

## Student E-Learning Satisfaction During The Covid-19 Pandemic in Bali, Indonesia

Ni Kadek Suryani<sup>1\*</sup>, Ida Ayu Putu Widani Sugianingrat<sup>2</sup>

<sup>1</sup>*Institut Desain dan Bisnis Bali, Indonesia, [suryani.staal@gmail.com](mailto:suryani.staal@gmail.com)*

<sup>2</sup>*Faculty of Economic, Business, and Tourism, Universitas Hindu Indonesia, Indonesia, [widanidayu47@gmail.com](mailto:widanidayu47@gmail.com)*

*\*corresponding authors*

### Abstract

The Covid-19 has led to comprehensive changes in the education sector. Physical distancing requirements have seen education programs in Denpasar city, Bali province, Indonesia move online. During the Covid-19 pandemic from February-May 2020, this study was conducted to determine student e-learning satisfaction and e-learning system success. Student satisfaction was measured by e-learning attitude, e-learning quality, and e-learning flexibility. The research was conducted at two private universities in Bali, Indonesia and involved 257 respondents. Respondents were student actively engaged in e-learning during Covid-19. The results found a significant positive relationship between student e-learning attitude and e-learning quality on student e-learning satisfaction, and also student e-learning satisfaction on e-learning system success; however, the influence of E-Learning flexibility on student e-learning satisfaction was not significant. Universities can improve e-learning results by considering the technical limitation students face for e-learning and improving the flexibility of access to online teachers.

**Keywords:** e-learning attitude, e-learning quality, e-learning flexibility, student e learning satisfaction, e-learning system success

## Kepuasan Siswa Mengikuti E-Learning Selama Pandemi Covid-19 di Indonesia

### Abstrak

Terjadinya pandemi Covid-19 mengakibatkan berbagai perubahan terjadi di seluruh dunia, termasuk di sektor pendidikan. Penerapan jarak fisik menyebabkan program pembelajaran dilakukan secara online, termasuk pada program pendidikan di kota Denpasar, Provinsi Bali, Indonesia. Penelitian ini dilakukan selama pandemi Covid-19 (Feb-Mei) 2020, bertujuan untuk mengetahui kepuasan mahasiswa mengikuti program e-Learning dan keberhasilan program e-Learning selama pandemi Covid-19. Pengukuran kepuasan mahasiswa dilakukan melalui variabel sikap mahasiswa, kualitas e-learning, dan fleksibilitas e-learning. Lokasi penelitian dilakukan di dua Universitas swasta di Bali, Indonesia, dengan populasi 718 dan 257 sampel yang diambil menggunakan formula Slovin. Responden adalah mahasiswa aktif yang mengikuti e-learning selama Covid-19. Data dianalisis menggunakan program SmartPLS 3,0. Hasil menemukan bahwa tiga hipotesis diterima dan satu hipotesis ditolak dari empat hipotesis yang diusulkan. Universitas diharapkan untuk memperhatikan waktu dan tempat pelaksanaan yang nyaman bagi mahasiswa dalam mengikuti pembelajaran e-learning demi meningkatkan kepuasan mereka terhadap program e-learning.

**Kata kunci:** sikap e-learning, kualitas e-learning, fleksibilitas e-learning, kepuasan e-learning siswa, keberhasilan sistem e-learning

## INTRODUCTION

Covid-19 has brought about comprehensive changes in the education sector. The introduction of protocols designed to limit the spread of Covid-19 through physical and social distancing has affected the way we live. The Indonesian government has given firm directions to carry out activities from home wherever possible with teaching and

learning switching to a remote, online activity. This phenomenon has had a tremendous impact and forced the education world to change from conventional class based activities to remote online learning.

Electronic Electronic learning or e-learning includes all forms of electronic-based education, internet networks, information, and communication, which function as a medium to help carry out the teaching or learning process online (Benigno, 2000). The online education system itself has existed since the early 2000s, which at that time began with the development of computer-based online courses (Williams et al., 2011). Before the spread of COVID-19, many online courses offered online distance education. E-learning, online training, web-based education programs, hybrid learning, and blended learning are some of the popular terms used in online teaching (Gluchmanova, 2015).

Unlike conventional face-to-face learning in the classroom, conducted with the guidance of a teacher, online learning focuses on the Internet and the development of information technology, learning systems through online and multimedia interactions (Wu et al., 2008). However, although online learning can be convenient by allowing time flexibility, independence of learning and eliminating geographical barriers, there are disadvantages including reducing social interaction, high costs, tutorial requirements, access to technology (Piccoli et al., 2001) and internet speed (Kinshuk and Yang, 2003, Wu et al., 2008).

Other obstacles that arise can negatively impact student attitudes. For example, alack of physical interaction and experience can lead to boredom, decreased interest in learning materials and a decline in student satisfaction, the effectiveness of the learning process (Maki et al., 2000, Santhanam, et al., 2008) and e-learning flexibility (Arbaugh, 2002). This study examines technical, experiential and social factors on the satisfaction and success of e-learning.

### **Student E-Learning Attitude**

Student e-learning attitude is defined as the impression students have towards e-learning programs (Piccoli et al., 2001). The students' impression positive or negative, can affect their satisfaction with e-learning programs.

Factors such as patience, self-discipline, time management, technical proficiency, and enthusiasm towards e-learning all effect student e-learning attitude. Adewole-Odeshi (2014) found that positive attitudes towards e-learning affect the students learning success. Students who are more proactive and positive towards the use of information technology and are computer literate are more satisfied and productive when following e-learning programs (Piccoli et al., 2001, Hong, 2002). Arbaugh, (2002) and Arbaugh & Duray, (2002) found students' attitudes towards e-learning, including the use of computers and information technology, have a positive effect on their satisfaction in e-learning.

Hypothesis 1: E-learning attitude has a positive and significant effect on student e-learning satisfaction during the pandemic.

### **E-Learning Quality**

The e-learning quality becomes a significant concern for program organizers, especially as the quantity of online programs has increased greatly during the pandemic. The ease of using online programs, the quality of the learning process, and the quality of instructors have a positive impact on student satisfaction (Sun et al., 2007).

Factors effecting E-learning quality include the speed and reliability of Internet services and the quality of device hardware (microphone, earphone, and electronic whiteboards) (Sun et al., 2007). Piccoli et al. (2001) mention that the quality of the technology used and the Internet's quality are essential points that influence student e-learning satisfaction. Software tools with user-friendly characteristics, short steps in operation, and easy-to-operational software, will encourage students to engage positively in e-learning. Other qualities that also influence student e-learning satisfaction include the quality of the programs used, the ease of operating video conferencing and the internet speed (Sun et al., 2007; Piccoli et al., 2001).

Hypothesis 2: E-learning quality has a positive and significant effect on student e-learning satisfaction.

### **E-Learning Flexibility**

E-learning programs can allow students to undertake employment, engage in social life and continue family activities (Moore & Kearsly, 2005), especially when e-learning can be done anytime and from anywhere. The flexibility of implementing e-learning programs dramatically contribute to the satisfaction of students (Arbaugh, 2000).

Flexibility is defined as the students perception of the efficiency of the learning process and the ease of utilising the e-learning system (Arbaugh, 2002). Students can interact and communicate with their teachers and peers according to the schedule, process, and method they agree on.

In many studies, flexibility has a substantial and significant impact on users' satisfaction (Arbaugh, 2002). Maki et al., (2000), Swam (2001) and Yukselturk (2008)). found that students flexibility of e-learning has a positive and significant effect on student satisfaction. Cheok et al. (2015), also found flexibility to be a predictor of student satisfaction in participating in e-learning. In all cases, flexibility was a positive factor and significant.

Hypothesis 3: E-Learning flexibility has a positive and significant effect on student e-learning satisfaction.

### **Student E-Learning Satisfaction and E-Learning System Success**

Success or failure of an e-learning program is mostly determined by a sense of satisfaction or dissatisfaction by users. Many studies have been published concerning distance learning satisfaction, where student satisfaction is one of the critical variables.

Yukselturk (2008) defined satisfaction as the student's feeling towards learning

quality, process flexibility, and user attitude. Serenko (2011) mentions that satisfaction is measured by observing the gap between experience and expectation. Happiness can also affect the organization's performance who arranges the program (Suryani, 2017) and to their customer who used the product (Suryani, 2018).

Research shows that the quality and quantity of interaction with instructors and peers is more important for online learning success and student satisfaction than in traditional learning (Woods, 2002). Swam (2001), who analyzed e-learning student satisfaction at university-level, found three factors that contributed significantly to student comfort level. These factors include interaction with instructors, active discussion among students, and the design of learning programs.

The success of the e-learning system can affect user behavior on an ongoing basis. If students conducting e-learning programs are satisfied, they will continue using the e-learning system. DeLone and McLean (2003) stated that e-learning programs organizers must include user satisfaction in order for their program to be successful.

Aparicio et al., (2017), found that satisfaction felt by e-learning users had a significant positive effect on e-learning system success measured by student productivity and the timeliness of completing their tasks.

Hypothesis 4: Student e-learning satisfaction has a positive and significant effect on e-learning system success.

Based on the theoretical description, a research model is built, such as Figure 1.

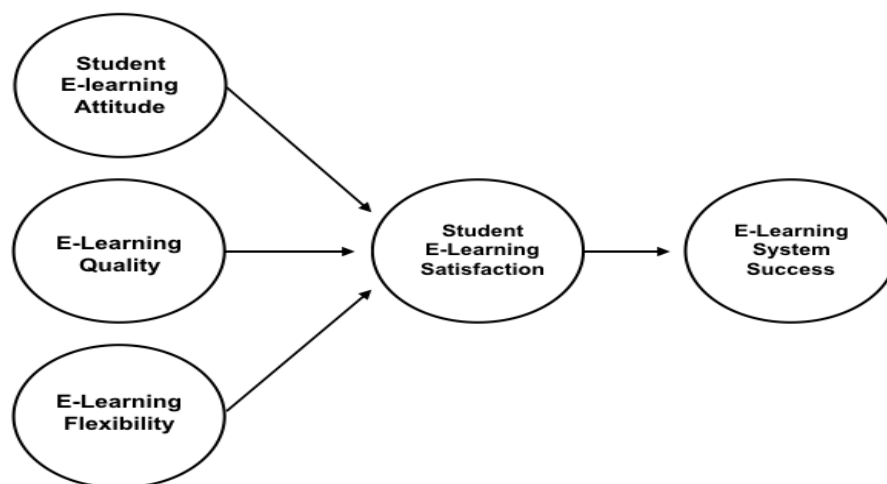


Figure 1: Research Model

## METHOD

The research was conducted at the two largest private universities in Denpasar, Bali, Indonesia: the Postgraduate Program of Mahasaraswati University; and the Faculty of Economics, Business and Tourism, Hindu University of Indonesia, Bali. Seven hundred and eighteen (718) active students took part in online learning during the Covid-

19 pandemic. The number of research participants was 257 people determined by the Slovin formula at 5% an error rate (formulated as follows:

$$n = N / (1 + N.e^2),$$

$$n = 718 / (1 + 718.0.0025),$$

$$n = 257$$

The questionnaires with a Likert scale 5 were distributed by an online system from February to May 2020. Respondants were selected using random sampling. Data was processed using Structural Equation Modelling (SEM) based Partial Least Square (PLS).

The variables studied were student e-learning attitude, e-learning quality, e-learning flexibility, student e-learning satisfaction, and e-learning system success. The measurement of all these variables is following the description in Table 1.

Table 1. Measurement of research variables

Variable		Item questions		Sources
X1	Student e-learning attitude	X11	E-learning programs are easy to follow	(Sun <i>et al.</i> , 2007).
		X12	E-learning programs reduce stress in learning.	
		X13	E-learning programs are productive in completing tasks.	
X2	E-learning quality	X21	Quality of internet access supports the implementation of e-learning programs	(Arbaugh, 2000).
		X22	The quality of instructors supports the implementation of e-learning.	
		X23	Quality learning materials to support the implementation of e-learning programs	
X3	E-learning flexibility	X31	Program e-learning provides the freedom of time to follow	(Arbaugh, 2000) Urbach <i>et al.</i> , 2010
		X32	Program e-learning gives freedom of place to attend	
		X33	Time and place to join e-learning programs are negotiable.	
Y1	Student e-learning satisfaction	Y11	Student satisfied with e-learning programs during COVID-19	(Sun <i>et al.</i> , 2007). (Arbaugh, 2000).
		Y12	St satisfied with the online application used in the e-learning process.	
		Y13	Students are satisfied with the e-learning process.	
Y2	E-learning system success	Y21	The e-learning program increases productivity in completing the task	Urbach <i>et al.</i> , 2010 (Sun <i>et al.</i> , 2007).
		Y22	The student hopes the e-learning program is done continuously.	
		Y23	The e-learning program gives freedom of time for family.	

## FINDING AND DISCUSSION

### Validity and Reliability Test

The validity and reliability of data tested using convergent validity and discriminant validity. Convergent validity testing is done by outer loading value. The indicator is valid if it has an outer loading value  $> 0.50$  and is significant (Ghozali, 2014). Table 2 shows the outer loading value of each indicator is higher than 0.50 and valid at  $p\text{-value} < 0.05$ . Table 2 also presents the reliability of research variables based on Cronbach's Alpha and Composite Reliability criteria, where Cronbach's Alpha and Composite Reliability are declared reliable at  $> 0.60$  (Ghozali, 2014).

Table 2. Validity and Reliability Test Results

Variables	Code/Items	Outer Loading	p-value	Cronbach's Alpha	Composite Reliability	AVE
X1 / Student E-learning attitude	X1.1	0.812	0,000	0.800	0.811	0, 882
	X1.2	0.883	0.000			
	X1.3	0.840	0.000			
X2 / E-learning quality	X2.1	0.800	0.000	0.805	0.817	0, 885
	X2.2	0.912	0,000			
	X2.3	0,829	0,000			
X3 / E-learning flexibility	X3.1	0.811	0.000	0.725	0.763	0, 841
	X3.2	0.718	0.000			
	X3.3	0.863	0.000			
Y1 / Student e-learning satisfaction	Y1.1	0.936	0.000	0.903	0.906	0, 939
	Y1.2	0.904	0.000			
	Y1.3	0.905	0.000			
Y2 / E-learning success system	Y2.1	0.828	0.000	0,663	0.686	0,815
	Y2.2	0.802	0.000			
	Y2.3	0,679	0,000			

### Evaluation of Model Accuracy

Evaluation of the accuracy of this research model will be tested through R-Square ( $R^2$ ), Q Square Predictive Relevance ( $Q^2$ ), and Goodness of Fit (GoF) values.

### R-Square ( $R^2$ )

The coefficient  $R^2$  for the effect of student e-learning attitude (X1), e-learning quality (X2), and e-learning flexibility (X3) on student e-learning satisfaction (Y1) is 0.582 and in e-learning system success (Y2) is 0.525. 58.2% of student e-learning satisfaction was influenced by student e-learning attitude (X1). Other factors outside the influence of e-learning quality (X2), and e-learning flexibility (X3) made up the remaining 41.8%. Student e-learning attitude (X1), e-learning quality (X2), and e-learning flexibility (X3) affected 52.5% e-learning system success (Y2); the remaining 47.5% involves factors outside this research model. Results are shown in Table 2.

### Q Square Predictive Relevance (Q<sup>2</sup>)

The results of the calculation of Q<sup>2</sup> are based on the following formula: Q-Square Predictive Relevance (Q<sup>2</sup>)

$$Q^2 = 1 - \{(1-R^2_1) (1-R^2_2)\}$$

$$Q^2 = 1 - \{(1-0.582) (1-0.525)\}$$

$$Q^2 = 1 - \{(0,418) (0,475)\}$$

$$Q^2 = 1 - (0,19855)$$

$$Q^2 = 0,80145$$

Based on the criteria proposed by Chin (1998), the Q<sup>2</sup> value of 0,80145 is quite strong, where the model gives 80,15% prediction accuracy, the prediction error is only 19,85%.

### Goodness of Fit (GoF)

The calculation results of Goodness Fit (GoF) are done through the following formulation:

$$GoF = \sqrt{(Average\ AVE\ X\ Average\ R^2)}$$

$$GoF = \sqrt{[(0.882+0.885+0.841+0.939)/5] \times [(0.582+0.525)/2]}$$

$$GoF = \sqrt{[(3,547)/5] \times [(1,107)/2]}$$

$$GoF = \sqrt{(0.7094 \times 0.5535)}$$

$$GoF = \sqrt{0.3926529}$$

$$GoF = 0.6266$$

Based on the criteria used by Akter et al. (2011) mentioned that GoF has a value higher than 0,6266 means the model is quite strong. The forecast illustrates that the model has a high degree of accuracy.

Analysis indicates that the model has a high degree of accuracy.

### Research Hypothesis Test Result

Research hypothesis testing in this study shown in Figure 2 and Table 3.

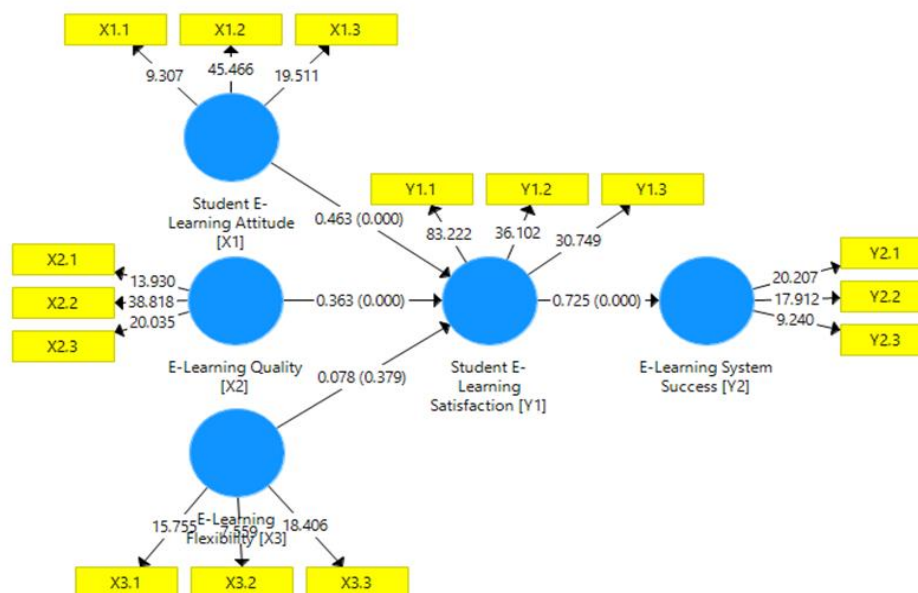


Figure 2. Hypothesis Testing Results

Table 3. Path Coefficient of Relationship of Each Variable

Relationship Between Variables		Path Value	p-value	Description
Independent	Variable Dependent Variable			
Student E-learning attitude	Student e-learning satisfaction	0,463	0,000	H1 accepted
E-learning quality		0,363	0,000	H2 accepted
E-learning flexibility		0.078	0,379	H3 rejected
Student e-learning satisfaction	E-learning system success	0,725	0,000	H4 accepted

The impact of variable shown on Figure 2 and Table 3 are as follows:

Hypothesis 1 (H1) proposed found accepted. Student e-learning attitude has a significant positive effect on student e-learning satisfaction, as demonstrated by the path value of 0.463 with a p-value of  $0,000 < 0.05$ . The results indicate e-learning attitudes can improve the students', e-learning satisfaction. Student attitude towards e-learning showed that they have successfully followed the learning materials and understand all of them. Students feel the e-learning program is easy to follow, leading to less learning stress. Moreover, e-learning has given students a productive sense from completing all the learning tasks provided by the instructor. These are factors leading to student satisfaction with the e-learning program.

This result is in line with research conducted by Hong (2002); Arbaugh, (2002); Arbaugh & Duray, (2002); Adewole-Odeshi (2014) and Piccoli et al., (2001). Students who joined online study gave positive responses to the program. They generally confirm a reduction in stress levels in completing learning tasks. They stated they were more productive when using online applications. These factors seem to influence their satisfaction with e-learning during the pandemic Covid-19 period.

The results also found that e-learning quality significantly and positively affected student e-learning satisfaction. This result is supported by a path value of 0.363 with a p-value of  $0,000 < 0.05$ . The result means that student e-learning satisfaction is strongly influenced by e-learning quality, which means that H2 was accepted. The University's quality of e-learning programs involves many factors. The quality of the Internet, instructors, and learning materials in the implementation of the e-learning program significantly affects the satisfaction perceived by the students.

This result in this study are in line with previous research findings by such Sun et al., (2007) and Piccoli et al., (2001). Internet quality, instructor quality, and quality of learning materials are the main focus of e-learning success resulting in a good response from students. They feel an increase in satisfaction because of the quality factors done during joining e-learning on the COVID-19 period.

Hypothesis 3 (H3) was rejected. Figure 2 and Table 3 show that e-learning flexibility does not significantly influence student e-learning satisfaction, with a path value of 0.078 with a p-value of  $0.379 > 0.05$ . The flexibility of e-Learning in this study did not result in



e-Learning. This was possible because the level of flexibility available was not in line with student expectation: the prescribed university schedule did not match with students' time availability and therefore satisfaction was compromised. In addition, students believed there was minimal support for the e-learning programs that were made available as a result of the pandemic, which affects their satisfaction after following the study.

The results were not in line with the finding research conducted by Swam (2001), Yukselturk (2008), and Cheok et al. (2015) which found a positive relationship between student satisfaction and the flexibility e-learning provided in terms of place and time. In this study, students stated flexibility of time and free space did not have a substantial impact on student satisfaction in e-learning. The quality of time and quantity of direct interaction with friends or instructors in this study may be more satisfying than what e-learning could offer, which is similar to the findings by (Woods, 2002) on distance education.

H4 was accepted. The analysis results found that student e-learning satisfaction has a significant positive effect on e-learning system success with a path value of 0.725 with a p-value of  $0,000 < 0.05$ . A satisfied student following e-learning will continue using the program; thus, the success of the e-learning system achieved. This also supports the freedom of the students' time to follow the students' success in completing all the learning tasks provided by the instructor.

Students' satisfaction from attitude, quality, and flexible processes significantly affect the success of e-learning programs provided by the University during the COVID-19 period.

## **CONCLUSION**

Implementation of online learning during the Pandemic Covid-19 period is a severe concern of the education sector, including universities in Bali Indonesia. However, the students' interest in participating influences the success of e-learning and several things determine satisfaction, including the attitude of students in following learning, quality of education, and e-learning flexibility.

The results of this study prove that student e-learning attitude, e-learning quality, and student e-learning satisfaction significantly and positively affected student e-learning during the pandemic Covid-19 period. However, the results also found that e-learning flexibility did not significantly influence student e-learning satisfaction. These findings study suggest that the University expected to pay attention to the time and place of the implementation of e-learning to increase student satisfaction in participating in e-learning.

This study was limited to Denpasar Bali, Indonesia during the Covid-19 pandemic. Further research across Indonesia is required to better understand the nationwide impact on e-learning.

## **REFERENCES**

Adewole-Odeshi, E. (2014). Attitude of students towards E-learning in South-West

- Nigerian universities: an application of technology acceptance model. *Library Philosophy and Practice (e-journal)*, 1035, 1-18. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2504&context=libphilprac>.
- Aparicio, M., Bacao, F., & Oliveira, T. (2017). Grit in the path to e-learning success. *Computers in Human Behavior*, 66, 388-399. <https://doi.org/10.1016/j.chb.2016.10.009>.
- Arbaugh, J. B., & Duray, R. (2002). Technological and structural characteristics, student learning and satisfaction with web-based courses: An exploratory study of two on-line MBA programs. *Management learning*, 33(3), 331-347. <https://doi.org/10.1177/1350507602333003>.
- Benigno, V., & Trentin, G. (2000). The evaluation of online courses, *Journal of Computer Assisted Learning*, vol. 16, 250-269. <https://doi.org/10.1046/j.1365-2729.2000.00137.x>.
- Cheok, M. L., & Wong, S. L. (2015) Predictors of e-learning satisfaction in teaching and learning for school teachers: A literature review, *International Journal of Instruction*, 8 (1), 75-90. [http://www.e-iji.net/dosyalar/iji\\_2015\\_1\\_6.pdf](http://www.e-iji.net/dosyalar/iji_2015_1_6.pdf).
- DeLone, W. H., & McLean, E. R. (2003) The DeLone and McLean model of information systems success: A ten-year update, *Journal of Management Information Systems*, 19 (4), 9-30. <https://doi.org/10.1080/07421222.2003.11045748>.
- Ghozali, I. (2014). *Structural Equation Modeling Metode Alternatif dengan Partial Least Squares (PLS)*, Semarang, Badan Penerbit Universitas Diponegoro. [https://www.researchgate.net/publication/289674653\\_Structural\\_Equation\\_Modeling\\_Metode\\_Alternatif\\_dengan\\_Partial\\_Least\\_Squares\\_PLS](https://www.researchgate.net/publication/289674653_Structural_Equation_Modeling_Metode_Alternatif_dengan_Partial_Least_Squares_PLS).
- Gluchmanova, M. (2015). Application of e-learning in foreign language teaching at the Technical University. *Procedia - Social and Behavioral Sciences*, 174, 3144– 3149. <https://doi.org/10.1016/j.sbspro.2015.01.1053>.
- Hong, K. S. (2002). Relationships between students' and instructional variables with satisfaction and learning from a Web-based course, *Internet and Higher Education*, 5, 267–281. [https://doi.org/10.1016/S1096-7516\(02\)00105-7](https://doi.org/10.1016/S1096-7516(02)00105-7).
- Kinshuk, D., & Yang, A. (2003). Web-based asynchronous, synchronous environment for online learning, *United States Distance Education Association Journal*, 17 (2), 5–17. <https://eric.ed.gov/?id=EJ668393>.
- Maki, R. H., Maki, W. S., Patterson, M., & Whittaker, P. D. (2000). Evaluation of a web-based introductory psychology course: Learning and satisfaction in online versus lecture courses, *Behavior Research Models, Instruments, and Computers*, 32, 230–239. <https://doi.org/10.3758/BF03207788>.
- Moore, M. G., & Kearsley, G. (2005). *Distance education: A systems view (2nd Ed.)*, Belmont, CA: Wadsworth. <https://www.amazon.com/Distance-Education-Systems-Online-Learning/dp/1111520992>.
- Piccoli, G., Ahmad, R., & Ives, B. (2001). Web-based virtual learning environments: a research framework and a preliminary assessment of effectiveness in basic IT skill

- training, *MIS Quarterly*, 25 (4), 401–426. <https://doi.org/10.2307/3250989>.
- Santhanam, R., Sasidharan, S., & Webster, J. (2008). Using self-regulatory learning to enhance e-learning-based information technology training, *Information Systems Research*, 19, 26–47. <https://doi.org/10.1287/isre.1070.0141>.
- Serenko, A. (2011). Student satisfaction with Canadian music programs: applying the American Customer Satisfaction Model in higher education, *Assessment & Evaluation in Higher Education*, 36 (3), 281-299. <https://doi.org/10.1080/02602930903337612>.
- Sun, Pei-Chen. Tay. J. Tsai, Glenn Finger, Yueh-Yang Chen, Dowming Yeh. (2007). What drives successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction, *Computers & Education*, (Compedu 2006.11.007) <https://doi.org/10.1016/j.compedu.2006.11.007>.
- Suryani N.K., Wardana, M., Sintaasih D.K., and Surya I.B.K., 2017. Human Resources Management Practice and Organizational Performance (A Case Study of Line Manager Support in Star-Hotel, Bali, Indonesia). *International Business Management*, 11: 1523-1531. <https://medwelljournals.com/abstract/?doi=ibm.2017.1523.1531>
- Suryani, N. K., Yoga, G. A. D. M., & Sugianingrat, I. A. P. W. (2018). Impact Of Human Resources Management Practice On Employee Satisfaction And Customer Satisfaction (Case Study Smes In Bali, Indonesia). *International Journal Of Sustainability, Education, And Global Creative Economic (Ijsegce)*, 1(1), 59-62. <http://www.journals.segce.com/index.php/IJSEGCE/article/view/16>.
- Urbach, N., Smolnik, S., & Riempp, G. (2010). An empirical investigation of employee portal success. *The Journal of Strategic Information Systems*, 19 (3), pp; 184-206. <https://doi.org/10.1016/j.jsis.2010.06.002>.
- Williams, B., Boyle, M., Molloy, A., Brightwell, R., & Munro, G. (2011). Undergraduate paramedic students' attitudes to e-learning: findings from five university programs. *Research in Learning Technology*, 19(2), 89-100. <http://dx.doi.org/10.1080/21567069.2011.586679>.
- Woods, R.H. Jr. (2002). How much communication is enough in online courses? Exploring the relationship between frequency of instructor-initiated personal email and learners' perceptions of and participation in online learning, *International Journal of Instructional Media*, 29 (4), 377-394. <https://eric.ed.gov/?id=EJ671759>.
- Wu, J. H., Tennyson, R. D., Hsia, T. L., & Liao, Y. W. (2008). Analysis of e-learning innovation and core capability using a hypercube model, *Computers in Human Behavior*, 24, 1851–1866. <https://doi.org/10.1016/j.chb.2008.02.008>.
- Yukselturk, E., & Yildirim, Z. (2008). Investigation of interaction, online support, course structure, and flexibility contribute to students' satisfaction in an online certificate program. *Journal of Educational Technology & Society*, 11(4), 51-65. [https://users.metu.edu.tr/zahidey/pdf/2008-ETS-yukselturk\\_yildirim.pdf](https://users.metu.edu.tr/zahidey/pdf/2008-ETS-yukselturk_yildirim.pdf).