Can Interactions Enhance Student Satisfaction in Online Learning During a Crisis? An Indonesian Study

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Abstrak

Penelitian ini dilakukan dengan tujuan untuk mengetahui pengaruh *internet facility, platform, learner-learner interaction* dan *learner-instructor interaction* terhadap *student satisfaction.* Penelitian ini menggunakan metode kuantitatif dengan melakukan penyebaran kuesioner melalui *Google Form* dan menggunakan skala Likert. Sampel peneliti terdiri dari 179 mahasiswa jurusan Business Accounting, Tax Accounting dan International Business Accounting angkatan 2017-2021 di Petra Christian University Indonesia. Data penelitian dianalisis dengan uji reliabilitas, validitas, statistik deskriptif dan multiple regression dengan bantuan software SPSS. Hasil dari penelitian menunjukkan bahwa fasilitas internet dan interaksi mahasiswa-dosen memiliki pengaruh positif yang signifikan terhadap kepuasan mahasiswa selama pembelajaran online, sedangkan platform dan interaksi mahasiswa-mahasiswa tidak berpengaruh terhadap kepuasan mahasiswa selama pembelajaran online.

Kata Kunci: kepuasan mahasiswa; fasilitas internet; platform pembelajaran; interaksi mahasiswa-mahasiswa; interaksi mahasiswa-dosen

Abstract

This research aims to examine the effect of internet facility, platform, learner-learner interaction, and learner-instructor interaction on student satisfaction. This quantitative research uses the survey method to collect data by distributing questionnaires through Google Forms. The research sample consisted of 179 students from the Department of Business Accounting, Tax Accounting, and International Business Accounting batch of 2017–2021 at Petra Christian University Indonesia. The data was analyzed using SPSS software by testing statistic descriptive, reliability, validity, and multiple regression. The results show that internet facilities and learner-instructor interaction have a significant positive effect on student satisfaction during online learning, while the platform and learner-learner interaction have not impact on student satisfaction during online learning when the COVID-19 pandemic occurred.

Keywords: student satisfaction; internet facility; learning platform; learner-learner interaction; learner-instructor interaction

INTRODUCTIONS

The Covid-19 pandemic that originated from China has been influenced Indonesia since early 2020. To reduce transmission, the government has introduced a physical distancing restriction policy. This policy has an impact on learning in schools and universities. This resulted in an appeal to learn from home and implement online learning (Prasetya & Harjanto, 2020).

In traditional face-to-face learning approach, teaching methods in accounting major usually use blackboard media to explain in detail the formulas and accounts related to class material, but because learning is via online, the teaching methods of accounting topics is change, and it can affect student satisfaction during online lectures. In addition, traditional face-to-face classes accounting students can communicate with fellow students or discuss group assignments, but these interactions are hindered if not reduced in online classes which could affect student satisfaction.

During pandemic, face-to-face learning is replaced by online learning using several applications such as zoom, google meet, Microsoft Team, and others (Mukhtar et al., 2020). The learning material provided also utilizes several platforms such as google classroom, email, LMS and many more. Therefore, it is important to pay attention to student satisfaction during online learning which consists of several factors that researchers will discuss. Factors related to student satisfaction during online learning are internet facilities, platforms, interactions that occur between students and students, interactions that occur between students and lecturers (Basuony et al., 2021).

From these four factors, we found the advantages and disadvantages of online learning. The advantages are the flexibility of time and place when learning online, the platform provided is more diverse and has adequate facilities to support learning, interaction that may be closer than during face-to-face classes. In addition, online learning that uses a platform makes it easier for students to see the recording of the material delivered by the lecturer after the class is over so that students can understand the material very clearly. While the disadvantages of online learning among others are: unstable network problems when listening to lecturers explain the material; then both students and lecturers spend extra costs to purchase internet quota or install wifi at home to enable online learning; limited participants in participating in online classes using the platform; unable to monitor whether students are actually present and engage in lessons during online classes and many more (Abbas & Erliyani, 2020).

Student satisfaction is a sign of a successful learning in online environment (Zhang & Lin, 2020). Student satisfaction is interesting since in education system students is the focus of the learning.

Previous research has shown interaction among students, interaction between students and tutors, and interaction between students and learning content has a positive impact on satisfaction through student engagement (Muzammil et al., 2020). On the other hand, Basuony et al. (2021) found negative impact of participation to student satisfaction during online learning during the covid-19 pandemic.

This study is different from previous study in that this study uses two types of interaction, student-student interaction and student lecturer interaction, rather than participation (Basuony et al., 2021), this study incorporated influence of internet facility and platform in explaining student satisfaction (Muzammil et al., 2020).

This study aims to investigate factors explaining student satisfaction in online learning, specifically relationships of internet facility, learning platform, and interactions to student satisfaction during Covid-19 pandemic.

E-learning

E-learning is defined as a teaching and learning environment where students and lecturers are separated by distance

and time (Bolliger, 2004). In other words, e-learning is a web-based system that is used to share information and knowledge by ignoring time and geographical restrictions (Sun et al., 2008). The form of delivery of e-learning is in the form of information and training using telecommunication technology. The extension of e-learning is electronic learning. According to Stefanovic et al. (2011) the concept of e-learning consists of the similarity of flexible Internet environment, distributed computing, virtual learning environment and general distance learning.

E-learning has its own appeal for some students due to its flexibility in participation, ease of access and convenience. The paradigm of e-learning is modern education that utilises information and communication technology to interact with students and as a tool to deliver materials. The application of online learning is a teaching and learning process that involves network-based technology, internet, communication, information, etc. (El Refae et al., 2021; Sun et al., 2008).

Student Satisfaction

In general, satisfaction can be felt when there is a perception of pleasure when using a product or service that matches the user's expectations (Darawong & Widayati, 2022). Student satisfaction can be defined as students' perceptions relating to the college experience and the perceived value of the education received while attending online classes (Magolda, 1993). There are many factors to assess student satisfaction in online learning. According to Nasser et al. (2008) student satisfaction can be seen from the teaching methods applied by lecturers, adequate facilities to support learning, good interaction during the learning process as well as the teaching time provided by lecturers. Thus it can be concluded that student satisfaction is formed based on the experiences felt by students both in teaching and educational

services (Carey et al., 2002; Weerasinghe & Fernando, 2017).

Internet Facility

The internet is an electronic communication network of a global system that connects computers and internet facilities as a tool in finding various information as well as a learning resource. The internet can connect various applications that allow interaction with other internet users both. With internet facilities, students and lecturers can conduct online meetings for online classes (Basuony et al., 2021).

According to Croxton (2014) the quality of the system can be seen from the proper maintenance of software and hardware resources. There are important technical aspects to consider in online learning environment which are quality, media richness, technology reliability. Internet quality is very important in both synchronous and asynchronous systems to access materials at any time and various problems on the server. Disruption in technology issues due to internet quality can be detrimental to users.

Platform

According to Basuony et al. (2021), platform is a facility used by students and lecturers in supporting the teaching and learning process in achieving the success of online learning by relying on technology. The uniqueness of the e-learning atmosphere such as interactive discussion forums and chat sessions between students and lecturers as well as multimedia presentation displays are very useful in online learning. Lecturers can adopt and integrate distance learning tools and technologies so as to motivate and encourage their students to be actively involved in the teaching process as well as in the knowledge acquisition process. There are several platforms that can be used to support online learning such as Google Clasroom, LMS, Microsoft Office 365 for Education, etc. There are also other digital platforms that can be used

during distance learning such as Whatsapp Group (WAG), Google Classroom (GC), Edmodo, Zoom, Google Meet, etc. (Assidiqi & Sumarni, 2020).

Interaction

According to Moore (1989) in distance learning there is transactional distance because lecturers and students do not interact directly in the same place and the same temporal. Moore identifies 3 types of interaction that are important in distance learning which are learner-content interaction, learner-instructor interaction, learner-learner interaction. Learner-content interaction is a one-way interaction method in the form of learning materials (text, audio, video, computer programme or online communication). While researchers focus more on the interaction that occurs between students and other students, the interaction that occurs between students and lecturers. Other research also identify that interaction between peers and teachers to refer to student engagement (Bond et al., 2020).

Learner-Learner Interaction

The interaction that occurs between students and other students is one of the keys to the success of online learning during this pandemic (Zhang & Lin, 2020). Learner-learner interaction refers to the interaction between students in the form of exchanging opinions or ideas related to the discussion of material that has been delivered by the lecturer, both in front of the lecturer and in the absence of the lecturer. This type of interaction can also be in the form of group assignments, group discussions, etc. Such interaction can encourage students in terms of distance learning to be able to collaborate and share knowledge with each other between students (Moore, 1989).

Learner-Instructor Interaction

Learner-instructor interaction refers to the interaction that occurs between students and lecturers. Interaction between students and lecturers is an important element in the success and effectiveness of face-to-face and online learning (Basuony et al., 2021; Sher, 2009). In general, interaction occurs when there is communication between instructors and students regarding the topics discussed during class.

The student-faculty interaction can be in the form of delivering information related to the material by encouraging and supporting students, as well as providing feedback. In addition, students can also ask questions or communicate with lecturers about the course being followed during online classes to help students understand the material that has been delivered by the lecturer (Moore, 1989).

Some students feel comfortable when online classes interact with lecturers without turning on the camera or microphone. University policies vary in implementing interactions between students and lecturers, some allow students to turn off the camera or microphone. But some universities also require that every student must activate the camera or microphone when answering questions or wanting to ask questions to the lecturer (Niemotko & Tolan, 2020). When high learner – lecturer interaction will drive participation in discussion forums in e-learning (Taib et al., 2021).

Internet Facility affects Student Satisfaction

According to Croxton (2014), important technical aspects in considering online learning environment are internet quality, media richness, technology reliability. Internet quality is very important in both synchronous and asynchronous systems to access materials at any time and various problems on the server. Disruptions in technology issues due to internet quality may result in more fundamental disappointments in student satisfaction levels. When proper assistance is available for e-learning usage, the level of reluctance will be low. Proper availability of technical resources and administrative support positively

affects student satisfaction with e-learning (Liaw et al., 2007). When students do not face login and logout problems, by continuously interacting with teachers their satisfaction will increase. Based on this explanation, the hypotheses are:

H1: Internet facilities affect student satisfaction with learning during the pandemic.

Platforms affect Student Satisfaction

Basuony et al. (2021) the platform used by students and lecturers produces a positive relationship with student satisfaction while learning via online. Some researchers say that platform quality has a significant influence in influencing student satisfaction (Piccoli et al., 2001; Webster & Hackley, 1997). But for some researchers who have conducted research say there is an insignificant positive relationship on student satisfaction (Basuony et al., 2021; Sun et al., 2008). The uniqueness of the e-learning atmosphere such as interactive discussion forums, chat sessions between students and lecturers, and multimedia presentation displays are very useful in shaping student satisfaction with the platform. Therefore, to achieve successful implementation and student satisfaction with e-learning, the quality of technology attributes needs to be superior because the higher the quality and reliability in ICT, the higher the learning effectiveness and student satisfaction (Stefanovic et al., 2011). Based on this explanation, the hypothesis is:

H2: Learning platform affects student satisfaction in learning during the pandemic.

Learner-Learner Interaction affects Student Satisfaction

According to Borup et al. (2013) interaction that occurs between students and other students has a significant positive effect on student satisfaction during online learning. Sher (2009) also said that interaction between students and other students is an important contributor to student satisfaction during online learning. But it is not justified by Yukselturk & Yildirim (2008) which showed that student-student interaction in Turkey decreased during the teaching and learning process. Online learning that relies on the platform triggers a lack of interaction between students that is needed in group work or discussion which affects student satisfaction in online learning. Based on this explanation, the hypothesis is:

H3: Student-student interaction affects student satisfaction in learning during the pandemic.

Learner-Instructor Interaction affects Student Satisfaction

The interaction that occurs between students and lecturers is very influential on student satisfaction during online learning. Some researchers maintains that lecturer-student interaction has a positive and significant influence on student satisfaction during online learning (Kuo et al., 2014; Sher, 2009; Stefanovic et al., 2011). In addition, Borup et al. (2013) said that of the three types of interactions identified by Moore (1989), student-faculty interaction is the most motivating and satisfaction-inducing for students in online learning. Significant positive effects are felt by students when there is student-lecturer interaction so that sherit can trigger student satisfaction which can be seen from students' final grades(Liu & Cavanaugh, 2012). Based on this explanation, the hypothesis is:

H4: Student-lecturer interaction has a positive effect on student satisfaction in online learning during the pandemic.

METHOD

To answer the hypothesis, researchers use an analysis model that explains the relationship between variables as shown in Figure 1 analysis model below. The dependent variable (Y) is student satisfaction in online learning, the independent variable (X) is factors that provide satisfaction for students in online learning, they are internet facility, platform,

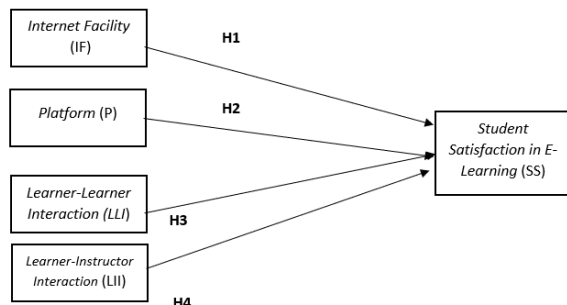learner-learner interaction, learner-instructor interaction.

Figure 1. Analysis Model

Based on the analysis model shown in Figure 1, the research model used by researchers is as follows:

$$SS = \alpha + \beta_1 IF + \beta_2 LP + \beta_3 LLI + \beta_4 LII + \varepsilon \quad (1)$$

Where:

SS	=	Student satisfaction
α	=	constant A
β	=	variable Coefficient
IF	=	Internet facility
LP	=	Learning Platform
LLI	=	Learning-learning interaction
LII	=	Learning-Instructor Interaction
ε	=	error

This research was conducted using quantitative measurement methods. Data was collected by distributing questionnaires online in December 2021 for a month period, this due to the conditions of the Covid-19 pandemic when physical distance restrictions was introduced. Questionnaires were designed in Google Form and the questionnaire link was distributed to several Whatsapp groups of accounting students. Whatsapp was a common and popular communication platform used both for personal, social and university based matters among the respondents.

This study population was active students in accounting department at Petra Christian University, Indonesia. Sample was drawn using purposive sampling method (Cooper & Schindler, 2014)based on the following criterion:

1. batch 2017 - 2021
2. experienced online learning during pandemic

Table 1. Questions per Variables

Variable	Items	
Student Satisfaction (Basuony et al., 2021)	SS1	The quality of academics in online classes is academically equivalent to the face-to-face classes I have attended.
	SS2	I can understand learning in online classes like face-to-face classes
	SS3	I would recommend the online class lecturer to other students
	SS4	I would recommend the online learning to other students.
	SS5	I am satisfied with the overall online class experience.
Internet Facility (Sun et al., 2008)	IF1	I have internet access with adequate speed.
	IF2	I feel the quality of communication using the internet is good.
	IF3	I feel the cost of internet network connection is not expensive.
	IF4	I find the internet easy to access.
Platform (Basuony et al., 2021)	P1	The IT facilities and platforms provided by my campus are adequate (Lantern, E-mail, Google Classroom, Google Form, etc.).
	P2	I have sufficient technological skills to be able to access other online learning platforms.
Learner-learner interaction	LLI1	I share knowledge about online classes with other students.
	LLI2	I can communicate with other students during online classes.
	LLI3	Interacting with fellow students helps me understand the material

Variable	Items	
(Sher, 2009)		during online classes.
	LLI4	There is a sense of community with other students when taking online classes.
	LLI5	Online classes encourage me to work together in groups and teams.
Learner-Instructor Interaction (Sher, 2009)	LII1	Lecturers encourage me to be actively involved in discussions during online classes.
	LII2	Lecturers give comments on the assignments I have done.
	LII3	I can interact with lecturers during online classes.

Sample size required by researchers was 162 respondents, based on Slovin formula (Nalendra et al., 2021) shown at Equation 2. The respondents were from Business Accounting, International Business Accounting and Tax Accounting program at Petra Christian University.

$$n = \frac{N}{1+N.e^2} \qquad (2)$$

where:

n	=	Required sample size
N	=	Population size
e	=	error

Variable Measurement

The variables were measured using instruments adopted from previous research as shown in Table 1. The scale of instrument was Likert scale of 1 to 5 scale where 1 means very dissatisfied and 5 means very satisfied, or 1 means very unimportant and 5 indicates very important choice for the existing statement.

Data Analysis

Data collected was cleaned. It then was analysed with using SPSS (Hamdan et al., 2021). Descriptive statistics were performed to catague respondents demographic characteristics.Further data were underwent T-test and multiple regression analyses to determine predictors of students' satisfaction.

RESULT AND DISCUSSION
Result

Table 2 demonstrate that most respondents were female, this phenomenon is represent the demographic of accounting department at PCU.

Table 2. Respondent data by gender

Gender	Number	%
Male	63	35.2%
Female	116	64.8%
Total	179	100%

Table 3. Respondent data by online class time per week

Duration (hour)	Frequency	%
< 5	11	6.1%
6-10	41	22.9%
11-15	29	16.2%
16-20	49	27.4%
> 20	49	27.4%
Total	179	100%

Table 3 shows almost a third respondents spent time on online lecture 16-20 hours (27.4%), more than 20 hours (27.4%), followed by 6-10 hours (22.9%). Thus more respondents spent some time to access online platform during their learning.

Table 4. Respondent experienced issues with internet

Issues	n	%
Yes	131	73.20%
No	48	26.80%
Total	179	100.00%

Table 4 shows the majority of respondents felt they had problems related to the internet as many as 131 respondents (73.2%), while 48

respondents (26.8%) felt they did not have problems related to the internet. The internet issues are caused by several things, namely unstable wifi providers, rainy weather, blackouts, running out of quota, natural disasters, etc.

Validity

Tabel 5. Validity test result

Indicator	Coefficient	P-value	Remark
IF1	0.761	0.000	Valid
IF2	0.832	0.000	Valid
IF3	0.771	0.000	Valid
IF4	0.747	0.000	Valid

Table 5 shows that all indicators are valid since the p-value is 0.00.

Reliability Test

Reliability test is used to test the consistency and stability of the instrument or measuring instrument. Researchers used the help of SPSS software by looking for the Cronbach's alpha value of each instrument. It is said to be reliable if Cronbach's alpha is greater than 0.60. Table 6 shows the results of the reliability test of each variable. The variables are reliable since Conbrach's alpha of all variables are above 0.60.

Table 6. Reliability Test Result

Variables	Cronbach α
Internet Facility (IF)	.771
Platform (P)	.84
Learner-Learner Interaction (LLI)	.84
Learner-Instructor Interaction (LII)	.832
Student Satisfaction (SS)	.916

Table 7. Regression analysis result

	Beta	t statistics	p-value
Constant		.500	.618
Internet Facility (IF)	0.192	2.760	.006
Platform (P)	-0.027	-.417	.677
Learner-learner interaction (LLI)	0.103	1.474	.142
Learner-Instructor Interaction (LII	0.513	7.643	.000
R^2	0.460		

Dependent variabel: SS
Source: SPSS test result

From table 7, t_hitung of IF is greater than t_table and the significance value is smaller than 0.05, so IF has an positive influence on SS. t_hitung P is smaller than t_table and the significance value is greater than 0.05, so P has no influence on SS. t_hitung of LLI is smaller than t_table and the significance value is greater than 0.05, so LLI variable has no influence on SS variable. t_hitung of LII variable is greater than t_table and the significance value is smaller than 0.05, thus LII has an influence on SS. The value of R square in this study is 0.460 means that 54% is explained by other variables.

The results indicate that internet facilities have a positive significant influence on student satisfaction. According (Croxton, 2014; Liaw et al., 2007) the relationship between internet facilities and student satisfaction has a significant positive effect, this is in line with the results of this study. Some students students feel that obstacles on the internet greatly affect student activities in participating in online classes. Constraints in internet facilities such as poor networks, interference from providers, natural disasters and power outages in several areas greatly affect student satisfaction

during online learning during this pandemic.

The results indicate that the platform has no significant effect on student satisfaction. Some researchers feel that platform variable has a significant positive effect on student satisfaction (Piccoli et al., 2001; Webster & Hackley, 1997). There are also those who state that this variable has a positive but insignificant effect on student satisfaction (Basuony et al., 2021; Sun et al., 2008). This is in line with this research, it can be seen from the average respondent's answers to the statement items about the platform variable that they feel the platform has a positive influence on student satisfaction.

Thi study results show that student-student interaction does not have a significant effect on student satisfaction. According to some researchers, student-student interaction has a significant positive relationship with student satisfaction during online classroom learning (Borup et al., 2013; Sher, 2009; Yukselturk & Yildirim, 2008). This is in line with this study where the average answer from respondents related to the learner-learner interaction variable is positive towards student satisfaction.

The results of this study indicate that student-lecturer interaction has a positive effect on student satisfaction during online learning, these results also can be seen from the average respondent's answer. This is in line with several researchers which found a significant positive relationship between student-lecturer interaction and student satisfaction (Kuo et al., 2014; Sher, 2009; Stefanovic et al., 2011).

CONCLUSIONS AND SUGGESTION

This research was conducted to investigates factors that affect student satisfaction during the pandemic in online learning. The test results this research shows that internet facilities, Interaction between students and lecturers have a significant positive influence on student satisfaction during online learning. On the other hands, learning platform and interaction between students and students has no effect on student satisfaction.

Based on the analysis, it is suggested to program study at university level that in online learning environment can enhance student satisfaction through supporting good internet facility and interactions between lecturer and students.

Like any other research, this study is not free from weaknesses. The sample used in this study is less varied and limited to students majoring in accounting at Petra Christian University Surabaya. The relatively homogeneous sample makes the results of this study limited in terms of generalisation. Future research can expand the study with samples from various universities not only in Surabaya, but also in other cities in Indonesia. This study discusses four independent variables that affect student satisfaction during online class learning. For research in developing country might consider element of learning environment in explaining student satisfaction in online setting (Barrot et al., 2021).

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