of Satisfaction (PS).

Cognitive factors

Compeau and Higgins (1995) indicated the two cognitive variables that influence one to behave in a certain way during LESSE are the self-efficacy of people onto using computers and their expectations toward the overall performance in engaging an information system (IS). (Compeau, Higgins, & Huff, 1999; Venkatesh, Morris, Davis, & Davis, 2003).

The social cognitive theory determines that expectations as a stimulus that lead individuals' actions to be more perceived. Performance expectations are derived from individual judgments regarding valuable outcomes that can be obtained through a requisite behavior. Individuals are more likely to perform behaviors that they believe will result in positive benefits than those which they do not perceive as having favorable consequences.

This definition is similar to the concepts of perceived usefulness, based on Davis's (1989) technology acceptance model. Prior research in education or computer-mediated learning has found that performance expectations are positively related to students' learning performance (Bolt, Killough, & Koh, 2001) and satisfaction (Martins & Kellermanns, 2004; Shih, 2006).

Learning styles

Learning style is a major factor in the extension of this study's model, with the potential to influence perceived usefulness and satisfaction. Felder (1996) defined learning styles as specific strengths and interests in the way that learners perceive and process cognition. This hypothesis suggests the importance of combining learning and teaching styles as these characteristics influence academic achievement, length of study, learning patterns and learner satisfaction. In addition, as Felder & Brent (2005) stated, the lack of emphasis on developing learning styles leads to learners dropping out of the course or performing poorly. Respectively,

there seems to be a correlation between these factors as learners will not accept a learning environment if their study habits are not supported. Also under this assumption, the perceived usefulness and satisfaction of a particular learning technology can follow a level that matches their style. In contrast, pedagogical effects on learning styles have been disputed by some researchers due to the lack of convincing evidence to support it (Mayer, 2011; Pashler, McDaniel, Rohrer, & Bjork, 2008). Therefore, the following hypotheses are examined:

H2a: Learning Styles (LS) positively affect Perceived Usefulness (PU).

H2b: Learning Styles (LS) positively affect Perceived Satisfaction (PS).

Learner's E-learning self-efficacy

Another blended cognitive factor is student's self-efficacy. Learners' E-Learning Self-Efficacy (ELSE) was depicted by Tarhini, Hone, and Liu (2014) as "a student's self-confidence in his or her ability to engage in specific learning activities." This item was considered to be a predictor of PU and PEOU (Hong, Thong, James, Wong, & Tam, 2002; Ong & Lai, 2006; Venkatesh & Davis, 1996). However, some users who are not able or low-ability to use technology may give up on the initial phases. The technology in this context refers to online learning. Accordingly, we suggest that ESSE is an influential factor in online learning and it is also an influential factor affecting perceived usefulness and perceived ease of use in the blended learning system. Subsequently, we identify the following hypotheses:

H2c: Learners' E-Learning Self-Efficacy (ELSE) positively affects Perceived Usefulness (PU).

H2d: Learners' E-Learning Self-Efficacy (ELSE) positively affects Perceived Ease Of Use (PEOU).

H2e: Learners' E-Learning Self-Efficacy (ELSE) positively affects Perceived Satisfaction (PS).

Perceived usefulness

Perceived usefulness demonstrates the scale of individual beliefs on using a particular system, as they expect it would improve their performance (Davis, 1986, p26). It was agreed that perceived usefulness (PU) has a crucial effect on accepting a technological teaching method, and it also describes a user's attitude (Davis, 1986). Hence, enhancing one's belief to make them feel comfortable in using and pointing out those useful features could help improve their expectation about a blended learning method, even if they found it does not meet their satisfaction when using it for the first time. As shown in literature, PU was a significant predictor of perceived satisfaction in blended or online learning climate (Liaw, 2008; Sun, Tsai,

Finger, Chen, & Yeh, 2008). How the learners rate the perceived usefulness depends on how satisfied they were with the system, as they expect the technology to bring them improvements and better performance. Consequently, this study tries to examine the following hypotheses:

H2f: Perceived Usefulness (PU) positively affects Perceived Satisfaction (PS).

Perceived ease of use

Perceived ease of use was defined as "the extent to which an employee believes it is free of physical and mental effort using a particular system" (Davis, 1986, p26). As a result, TAM and its successor, the Technology Acceptance Model 2 (TAM2), demonstrated the importance of PEOU in determining PU and users' attitudes toward a technology (Davis, 1989; Venkatesh & Davis, 2000). As a result, the following hypotheses are proposed:

H2g: Perceived Ease Of Use (PEOU) positively affects Perceived Usefulness (PU).

H2h: Perceived Ease of Use (PEOU) positively affects Perceived Satisfaction (PS).

Perceived satisfaction

To successfully operate the blended learning system, investigating the factors that influence learner's perceived satisfaction seems to be an essential process in a blended learning environment, thus it is believed to boost individual learning experiences. Some researchers (Thurmond, Wambach, Connors, & Frey, 2002, p176) defined the satisfaction as the result's reflection of one onto the binary reciprocity between students and their mentors. The mentor takes the role of a double-checker to track learners' process about what learning material will be involved or interacting with students to make sure they are learning in the right path.

Wu et al. (2008) model of student learning satisfaction infers three main factors that affect the satisfaction of students which are (1) perceived ease of use; (2) perceived usefulness; and (3) learning climate.

Furthermore, Wu, Tennyson, & Hsia (2010) define learner satisfaction as the acquisition of all the advantages a learner aims to receive from learning, as per his behavioral beliefs and attitudes. Based on these definitions, PS is a key factor stemming from the completion of a learning task, where the aimed outcomes derive enjoyably.

Based on the previous studies, we developed a model based on TAM that employed social environment and cognitive factors to identify students' satisfaction when they study online. The proposed research model is presented in Figure 4 below.

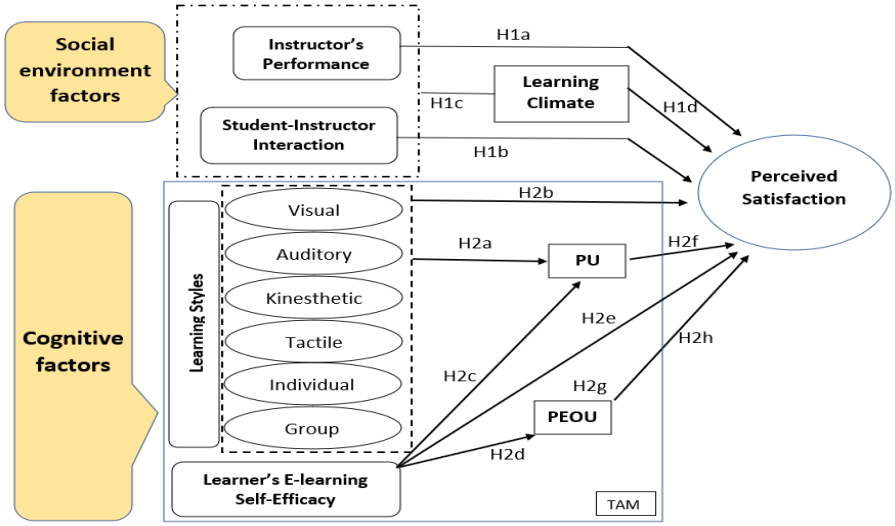

Fig. 4: The proposed research model

Research methodology

Participants

According to Cohen, Manion, and Morrison (2011), the correct sample size of a study depends on its purpose, the numbers of variables, the style of the study, and the kinds of population under investigation. For a quantitative study, the bigger the sample size the better its chance of being representative. In addition, the error margins are also essential factors to be considered. In other words, they are the confidence level and confidence interval. A compromise of the confidence level that most researchers wish to obtain is 95 per cent (Cohen et al. 2011), while the confidence interval varies from 3 to 5 per cent. The smaller the confidence level and confidence interval are, the more confident the researcher feels about the generalization for the whole population.

In this study, the confidence level and the margin of error the researcher seeks to obtain are 95% and 5%. The total population of the current study is 2043 students (as supplied by Student Academic Affairs Service), so the sample size would be 343 participants (Krejcie & Morgan, 1970). Among 453 returned, just 345 responses were qualified for data analysis. They are students, aging from 18-22 mainly from the Mekong Delta, from Courses 13, 14, 15, and 16 majoring in Business, IT and English in Summer Semester, 2021 at FPT University in Can Tho. They were selected as participants for the survey because they have taken at least one subject on Coursera/FUNiX. Therefore, they had experience with BL and they could evaluate this learning method based on their own experience.

Table 1

Participant size

Majors	Population	Sample size needed	Respondents
Business, IT, English	2403	343	345

* Confidence Level: 95% Confidence Interval: 5%

Research instruments

In order to gauge students' satisfactions on blended learning at FPT University, a 76-item questionnaire adapted from previous studies by Reid (1984), Wu et al. (2008), Ali (2011), Azawei (2017) were utilized. The questionnaire comprised three sections: (i) Demographic information; (ii) Learners' learning styles; and (iii) Key factors for determining students' satisfaction. In order to make sure that the respondents will comprehend the adapted items appropriately, we conducted a piloting phase before delivering the questionnaire to them. Participants had to tick their responses from the five options offered on a Likert-type scale ranging from "strongly disagree, disagree, neutral, agree, and strongly agree".

Data collection procedures

Piloting phase

In this study, a pilot test was conducted with sixty students who have studied BL courses at FPT university in Can Tho Campus. This phase is to help evaluate the respondent's comprehension and the internal reliability of the questionnaire. The Cronbach's Alpha of variables used in the piloting phase were all above 0.7, indicating that the instrument was reliable.

Table 2

Reliability Statistics of Piloting Phase

Variables	Cronbach's Alpha	N of Items
Auditory	.739	5
Kinesthetic	.762	5
Group	.857	5
Visual	.781	5

Tactile	.783	5
Individual	.883	5
Learning Climate	.924	4
Perceived Usefulness	.724	3
Learner's E-Learning Self-Efficacy	.909	3
Perceived Ease Of Use	.871	4
Student-Instructor Interaction in in-class meetings	.892	10
Instructor's Performance	.935	9
Perceived Satisfaction	.885	3

The actual research data collection procedures

In this phase, we first emailed the instructors of classes where BL students were studying to ask for permission. The content of the email included information about the research, advisor, group members, and the specific time of the data collection. However, during our data collection phase, due to the development of the Covid pandemic during our data collection, we had to email respondents to obtain more data. The email briefly explained the research purpose to the potential participants in Vietnamese and an attachment of the Research Information. To those who agreed to participate in the study, we emailed them with a link of the questionnaire and the Consent Form. Once completing the questionnaire, the data were automatically saved in the platform of Google Sheets which can only be obtained by the research team and our advisor. As a result, 345 responses were obtained. Table 3 below indicates the reliability of the questionnaire in the actual data collection phase.

Table 3

Reliability of the variables

Variables	Cronbach's Alpha	N of Items
Auditory	.817	5
Kinesthetic	.850	5
Group	.787	5
Visual	.781	5
Tactile	.849	5
Individual	.871	5
Learning Climate	.918	4
Perceived Usefulness	.931	3

Learner's E-Learning Self-Efficacy	.888	3
Perceived Ease Of Use	.910	4
Student-Instructor Interaction in in-class meetings	.962	10
Instructor's Performance	.964	9
Perceived Satisfaction	.915	3

Findings

General statistical information

Male students constituted about 45,5%, while female students comprised 54.5% of the responses (Figure 3). Among these participants, most of the respondents were second-year, third-year students, & final years, accounting for 32.5%, 30.8%, and 27.6% respectively. First-year students just took up 9.1%. Moreover, the highest proportion of participants majoring in Business with 61%, ranked the second place were IT students with 28%, and finally 11% were the students of English major.

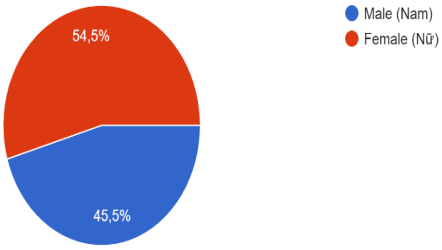

Fig. 3: Percentage of participants' genders

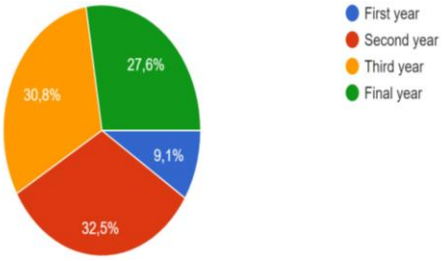

Fig. 4: Percentage of participants' school years

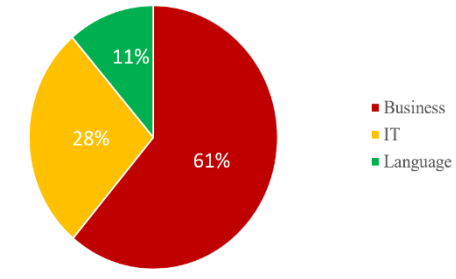

Fig. 5: Percentage of participants' majors

As shown in Table 4 below, all the Mean scores were greater than 3 and below 4.5.

As a result, we conclude that most of the respondents agree with the given suggestions. Regarding the Std. Deviation, most of the scores were smaller than 1 meaning that the questionnaire's items were acceptable.

Table 4

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Learning Climate	345	1.00	5.00	3.8326	.89332
Perceived Usefulness	345	1.00	5.00	3.6696	.94469
Learner's e-learning self-efficacy	345	1.00	5.00	3.6029	.96672
Perceived ease of use	345	1.00	5.00	3.7000	.91571
Student-Instructor Interaction	345	1.00	5.00	4.0162	.78383
Teacher's Performance	345	1.00	5.00	4.1333	.78249
Perceived Satisfaction	345	1.00	5.00	3.9295	.87152
Learning Style	345	1.43	5.00	3.9137	.60116
Valid N (listwise)	345				

After running Cronbach's Alpha to confirm that the data is correct. We examined the Pearson correlation between each variable with Perceived Satisfaction. As shown in Table 5, 12 pairs out of 13 pairs of variables all look up Sig. results (2-tailed) is .000 < 0.05. Only 1 pair of variables (Individual and Perceived Satisfaction) is uncorrelated because the value Sig. (2-tailed) is 0.06 > 0.05.

All items with positive Pearson r values from the proposed pairs of variables are strongly correlated. Because all these variables have Pearson r > 0. This means that if one variable increases in value, its related variable will increase in value and vice versa. Please note that we have selected these pairs based on Pearson's most important correlation index.

Table 5

Correlations between Independence factors and Perceived Satisfaction

Independent Factors	**Dependent Factor**	**Pearson Correlation**	**Sig. (2-tailed)**

Instructor's Performance	Perceived Satisfaction	.494**	.000
Student-Instructor Interaction	Perceived Satisfaction	.532**	.000
Learning Climate	Perceived Satisfaction	.650**	.000
Auditory	Perceived Satisfaction	.427**	.000
Kinesthetic	Perceived Satisfaction	.380**	.000
Group	Perceived Satisfaction	.481**	.000
Visual	Perceived Satisfaction	.345**	.000
Tactile	Perceived Satisfaction	.317**	.000
Individual	Perceived Satisfaction	.147**	.06
Perceived Usefulness	Perceived Satisfaction	.626**	.000
Perceived Ease Of Use	Perceived Satisfaction	.518**	.000
Learner's E-learning Self-Efficacy	Perceived Satisfaction	.539**	.000
Learning Style	Perceived Satisfaction	.423**	.000

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

Table 5 indicates that all independent factors have positive correlations on dependent factors (students' satisfaction), except Individual factors do not (sig. > .05). Consequently, this variable was deleted for the regression analysis of the independent & dependent factors in the next step.

Research Question 1: To what extent do social environment and cognitive factors affect students' satisfaction?

Table 6

The appropriateness of variables in the research model

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98.821	2	49.411	104.014	.000[b]
	Residual	162.463	342	.475		
	Total	261.284	344			

a. Dependent Variable: Perceived Satisfaction
b. Predictors: (Constant), Cognitive Factors, Social Factors
As can be seen in Table 6, sig. < .05 means that data for all variables are appropriate for the next regression stage.

Table 7

The appropriateness of variables in the research model

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.675	.229		2.950	.003		
	Social Factors	.334	.061	.292	5.481	.000	.641	1.561
	Cognitive Factors	.503	.068	.394	7.392	.000	.641	1.561

a. Dependent Variable: Perceived Satisfaction
As can be seen in Table 7, social factors and cognitive factors impacted positively on dependent variables (students' satisfaction) (p = .000 < .001). This means that all hypotheses are supported.

Research Question 2: What are the relations of the independent variables?

Table 8

Relationship between the independent variables

	LC	PU	ESSE	PEOU	SII	IP	LS
LC	1	.801**	.736**	.674**	.682**	.617**	.536**
PU	.801**	1	.848**	.771**	.580**	.510**	.515**
ESSE	.736**	.848**	1	.814**	.513**	.440**	.485**
PEOU	.674**	.771**	.814**	1	.618**	.534**	.487**
SII	.682**	.580**	.513**	.618**	1	.889**	.563**
IP	.617**	.510**	.440**	.534**	.889**	1	.548**
LS	.536**	.515**	.485**	.487**	.563**	.548**	1

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

In Table 8, the Pearson Correlation analysis is calculated to clarify the direction and how strong the connection between these independence factors. Moreover, the significance of these relationships is depicted to make a clear explanation between them. The (r) by mean of 1.0 will indicate a positive relationship while (r) -1 will indicate a negative correlation. In our study, all variables indicate a positive relationship when tested between two variables. The correlation results are shown in Table 3 above. After analyzing the data, the result is that all independent variables have positive and large correlation with each other. In a study conducted by Cohen (1988), the value of correlation shows 0.5 is large, 0.3 is moderate, and 0.1 is small. The table displayed most correlation values ranging from 0.5 and above can be considered as large. The variable student-instructor interaction (r=0.889) has the highest correlation to instructor performance. Meanwhile, the pair of variables of the learner's E-Learning Self-Efficacy and instructor performance shows the lowest correlation (r=0.440).

Discussion of the findings and implications

Our study pinpointed three major findings. First, social environment factors have the most influence on students' satisfaction. This hypothesis is based on some previous studies (e.g., Pituch & Lee, 2006), which assumes that learning climate to

be the prerequisite factor that makes students feel interested in participating in the courses (e.g. *The course in BL mode is interesting*). In addition, the social environment factor influences both direct and indirect ways to achieve satisfaction, which are clearly displayed in our TAM's expansion. It can be clearly seen that instructors' performances and interaction with students help promote their motivation to get involved in the course (e.g., *The instructors stimulated students learning*), as well as generate comfortable learning experiences (e.g., *I felt less pressure in the BL mode environment*). Whereas, instructors' performance is also an encouraging factor to stimulate students to study better in BL courses (e.g., *The instructor welcomed and encouraged questions and comments*). This result confirms a study by Ali & Ahmad (2011) which indicates that it is possible to persuade and motivate students to accept the BL environment, as the instructor's support could help students to solve their problems (e.g., *The instructors were available for consultation during office hours or by appointment*).

In the aspect of student-instructor interaction, our data show that most participants agree that instructors tend to listen and clear up student's queries about their wondering during these courses (e.g., *The instructors are interested in and answered my questions related to lessons I studied in Coursera and/ or FUNiX; The instructors are patient during discussions in in-class meetings*). Moreover, instructors are willing to help students with any issue that happens during the e-learning process (e.g., *The instructors are supportive during my study in BL mode*). By keeping the interaction with students, instructors' role of being a mediator to directly deliver necessary information to students, contact with them but indirectly affect the learning outcomes, maintain the basic format of an online learning environment (e.g., *The instructors informed me about the course progress in in-class meetings*).

Second, cognitive factors foster students to participate in these blended courses. This result resonates with other studies confirming students' self-efficacy towards using computers and their expectation of the overall performance during their study in BL courses (Compeau, Higgins, & Huff, 1999; Venkatesh, Morris, Davis, & Davis, 2003). Each student has a unique level of cognitive knowledge, whether it is higher or lower than expected, but it can be surely stated that performance expectations are positively related to students' learning performance (Bolt, Killough, & Koh, 2001) and satisfaction (Martins & Kellermanns, 2004; Shih, 2006). This variable is considered as the crucial component that positively affects students' satisfaction and both of two supplementary variables: perceived ease of use and perceived usefulness. In fact, due to learners' competent level of using technology, some could easily give up joining the course in the initial phases. Therefore, enhancing one's belief to make them feel comfortable in using and pointing out those useful features could help improve their expectation about a blended learning method, even if they found it does not meet their satisfaction when

using it for the first time. In the present study, the perceived usefulness predicts students' behaviors and attitudes in participating in the courses. This perception has a strong connection with perceived ease of use, which proposes a scale of perception levels that determine how readily the participants are when taking a specialized system. Innovative technology systems that are perceived as easier to use and less complex, tend to be accepted and used by potential users (Davis et al., 1989). Theoretically, the ease of use is perceived when students realize that the new learning system is not difficult to understand, as well as learning and using. For this reason, perceived ease of use is considered as one of the important factors influencing the acceptance and satisfying the users' expectations. In the concept of an e-learning system, its ease of use should include friendly interfaces such as understandable and conspicuous steps, appropriate content and graphical layout, and maybe some precise functions. In this study, students' perceived ease of use also indicated a fairly high correlation with their satisfaction ($r = .518$, $p < .01$)

Third, students' self-efficacy in an e-learning environment determines whether they will try their best to understand the system or not. According to Bandura's social learning theory (1989), a person's attitudes, abilities as well as their cognitive skill will form a self-efficacy system, which contribute to how a person believes they can achieve the actions and their sequential behaviors. In the same vein, Tarhini and his colleagues (2014) describe learners' E-Learning Self-Efficacy (ELSE) as students' self-confidence in his or her ability to engage in specific learning activities. From what we have discussed, it can be concluded that when a student believes in their own abilities, they are willing to perform necessary actions, in order to be successful using a system. Also, this belief is considered as a key part of our model. Our data disclosed a fluctuation among the answers, where participants' responses produce standard deviation over 1 value. (e.g., Std Deviation of question 3.8, 3.9 and 3.10 was 1.049, 1.042 and 1.116 respectively).

There are some implications that can be drawn on from the study results. For institutional administrators and MOOCs developers, the present study lends them a helping hand for a renovation and improvement of the online programs, creating the optimum learning condition to motivate students in their learning process, and so enhance students' academic outcomes. The results of the study will also help lecturers or instructors to design their lessons and employ teaching methods that suit students' learning styles in order to maximize their potential abilities.

The results of the study would benefit other Vietnamese universities since most of the study participants come from various parts of Vietnam, especially universities in the Mekong Delta. However, other contexts outside of Vietnam should apply the results with caution since differences of

students' demographic features may lead to different perspectives of the impact of these factors.

Conclusion

Our findings indicate a significant correlation between social environment and cognitive factors on students' satisfaction in BL courses in FPT University in Can Tho Campus, based on the extension model of TAM. The model has demonstrated the influence of social environment factors and cognitive factors on students' satisfaction in blended learning courses. According to the study's findings, social environment factors, namely students' interaction with their instructors and teachers' performances in class play a significant role in motivating students to pursue BL courses as well as feel less pressure in the classroom. Likewise, cognitive factors influence student's confidence to engage in e-learning programs as their willingness to participate in these courses is also determined by their technology abilities, as well as their learning styles demonstrate how difficult that blended learning method impinges their behaviors. Students' e-learning self-efficacy shows their belief in their capability of obtaining their expected learning outcomes. The findings of this research help to assist and guide higher education institutions in their application of blended learning. This research will also benefit instructors to adjust teaching methods in order to increase the effectiveness of offline meetings with students and pay more attention to motivational factors during students' learning process.

The current study acknowledges some limitations. Firstly, although the sample size of the study is sufficient, it is much better if the participants come from other educational institutions so that the students' perspectives of the investigated issue are possibly more convincing. Secondly, the study primarily employed self-reported survey questionnaires, it may suffer from the overestimation and/or underestimation of respondents, which is raised by Cole and Gonyea (2010). Finally, this study only considered the correlation between variables, and did not perform analytical methods such as regression, linearity and confirmation of paths as well as the role of variables in the model. Further studies should take these issues into consideration.

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Appendix

SURVEY QUESTIONNAIRE

Students' Satisfaction on Blended Learning in Higher Education: A Case Study in FPT University

Part 1: Demographic information

Read each statement on the following pages. Please respond to the statements IF THEY INVOLVE IN YOUR STUDY. Decide whether you agree or disagree, and/or possible answers to the blanking space with each statement.

1.1 Your gender: ❑ Male ❑ Female

1.2 What year are you in? ❑ First year ❑ Second year ❑ Third year ❑ Final year

1.3 What is your age? ❑ 18 to 20
❑ 20 to 22
❑ Other

1.4 What is your student ID?

1.5 What is your major?

1.6 How many courses have you studied on Coursera and/ or Funix?

❑ 1 course ❑ 2 courses ❑ 3 courses ❑ More than 3 courses

1.7 How many offline meetings per subject did you meet your mentors/ teachers when you studied on Coursera and/ or Funix?

❑ 4 times ❑ 5 times ❑ 6 times ❑ More than 6 times

Part 2: Learners' learning style preference questionnaire on *Blended learning course* (BL course = Learning on Coursera and/ or Funix & in-class meetings with mentors)

Please choose the appropriate response for each item

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

2.1 When the teacher tells me the instructions, I understand better.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.2 I prefer to learn by doing something in class.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.3 I get more work done when I work with others.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.4 I learn more when I study with a group.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.5 In class, I learn best when I work with others.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.6 I learn better by reading what the teacher writes on the chalkboard

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.7 When someone tells me how to do something in class, I learn it better.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.8 When I do things in class, I learn better.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.9 I remember things I have heard in class better than things I have read.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.10 When I read instructions, I remember them better.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.11 I learn more when I can make a model of something.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.12 I understand better when I read instructions.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.13 When I study alone, I remember things better.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.14 I learn more when I make something for a class project.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.15 I enjoy learning in class by doing experiments.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.16 I learn better when I make drawings as I study.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.17 I learn better in class when the teacher gives a lecture.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.18 When I work alone, I learn better.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.19 I understand things better in class when I participate in role-playing.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.20 I learn better in class when I listen to someone.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.21 I enjoy working on an assignment with two or three classmates.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.22 When I build something, I remember what I have learned better.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.23 I prefer to study with others.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.24 I learn better by reading than by listening to someone.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.25 I enjoy making something for a class project.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.26 I learn best in class when I can participate in related activities.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.27 In class, I work better when I work alone.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.28 I prefer working on projects by myself.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.29 I learn more by reading textbooks than by listening to lectures.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

2.30 I prefer to work by myself.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Part 3: Key Factors for Determining Students' Satisfaction

Please choose the appropriate response for each item:

1 = Strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Strongly Agree

Perceived usefulness (PU)

3.1 Using e-learning (Coursera and/ or Funix) improves my performance in BL.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.2 Using e-learning (Coursera and/ or Funix) in BL increases my scientific performance.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.3 Using e-learning (Coursera and/ or Funix) in BL enhances my learning effectiveness.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Learners' E-Learning Self-Efficacy (ELSE)

3.4 I can use e-learning (Coursera and/ or Funix) in BL, if there is no one around to tell me what to do as I go.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.5 I can use e-learning (Coursera and/ or Funix) in BL, even if I have never used a system like it before.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.6 I can use e-learning (Coursera and/ or Funix) in BL, even if there is no assistant illustration tools with the system

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Perceived ease of use (PEOU)

3.7 The interaction feature in e-learning (Coursera and/ or Funix) is clear and understandable.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.8 Interacting with e-learning (Coursera and/ or Funix) in BL does not require a lot of mental effort.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.9 I would find it easy to get e-learning (Coursera and/ or Funix) to do what I want it to do.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.10 I would find the e-learning (Coursera and/ or Funix) easy to use.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Student-Instructor Interaction in in-class meetings (SII)

3.11 The instructors encouraged me to actively give comments and ask questions throughout the meetings.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.12 The instructors give us adequate time to respond to questions.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.13 The instructors are interested in and answered my questions related to lessons I studied in Coursera and/ or Funix.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.14 The instructors informed me about the course progress in in-class meetings.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.15 The instructors are not looking for just one answer to a question.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.16 The instructors do not interrupt students during the discussion in in-class meetings.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.17 The instructors are patient during discussions in in-class meetings.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.18 The instructors do not dominate class discussions.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.19 The instructors respect my opinion.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.20 The instructors are supportive during my study in BL mode.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

Instructor's Performance (IP)

3.21 Overall, the instructors were effective in in-class meetings.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.22 The instructors were available for consultation during office hours or by appointment.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.23 The instructors stimulated students learning.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.24 The instructors treated all students fairly (e.g., ask questions and ask for answers from all students).

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.25 The instructor treated all students with respect.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.26 The instructor welcomed and encouraged questions and comments.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.27 The instructor presented the information clearly.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.28 The instructor emphasized the major points and concepts in lessons during my study in Coursera and/ or Funix.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.29 The instructor demonstrated knowledge of the subject.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑

Perceived Satisfaction (PS)

3.30 I am satisfied with the BL (Coursera + offline meetings) efficiency.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.31 I am satisfied with the BL (Coursera + offline meetings) effectiveness.

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5

3.32 Overall, I am satisfied with the BL (Coursera + offline meetings).

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5