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DEVELOPING AN IDEAL MODEL OF ONLINE LEARNING FOR PUBLIC UNIVERSITIES BASED ON PUBLIC SATISFACTION SURVEY DATA

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Abstract

The provision of high-quality educational services is one of the initiatives aimed at improving education. Online learning environments are part of a higher education program that aims to provide outstanding education. One measure of the effectiveness of public service delivery in higher education is user satisfaction with the online learning platform. The objectives of this study are: (1) analyzing the effect of Culture on Perceived Ease; (2) analyzing the effect of Perceived Risk on Perceived Ease; (3) analyzing the effect of Trust on Perceived Benefit; (4) analyzing the effect of Trust on Perceived Ease; (5) analyzing the effect of Perceived Risk on Trust; (6) analyzing the effect of Perceived Benefit on User Satisfaction; (7) analyzing the effect of Perceived Ease on User Satisfaction; and (8) analyzing the effect of Perceived Ease on Perceived Benefit in using online learning platforms. The data collection method uses a questionnaire. The data were processed using SPSS software for descriptive statistics of research variables analyzed by the three-box method. SEM-PLS4 program was used to test the research model. The results showed: (1) Culture variables have a significant positive effect on perceived ease. (2) Perceived Risk has a negative and insignificant effect on Perceived Ease. (3) Perceived Trust has a positive and insignificant effect. (4) Perception of Trust has a significant positive effect on Perception of Ease. (5) Perceived Risk has a significant negative effect on trust. (6) Perceived usefulness has a negative and insignificant effect. (7) Perception of Ease has a significant positive effect. (8) Perceived Ease has a significant positive effect.

Keywords: Public Service Satisfaction, Culture, Perceived Risk, Trust, Perceived Ease, Perceived Benefit.

1. INTRODUCTION

One of the development efforts in the field of education is the availability of quality education services. Quality education in higher education includes the provision of

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learning models according to user needs. User satisfaction with the applied learning model is one indicator of the success of providing public services in higher education. In the present era, information technology is evolving quite quickly. In the age of globalization, the advancement of digital technology undoubtedly brings about many changes in the facets of human existence (Rifani et al., 2023). One of the ways that the field of education has changed as a result of the advancement of information technology is the transformation of the traditional face-to-face learning model into an online one.

The first online learning program was launched in 1985 and started as a virtual university hosted online by the Open University of Catalonia. Since then, enrollment has steadily increased, and many private and public institutions offer online learning programs at various levels (Dwiyogo, 2018).

The presence of internet technology makes it easy to implement online learning without being limited by time and space. Higher education activities that were hampered at the beginning of the Covid-19 pandemic can now be resolved with the existence of online learning platforms in the form of e-learning, zoom, google meet, google class and other online learning platforms.

Through online learning platforms, the learning process can take place anywhere. Lecturers and students no longer need to meet face-to-face in the lecture hall. The development of online learning concepts through advanced technology will be able to produce creative and productive graduates and does not require expensive costs.

Higher education must change the image of society from an institution that is considered exclusive to an institution that is popular and serves the wider community (Alastair Inglis, Vera Joosten, 2002). With thousands of islands, Indonesia poses a difficulty for education when it comes to online learning.

The difficulty of utilizing technology and setting up internet connectivity in isolated places where internet-connected devices are still considered a luxury. It is a challenge for every individual involved to use technology to address the actual issues that arise for students, particularly those who are less affluent and reside in remote places.

According to information from the Indonesian Central Bureau of Statistics catalog (2022), there are 3,115 public and private universities under the Ministry of Education and Culture. The number of students is 7,665,516 while the number of teachers is 265,452. Not all of these instructors and students are proficient in using e-learning, zoom, google meet, google class, and other online learning platforms.

Users' proficiency with technology varies when they learn online, and the infrastructure they possess also varies. Numerous scholars have studied behavior related to technology. The Technology Acceptance Model (TAM) by Davis (1989) is the hypothesis that is most frequently cited. TAM was created to model user adoption of an information system interface.

According to Davis (1989), the main purpose of TAM is to establish a basis for tracing the influence of external factors on beliefs, attitudes, and intended use of a technology. Some

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research has resulted in some influence of risk and trust factors in business into TAM. But in its development TAM can be developed by adding variables and producing a new TAM model.

TAM measures how users of a system in technology adapt and is found to be influenced by cultural factors. Culture is an important factor to increase the level of adoption of online learning systems among users. Research conducted by Almaiah et al. (2020) states that cultural factors in the form of information and communication technology (ICT) literacy, joining e-society or online learning classes and utilizing social media in online learning affect the perceived ease of using online learning.

The more user trust increases, the lesser the risk of adopting online learning. Research by Pal & Patra, (2021) and Amoroso et al. (2009) both corroborate the dependence relationship between trust and risk perception. Trust is an important factor to increase the adoption rate of learning systems. Universities always try to ensure that the e-learning system can be trusted Almaiah et al., (2020). In order to increase the adoption of e-learning system among users, it is important for universities to always update the security system to keep the system completely safe from any kind of virus, and to ensure that all learning activities are legally executed based on the implemented privacy policies and laws.

Previous studies on online learning using TAM have been conducted by previous researchers such as Venkatesh, (2000), Andreassen Wallin et al., (2001), Roca et al., (2006), Tarhini et al., (2017) and Baber, (2021). However, these previous studies only research from Andreassen Wallin et al., (2001) and Roca et al., (2006) which relate to user satisfaction. Research on user satisfaction of online learning services have also been studied before, for example by Andreassen Wallin et al. (2001), Roca et al. (2006), Wang, (2012), Chen et al. (2020), Maheswaran et al. (2020) and Shahzad et al. (2021). However, these previous studies mostly looked at perceived quality variables (system quality, information quality and service quality), while in this study researchers were inspired by the TAM model to create an online learning model that can provide user satisfaction based on public satisfaction which is still rarely used by previous researchers.

The current debate about public services basically lies in the approach that will be used to measure the quality of public services. In this case, there are three approaches to measuring the quality of public services, namely: process approach, output approach, and a combined approach between process and outcome (Dwiyanto, 2021).

Regulation of the Minister of Administrative Reform and Bureaucratic Reform of the Republic of Indonesia Number 14 of 2017 concerning Guidelines for Preparing Community Satisfaction Surveys for Public Service Delivery Units stipulates nine elements in the community satisfaction survey, namely 1) requirements, 2) systems, mechanisms and procedures, 3) completion time, 4) costs/tariffs, 5) service type specification procedures, 6) executor competence, 7) executor behavior, 8) handling complaints, suggestions and input, and 9) facilities and infrastructure. The cost/tariff element can be replaced with other forms of questions, if in a regulation the cost is not

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charged to service recipients (consumers). The elements of implementing competence and implementing behavior can also be replaced with other forms of questions if the type of service to be surveyed is web-based (online). In order to measure the quality of public services, Zeithaml et al. (1993) combined the process and outcome techniques, creating a more comprehensive public service quality measurement model. Ten metrics are introduced by Zeithaml et al. (1993) to assess the caliber of public services, namely: (1) physical appearance (tangibles); (2) reliability; (3) credibility; (4) competence; (5) understanding the needs of consumers (understanding the customer); (6) communication; (7) responsiveness; (8) courtesy; (9) security; and (10) access.

In this study, the measurement of the level of quality of public services in the education sector combines the nine indicators stipulated by the Minister of Administrative Reform and Bureaucratic Reform of the Republic of Indonesia and an indicator model developed by Zeithaml et al., (1993), which includes ten indicators.

The assumption used is that the indicator model is quite complete and can include indicators developed by other experts and is easily applied in assessing the quality of public services, including education services by education provider institutions, namely universities. This research aims to produce an online learning model based on public service user satisfaction by looking at cultural variables, risk perception, trust, perceived usefulness and perceived ease of use.

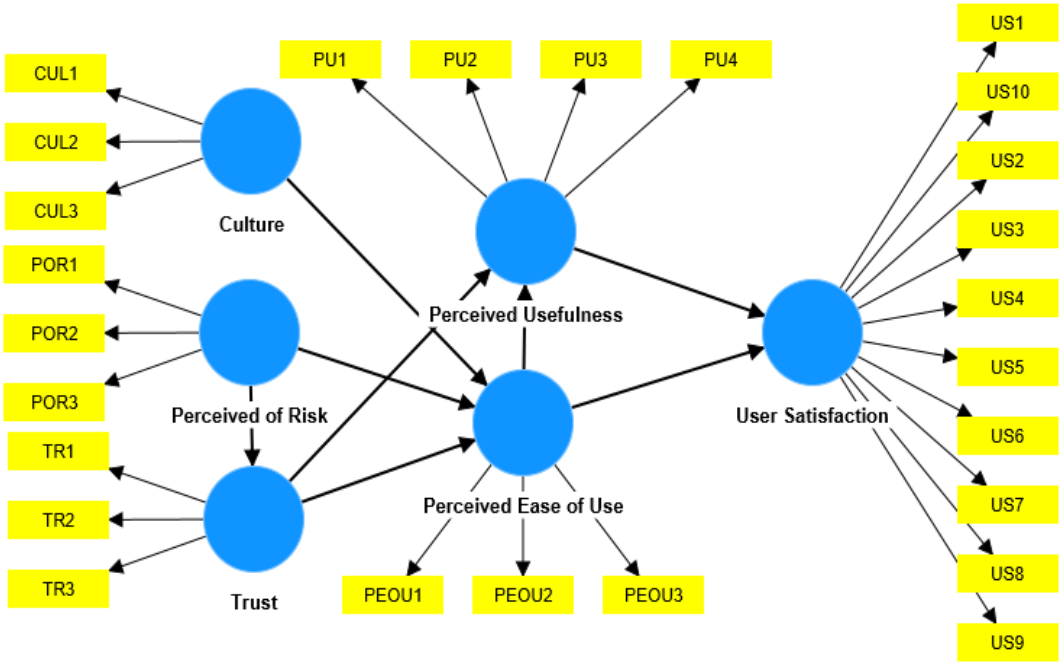

Figure 1: Framework

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H1: Culture has a significant effect on the perceived ease of using online learning platforms.

H2: Perceived risk has a significant effect on perceived ease of using online learning platforms.

H3: Trust has a significant effect on perceived usefulness in using online learning platforms.

H4: Trust has a significant effect on the perceived ease of using online learning platforms.

H5: Perceived risk has a significant effect on trust in using online learning platforms.

H6: Perceived usefulness has a significant effect on user satisfaction in using online learning platforms.

H7: Perceived ease of use has a significant effect on user satisfaction in using online learning platforms.

H8: Perceived ease of use has a significant effect on perceived usefulness in using online learning platforms.

2. RESEARCH METHOD

This study was carried out on lecturers from 11 faculties at a public University on the island of Kalimantan. The university is the biggest and oldest state university. As the sole institution that focuses its research on wetland environments, the institution is currently entrusted with the management of 629.27 hectares of mangroves in Kotabaru Regency, making it the world's center for mangrove studies. Because of this, the university needs an online learning model that would enable institutions all over the world to enroll in courses there. The population in this study are 1,281 lecturers. The sample size uses the sample table from Krejcie and Morgan as in the following table:

Table 1: Krejcie's and Morgan's sample

Population(N)	Sample(n)	Population(N)	Sample(n)	Population(N)	Sample(n)
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351

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90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

The sample size is 297, or around 300 responses, if the population is 1281 (rounded to 1300). Using partial least square (PLS) data analysis methods and SmartPLS software, a structural equation modeling (SEM) equation model was employed in this investigation.

3. RESULTS AND DISCUSSION

Evaluation of the measurement model through confirmatory factor analysis is to use the MTMM (MultiTrait-MultiMethod) approach by testing convergent and discriminant validity. Reliability testing is done in two ways, namely with Cronbach's Alpha and Composite Reliability.

Convergent validity of the measurement model with reflective indicators can be seen from the correlation between the item score/indicator and the construct score. An individual reflective measure is said to be high if it correlates more than 0.70 with the construct to be measured. However, in scale development stage research, loading of 0.50 to 0.60 is still acceptable (Ghozali, 2021).

The loading factor value for the research model of each indicator shows a value of more than 0.5, meaning that all indicators are declared valid and can be used for further analysis.

Discriminant validity of indicators can be seen in the cross loading between indicators and their constructs. If the correlation of the construct with its indicators is higher than the correlation of indicators with other constructs, then this indicates that the latent constructs predict the indicators in their blocks better than the indicators in other blocks.

The results of data processing show that all indicators in the research model have a higher correlation with their constructs than with other construct indicators, so the research model has good discriminant validity through the assumption of cross loading. To measure the reliability of a construct with reflexive indicators, it can be done in two ways, namely with Cronbach's Alpha and Composite Reliability.

The construct is declared reliable if the composite reliability and Cronbach alpha values are above 0.70. The results of data processing show that all variables in the research

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model have a composite reliability value and Cronbach's alpha above 0.70, so it can be said that all indicators measuring each variable are reliable.

So, it can be concluded that the construct has good reliability and is suitable for use as a measuring tool. Hypothesis testing is done with the bootstrap resampling method developed by Geisser & Stone. The test statistic used is the t statistic or t test.

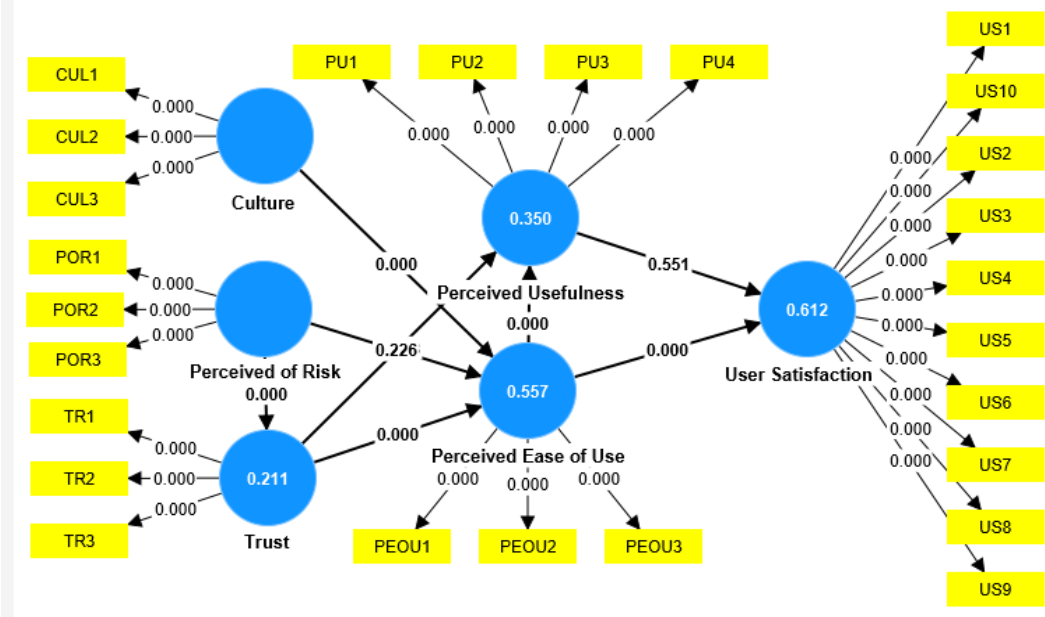

Figure 2: Output of Bootstrapping

In the bootstrap resampling method, the significance value used is 1.96 (significance level = 5%). Therefore, the criteria for accepting the hypothesis in this study are when the t-statistic is greater than the t-table (Ghozali, 2015).

Table 2: Outputs of Path Coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Culture -> Perceived Ease of Use	0.334	0.338	0.051	6.578	0
Perceived Ease of Use -> Perceived Usefulness	0.556	0.561	0.086	6.446	0
Perceived Ease of Use -> User Satisfaction	0.81	0.811	0.047	17.286	0
Perceived Usefulness -> User Satisfaction	-0.048	-0.043	0.08	0.597	0.551
Perceived of Risk -> Perceived Ease of Use	-0.087	-0.088	0.072	1.21	0.226
Perceived of Risk -> Trust	-0.46	-0.466	0.084	5.464	0
Trust -> Perceived Ease of Use	0.556	0.557	0.061	9.177	0
Trust -> Perceived Usefulness	0.052	0.051	0.102	0.512	0.608

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The results of the study can be seen that the t-count value of the Culture variable on the Perceived Ease of Use is 6.578 or greater than the t-table value of 1.96, and the probability value of 0.000 is smaller than 0.05. This means that the Culture variable has a significant effect on the Perceived Ease of Use variable. In addition, the positive original sample indicates that the direction of the relationship between the Culture variable and the Perceived Ease of Use is positive, meaning that the stronger the culture of information technology literacy, the greater the willingness to create online learning classes. Therefore, users can join these online learning classes and utilize social media. This will provide a positive attitude towards the Perceived Ease of Use for users in providing online learning.

The significant influence of the Culture variable on the Perceived Ease of Use is due to the fact that currently the literacy of both students and lecturers on information and communication technology is something that is easily obtained. Information technology acts as a learning tool through various modern means of communication. For example, computers, cell phones, electronic mail (email), online learning software, and so on.

The support of information technology gives teachers the opportunity to continue providing learning without having to meet face-to-face with their students. Similarly, students can obtain a wider range of materials, information, and references. The presence of internet technology also makes the implementation of the education system easier and more practical. This can be seen from the development of cyber teaching methods, a.k.a virtual learning that utilizes the internet.

The results of testing hypothesis 2 can be seen that the t-count value of the perceived risk variable on perceived ease of use is 1.21 or lower than the t-table value of 1.96, and the probability value of 0.226 is greater than 0.05. This means that the perceived risk variable does not have a significant effect on the perceived ease of use variable.

The perceived risk variable in this study is measured using indicators of frequent online lecture cancellations, the quality of online learning is not in accordance with the national standard of higher education, and the risk of online learning is higher than offline learning. The perceived ease of access variable in this study is measured by indicators of easy access to online learning media via smartphones, laptops, or tablets. Other indicators are online learning media that have features that are easy to understand and indicators of menus displayed in online learning media that have information that is easy to understand.

The insignificant effect of perceived risk on perceived ease of use in this model is because users consider the cancellation of online lectures, learning that is considered not in accordance with the National Higher Education Standards and the higher risk of online learning compared to offline learning are not related to perceived ease of use. Cancellation of online lectures often occurs due to non-technical factors such as power outages by the State Electricity Company, interference with the internet network and other non-technical factors that have nothing to do with perceived convenience.

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The risk of learning quality that is not in accordance with the National Higher Education Standards also does not affect the Perception of Ease, both in terms of ease of access through smartphone/laptop/tablet media, ease of understanding the features of online learning media or ease of understanding the menus in online learning media that have information that is easy to understand. Users consider that online learning that is not in accordance with the National Higher Education Standards does not occur in the online learning classes they participate in.

The risk of online learning is higher than offline learning. This is considered by users because online learning has limitations in social interaction with fellow students and lecturers. The effect of the Trust variable on perceived usefulness in hypothesis 3 shows a t-count value of 0.512 which is lower than the t-table value of 1.96, and a probability value of 0.608 above 5% ($p > 0.05$). So, it can be concluded that perceived trust has an insignificant effect on perceived usefulness in using online learning platforms.

Perceived Trust in this study is measured using indicators of trust in security in online learning, trust in the security of personal data during online learning and trust in the quality of learning in accordance with the semester learning plan. Because lecturers do not think that the online lectures contribute equally to the growth of all students' learning accomplishment, the perceived trust variable in this study model has a negligible effect on perceived usefulness. Even if most students are comfortable with technology, some lecturers are still unfamiliar with it when it comes to online learning, which makes them think that the benefits of online learning cannot match those of traditional face-to-face instruction.

One of the negative impacts of prolonged online learning is that many students cannot absorb the subject properly. This is because they are not used to following online learning using applications such as Zoom, Google Meet and so on. Learning that is often interrupted due to lost or unstable internet connections causes lecturers to feel uncomfortable in the teaching and learning process. For practicum courses, online learning methods are not suitable for lecturers to use, even if they are forced to use online learning, finally the learning plan that has been arranged to carry out the practicum has an impact on the mismatch in the learning process. This is what causes the absence of a significant influence of the Trust variable on Perceived Usefulness.

The effect of the Trust variable on perceived ease of use in hypothesis 4 shows a t-count value of 9.177 which is greater than the t-table value of 1.96, and a probability value of 0.000 below 5% ($p < 0.05$). Thus, it can be concluded that perceived trust has a significant effect on perceived ease of using online learning platforms.

Perceived Trust is measured using indicators of trust in security in online learning, trust in the security of personal data during online learning and trust in the quality of learning in accordance with the semester learning plan. The significant influence of perceived trust on perceived ease of use is due to the online learning system providing many conveniences in the learning system in today's digital era. Online learning systems using meeting/teleconference platforms such as Google Meet, Microsoft Teams, Cisco Webex,

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Zoom, and others provide convenience and flexibility in attending classes and examinations. The transition of learning methods to digital direction is an important step for Indonesian education. This easy access to courses is one of the steps of digitizing education. It improves the quality of education because all students can access lecture topics that they do not get in their lectures so that it has the potential to increase student insight. Increased student knowledge will directly impact the quality of human resources in the future. This ease of access also gives students more flexibility to add to their knowledge so that they have more time to develop beyond the basic skills they have and deepen.

The facilitation from the government and universities in this online learning creates user confidence to use this online learning facility. Innovations in the field of education digitization will be very important if followed by the implementation of technology in the field of education.

The effect of the perceived risk variable on perceived trust in hypothesis 5 shows a t-count value of 5.464 which is greater than the t-table value of 1.96, and a probability value of 0.000 is smaller than 5% ($p < 0.05$). So, it can be concluded that perceived risk has a significant negative effect on perceived trust in using online learning platforms. Thus, it can be interpreted that when the risk of online learning is getting smaller, it will be able to increase the perceived trust of users.

Perceived Risk has a significant effect on Perceived Trust because lecturers as educators need to foster trust in the online learning media used both in terms of security during online lectures and personal data security. Lecturers in preparing online learning need to pay attention to the risks that can occur in online learning such as the risk of cancelling courses due to technical problems such as no internet network and so on. The risk of learning quality that is not in accordance with the National Higher Education Standards for practicum courses is also a consideration for lecturers to choose the most suitable online learning media to foster Perceptions of Trust for users, especially students who take these courses. The effect of the perceived usefulness variable on user satisfaction in hypothesis 6 shows a t-count value of 0.597 which is smaller than the t-table value of 1.96, and a probability value of 0.551 above 5% ($p> 0.05$). Therefore, it can be concluded that perceived usefulness has an insignificant effect on user satisfaction in using online learning platforms. Perceived usefulness does not have a significant effect on user satisfaction because lecturers who were “forced” to use an online learning system during the pandemic want to return to an offline learning system that allows lecturers to interact directly with students to improve students' social skills and communication skills in the form of class presentation assignments, class discussions and so on. The benefits of online lectures that can be done anytime, save time and are more practical do not have a significant effect on lecturers' satisfaction as users of online learning. Perceived Ease of User Satisfaction in hypothesis 7 shows a t-count value of 17.286 which is greater than the t-table value of 1.96, and a probability value of 0.000 is less than 5% ($p < 0.05$). Consequently, it can be concluded that perceived ease of use has a significant effect on user satisfaction in using online learning platforms.

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The significant effect of perceived ease of use on user satisfaction is due to the ease of accessing online learning with media owned by users in the form of smartphones, laptops or tablets causing users to feel satisfied with the online learning that is followed. Online learning media that are very diverse today such as Zoom, Google Meet, Google Class and so on have features that are easy for users to understand so that they also provide satisfaction for users. The menus contained in the current online learning media can also be translated causing the menus displayed on the online learning media used have information that is easily understood by users. In the end, this is able to contribute a significant influence on user satisfaction.

The effect of the perceived ease of use variable on perceived usefulness in hypothesis 8 shows a t-count value of 6.446 which is greater than the t-table value of 1.96, and a probability value of 0.000 below 5% ($p < 0.05$). It can be concluded that perceived convenience has a significant effect on perceived usefulness in using online learning platforms. The significant effect of perceived ease of use on perceived usefulness can be interpreted if online learning can be carried out easily both in terms of ease of access via smartphone, laptop or tablet media, ease of understanding the features available on online learning media and ease of understanding the information contained in the online learning menus, it will automatically be able to increase user perceived usefulness. With the ease of use in online learning media, users can take advantage of online learning to be used anytime as needed, can save time and have practicality in the implementation of learning.

4. CONCLUSION

1) Culture has a significant positive effect on the perceived ease of using online learning platforms.
2) Perceived Risk has a negative and insignificant effect on the perceived ease of using online learning platforms.
3) Perceived Trust has a positive and insignificant effect on the perceived usefulness of using an online learning platform.
4) Perceived Trust has a significant positive effect on the perceived ease of using an online learning platform.
5) Perceived Risk has a significant negative effect on Trust in using online learning platforms.
6) Perceived usefulness has a negative and insignificant effect on user satisfaction in using online learning platforms.
7) Perceived Ease of use has a significant positive effect on user satisfaction in using online learning platforms.
8) Perceived Ease of use has a significant positive effect on perceived usefulness in using online learning platforms.

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