



## Factors Analysis of Acceptance of LMS Applications as A Substitute to Face-To-Face Learning in Higher Education in Distance Education Systems

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### ABSTRACT

This study aims to determine what factors influence the level of acceptance of LMS technology at the Mataram Open University. as we know, the use of the Open University LMS application is intended for students who take part in face-to-face services starting during the covid 19 pandemic. Individuals who do not understand computers or experience computers inevitably have to be able to accept the learning process with the LMS application. In this study, a quantitative approach is used to determine what factors affect the acceptance rate of LMS applications. the basic research model uses the TAM Technology Acceptance Model, and the Structural Equation Model (SEM) to analyze the acceptance of LMS technology by utilizing AMOS as an analytical tool. Questionnaires were distributed online using the Google Form platform for data collection of students throughout NTB with a total of 269 respondents, consisting of students from various study programs and semesters at the Mataram Open University. The results of the analysis showed that four of the nine hypotheses were rejected or not significant and most of the rejected hypotheses were the original TAM variable. From the results of the study, it is known that LMS (PL) training has a significant effect on user confidence in the ability to use the Internet (KM) and ease. confidence in the ability to use the internet (KM) No significant effect on perceived ease (PK). Perception of Comfort (PK) has a significant effect on Attitudes towards Use (SM). Perception of convenience (PK) has a significant effect on perceived benefits (PU) and perceived benefits (PU) have a significant effect on real users (PN).

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### 1. INTRODUCTION

During the COVID-19 Pandemic, the Open University implemented LMS and Tuweb for students who did face-to-face learning. This LMS system requires students to work on assignments, discussions, and materials that can be accessed on the LMS application. In connection with this policy, directly or not, students throughout NTB who take Face-to-Face Tutorial services will use LMS as their learning medium.

Based on what is quoted by the Lombok radar in 2020, where 71 villages in NTB are still Blank Spots for internet access signals (RADAR LOMBOK, 2020), seeing this situation learning activities must continue to run by utilizing LMS and webinar tutorials as learning media, on the other hand based on findings related to the results of checking conditions tutorial activities that took place at the Open University of Mataram in 2021 there were students who did not take part in the discussion, nor submitted assignments at the LMS where in the Introduction to Statistics MKKI4201.780001 course, only 1 person participated in the discussion, and only 16 people submitted assignments 1, in the Education perspective course at SD PDGK4104.780017 Of the 26 LMS participants only 1 person took part in the discussion at the third meeting on behalf of NURAINI 859161239 and of the 26 students in the class, only 19 students submitted assignments 1. seen that individuals who do not understand computers or experience anxiety san with a computer, like it or not, must be able to accept the learning process with LMS. this creates a psychological reaction to the technology. so that it affects the level of acceptance of the use of the LMS application. Therefore it is necessary to find a solution, one of which is by researching student admissions about the use of the LMS application that needs to be analyzed using the Technology Acceptance Model (TAM) method.

Therefore, here the researcher is interested in researching what factors influence the acceptance of LMS application users as a learning support medium at the Mataram Open University. So this research will provide input to the Mataram Open University, especially student admissions about the use of the LMS application. The problems in this study are (1) what are the factors that significantly affect the level of acceptance of LMS application users as a supporter of learning in face-to-face classes at the Mataram Open University, and (2) What recommendations can be given to LMS management and administrators at the Open University Mataram. TAM is a development model of the Theory of Reasoned Action (TRA). This theory studies a person's receptive behavior when given an information system based on perceived usefulness, perceived ease of use, attitudes towards technology use, intention to use, and actual use of technology (Ilmi et al., 2020).

SEM is a powerful multivariate analysis tool that has great potential in ecological research, as data accessibility continues to increase. The selection of appropriate variables and models is the first step in SEM applications. The selection algorithm can be based on preferred variables and models according to certain statistical criteria. the SEM statistical tool is used to solve multilevel models simultaneously which cannot be solved by linear regression equations (Fan et al., 2016).

AMOS is very popular software with a unique graphical interface (GUI) for solving structural equation modeling problems. This software was developed by IBM and SPSS Inc. Before 2003, AMOS software was part of SmallWaters Corp. AMOS is widely used by researchers for multivariate analysis by integrating the use of various methods of multivariate analysis such as regression, factor analysis, correlation, and analysis of variance. AMOS provides an intuitive graphical user interface or program for evaluating complex relationships between constructs. SPSS AMOS is available for the Windows operating system (Mustafa et al., 2020).

A learning management system (LMS) is software that is used for administrative purposes, recording, retrieval of reports, or making materials in the learning process and online learning via the internet. The use of TAM is used as an analysis model because it has several advantages. This is based on several research results such as (Maita & Almarozi, 2022) whose findings are showing convenience and have a positive effect on perceived benefits, Furthermore (Musriannur et al., 2021) stated that the use of technology on the actual use factor of attitudes in using e-learning will increase the adoption of the system (Ibrahim et al., 2018) as well expressed perceived ease and perceived usefulness, both and on the implementation of e-learning.

Several literature studies related to the variables used. Training is an activity held to provide debriefing in the context of increasing the ability of employees in a field of work

(Hair et al., 2017) Thus, the intended training is training in a broad sense, not only limited to developing skills alone. According (Vogt, 2015) to the condition of ICT facilities in practice, it is explained that users believe in the need for facilities to use new technology in the organization. This relates to the availability of the necessary organizational and technical infrastructure for the use of technology. There are two categories of components, namely: (1) Physical Components, and (2) Logic Components. The physical component is the e-learning supporting technology infrastructure related to hardware, such as servers, and computer networks, while the logical component is the e-learning supporting technology infrastructure related to software such as operating systems, LMS, databases, and so on. Internet Confidence Prior research has found that computer self-efficacy has a positive influence on willingness to use computers in general (Hamidah & Yanuarmawan, 2018). Mechanisms through computer self-efficacy that will affect user behavior through TAM can be better understood with arguments. Perceived Usefulness According to (Ilmi et al., 2020), the definition of perceived usefulness is "The degree to which an individual believes that using the system will contribute to achieving certain goals". Following the literature, on the usefulness of information systems as suggested by Davis, in this study it is proposed that increased usability is positively related to attitudes toward a digital library. Perceived Ease of use Perceived ease of use is defined as "the degree to which a person believes that using a particular system will be free of effort" (Ilmi et al., 2020), which reflects that effort is a limited resource for a person to allocate to various activities. What matters most to the user is the amount of effort he puts out in using a system. Attitude Towards Using Attitude Towards Using in TAM is conceptualized as an attitude towards the use of the system in the form of acceptance or rejection as a result of when a person uses technology in his work (Ilmi et al., 2020).

Real Usage Actual System Usage is the actual condition of using the system. Conceptualized in the form of measuring the frequency and duration of technology use (Ilmi et al., 2020). Someone will be satisfied using the system if they believe that the system is easy to use and will increase their productivity, which is reflected in the real conditions of use.

## 2. RESEARCH METHOD

This research is an explanatory research. The research was conducted at UT Mataram. The research was carried out in the 2021.2 period where the population in this study amounted to 818 students throughout NTB, from the total population used a sample of 269 students spread throughout NTB. Collecting data using Google Form with a questionnaire instrument using a Likers scale of five choice statements namely: Strongly Agree (SS), Agree (S), Neutral (N), Disagree (TS) Strongly Disagree (STS).

In processing and analyzing the data in this research, the author will use the Structural Equation Model (SEM). According to (Hair et al., 2017) much of the success of SEM can be attributed to the method's ability to evaluate the measurement of latent variables, while also testing the relationship between latent variables. According to (Vogt, 2015) SEM is used to represent the causal relationship between variables in the model. In processing the data, IBM SPSS Statistics V25 and SPSS Amos software will be used which provides regression calculations based on the data that has been collected.

The basic model used in this study is the Technology Acceptance Model (TAM). The basic model is then adjusted to the current conditions of the research object based on the observations at the field study stage and also adopts the model in previous research which also uses the LMS application as the object of research obtained from observations at the library study stage.

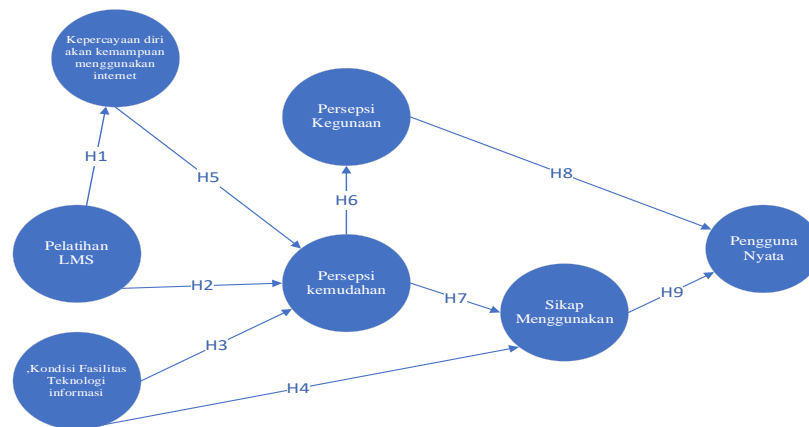


Figure 1: Research Model

Based on the model above, the following hypothesis can be proposed:

- H1: Participating in LMS Training has a significant effect on Confidence in using the Internet in Using LMS Applications.
- H2: Participating in LMS Training has a significant effect on Perception of Ease of Use of LMS Applications.
- H3: The condition of information technology facilities has a significant effect on the perception of the ease of use of the LMS application.
- H4: The condition of information technology facilities has a significant effect on the attitude of using the LMS application.
- H5: Confidence in using the Internet has a significant effect on perceived ease of use of LMS applications.
- H6: Perception of convenience has a significant effect on Perception of Usability in LMS Applications.
- H7: Perception of convenience has a significant effect on Attitude to Use on the Use of LMS Applications.
- H8: Perceived usefulness has a significant effect on real users of LMS applications
- H9: Attitude to use has a significant effect on Real Users of LMS Applications.

### 3. RESULTS AND DISCUSSIONS

#### 3.1 Respondent's Gender

The sex distribution of respondents who were dominated by women was 81.8% or as many as 233 respondents while for men it was 18% or as many as 52 respondents. The results of these data show that there is a difference in users of the UT Mataram LMS application, it can be concluded that the users of the UT Mataram LMS application are dominated by women.

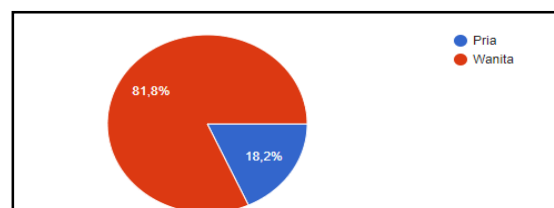
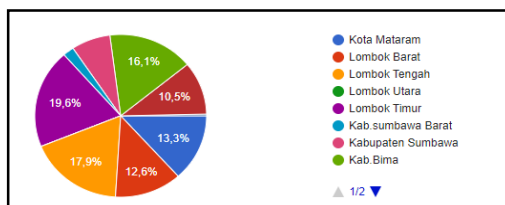


Figure 2. Respondent data by Gender

#### 3.2 Student/Respondent Residence Location Data



Figur 3. Respondent data by place of residence

Respondent data is based on where the respondent/student lives where the distribution of the distribution of respondents is in accordance with the state of the data in the sample taken which can be seen as 19.6% of the respondents live in East Lombok, as many as 17.9% live in Central Lombok, as many as 16, 1% of respondents came from Bima Regency, followed by 13.3% of respondents from Mataram City, 12.6% of respondents came from West Lombok Regency, as many as 10.5% of respondents came from Bima City district, as many as 7.4 % and 2.1% of the respondents came from the districts of Sumbawa and West Sumbawa.

### 3.3 Data for Semester Students/Respondents who Access the LMS application

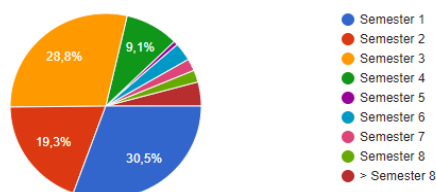


Figure 4. Respondent Data by semester

Respondent data is based on Semester, it can be seen where the distribution of the distribution of respondents is in accordance with the state of the data in the sample taken where the most respondents are in semesters 1,2 and 3 where UT Mataram students who take part in face-to-face learning are replaced with LMS applications with webinar tutorials dominated by students in the semester. The distribution of respondents is 30.5% or as many as 87 people in semester 1, then 28.8% of respondents are in semester 3, as many as 19.3% or as many as 55 people are from semester 2, then 9.1% or as many as 26 people are in semester 4, as many as 4.2% or 12 student respondents over semester 8, 3.2% or 9 respondents in semester 6, 2.1% filled in by respondents in semester 7 and 8 and 0.7% 2 people are in semester 5.

### 3.4 Validity Test Results

Where the researchers tested using a test N = 269 respondents where a significance value of 5% then obtained an rtable of 0.40. The results of the validity test showed that all the questions in the questionnaire were 24 questions declared valid with a value above 0.40.

Table.1 Validity test results

No	Question	Corrected Item - Total Correlation	Batas Korelasi	Information
1	Will LMS Training for students make it easier to use LMS Applications in learning?	0,9	0,4	Valid

2	Will the Training increase my motivation to take advantage of the LMS app	0,902	0,4	Valid
3	Do I really need LMS training to support fluency in learning?	0,935	0,4	Valid
4	Does after attending LMS training increase fluency in lectures?	0,927	0,4	Valid
5	Is your internet connection easy when you are at home	0,907	0,4	Valid
6	Is the Internet speed that is owned is sufficient or can open and access the LMS application	0,924	0,4	Valid
7	Is the Internet connection of the father / mother at home stable?	0,931	0,4	Valid
8	I have no problems connecting my computer with an Internet connection while at home.	0,782	0,4	Valid
9	Do you usually look for Lecture support materials using the internet (Journals, e-books, etc.)	0,829	0,4	Valid
10	Do you usually access the internet more than 3 hours a day?	0,835	0,4	Valid
11	I usually use the internet for activities, for example (online forums, email, chat, social media)	0,838	0,4	Valid
12	I believe the LMS application can increase efficiency and effectiveness in the teaching and learning process.	0,871	0,4	Valid
13	I believe the LMS application can support increasing my productivity in learning	0,913	0,4	Valid
14	I believe the LMS Application can support Developing my Insights and Capabilities.	0,875	0,4	Valid
15	I believe the LMS Application can support me to manage my study time flexibly	0,843	0,4	Valid
16	Is the LMS App easy to learn	0,907	0,4	Valid
17	What are the steps for the LMS application to download, upload materials and tasks that are easy to use to support the learning process.	0,932	0,4	Valid

18	Is the LMS Application easy to access from anywhere and anytime	0,901	0,4	Valid
19	I like to study/work using internet services	0,893	0,4	Valid
20	I think that in the future LMS will become an important part of the teaching and learning process	0,92	0,4	Valid
21	I see the LMS application is needed by students to support distance learning	0,892	0,4	Valid
22	I apply LMS applications consistently as a learning support.	0,751	0,4	Valid
23	I use the LMS App But only a small part of the learning and teaching process.	0,786	0,4	Valid
24	I use the LMS application for discussions between students, uploading, downloading lecture materials and coursework	0,756	0,4	Valid

Source: IBM SPSS Statistics V27 questionnaire data processing results

### 3.5 Reliability Test Results

Reliability test is a tool used to measure consistency questionnaire which is an indicator of a variable or construct. A questionnaire said to be reliable or reliable if someone's answer to the question is consistent or stable over time.

Table 2 of Reliability Test Results

Variabel	Cronbach's Alpha	Batas	Keterangan
PL1	0.958	0,60	Reliabel
PL2	0.958	0,60	Reliabel
PL3	0.958	0,60	Reliabel
PL4	0.958	0,60	Reliabel
KFTI1	0.958	0,60	Reliabel
KFTI2	0.957	0,60	Reliabel
KFTI3	0.957	0,60	Reliabel
KM1	0.958	0,60	Reliabel
KM2	0.958	0,60	Reliabel
KM3	0.958	0,60	Reliabel
KM4	0.957	0,60	Reliabel
PU1	0.956	0,60	Reliabel
PU2	0.956	0,60	Reliabel
PU3	0.956	0,60	Reliabel
PU4	0.957	0,60	Reliabel
PK1	0.957	0,60	Reliabel
PK2	0.957	0,60	Reliabel
PK3	0.957	0,60	Reliabel
SM1	0.957	0,60	Reliabel
SM2	0.957	0,60	Reliabel
SM3	0.957	0,60	Reliabel
PN1	0.957	0,60	Reliabel
PN2	0.965	0,60	Reliabel
PN3	0.957	0,60	Reliabel

### 3.6 Structural Equation Model Analysis

The results of processing using SPSS Amos obtained the following results:

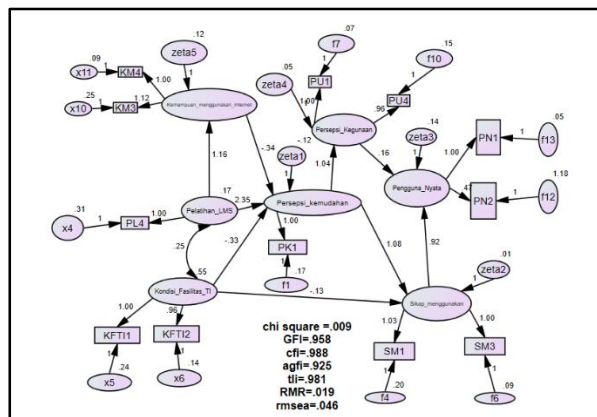


Figure 5. Image of Research Model Analysis Results with SPSS Amos

In the picture it can be seen that there are variables that are interconnected. Each related variable has a value that shows the effect on other variables. The table shows the correlation value between each variable. The model feasibility test is also carried out in order to find out if the model fits the data or fits the data used in the study. The results can be seen in the following table:

### 3.7 Goodness of Fit Index Test Results

Table 3 Goodness of Fit Index Test Results			
Indeks	Kriteria	Hasil	Keterangan
Goodness of Fit			
	GFI ≥ 0,90 (good fit)		
GFI	0,80 ≤ GFI ≤ 0,90	0,958	Good Fit
	0,837 Marginal (marginal fit)		
AGFI	AGFI ≥ 0,90 (good fit)		Good Fit
	0,80 ≤ AGFI ≤ 0,90 (marginal fit)	0,925	
TLI	TLI ≥ 0,90 (good fit)	0,981	Good Fit
	0,80 ≤ TLI ≤ 0,90		
CFI	≥ 0,90	0,988	Good Fit
RMSEA	≤ 0,08 (good fit)	0,046	Good Fit

Sumber: Hasil olah data menggunakan SPSS Amos

Based on the results above, it can be seen that the research model already has a predetermined goodness of fit index value. The results of the index show in good fit, marginal, and poor fit conditions. GFI, AGFI, TLI, CFI, RMSEA, showed good fit results.

### 3.8 Hypothesis Testing

The results of the Structural Equation Model analysis in testing the hypothesis are as follows:

Table 4 of Analysis Results on AMOS

Hipotesis	Variabel	Estimate	Prob	Sig	Ket
H1	Kemampuan_menggunakan_Internet <--- Pelatihan_LMS	1.159	***	<0,05	Signifikan
H2	Persepsi_kemudahan <--- Pelatihan_LMS	2.351	.003	<0,05	Signifikan
H3	Kondisi_Fasilitas_TI <--- Persepsi_kemudahan <--- Kemampuan_menggunakan_Internet	-.328	.141	<0,05	Tidak signifikan
H4	Persepsi_Kegunaan <--- Persepsi_kemudahan	-.336	.296	<0,05	Tidak signifikan
H5	Sikap_menggunakan <--- Kondisi_Fasilitas_TI	1.042	***	<0,05	Signifikan
H6	Sikap_menggunakan <--- Persepsi_kemudahan	-.131	.033	<0,05	Tidak signifikan
H7	Pengguna_Nyata <--- Sikap_menggunakan	1.080	***	<0,05	Signifikan
H8	Pengguna_Nyata <--- Persepsi_Kegunaan	.916	***	<0,05	Signifikan
H9	Persepsi_Kegunaan	.158	.385	<0,05	Tidak signifikan

Source: Results of data processing using SPSS Amos

Based on the table, it can be seen that the LMS training variable (PL) has a significant effect on the ability to use the internet (KM), LMS training (PL) has a significant effect on the perception of convenience (PK), the perception of convenience (PK) has a significant effect on the perceived usefulness (PU), Perception of Ease (PK) has a significant effect on Attitude to Use (SM), and Attitude of Use (SM) has a Significant Effect on Real Users (PN) because the P-value is smaller than 0.05. While the variable Condition of IT Facilities (KFTI) has no significant effect on Perception of Ease (PK), Condition of IT Facilities (KFTI) has no significant effect on Attitude of Use (SM), Ability to use the Internet (KM) has no significant effect on Perception of Ease (PK), and lastly, perceived usefulness (PK) has no significant effect on real users (PN) because the P-value is greater than 0.05.

Participating in LMS training has an effect on the ability to use the internet in line with research (Hamidah & Yanuarmawan, 2018) where the training carried out was successful in improving teacher performance in varying the internet as a source of learning English through the use and utilization of the internet. that the process of training and capacity development plays an important role in achieving competitive advantage. This is because the training and development process is able to encourage or increase motivation and direct the creation of creativity.

Motivation to take part in LMS training has an effect on perceptions of ease of application for LMS in line with research conducted by (Yanti et al., 2020) where there is a significant effect of training in preparing financial reports on perceptions of ease of accounting implementation in micro, small and medium enterprises in Jember Regency. The perception of the ease of use of the LMS application affects the perception of the usefulness of the application. This finding is also in line with research (Arent et al., 2017) where in this study it was concluded that the perception of ease of use had a positive and significant effect on interest in using E-Money Go-Pay. This shows that the easier it is for students to use the LMS application, it will attract consumers to continue using the LMS application.

In accordance with TAM, the perception of usefulness is influenced by the perception of ease, because the easier a system is to use, the more useful the system is felt. Because there is an interrelated relationship between perceived ease of use and perceived usefulness of real use, it can be concluded that if there is no significant relationship between perceived ease of use and perceived usefulness, there will also be no relationship between perceived usefulness and actual use of the LMS application. Which indicates the low acceptance of LMS application technology at the Mataram Open University.

#### 4. CONCLUSION

Of the nine hypotheses in this study, four were rejected and only five were accepted. The four rejected or insignificant hypotheses were dominated by factors in the technology acceptance model or TAM such as perceived convenience, perceived usefulness, attitude towards use, and actual use. This finding indicates that the level of acceptance of LMS application technology by users at the Mataram Open University is very low. This finding also confirms the initial assumptions and conditions in the field regarding the acceptance of the Mataram Open University LMS application put forward by the researcher in the background of the research.

LMS training is a significant factor affecting acceptance of the Mataram Open University LMS application. While the condition of IT facilities did not significantly affect the acceptance of LMS applications in this study, Continuous training is needed to be able to increase application acceptance which in turn becomes motivation and experience for LMS applications and will foster perceptions of usefulness for the application, which in turn has an impact on the consistent use of this application to support the teaching and learning process at Mataram Open University.

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