Analyzing the Impacts of Students' Perception on the E-learning Motivation at Vietnam National University of Agriculture

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Abstract

The study was conducted to evaluate the impact of student's perception on e-learning motivation using a case study at the Vietnam National University of Agriculture. The study used an online survey to collect data from 278 students. The Structural Equation Modeling using AMOS package was applied to analyze influencing factors. The results revealed that students' perception of readiness for E-learning (H1: ß = 0.138, P = 0.023), perception of E-learning benefits (H2: ß = 0.315, P = 0.00), and perception of E-learning effectiveness (H3: ß = 0.443, P = 0.00) all have significant positive impacts on their motivation. These findings highlight the importance of enhancing students' perceptions of E-Learning to foster more effective and engaging E-learning experiences.

Keywords

Introduction

E-learning, a rapidly growing educational method worldwide, has been widely adopted in various educational activities, including higher education. Beyond obligatory or urgent circumstances such as natural disasters or pandemics, E-learning is now recognized as an important educational modality facilitating students' personal development across diverse fields. Es emphasized by Bates (2007), e-learning encompasses all teaching activities conducted via computers and the Internet to support the educational process (Bates, 2007). Singh & Thurman (2019) stated that in the online environment, students can learn and interact with instructors and peers from anywhere, participating in live lectures with real-time interactions between learners and educators (Singh & Thurman, 2019). The motivational dimension of E-learning has gained growing attention in recent years. Motivation plays a central role in determing student engagement and persistence in the online learning environment. Therefore, conducting studies to identify the driving

factors of E-learning is crucial, especially in the post-COVID-19 era in order to increase it's utilization and effectiveness (Kadiresan *et al.*, 2021; Mustakim *et al.*, 2021).

In Vietnam, especially after the COVID-19 pandemic, numerous studies have been conducted to analyze the factors influencing students' motivation for e-learning. The studies have addressed course design, studying materials, interactions during the learning process, internet connectivity quality, and learners' attitudes toward online learning (Le Huu Nghia *et al.*, 2021; Tran Dinh Manh, 2021; Trang Thi Thanh Huyen *et al.*, 2021; Bui Hong Dang *et al.*, 2022; Pham Anh Tuyet *et al.*, 2022; Quang, 2022; Pham Le Hong Nhung *et al.*, 2023). Among these, students' personal perception emerged as a crucial factor impacting E-learning motivation. Students' personal perception can be regarded as a subjective factor, shaping E-learning motivation of the learner. Such perceptions influence how learners internalize the value of online learning and their willingness to engage in it voluntarily..

As one of Vietnam's largest universities, the Vietnam National University of Agriculture (VNUA) has approximately 20,000 students across various fields of study. In recent years, VNUA has adopted online learning not only as an emergency response, but also as a core component of long-term learning strategy. Understanding the factors influencing learner motivation is essential for enhancing learning experiences to supporting learner diversity and promoting habits for lifelong learning. to The objective of this study was to analyze the impact of learners' perceptions of E-learning on E-learning motivation at VNUA. The findings of this study are expected to provide vital insights for educators and administrators to devise measures that encourage and enhance student motivation and engagement in the digital leaning environment, creating lifelong learning habits.

Materials and Methods

Study approach and research hypothesis

There are many different definitions of motivation. However, motivation can be understood as an internal state that drives an individual's to behaviors (Ryan & Deci, 2000).

Analyzing factors that affect motivation is crucial in education because it helps find solutions to achieve educational goals and promote individual development. Motivation plays a vital role in education as it significantly affects learning outcomes. Motivated learners are more likely to persevere through challenges to engage in learning activities and achieve desired results. For higher education, establishing and maintaining student motivation becomes even more important (Ryan & Deci, 2000).

Summarizing from various studies, including Quang (2022), Parkes *et al.* (2015), Das & Dansana (2022), Thanji & Shanmugam (2018), Pham Anh Tuyet *et al.* (2022), and Gray & Diloreto (2016), subjective perceptions play a crucial role because they contribute to maintaining a student's learnimg behavior, helping them recognize the benefits of the technology. Key perceptions that can affect learning motivation, in general and E-learning motivation in particular, include perceptions of the benefits of E-learning, the effectiveness of E-learning, and especially the readiness to perform E-learning behaviors effectively. Based on the combined research results, the authors propose a model to analyze the impact of personal perception on E-learning motivation (**Figure 1**). The variables and evaluation questions in the model are detailed in **Table 1**.

Research hypotheses

The research will test three hypotheses:

(i) *Hypothesis 1 (H1):* Perception of readiness for E-learning has a positive impact on student's motivation

(ii) *Hypothesis 2 (H2):* Perception of E-learning benefits has a positive impact on student motivation
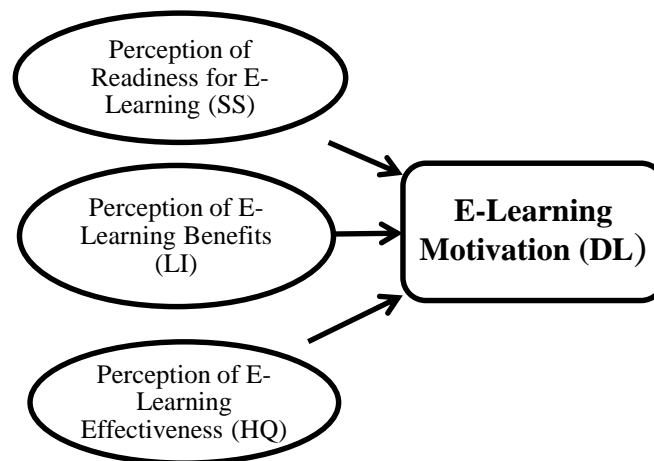
(iii) *Hypothesis 3 (H3):* Perception of E-learning effectiveness has positive impacts on student motivation

The model of research hypothesis is presented in **Figure 2**.

Data collection and analysis methods

Online survey

The study employed a convenience sampling method. A total of 1,000 students from various cohorts and faculties were invited to participate

Figure 1. Proposed Research Model to Evaluate the Impact of Self-Perception on E-Learning Motivation

Table 1. Variables in the Model

Factors	Questions	Code	References
Motivation of E-Learning (DL)	I choose E-learning to develop new skills in class	DL1	Authors' suggestion
	I choose E-learning to obtain the necessary certificates	DL2	
	I choose E-learning to gain knowledge not learned in class	DL3	
	I choose E-learning to practice independence and discipline	DL4	
Perception of Readiness for E-Learning (SS)	I always develop online teamwork skills	SS1	Parkes *et al.* (2015); Das & Dansana (2022)
	I always develop note-taking skills for online courses	SS2	
	I always develop reading and synthesis skills for online courses	SS3	
	I always develop computer skills.	SS4	
Perception of E-Learning Benefits (LI)	E-learning saves time	LI1	Thanji & Shanmugam (2018); Pham Anh Tuyet *et al.* (2022)
	E-learning saves money	LI2	
	E-learning is suitable for mandatory situations (e.g., quarantine, distant locations)	LI3	
	E-learning is flexible in learning methods.	LI4	
Perception of E-Learning Effectiveness (HQ)	I find myself more concentrated when learning online	HQ1	Gray & Diloreto, (2016) and authors' suggestion
	I obtain new knowledge and skills through online courses	HQ2	
	E-learning helps me to fulfill course requirements more effectively	HQ3	
	E-learning helps me obtain appropriate certificates.	HQ4	

in the survey. The questionnaire was distributed via Google Forms in November 2024 using university-managed email lists and student groups on Zalo, a popular messaging platform in Vietnam. The questionaire collected general demographic information of students and included items to measure students' perception and thier motivation for E-learning on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Two hundred eighty-seven valid responses were received, and although the response rate was 27.8%, it is common and acceptable in online survey research, particularly when using convenience sampling methods (Wu *et al.*, 2022). In addition, the final sample size of 278 was considered sufficient for Structural
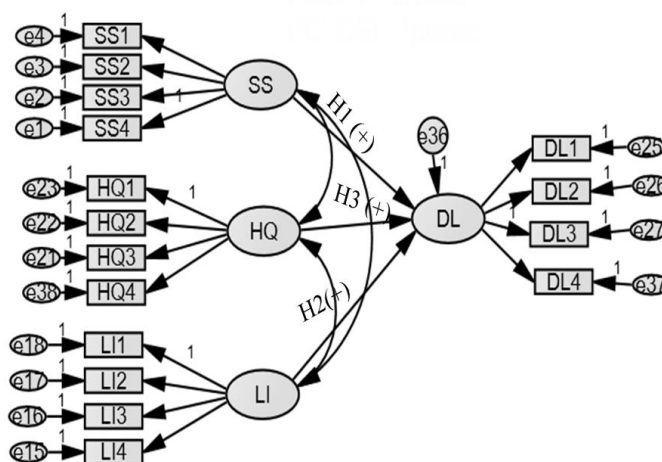
Note: (+): Positive relationship; (-): Negative relationship
Figure 1. Model and research hypothesis

Equation Modeling (SEM), which typically required a minimum sample of 200 for estimation model fit indices (Kline, 2024). The data were processed by SPSS 22 for data cleaning and preliminary analysis and AMOS 20 for confirmatory factor analysis (CFA) and SEM procedures.

Data analysis

To investigate the relationships between variables, this study employed Structural Equation Modeling (SEM) as the primary analytical framework. SEM was selected due to the complexity of the conceptual model, which involved multiple latent variables and interrelated hypotheses. It allowed for the simultaneous estimation of both the measurement model and the structural model, providing a comprehensive and accurate assessment of the relationships between students' perceptions and their motivation for E-learning (Kline, 2024). To prepare for SEM analysis, a series of preliminary steps were conducted, including Exploratory Factor Analysis (EFA), reliability testing using Cronbach's Alpha, and Confirmatory Factor Analysis (CFA). All statistical analyses were performed using SPSS 22.0 for EFA and reliability testing, and AMOS 20.0 for CFA and SEM.

Exploratory Factor Analysis (EFA) and Scale's Reliability Analysis

The exploratory factor analysis was used to find meaningful observed variables from the model's proposed variables. The suitability of exploratory factor analysis was determined by the KMO coefficient, as follows: KMO≥0.5 minimum acceptable level; 0.5<KMO≤0.7 moderate; 0.7<KMO≤0.8 good; 0.8<KMO≤0.9 very good; and KMO>0.9 excellent. The scale's reliability was evaluated using Cronbach's Alpha coefficient. If Cronbach's Alpha coefficient ≥0.6, the scale is acceptable for reliability; if Cronbach's Alpha coefficient ranges from 0.7 to 0.9, the scale has good reliability.

Confirmatory factor analysis (CFA)

After EFA, CFA was employed to measure the validity of the model. The study used indices such as Chi-square/df; goodness-of-fit index (GFI); the comparative index (CFI); the root-mean-square error of approximation (RMSEA), and the *P*-value of close fit (PCLOSE) If a model receives Chi-square/df < 3; GFI, CFI from 0.9 to 1; (RMSEA) < 0.08; and PCLOSE>0.01, it is considered the model well-fitted with the survey data.

Hypotheses testing

Research hypotheses were tested by the *P*-value. If *P*-value ≥0.05, the hypothesis is rejected, indicating insufficient evidence to prove a relationship between variables. If *P*-value ≤0.05, the hypothesis is confirmed, indicating a statistically significant relationship between variables.

Results and Discussion

Demographic characteristics of interviewees

Statistics from the 278 responses show that the male ratio was 55% and the female ratio was 45%. First-year students provided the highest response rate at 32% of the total responses, followed by fourth-year students at 26%. Other responses came from second and third-year students (**Table 2**).

Perception of Readiness for E-Learning Skills

E-learning differs significantly from traditional learning. Traditional learning is typically classroom-based with fixed schedules, while E-learning offers flexibility in time and location. It allows learners to study at their own pace using digital platforms and multimedia tools. E-learning also requires a higher level of self-discipline and digital skills. These differences influence how students interact, engage, and achieve learning outcomes. Therefore, E-learning skills are crucial for maintaining interest and continuity. Necessary E-learning skills include computer skills (SS4), reading and synthesizing information from online resources (SS3), note-taking skills (SS2), and online teamwork skills (SS1). The results show that most students recognize the importance of these skills, with over 80% acknowledging their importance. Notably, 83% of students reported practicing computer skills and reading and synthesizing information for more effective E-learning. However, However, a considerable percentage of students remained uncertain about these preparations.about these preparations (**Figure 3**).

Perception of E-learning benefits

The analysis of perceptions of E-learning benefits shows that most students believe E-learning offers many benefits. These benefits include saving time, saving costs, flexibility in learning methods, and suitability for mandatory situations. The benefit of E-learning in mandatory situations has received the highest recognition among students (**Figure 4**).

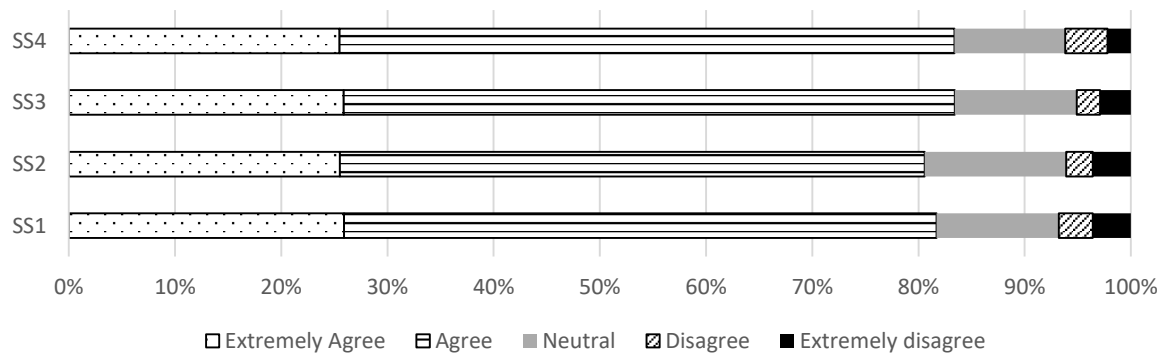### Perception of E-learning effectiveness

In addition to evaluating perceptions of readiness and benefits of E-learning, the study also assessed students' perceptions of E-learning effectiveness. The results show that most students find themselves more focused, gain new knowledge and skills, meet course requirements better, and obtain appropriate certificates through E-learning. However, the proportion of students agreeing that E-learning helps them meet course requirements and obtain appropriate certificates is lower than the other perspectives, at 70% and 73%, respectively (**Figure 5**).

### Results of exploratory factor and scale reliability analysis

The exploratory factor analysis showed a KMO coefficient of 0.917, indicating that the

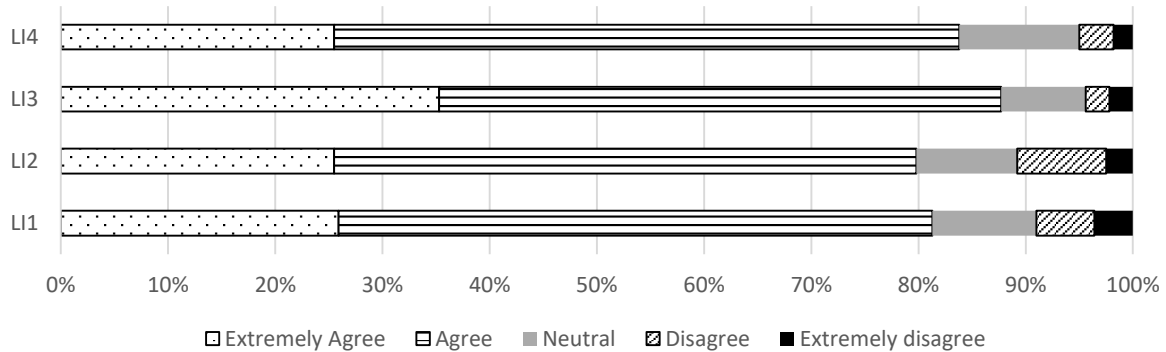**Table 2.** Descriptive statistics of interviewees

	Characteristics	Frequencies	Percentage (%)
Gender	Male	153	55
	Female	125	45
Year	First-year student	90	32
	Second-year student	47	17
	Third-year student	38	14
	Fourth-year student	71	26
	Others	32	11

Figure 3. Students' perception of readiness for E-learning skills
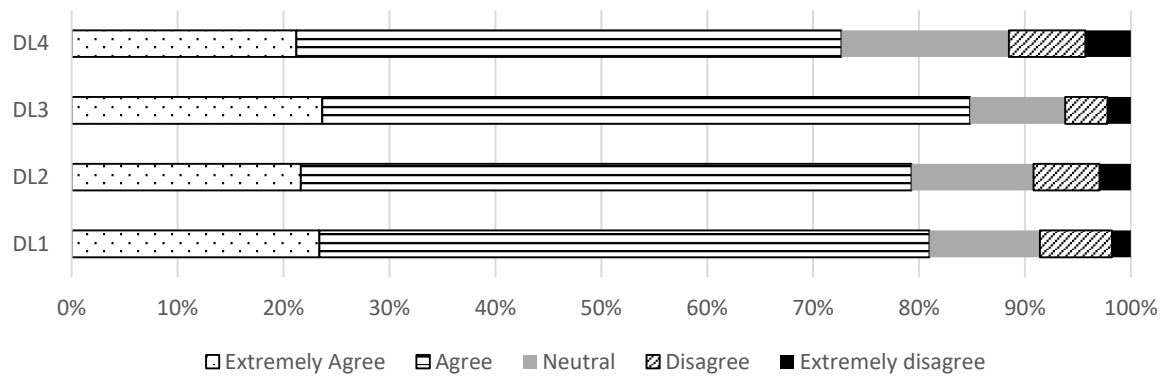
Figure 4. Students' perception of E-learning benefits

Figure 5. Students' perception of E-learning effectiveness

data set is very suitable for factor analysis. Bartlett's test with Sig = 0.000 indicates that the observed variables are correlated within the factor. The factor loading coefficients of all observed variables are statistically significant and very good (>0.5 and >0.7). The scale reliability analysis shows that the variables used to assess factors DL, SS, LI, and HQ are reliable, with Cronbach's Alpha coefficients >0.8 (**Table 3**).

Accessing the fit of the model

The confirmatory factor analysis was conducted to evaluate the model's fit for prediction.

The confirmatory factor analysis results indicate that the model is good in predicting perception's impact on E-learning motivation. Specifically, the model has a Chi-square = 212.268, *P* <0.000; Chi-square/df = 2.211 < 3 (good); GFI = 0.914 > 0.9 (good); TLI = 0.960

Table 3. Result of scale reliability assessment

Factors	Loading factor				Cronbach's Alpha
	1	2	3	4	
Perception of readiness for E-learning skills	0.881				0.947
	0.870				
	0.857				
	0.840				
E-learning motivation		0.841			0.888
		0.839			
		0.807			
		0.521			
Perception of E-learning benefits			0.849		0.867
			0.823		
			0.657		
			0.634		
Perception of E-learning effectiveness				0.803	0.862
				0.760	
				0.758	
				0.617	

> 0.9 (good); CFI = 0.968 > 0.9 (good); RMSEA = 0.066 < 0.08 (good); and PCLOSE = 0.015 > 0.01 (acceptable) (**Figure 6**).

Results of hypothesis testing

The analysis from the predictive model found significant correlations and statistical significance for the factors analyzed, and are summarized in **Table 4**.

The results show that all three hypotheses H1 (ß = 0.138, P = 0.023), H2 (ß = 0.315, P = 0.00), and H3 (ß = 0.443, P = 0.00) are accepted. This confirms that E-learning motivation is positively related to the perception of readiness for E-learning skills, the perception of E-learning benefits, and the perception of E-learning effectiveness. However, the influence levels of these 3 factors vary.

Discussion

Relationship between Perception of Readiness for E-learning skills and E-learning motivation

The analysis shows that the perception of readiness for E-learning skills is positively related to E-learning motivation, although the

standardized regression coefficient is not high (ß = 0.138). Development of these skills is related to the learner's readiness for E-learning, an important factor influencing students' E-learning, as highlighted by Das & Dansana (2022). Another study by Parkes *et al.* (2015) at the university in New South Wales confirmed that reading comprehension and note-taking skills in virtual learning are crucial. The relatively low coefficient in this study may reflect a broader issue in higher education, where digital skill-building is not systematically integrated into curricula. This highlights the need for universities to implement targeted interventions, such as digital readiness workshops or orientation programs, to enhance student motivation through improved skill confidence.

Relationship between Perception of E-learning benefits and E-learning motivation

The hypothesis H2 test results show that the perception of E-learning benefits positively correlates to E-learning motivation, with a standardized regression coefficient of ß = 0.315 (P = 0.00). This result indicates that learners are
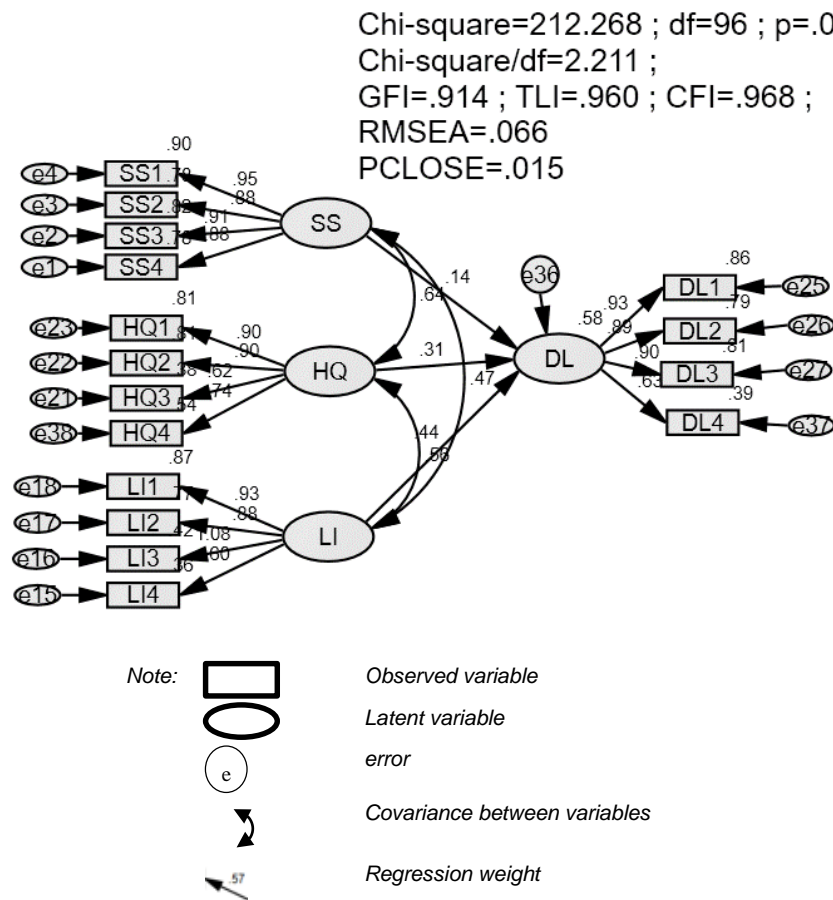
Figure 6. Predictive model of sefl-perception impact on E-learning motivation

Table 4. Standardized path coefficients in the structural model of perception impact on E-Learning motivation

No.	Hypothesis	Factors	ß	P-value	Hypothesis Conclusion
1	H1	SS··>DL	0.138*	0.023	Confirmed
2	H2	NC··>DL	0.315***	0.000	Confirmed
3	H3	HQ··>DL	0.443***	0,000	Confirmed

*Note: * P <0.050 (5%); ** P <0.010 (1%); *** P <0.001 (0.1%)*

more likely motivated to engage with E-learning courses if they perceive it benefits. Perceived benefits create motivations for individuals to pursue a learning behavior. Prior ressearch (Pham Anh Tuyet *et al.,* 2022; Mustakim *et al*., 2021; Isroani *et al.,* 2022) has consistently shown that percieved usefullness is one of the strongest predictors of online learning engagement. This study's results reaffirm promoting awareness of E-learning's practical benefits, such as flexibility, career relevance, and skill acquisition, which can be an effective

strategy to enhance student motivation. For educators and policy makers, this suggests that communication strategies and course design should emphasize these perceived benefits more explicitly. Institutions could, for instance, integrate case studies and practical applications to highlight E-learning's long-term value.

Relationship between perception of E-learning effectiveness and E-learning motivation

Among the factors examined, percieved effectiveness of E-learning showed the strongest

influence on motivation (ß = 0.443, P = 0.00). This perception reflects students' evaluation of their learning experiences including knowledge and skills acquisition, course certificates, concentration, and course requirements. The results are consistent with prior findings suggesting that learners' subjective experiences of E-learning outcomes are critical to sustaining motivation (Pham Le Hong Nhung *et al.,* 2023). This strong relationship emphasizes that, positive experiences during E-learning are crucial for motivating students. When learners feel that E-learning helps them achieve academic goals effectively, they are more likely to maintain effort and engagement. In the contex of Vietnamese higher education, these findings suggest that maintaining student motivation on E-learning requires more than just technological provision. Institutions pedagogical training for instructors encourage the use of interactive and student-centered teaching methods. As students experience successful E-learning, their motivation may increase, which in turn enhances their learning engagement and outcomes.

Practical implications

This study found that student motivation in E-learning is not solely driven by external conditions such as infrastructure, course design, etc. but is significantly shaped by students' personal perceptions, particularly their perceived readiness, perceived benefits, and perceived effectiveness of E-learning. Among these, perceived effectiveness plays a particularly strong role. Therefore, in addition to investing in technological and institutional resources, universities should focus on shaping and enhancing students' perceptions. Specifically, institutions should:

(i) Conduct early assessments of students' digital readiness and provide targeted support to bridge skill gaps.

(ii) Clearly and consistently communicate the academic and professional benefits of E-learning to foster positive expectations.

(iii) Strengthen students' actual and perceived learning effectiveness through improved instructional design, timely and meaningful feedback, and interactive learning methods.

Despite its contributions, this study has limitations due to the use of convenience sampling. This might produces bias and limit the generalizability of the findings. Additionally, the model did not include contextual factors such as prior E-learning experience, access to technology, or students' preferences for in-person-learning learning environment, Aall of which could influence the motivational outcomes. Future studies should incorporate these variables to better capture the complexity of E-learning motivation. Longitudinal research designs are also recommended to examine how motivation evolves over time.

Conclusions

This study examined the impact of personal perception on students' E-learning motivation through a survey of students at the Vietnam National University of Agriculture. The results demonstrate that students' perceptions of various aspects of E-learning significantly influence their online learning motivation to varying degrees. Specifically, all three hypotheses H1 (ß = 0.138, P = 0.023), H2 (ß = 0.315, P = 0.00), and H3 (ß = 0.443, P = 0.00) were accepted. This indicates that E-learning motivation is positively correlated with perceptions of readiness for E-learning skills, the benefits of E-learning, and the effectiveness of online learning. Among these, the perception of the effectiveness of E-learning was found to have the greatest impact on students' motivation. However, some limitations of this study must be acknowledged. The use of convenience sampling methods and the omission of some contextual variables, such as access to digital devices, learning preferences etc. may limit the generalizability and explanatory of the model. Future research should consider these factors to enhance model robustness and validity.

In conclusion, the study contributes to a deeper understanding of how internal psychological factors, especially learners' perceptions, shape E-learning motivation. Given that motivation is a key driver of sustained learning efforts and long-term academic success, these findings offer practical implications for higher education institutions. Policymakers and educators should prioritize initiatives that foster

positive student perceptions of E-learning, including early support for digital readiness, improved instructional quality, and meaningful student engagement. This, in turn, can help students continuously improve their competencies, supplementing face-to-face courses. Moreover, it can foster lifelong learning habits among students, creating new opportunities for higher education beyond traditional curricula.

Acknowledgments

References

Bates M. J. (2007). Defining the information disciplines in encyclopedia development. Information Research. 12(4): paper colis29. Retrieved from http://InformationR.net/ir/12-4/colis/colis29.html on December 1, 2023.

Bui Hong Dang, Trang Thi Ngoc Lan, Dang Van Tho & Nguyen Duy Duong (2022). Factors affecting the effectiveness of online learning: A case study of students at Ho Chi Minh City University of Food Industry. Journal of Food Science and Technology. 22(3): 419-430 (in Vietnamese).

Das S. & Dansana A. (2022). Preparedness of University Students for e-Learning. 10: 112-122.

Gray J. & Diloreto M. (2016). The Effects of Student Engagement, Student Satisfaction, and Perceived Learning in Online Learning Environments. International Journal of Educational Leadership Preparation. 11: 89-119.

Isroani F., Jaafar N. & Muflihaini M. (2022). Effectiveness of E-Learning Learning to Improve Student Learning Outcomes at Madrasah Aliyah. International Journal of Science Education and Cultural Studies. 1(1): 42-51.

Kadiresan V., Sujin J., Rahim H. & Rasu F. (2021). Motivating Factors Influencing Online Learning Among University Students: A Study of a Private University in Malaysia. Journal of Social Science Studies. 8: 88.

Kline R. B. (2024). Principles and Practice of Structural Equation Modeling - The Guilford Press (5th ed.). Guilford Press. London, UK.

Le Huu Nghia, Huynh Thi Luu Kim Huong, Le Thi Lan Phuong, Lam Cam Tien, Cao Thi Thuy Ha & Nguyen Van Dan (2021). Evaluations of lecturers and students on the quality and effectiveness of online teaching during the COVID-19 pandemic in the Department of Traditional Medicine, University of Medicine and Pharmacy, Ho Chi Minh City. Journal of Science. 18: 358 (in Vietnamese).

Mustakim Z., Fatimah S. & Mahmudah U. (2021). Students' perception and motivation on e-learning during the COVID-19 pandemic. In: Online Education during the COVID-19 Pandemic: Issues, Benefits, Challenges, and Strategies. Jackowicz S. & Sahin I. (Eds.). STES Organization: 59-80.

Parkes M., Stein S. & Reading C. (2015). Student preparedness for university e-learning environments. The Internet and Higher Education. 25: 1-10.

Pham Anh Tuyet, Hoang Thu Ba, Trinh Thi Huong, Pham Thi Yen & Pham Thi Hai Van (2022). Factors affecting online learning motivation of students: A case study at the University of Commerce. Journal of Education. 22(11): 13-20 (in Vietnamese).

Pham Le Hong Nhung, Banh Ngoc Tram & Dinh Cong Thanh (2023). Factors affecting the effectiveness of online learning of students at the School of Economics, Can Tho University. Journal of Can Tho University. 3(2023): 161-171 (in Vietnamese).

Quang N. V. (2022). Overview of factors affecting online learning [Online] [Online]. Vietnam National University of Agriculture. Retrieved from https://cnsh.vnua.edu.vn/tin-tuc-va-su-kien/tong-quan-ve-cac-yeu-to-anh-huong-den-hoc-tap-truc-tuyen-50558 on December 1, 2023 (in Vietnamese).

Ryan R. M. & Deci E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. Contemporary Educational Psychology. 25(1): 54-67.

Singh V. & Thurman A. (2019). How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018). American Journal of Distance Education. 33: 289-306.

Thanji M. & Shanmugam V. (2018). Impact of Learner's Perception of Time Savings and Cost Effectiveness on Adoption of Online Learning. 118(5): 155-165.

Tran Dinh Manh (2021). Factors affecting online learning effectiveness: A study at the Vietnam Forestry University. Journal of Industry and Trade. 23: Retrieved from https://tapchicongthuong.vn/bai-viet/cac-nhan-to-anh-huong-den-hieu-qua-hoc-truc-tuyen-nghien-cuu-tai-truong-dai-hoc-lam-nghiep-85370.htm on December 1, 2023 (in Vietnamese).

Trang Thi Thanh Huyen, Hoang Thi Mai Anh & Nguyen Ngoc Mai (2021). Analysis of factors affecting students' learning motivation in the Faculty of Accounting and Business Management, Vietnam National University of Agriculture. Journal of Vietnam Agricultural Science. 19(1): 129-139 (in Vietnamese)..

Wu M.-J., Zhao K. & Fils-Aime F. (2022). Response rates of online surveys in published research: A meta-analysis. Computers in Human Behavior Reports. 7: 100206.