Analysis of Application Success in XYZ Agency as an Online Learning Media Using the DeLone and Mclean Models

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ARTICLE INFO | ABSTRACT

Internet users in Indonesia have shown a rapid increase. This indicates that the development of information and communication technology is growing, bringing many life changes, thus demanding the education industry to strive to improve the quality of education continuously. However, at the beginning of 2019, COVID-19 pandemic emerged, which required that all students not be allowed to do face-to-face learning. Because of this problem, companies are starting to create online learning technologies that have a positive impact. In 2022, XYZ application is a learning application ranked 9th among the most popular applications. Nevertheless, in its use, there are still obstacles. Based on this description, this study will analyse application's success using DeLone and Mclean models to determine whether application has been considered successful. The research data was obtained by distributing questionnaires online with a total of 240 respondents who were users who had used e-learning in XYZ agency with an age range of 15 to 45 years. This study used quantitative methods and data processing using SmartPLS version IV software to test inner and outer models. The results showed that success rate of e-learning in XYZ agency was very high, and out of twelve hypotheses, eight were accepted, and four were rejected. The factors that support success of e-learning in XYZ agency are seen from accepted hypotheses. At the same time, factors that hinder application's success are information quality, system quality, service quality, instructor quality, and user satisfaction. From these inhibiting factors, appropriate recommendations are then given. The results of this research are expected to be considered by e-learning in XYZ agency developers and providers.

1   Introduction

Indonesia is one of countries with the world's top 5 most significant populations. Based on the calculation data report by Ministry of Home Affairs through the Directorate General of Population and Civil Registration as of June 22, 2022, Indonesia's population reached 275.36 million. This figure shows an increase. The number increased by 1.48 million people (0.54%) compared to December 2021 (Kusnandar, 2022). Development of information and communication technology has brought many changes in social life of society, so it demands one of industries, that is education industry, to meet its needs for efforts to improve quality of education. In 2019, COVID-19 pandemic emerged, so students could not learn face-to-face. Because of these problems, several companies have to make e-learning. Docebo (2016) reports that development of e-learning reached an average of 23% in 2017. Indonesia has also ranked 8th in the world based on total e-learning market each year, which is 25% (Maturbongs, 2020).

With developments described above, it is inevitable that number users of online learning applications in Indonesia currently have thousands of users. This shows that e-learning has potential to be maximized in its application, so it is essential to know which factors are already strong to be maintained and which factors are still lacking to be addressed and followed up in the successful implementation of e-learning (Kristiningsih, 2020). Therefore, companies are competing to attract consumers' attention by improving quality and service of their products. Several brands in education sector have quite tight competition as ranked by Similar Web in 2022 if e-learning in XYZ agency is

ranked 9th out of the top 10 educational applications in high demand in 2022. The merits of this research are clear because there needs to research on successful information systems regarding e-learning in XYZ agency. Anticipating this competition, e-learning in XYZ agency must be able to create customer satisfaction. However, e-learning still has problems for both user and system. There are several problems that the researchers took from Google Play Store review, such as users having problems unable to continue to the next material, slow loading, and small image displays. This could impact success of application. Therefore, it is necessary to measure quality of system in e-learning. One model currently popularly used to examine success and failure of information systems is model developed by DeLone & Mclean.

2   Theoretical Basis

2.1   E-Learning

E-learning is distance learning that utilizes computer technology, computer networks, or internet. E-learning can enable the learning process via computer from their respective places without having to meet face-to-face to attend lessons or lectures in class. One of the problems experienced by educators or students, especially during COVID-19 pandemic, is being unable to meet face-to-face. With e-learning, learning can be done anywhere and anytime, with flexibility in time. If students are having difficulties, teacher can teach it again until students or students feel understood, it can save costs (including travel costs to study locations, accommodation during study period, administrative costs, physical facilities, and classrooms. With various conveniences provided, e-learning users have increased. Based on data published by Docebo in 2017, Indonesia ranks eighth globally, with an increase of 25% annually (Maturbongs, 2020).

2.2   DeLone and Mclean Model Development

This study uses variables in model developed by DeLone & Mclean (2003). There are six variables in this model, namely system quality, information quality, and service quality which has system use and user satisfaction by looking at net benefits of implementing application. In this study, researchers add external variable as content (CO) variables adopted from Jung et al. (2009) instructor quality (INS) variable adopted from Al-Fraihat et al. (2020) and loyalty variable (L) adopted from (Jill, 2015). The following is a research model presented in Figure 1.
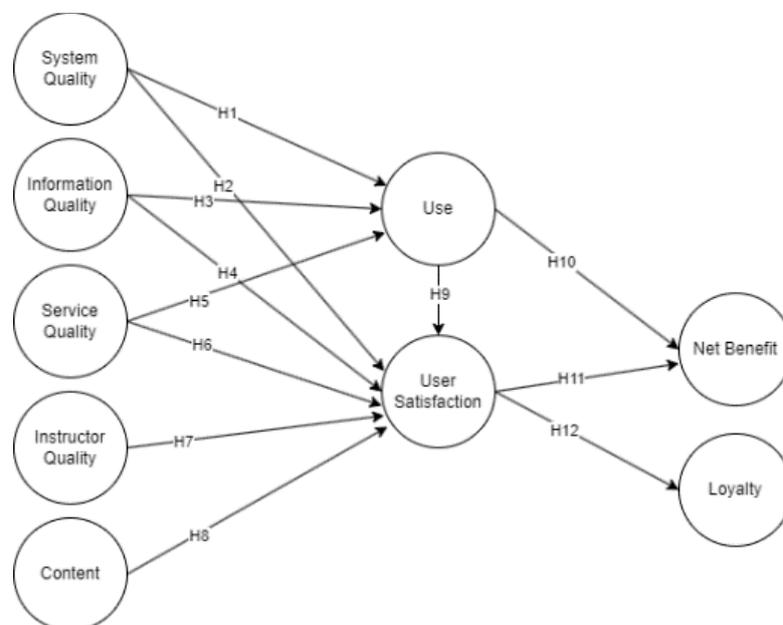

Figure 1. Research model

    Based on research conducted by Nicola et al. (2022) has proven that system quality variable has a significant influence on use and user satisfaction variables. From the results of previous studies that have been described, the researcher proposes a hypothesis:

H1: System quality has a significant effect on influence on use.

H2: System quality has a significant effect on influence on user satisfaction.

Based on research conducted Kurnianto et al. (2019) information quality significantly affects use and user satisfaction variables. From the results of previous studies that have been described, researcher proposes a hypothesis:

H3: Information quality has a significant effect on influence on use.

H4: Information quality has a significant effect on user satisfaction.

Based on research conducted Mellanie et al. (2022), service quality significantly affects use and user satisfaction variables. From the results of previous studies that have been described, the researcher proposes a hypothesis:

H5: Service quality has a significant effect on use.

H6: Service quality has a significant effect on user satisfaction.

Based on research conducted by Cidral et al. (2018), instructor quality variable significantly affects customer satisfaction variable. From the results of previous studies that have been described, the researcher proposes a hypothesis:

H7: Instructor quality has a significant effect on user satisfaction.

Based on research conducted Prasetyo (2017) content variable significantly affects user satisfaction variable. From the results of previous studies that have been described, the researcher proposes a hypothesis:

H8: Content has a significant effect on user satisfaction.

Based on research conducted by Muhammad & Arief (2020) that use variable has a significant effect on variable user satisfaction and net benefits. From the results of previous studies that have been described, the researcher proposes a hypothesis:

H9: Use has a significant effect on user satisfaction.

H10: Use has a significant effect on net benefits.

Based on research conducted Rakhmah & Widyastuty (2019) that user satisfaction variable has a significant effect on net benefit variable. Also supported by Dewi & Nugroho (2020) if the user satisfaction variable significantly affects loyalty variable. From the results of previous studies that have been described, the researcher proposes a hypothesis:

H11: User satisfaction has a significant effect on net benefits.

H12: User satisfaction has a significant effect on loyalty.

3   Method

This study uses a quantitative method approach. This study used a questionnaire to collect data and made direct observations on e-learning in XYZ agency. Meanwhile, to processing questionnaires using outer model and inner model. Sampling technique used in this study was purposive sampling.

Sample size was determined according to Hair et al. (2019) to determine number of samples can be done with the following calculations:

$$n = \text{number of indicators} \times 5 \qquad (1)$$

Description:

n = number of research samples

Based on this formula, the following is a calculation to find number of research samples:

$$n = 40 \times 5 = 200 \qquad (2)$$

Concerning this opinion and based on considerations put forward, minimum number of respondents is 200 samples. In fact, number of respondents processed was around 240 respondents.

3.1 Validity Technique (Outer Model)

The outer model analysis aims to determine relationship between later variables and existing indicators. The first test is convergent validity. In convergent validity, there is a process of individual item reliability which can be seen from value of loading factor. Loading factor describes correlation magnitude between each measurement item (indicator) and construct. Loading factor value above 0.7 can be ideal, meaning that indicator is valid as an indicator that measures constructs (Siswadi et al., 2021). Next is the internal consistency reliability of composite reliability value. Composite reliability can be used to evaluate internal consistency. A cutoff value of 0.7 and above means acceptable, and above 0.8 and 0.9 means very satisfying (Selvianti et al., 2021). Next, is average variance extracted (AVE). This value describes magnitude of variance or diversity of manifest variables that latent constructs can contain. A minimum AVE value of 0.5 indicates a good measure of convergent validity. This means that latent variables can explain, on average more than half of variance of indicators. Next is discriminant validity, which can be assessed based on cross-loading measurements with construct. The model recommends that cross-loading value be greater than 0.50 (Ghozali, 2016). Another method to test discriminant validity is to compare each construct's square root of AVE (Fornell-Larcker Criterion) with correlation value between constructs model.

3.2 Data Analysis Technique (Inner Model)

The inner model explains effect of independent latent variables on dependent variable. The inner model goes through several processes, including path coefficients, coefficient of determination (R2), t-test, effect size (F2), and predictive relevance (Q2). The first is path coefficient. If path coefficient value is above 0.1 states that intended path influences model (Hair Jr et al., 2021). Measurement of path coefficients between constructs in each hypothesis aims to see relationship's significance and strength and test hypotheses (Furadantin, 2018). Second, evaluating R2 coefficient of determination to explain variance of each target endogenous variable with a standard measurement of about three categories of levels on R-square, including strong category with an R-square value of 0.75. Then the good category with an R-square value of 0.5, and weak category with an R-square value of 0.25 (Hair et al., 2019).

Third, looking at the value of t-test with bootstrapping method using a two-tailed test with a significant level of 0.05 to test research hypotheses. The research hypothesis will be accepted if it has a t-test greater than 1.96, meaning that independent variable affects dependent variable (Huda et al., 2021). Fourth, the F2 effect size test predicts effect of certain variables on other variables in model structure with value of around 0.02 for small effects, 0.15 for medium and 0.45 for large effects. Meanwhile, an effect size value below 0.02 indicates that it does not influence model structure. Fifth, to test Q2 predictive relevance using blindfolding method to provide evidence that certain variables used in model have predictive relevance with other variables. The results of Q2 value > 0 indicate that model being tested has accurate predictive relevance for certain constructs, while Q2 value < 0 indicates that model being tested has a less accurate predictive relevance value (Furadantin, 2018).

4 Results and Discussion

4.1 Success Rate Test Results

This section will describe the results of calculating data obtained from distribution online questionnaire. Analysis was carried out based on hypotheses prepared beforehand. That way, based on data that has been processed, researchers will know more about whether hypothesis is accepted or rejected. The first step is to test level of success. In measuring variables in this study using, a measurement tool was used to determine number of class interval classes that should be used for grouping data, namely sturges formula (Supranto, 2008).

$$Interval = \frac{(\text{max value} - \text{min } value)}{\text{number of classes}} = \frac{3}{4} = 0.75 \qquad (3)$$

The distribution scale for each variable based on these calculations is as follows:

Very Low	: 1.00 – 1.74	Moderate	: 2.50 – 3.24
Low	: 1.75 – 2.40	Height	: 3.25 – 4.00

The following Table 1 is a recapitulation of respondents' answers to success of e-learning in XYZ agency:

Table 1. Questionnaire results mean

Variable	Mean	Description
System Quality	3.279	Moderate
Information Quality	3.422	High
Service Quality	3.436	High
Content	3.524	High
Use	3.144	Moderate
User Satisfaction	3.400	High
Instructor Quality	3.435	High
Loyalty	3.291	Moderate
Net Benefit	3.371	Moderate
Total Mean Average	**3.367**	**Moderate**

From the results of Table 1 above, it can be seen that results of research on measuring success of e-learning in XYZ agency can be seen from average value of each variable in questionnaire, which is at a high level, it can be said that e-learning in XYZ agency has a high level of success with a score of 3.367 so that respondents feel satisfied and valuable with e-learning in XYZ agency.

4.2 Data Validity Test Results (Outer Model)

This validity test stage must pass through two stages namely, validity test aims to test validity level of data, and reliability test. There are three validity test calculations carried out in this study. Among them, namely convergent validity, average variance extracted, and discriminant validity. The first stage of convergent validity test is looking at outer loading value above 0.7, it can be concluded that if data in study are ideal, indicator is valid (Siswadi et al., 2021). The following is result of processing convergent validity test data in Figure 2.
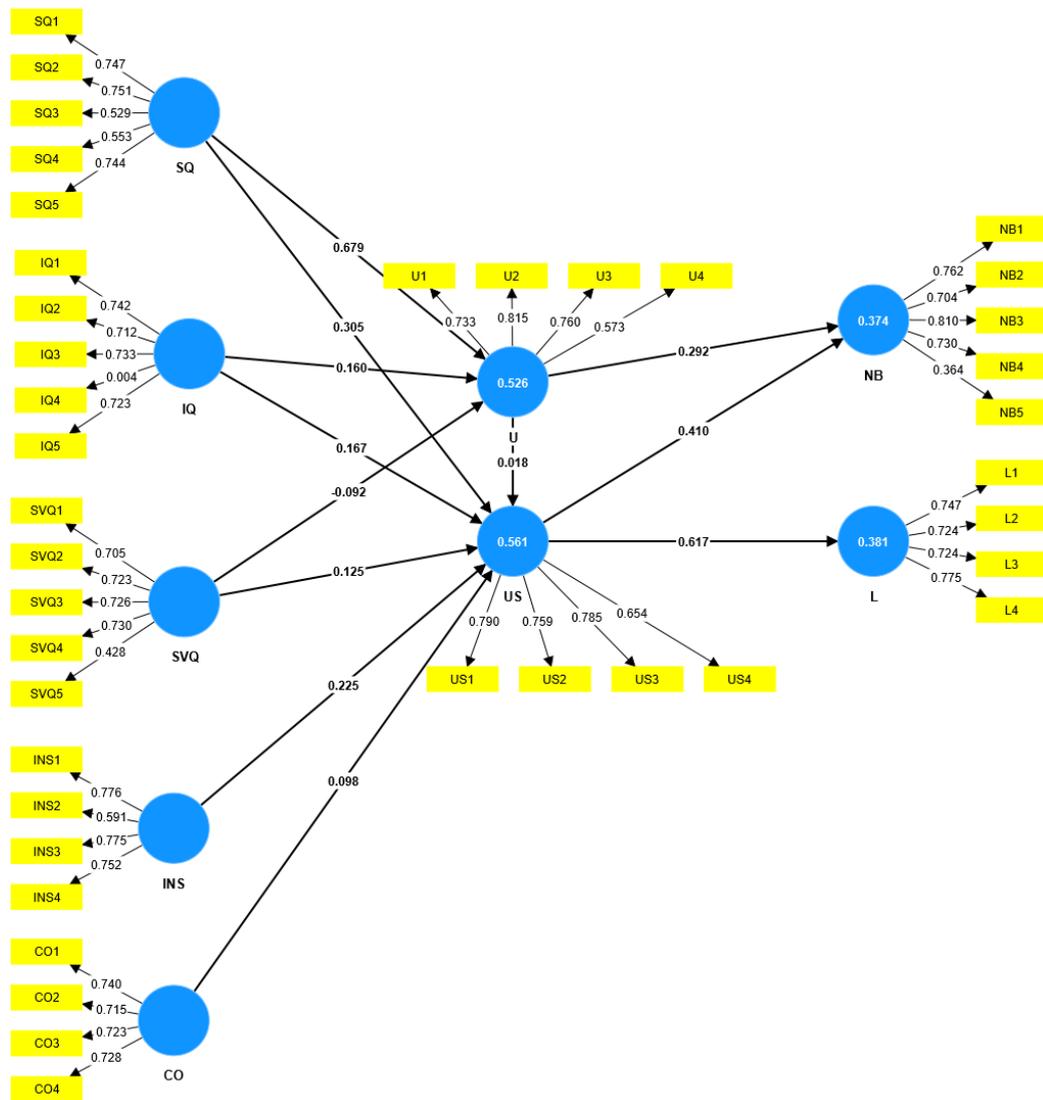
Figure 2. Convergent validity test

Figure 2 displays results of convergent validity test. Where the blue colour is a variable and yellow colour is an indicator. An example of how to read it is on CO variable to US. CO1, CO2, CO3, and CO4 indicators have an outer loading value of more than 0.7, so CO variable meets requirements for next stage and so on. There were outer loading results on several indicators that did not meet minimum value of 0.7. These indicators include: SQ3, SQ4, IQ4, SVQ5, U4, US4, INS2, and NB5. That eight indicators mean that they do not meet requirements at this stage, then these indicators will be deleted leaving valid indicators. In the following, the results of data processing of convergent validity test are presented after deleting indicators that do not meet requirements listed in Figure 3.
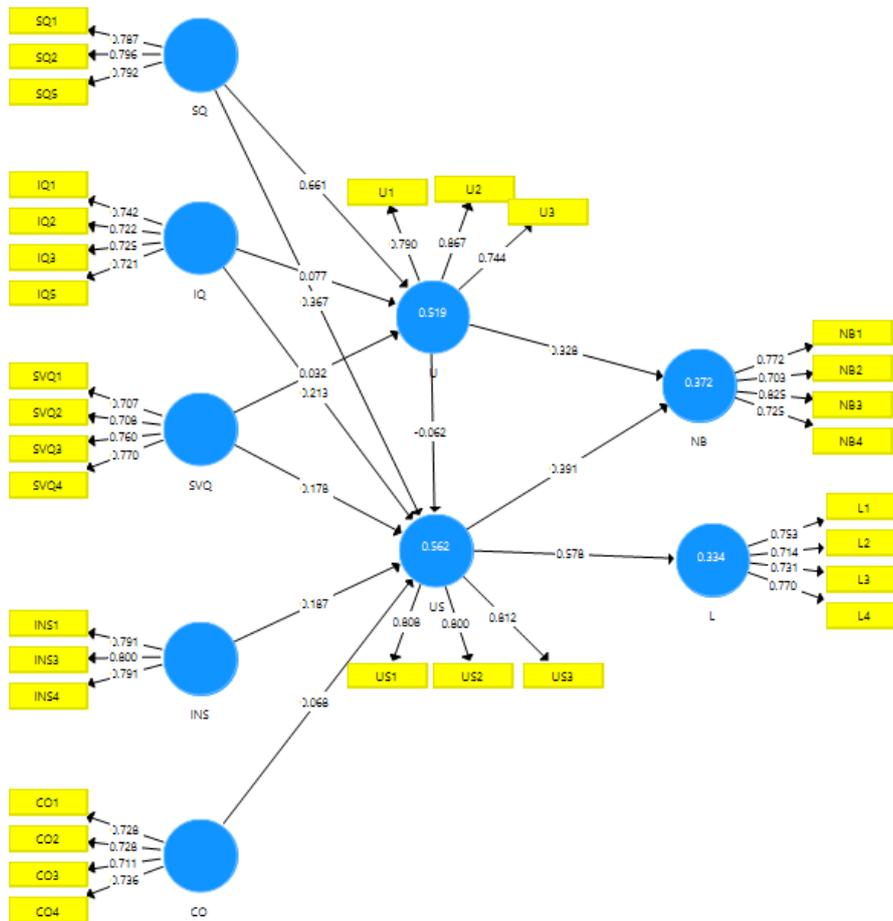
Figure 3. The final result of convergent validity test

After deleting indicators that do not meet requirements, the next calculation is AVE. This calculation illustrates diversity of manifest variables in latent constructs. The minimum value of AVE is 0.5 (Yonata et al., 2021). The results of AVE calculation are presented in Table 2 as follows.

Table 2. AVE Calculation Results

	AVE
CO	0.526
INS	0.630
IQ	0.530
L	0.551
NB	0.574
SQ	0.627
SVQ	0.543
U	0.643
US	0.651

Based on the results in Table 2, we can see that all variables already have an AVE value above 0.5. This indicates that discriminant validity requirement has been reached. Next is discriminant validity test. However, there is another way to test discriminant validity by looking at correlation value of each construct with square root value of AVE, commonly called Fornell-Larcker Criterion. If square root correlation value of AVE of each construct is greater than other constructs, variable can be valid. The results of Fornell-Larcker Criterion test are presented in Table 3.

Table 3. Fornell-Larcker Criterion Test Results

	CO	INS	IQ	L	NB	SQ	SVQ	U	US
CO	**0.726**								
INS	0.483	**0.794**							
IQ	0.564	0.511	**0.728**						
L	0.416	0.393	0.435	**0.742**					
NB	0.420	0.361	0.478	0.505	**0.758**				
SQ	0.417	0.417	0.518	0.553	0.574	**0.792**			
SVQ	0.453	0.425	0.558	0.419	0.419	0.452	**0.737**		
U	0.374	0.271	0.438	0.577	0.499	0.716	0.374	**0.802**	
US	0.489	0.541	0.609	0.578	0.534	0.620	0.550	0.437	**0.807**

Based on Table 3, square root correlation value of AVE of each construct is greater than other constructs. For example, correlation value between variables U is greater, namely 0.802. When compared, correlation between U and US is 0.437. From data processing results, variable U has a good level of discriminant validity, and it can say that this variable is valid. This also applies to other variables. All data that has been processed concludes that nine variables have good discriminant validity. Next is reliability test. reliability test is seen from composite reliability and Cronbach alpha values with a value limit of 0.7 and above means that it is acceptable, and if it is above 0.8 or 0.9, it is very satisfying (Selvianti et al., 2021). The results of reliability test calculations are in Table 4.

Table 4. Reliability Test Results

	Cronbach's Alpha	Composite Reliability
CO	0.703	0.816
INS	0.708	0.837
IQ	0.704	0.818
L	0.731	0.831
NB	0.752	0.843
SQ	0.704	0.834
SVQ	0.719	0.826
U	0.720	0.843
US	0.732	0.848

Table 4 shows that a Cronbach's alpha value of more than 0.7 means acceptable, and a composite reliability value of more than 0.8 means very satisfactory. Based on the analysis results, it concludes that the indicators contained in this study were reliable.

4.3 Data Analysis Test Results (Inner Model)

Next stage is calculating inner model, in which there are several calculations. First, calculation is path coefficient test. This path coefficient test illustrates significance and strength of relationship as well as tests hypotheses (Furadantin, 2018). The minimum path coefficient requirement must be met by 0.1 (Hair Jr et al., 2021). The results of path coefficient calculation are presented in Table 5.

Table 5. Path coefficient results

	CO	INS	IQ	L	NB	SQ	SVQ	U	US
CO									**0.068**
INS									0.187
IQ								**0.077**	0.213
L									
NB									
SQ								0.661	0.367
SVQ								**0.032**	0.178
U					0.328				**-0.062**
US				0.578	0.391				

In Table 5, it can see that results of path coefficient calculation can see that, of 12 paths proposed in this study, four paths are not significant, namely CO to US with a result of 0.068, IQ to U with a result of 0.077, SVQ to U with a value of 0.032, U against US with a result of -0.062. Where this value does not meet requirements, it is still below minimum value of 0.1. The following calculation is coefficient of determination test. Coefficient of determination has three levels. Namely, with an R-square value of 0.75, it is a strong category. Then with an R-square value of 0.50, it is a suitable category, and with an R-square value of 0.25, it is a weak category (Hair et al., 2019). The following presents the results of calculating coefficient of determination listed in Table 6.

Table 6. Calculation results of coefficient of determination.

	R-Square	Description
L	0,334	Weak
NB	0,372	Weak
U	0,519	Enough
US	0,562	Enough

Table 6 shows results of calculation of Coefficient of Determination which can conclude if all variables meet minimum R-Square value where L variable has a value of 0.334 and NB variable has a value of 0.372, which concludes in weak category. U variable has a value of 0.519, and US variable has a value of 0.562, which concludes in excellent category. The following calculation is effect t-test, whose research results will be accepted if t-test value is greater than 1.96 and p-value is less than equal to 0.05. This t-test carries out to determine independent variables' effect on dependent variable (Huda et al., 2021). The following is result of t-test calculation in Table 7.

Table 7. T-test calculation results

Hypothesis	T Statistics (|O/STDEV|)	P-Values
CO → US	1.400	0.162
INS → US	3.651	0.000
IQ → U	1.242	0.214
IQ → US	3.189	0.001
SQ → U	12.464	0.000
SQ → US	4.600	0.000
SVQ → U	0.566	0.571
SVQ → US	3.223	0.001
U → NB	5.710	0.000
U → US	0.798	0.425
US → L	13.912	0.000
US → NB	6.254	0.000

Table 7 above shows that four correlations have t-statistic values below 1.96 and p-values above 0.1. The correlation is CO to US with a t-statistic value of 1.242 and a p-value of 0.162. The second correlation is IQ to U, with a t-statistic value of 1.4 and a p-value of 0.214. SVQ's third correlation to U has a t-statistic value of 0.566 and a p-value of 0.571. The fourth correlation is U to US, with a t-statistic value of 0.798 and a p-value of 0.425. Of 12 hypotheses proposed, four not accept by these results. The following calculation is effect size test (F2), whose aim is to determine effect of certain variables on other variables with a threshold value of 0.02 having a small effect, 0.15 having a medium effect and 0.45 having a significant effect. Meanwhile, a threshold value below 0.02 indicates that it does not affect model structure (Yonata et al., 2021). The following results from calculation of effect size are in Table 8.

Table 8. Effects size test results

	CO	INS	IQ	L	NB	SQ	SVQ	U	US
CO									**0.006**
INS									0.052
IQ								**0.007**	0.051
L									
NB									
SQ								0.629	0.126
SVQ								**0.001**	0.045
U					0.139				**0.004**
US				0.501	0.197				

Based on the calculations described in Table 8, it can see that four hypotheses are not supported, one of which is CO to US with a value of 0.006, which means it has no effect. Furthermore, the correlation between IQ and US is 0.007, which means it has no effect. Then correlation between SVQ and U with a value of 0.001 means that it has no effect. Then correlation between U and US with a value of 0.004 means that it has no effect, where four correlation values are below 0.02, which is minimum limit. Next is predictive relevance test (Q2) with blindfolding method. This calculation aims to measure how well model generates observed values, and also, parameter estimates with a Q2 value of more than 0 indicate that model test has real predictive relevance to construct. If Q2 value is less than 0, it is less accurate (Furadantin, 2018). The results of predictive relevance test calculations are presented in Table 9.

Table 9. Predictive relevance test results

	Q^2 (=1-SSE/SSO)	Description
L	0.174	Predictive Relevance
NB	0.205	Predictive Relevance
U	0.325	Predictive Relevance
US	0.345	Predictive Relevance

Based on calculation results in Table 9, values of variables L, NB, U, and US are above zero, so they strongly influence. The results of these calculations show that dependent variable has a predictive relationship with other variables. The last test is to test hypothesis by looking at path coefficient, t-statistic and p-values. A hypothesis will be accepted or significant if t-statistic value is above 1.96 and p-value is above 0.1 (Darma, 2021). The following can see from results of calculating hypothesis test in Table 10.

Table 10. Hypothesis test results

	Hypothesis	Path Coefficient	T-statistic	P-Values	Hypothesis Status
H1	SQ → U	0.661	12.464	0.000	Accepted
H2	SQ → US	0.367	4.600	0.000	Accepted
H3	IQ → U	0.077	1.242	0.214	**Rejected**
H4	IQ → US	0.213	3.189	0.001	Accepted
H5	SVQ → U	0.032	0.566	0.571	**Rejected**
H6	SVQ → US	0.178	3.223	0.001	Accepted
H7	INS → US	0.187	3.651	0.000	Accepted
H8	CO → US	0.068	1.400	0.162	**Rejected**
H9	U → US	0.062	0.798	0.425	**Rejected**
H10	U → NB	0.328	5.710	0.000	Accepted
H11	US →NB	0.391	6.254	0.000	Accepted
H12	US → L	0.578	13.912	0.000	Accepted

Based on Table 10 above, the results of hypothesis test have been presented. The following is an analysis of each hypothesis that researcher has proposed based on calculation results. The first hypothesis is system quality affects use. The correlation obtains a coefficient value of 0.661, a t-statistic value of 12.464, and a p-value of 0.000. Based on elaboration of results, it can see that better quality of e-learning in XYZ agency, starting from flexible application to meet user needs, when system used, user is easy to use, application access speed is good, minimum errors are, and application security is a guarantee, it will increase user usage for continue to use e-learning in XYZ agency. The second hypothesis is that system quality affects user satisfaction. The value of path coefficient on correlation of influence of SQ on US is 0.367. In addition, t-statistic value obtained is 4.600, and p-value is 0.000. These results show that better quality system of e-learning in XYZ agency, more users will show a positive attitude and feel a sense of satisfaction when using it.

The third hypothesis is information quality does not affect use. Based on inner model analysis, a path coefficient value of 0.077 has been obtained. Then the t-statistic value is 1.242, and p-value is 0.214. Based on results of processing data obtained, it can conclude that quality of information, such as information presented is complete and always up-to-date, and format of information that makes it easy for users to use application does not affect use of application. When users experience quality information obtained from e-learning in XYZ agency, it is not confident that users will use it again. The fourth hypothesis is information quality affects user satisfaction. The results of path coefficient value of 0.213. In addition, t-statistic value was 3.189, and p-value was 0.001. The results of these calculations can be interpreted that better quality of information, user satisfaction will increase.

The fifth hypothesis is service quality does not affect use. The path coefficient test results obtained a value of 0.032. Meanwhile, this correlation obtained a t-statistic value of 0.566 and a p-value of 0.571. The results show that quality of application service does not affect use of e-learning in XYZ agency. Users are not worried about quality of service when using application because they have to access application to support online learning. The sixth hypothesis is service quality affects user satisfaction. The value of path coefficient is 0.178. In addition, t-statistic value obtained is 3.223, and p-value is 0.001. These results indicate that better application service quality affects user satisfaction. Forms of service include understanding user needs and being fast and responsive in overcoming user problems where users are very pampered to leave a good impression in eyes of users. Because of this, users feel very cared for user.

The seventh hypothesis is instructor quality affects user satisfaction. Based on inner model analysis results, path coefficient value is 0.187. Then, this correlation obtained a t-statistic value of 3.651 and a p-value of 0.000. If a qualified teacher or mentor gives, user will be satisfied. Put, higher quality of instructor, higher user's satisfaction when using e-learning in XYZ agency. Quality of this teacher includes a quick response to questions and concerns, interactive delivery of material, and a positive attitude instructor so that users feel at home and comfortable using e-learning in XYZ agency. The eighth hypothesis is content does not affect user satisfaction. The value of path coefficient is 0.068. In addition, t-statistic value obtained is 1.400, and p-value is 0.162. Users of all items indicate that content of e-learning in XYZ agency is quite diverse and matches what users need, but this content does not affect user satisfaction in continuing to use e-learning in XYZ agency.

The ninth hypothesis is use does not affect user satisfaction. The results of calculation of path coefficient obtain a coefficient value of -0.062. Then, this correlation obtained a t-statistic value of 0.798, and p-value obtained was 0.425. Researchers argue that using e-learning in XYZ agency cannot directly increase user satisfaction but is mediated by instructor quality, system quality, information quality, and service quality. The tenth hypothesis is use of effect on net benefits. Based on inner model analysis results, t-test obtained was 5.710. This is supported by a path coefficient of 0.328 and a p-value of 0.000. This shows that if use of system increases, there will also be an increase in benefits felt by users using application.

The eleventh hypothesis is user satisfaction effect on net benefits. Based on inner model analysis results, t-test obtained was 6.254. Meanwhile, path coefficient is 0.391, and p-value is 0.000. This shows that higher level of user satisfaction, higher benefits after using e-learning in XYZ agency. The twelfth hypothesis is user satisfaction effect on loyalty. Based on inner model analysis results, t-test obtained was 13.912, path coefficient value was 0.371, and p-value was 0.000. This shows that higher level of user satisfaction, higher user's loyalty.

4.4 Discussion of Factors Supporting Application Success

Based on the results of data processing and hypothesis testing that has been described in table 10, which contains path coefficient of model that has been made, variable that influences use variable is system quality. From the data obtained, relationship between system quality and use obtains a value of 0.661. Based on indicators that support system quality, namely users find it easy to use e-learning system, there are no problems when accessing services on system, and system security that can maintain system user data can also be accessed in all browsers and media.

Furthermore, the variables that affect user satisfaction are system quality, information quality, service quality, and instructor quality. Based on the data obtained, relationship between system quality and user satisfaction earned a value of 0.367, relationship between information quality and user satisfaction earned a value of 0.213, relationship between service quality and user satisfaction earned a value of 0.178, and relationship between instructor quality and user satisfaction obtained a value of 0.187. According to data obtained, information obtained by user is information contained in complete e-learning according to needs of user, presentation of information following user's needs, namely related to learning activities, system provides accurate and clear information, in presenting information it is easy to understand for user.

User satisfaction is also influenced by service quality in e-learning in XYZ agency. E-learning in XYZ agency provider gives users a sense of security because they provide good and accountable information to satisfy users with services provided. Able to provide a sense of empathy to communicate so that users feel that this system understands user needs, can provide services or respond quickly to problems. User satisfaction is also influenced by system quality. Users find it easy to use e-learning system. There are no problems when accessing or services on the system, and system security that can protect system user data can also access in all browsers and media. User satisfaction is influenced by quality of instructor, who responds quickly to questions and confusion from participants, communicates well in two directions, is full of enthusiasm for teaching and has a good attitude.

Furthermore, the variables that affect net benefit are use and user satisfaction. The relationship between user satisfaction and net benefits is 0.391, and relationship between use and net benefits is 0.328. Based on the data obtained by e-learning in XYZ agency users, they are satisfied with information obtained. Then they are satisfied with using system as a whole and e-learning in XYZ agency users. The last variable that affects loyalty is user satisfaction. Relationship between loyalty and user satisfaction has a value of 0.578. Based on the data obtained, e-learning in XYZ agency users feel satisfied in terms of the effectiveness of system that can meet user needs from functions provided by information system, making e-learning in XYZ agency users feel satisfied when using system as a whole.

4.5 Discussion of Factors Hampering Application Success

The smallest mean value on information quality variable on timeliness indicator is also focus of hampering success of e-learning in XYZ agency system with a score of 3.317, which states that delivery of information provided by e-learning in XYZ agency providers is felt to be received late by users. The service quality variable on responsiveness indicator is also focus of hampering success of e-learning in XYZ agency system with a score of 3,263, which states that services provided by e-learning in XYZ agency service providers are deemed lacking in providing responses and responses to all forms of user complaints. Furthermore, the smallest mean value of use variable in frequency of use indicator is also focus of success of e-learning in XYZ agency system with a score of 2.900, which states that users do not often use e-learning in XYZ agency because some users rely on materials from teachers and only open e-learning only at certain times. The smallest mean value is in content variable on exactness indicator, which is also focus of inhibiting success of e-learning in

XYZ agency with a score of 3.492, which states that user satisfaction has not been achieved because system does not provide right content as needed.

5 Conclusion

Out of the 12 hypotheses suggested,, eight have been accepted and become factors supporting success of e-learning in XYZ agency, including SQ to U, SQ to US, IQ to US, SVQ to US, INS to US, U to NB, US to NB, and US to L. However, there are four factors inhibiting success of e-learning in XYZ agency, namely IQ to U, SQ to U, CO to US, U to US. The results showed that average value of questionnaire results for each variable was 3.367, which means it is in high-level category, namely : 3.25 – 4.00, or it can say that e-learning in XYZ agency has a high success rate so that respondents feel satisfied and valuable with e-learning in XYZ agency. In addition, researchers provide evaluation recommendations to improve successful implementation of e-learning in XYZ agency services, such as information quality variables for timeliness indicators. Recommendations can make e-learning in XYZ agency improve system performance in displaying information when responding to requests or input from users. It would be better if e-learning services at e-learning in XYZ agency could respond and solve problems quickly according to user needs through a complaint contact or chat box so that user problems can handle quickly. E-learning in XYZ agency provider can provide information quickly to the hands of users by always paying attention to user needs and by consistently providing up-to-date topics so that users feel satisfied with services provided. In addition, the content in e-learning in XYZ agency is always new and related to latest trending news. Previously, they could brainstorm. Last, the researcher recommends increasing frequency of using e-learning in XYZ agency by placing materials and assignments in one place in one application to increase frequency of users using e-learning.

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