ORIGINAL ARTICLE

Learners' Perceived Self-Efficacy, Engagement, and Satisfaction in Online Learning of Accounting and Auditing University Students

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ABSTRACT
The development of online learning is inevitable in the digital age and the Covid-19 pandemic context. The benefits and limitations of online learning are studied along with solutions to improve its efficiency. This study investigated how students' perceived self-efficacy affects their learning online learning environment based on learner characteristics. With the data collected from 401 accounting and auditing students, the study evaluated the measurement model and tested the research hypotheses with the structural equation model (SEM), SPSS 20 and Amos 24. The finding validates that the level of online student engagement can be classified as: engagement for learning and engagement for social interaction. The results of the SEM analysis show a significant positive influence of online students' perceived self-efficacy on their engagement in learning and on the satisfaction of students majoring in accounting and auditing. These findings contribute to the existing literature and practice that provide a framework for higher education to propose appropriate solutions to promote online learning or blended learning.

1. INTRODUCTION

Online learning has rapidly evolved with a vast number of online courses globally, especially in the context of the Covid-19 pandemic. Over 3.2 million undergraduate students in the US attended at least one online course in 2005 (Allen & Seaman, 2007). In 2021, higher education institutions worldwide have turned to online learning under the impact of the Covid-19 pandemic. Despite a favorable learning environment for students, learners often feel isolated and limited in this learning environment (Dixson, 2015). Therefore, many studies have explored student engagement in online learning from a variety of perspectives, such as activities in online learning to increase student engagement (Dixson, 2010), influences of learners' cultural factors on their learning satisfaction (Hannon & D'Netto, 2007), the factor of web-based learning technology on cohesion (Dyment et al., 2020), and cohesion in e-learning observed from the perspective of the learner and instructor (Bolliger & Martin, 2018). Cohesion in online learning is gradually being considered a new benchmark in online education (Robinson & Hullinger, 2008), so measuring student engagement in online learning is essential and has motivated many scholars to conduct research such as Dixson (2015), Dyment et al. (2020).

The discipline of accounting and auditing at tertiary education level has boasted a great recruitment demand in the global economy. Majoring in accounting and auditing requires knowledge, skills, and working attitudes to comply with professional ethics and business characteristics. Undergraduate students majoring in accounting, in general,

fulfil the professional skill requirements such as information and communication technology skills, accounting software literacy, time management, independent working, and planning; however, there are still limitations in several skills such as foreign languages competencies (Vu et al., 2020). The significant difference between face-to-face learning and an online environment impacts the learning process of accounting and auditing students. For example, the junior and senior accounting and auditing students have several practice modules and a semester of on-site internship to reinforce their skills and knowledge. The abrupt shift to online learning also creates certain gaps in training procedure compared to face-to-face learning. Therefore, finding out solutions to improve the engagement of accounting and auditing students while studying online is essential to improve their satisfaction and training quality at accounting - auditing educational institutions.

Dixson (2010) developed a scale to measure student engagement in online learning. In the subsequent study, this author (Dixson, 2015) emphasized the online learning environment with the Online Student Engagement (OSE) scale. The OSE scale is based on social constructivist theories and the community of inquiry model that includes 19 indicators. The research results of Dixson (2015) showed a positive influence of student engagement in online learning on their observational learning behavior. However, the author also called for further studies to expand the scope of research samples to verify the OSE scale. When higher education institutions shifted entirely to online learning due to the Covid-19 pandemic, many studies have focused on the determinant of student engagement as well as its effect on student satisfaction and academic performance (Baloran & Hernan, 2021). Student satisfaction in online learning receive great attention not only from lecturers and instructors but also from higher education institutions. However, those studies focused on certain issues such as measuring engagement, exploring teaching activities that increase engagement, determinants of student engagement, and the impact of student engagement on their academic outcomes or satisfaction (Baloran & Hernan, 2021; Wolverton et al., 2020) with significant differences in research results; otherwise the context of the study is small-scaled. Therefore, the research problem of student engagement is still calling for further studies in different geographic and disciplinary contexts.

This study aims to verify the online students' engagement (OSE) scale proposed by Dixson (2015) with data in the context of a complete shift to online learning under the impact of the Covid-19 pandemic in the 2021-2022 academic year. Then, this study examines the relationship between online students' perceived self-efficacy, their learning engagement, and their effects on student satisfaction in online courses. This study uses data from higher education institutions majoring in accounting and auditing in Vietnam. The findings of the research offer both academic and practical contributions. The results confirm the OSE scale with data from the developing country focusing on two aspects: online student engagement for learning and online student engagement for social interaction. The findings also verify the relationship between students' perceived self-efficacy and their learning engagement and their impacts on student satisfaction. Furthermore, the results provide the most practical evidence of the learners' assessment at accounting-auditing higher education institutions regarding the online learning process during the first transition phase from face-to-face to online learning under the pressure of the Covid-19 pandemic.

2. LITERATURE REVIEW

Online learning is an attractive educational option resulting from network technology and computer technology development. Lee-Post (2009, p. 60) defined online learning (e-learning) as "*the process of extending learning or delivering instructional materials to remote sites via the Internet, intranet/extranet, audio, video, satellite broadcast, interactive TV, and CD-ROM*". Online learning is the continuous development of learners' cognitive levels; thus, learners need to actively take part in learning to absorb effectively in the learning process (Hu & Li, 2017). The advantages of online learning are based on the openness of learning resources and communication between teacher and students and between learners as well as the participation of a large number of learners at the same time in the classroom (Hu & Li, 2017), convenience and flexibility to students to learn (Bolliger & Martin, 2018). Besides, instructors and training managers can more easily interact, manage and track learners' progress in the online classroom which also helps them minimize training and operational costs with a stable online learning system (Liaw, 2008).

However, online learning has limitations. Firstly, the interaction in an online learning environment requires more investment in facilities and learning systems. The shortage of investment in facilities is a significant limitation in developing countries like Vietnam when deploying online learning. The second limitation of online learning is the learning environment that restrains direct interaction, creates isolation, and limits communication for learners (Dixson, 2015). These disadvantages reduce the efficiency of online learning (Liaw, 2008). Thus, engagement is a

determinant in online learning classes, where the attrition rate is much higher than in face-to-face classes (Angelino et al., 2007). Higher education institutions try to find solutions to improve student engagement in online learning that both help exploit the online learning system and effectively enhance training quality.

Student engagement reflects the effort and time students spend on activities that are empirically associated with desired outcomes of higher education, and what higher education institutions do to lead students to join in these activities (Kuh, 2009a; Lam, 2012). Student engagement is generally the degree to which students actively participate by thinking, talking, and interacting with the content of a course, other students in the course, and instructors (Robinson & Hullinger, 2008). Kuh (2009b) emphasized two main aspects of student engagement: engagement in the classroom or learning and engagement outside the classroom or extracurricular activities. Student engagement positively correlates with students' persistence, satisfaction, and academic achievements (Meyer, 2014). In the online course, student engagement is identified to affect observational learning behavior positively and applied to learning behavior (Dixson, 2015). Mechanisms in online learning create new teaching and learning styles. In the connectivist theory for online learning, Siemens (2004) emphasized the expansion of learning and teaching to students, faculty, and professionals around the globe; thus, learners need to connect with other learners and experts to be sure of learning and updating knowledge. Online learning is a multi-dimensional interaction.

Cognitive theory shows differences in learners' perceptions during the learning process due to self-regulation capabilities (Bandura, 1991) and self-efficacy (Bandura, 2005). In face-to-face learning, students cooperate with classmates to prepare lessons together, but in online education, they have to prepare by themselves with more independence and more self-practice in their course (Rabe-Hemp et al., 2009). Teachers and instructors deliver learning materials to online classes through a multi-channel system, and learners have to search and assemble information and learning materials from many different sources (Ally, 2004; Siemens, 2004). In other words, the factors of personal competence are the key drive for effective online learning, and learners' self-efficacy should be noted and considered when developing an efficient online learning system (Liaw, 2008). Previous studies have confirmed the link between students' perceived self-efficacy and their learning engagement (Sriwiyanti et al., 2021), computer self-efficacy, and student engagement (Wolverton et al., 2020). Students' academic performance and experience would be better if students are engaged and satisfied in the online learning process. Gen Zers and graduate students with well-perceived self-efficacy would be more satisfied when learning online (Hensley et al., 2021). Especially with online learning, the use of technology is an indispensable requirement. Therefore, the effect of computer self-efficacy and student satisfaction in online learning between groups was examined by Wolverton et al. (2020). The impact of online student engagement on their learning satisfaction has been explored in many studies (Rabe-Hemp et al., 2009; Gray & DiLoreto, 2016; Baloran & Hernan, 2021; Hensley et al., 2021; Sriwiyanti et al., 2021).

From the above research results, the authors proposed the following hypotheses:

Hypothesis H_1: Online learning engagement positively affects the satisfaction of students majoring in accounting and auditing.

Hypothesis H_2: Perceived self-efficacy positively affects online student engagement in online learning of students majoring in accounting and auditing.

Hypothesis H_3: Perceived self-efficacy positively affects online course satisfaction of students majoring in accounting and auditing.

3. MATERIALS AND METHODS

Measuring instruments

This study employed the construct of research variables from many studies and used various scales to minimize the Common Method Variance (CMV) phenomena (Chang, Van Witteloostuijn, & Eden, 2010). The research variables used in the model were adopted from the scale of the previous studies. The concept of perceived self-efficacy was adopted from Liaw (2008) that included 03 indicators (PSE1, PSE2, PSE3). Student engagement in online learning was adopted from the OSE scale of Dixson (2015) with 19 indicators (from OSE1 to OSE19). And student satisfaction in online learning was adopted from the study of Elshami et al. (2021) with 3 indicators (SAT1, SAT2, SAT3). Perceived self-efficacy and online student engagement were measured by a 5-point Likert scale while a 7-point Likert scale measured student satisfaction.

Collecting and analyzing data

We collected data through a survey. The questionnaire was designed and sent online to students majoring in accounting and auditing via Facebook and Zalo groups and classes, taking about 15 days at the end of the 2-year semester in the school year 2021-2022. Furthermore, with online learning, the lecturers often opened a group on the social networking platform to send out information and notices to students in class. Thus, we also asked the lecturers to send the online survey link to their students. The online survey was an effective tool to collect data in the context of Covid-19 pandemic when all higher education institutions have implemented online learning. In addition, the online survey also helps reduce costs and collect data fast, leading to data collection efficiency (Bhattacherjee, 2012). We analyzed the data with the support of two software packages: SPSS 20 and Amos 24. The analysis included exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to test measurement models and path analysis of structural equation model (SEM) with Maximum Likelihood estimation method to confirm research hypotheses.

Demographics of respondents

After closing the survey link, we gathered 451 respondents, of which 401 valid responses were from students majoring in accounting and auditing (accounting for 97.56% of the total respondents). Regarding the higher education institution, 46% of the valid respondents were students from Hanoi Industrial University, 17% were students from ThuongMai University, and 37% were from other higher education institutions, i.e., National Economic Universities, Academy of Finance, Lac Hong University, etc. Regarding gender, the percentage of female participants in the survey was 90%, the rate for male ones was 9%, and the rest were others.

4. RESULTS AND DISCUSSION

Measurement model test results

The study employed EFA and CFA analysis to evaluate the reliability and validity of the measurement model. The EFA analysis results include KMO and Bartlett tests, Principal axis factoring extraction method, and Promax rotation. Criteria of the KMO coefficient are adopted from Kaiser (1974) and Tabachnick and Fidell (2007); with a KMO value greater than 0.5, the Eigenvalue coefficient stopping at 1 will load the number of factors in the matrix table. The reliability threshold is adopted from Nunnally and Bernstein (1994) and Ursachi, Horodnic, and Zait (2015), with Cronbach's alpha greater than 0.6. The results of the research model include a KMO coefficient = 0.921, sig. = 0.000. Eigenvalue coefficient stops at 1 that loads four groups of factor, including: Student's engagement for learning - OSEL (Including OSE1, OSE2, OSE3, OSE4, OSE6, OSE7; Cronbach's alpha coefficient = 0.909), Student engagement for social interaction - OSES (Including OSE15, OSE16, OSE17, OSE18, OSE19; Cronbach's alpha coefficient = 0.868), perceived self-efficacy - PSEF (Including PSE1, PSE2, PSE3; Cronbach's alpha coefficient = 0.878), and student satisfaction in online learning - SATIS (Including SAT1, SAT2, SAT3; Cronbach's alpha coefficient = 0.882). The results of the EFA analysis eliminated eight indicators of original online student engagement scale.

The CFA results validated the composite reliability, discriminant, and convergent value of measurement model. The fit indice of the measurement model (including Chi-square/df = 2.139, P-value = 0.000, GFI = 0.934, AGFI = 0.908, CFI = 0.972, TLI = 0.965, NFI = 0.949, RMSEA = 0.053) shows a good fit of the conceptual model according to popular recommendations (Vu et al. , 2020; Gunzler & Morris, 2015). The convergent validity includes composite reliability (CR) and average variance extracted (AVE). The CR and AVE results of constructs include OSEL (CR = 0.91, AVE = 0.592), OSES (CR = 0.864, AVE = 0.56), PSEF (CR = 0.878, AVE = 0.706), and SATIS (CR = 0.888, AVE = 0.727), respectively. These results indicate a strong relationship of the constructs (Hair, Black, Babin, & Anderson, 2014). Thus, with 19 indicators measuring online student engagement of Dixson (2015), the analysis result retained 10 indicators divided into 2 groups reflecting the online student engagement for learning purpose and online student engagement for social interaction purpose in an online learning environment. This result aligns with Kuh (2009b), who emphasized two main aspects of student engagement: Engagement in the classroom or in learning purpose and engagement in outside classroom or in extracurricular activities.

Hypotheses test results

The study used the SEM to test the research hypotheses. In particular, the OSE scale is split into OSEL and OSES, so hypothesis H_1 splits into H_{1a} and H_{1b}, corresponding to the positive influence of online student engagement for

learning (OSEL) and online student engagement for social interaction (OSES) on student satisfaction (SATIS). And hypothesis H_2 is split into H_{2a} and H_{2b}, respectively, positively affecting perceived self-efficacy on OSEL and OSES. The fit indices of the SEM include Chi-square/df = 3.336, P-value = 0.000, GFI = 0.903, AGFI = 0.865, CFI = 0.942, TLI = 0.927, NFI = 0.919, RMSEA = 0.076 that indicate a good fit of the research model with observed data.

Table 1. The results of testing hypotheses in the structural equation model

Hypotheses	B	β	*t-test*	Result
H_{1a}: OSEL → SATIS	0.412	0.239	4.297***	Accepted
H_{1b}: OSES → SATIS	0.555	0.361	6.092***	Accepted
H_{2a}: PSEF → OSEL	0.688	0.603	10.813***	Accepted
H_{2b}: PSEF → OSES	0.752	0.584	9.478***	Accepted
H_3: PSEF → SATIS	0.594	0.302	4.432***	Accepted

*Note: Significance *** $p < 0.001$*

The results of SEM analysis are summarized in Table 1, which shows an acceptance of five hypotheses. The acceptance of hypotheses H_{2a}, H_{2b}, and H_3 confirms the positive effect of perceived self-efficacy on online student engagement for both learning achievements and social interaction purposes, as well as student satisfaction in the online course. Students majoring in accounting and auditing with better self-efficacy will be involved in online learning achievements and socializing, which will also make students more satisfied in the online learning environment. These results reinforce previous results of Wolverton et al. (2020) and Sriwiyanti et al. (2021). The acceptance of hypotheses H_{1a} and H_{1b} affirm the positive effect of online student engagement on the satisfaction of students majoring in accounting and auditing in the online learning environment. The standardized regression coefficient (β) results show that perceived self-efficacy is an essential determinant of student engagement and satisfaction. Therefore, higher education institutions should pay more attention to improving students' perceived self-efficacy when looking for solutions to increase student engagement and student satisfaction in online courses. Wolverton et al. (2020) highlighted improving students' technology skills and computer self-efficacy because online learning requires a high degree of interaction with computer applications. Teachers and instructors need initial support for learners to become familiar with applications used in the module or course. Especially in the accounting and auditing major, they use online learning applications such as Zoom, Google Meet, and Microsoft Team together with hands-on manipulation on accounting software such as Misa, software supporting tax declaration, or modeling the accounting system with Visio, etc. Moreover, accounting and auditing students also need to enhance their competence in using technology in online learning themselves.
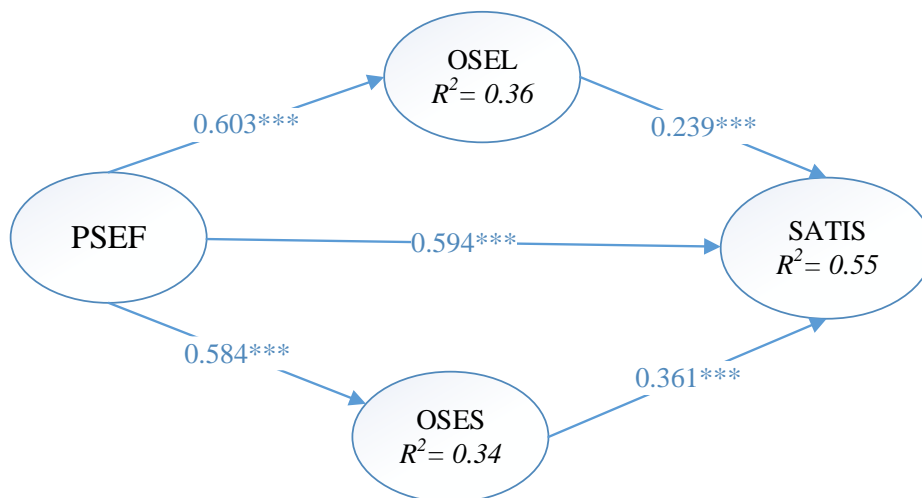

Figure 1. The results of SEM analysis

Figure 1 shows the impact degree of the research model. The results confirm a significant impact of self-efficacy on online student engagement (OSEL: $R^2 = 0.36$ and OSES: $R^2 = 0.34$). And perceived self-efficacy and online student engagement explain 55% of the variance of accounting and auditing student satisfaction in the online learning environment (SATIS: $R^2 = 0.55$). The results of this study show that the independent variables in the research model significantly explain the variation of the dependent variables. In order to improve the satisfaction of accounting and auditing students in online learning, it is vital to increase student engagement in the online learning environment.

Because online learning often lacks frameworks that encourage students to learn, reduces direct interaction, and lacks a learning atmosphere (Liaw, 2008), the existence of isolation in online learning can cause limited student engagement. Therefore, solutions to increase online student engagement in the learning process are crucial. For example, the solutions may focus on the first aspect of online student engagement, for learning purposes, such as applying new teaching and examining methods in online learning. The accounting and auditing major has specific traits that require much practice and internship; thus, it is impossible to apply the face-to-face teaching method to online learning thoroughly. Other suggestions for engaging students focus on enhancing social interaction in online classes, such as creating a learning community, forums, and online exchange groups under the support of applications such as Zalo and Facebook to be able for students to interact and exchange with other students and teachers. In addition, in the online learning environment, the amount of assigned tasks for students is greater; students will have to prepare more for lessons than in face-to-face study (Dyment et al., 2020). Teachers need to balance, avoid assigning too many assignments as well as seek effective methods of managing student participation to avoid overloading. Another important recommendation to increase student engagement and satisfaction is to improve the online learning system, which is a solution that the entire education system of the accounting and auditing institution needs to address. With the major of accounting and auditing, creating professional practice activities is very important, so if the higher education institutions in accounting and auditing implement blended learning after Covid-19 pandemic, there should be a good platform for students to practice in face-to-face learning.

5. CONCLUSIONS

The development of online learning offers great benefits to higher education institutions, lecturers, and learners. The issues of online learning are not only appealing in the context of the Covid-19 pandemic, but it is also a matter of the future of accounting and auditing training in particular and other disciplines. Understanding the presence and determinants in the relationship of different issues in online learning is essential to obtaining the suitable solutions to improve the quality of online education. This study explores the relationship between students' perceived self-efficacy and online student engagement in an online environment with accounting and auditing students and their impact on student satisfaction. With the data collected during online learning under the effects of the Covid-19 pandemic, the study's results verify the online student engagement scale that reveals two critical aspects of engagement: learning purpose and social interaction. The results of this study also confirm the relationship between the perceived self-efficacy, online learning engagement, and satisfaction of accounting and auditing students. The research results are an essential framework for accounting and auditing higher education institutions to have appropriate solutions in developing online learning in the future.

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