

**LAPORAN AKHIR**  
**PENELITIAN DASAR KEILMUAN (PDK)**



**FAKTOR-FAKTOR YANG MEMPENGARUHI PENERIMAAN  
TEKNOLOGI E-LEARNING DI PERGURUAN TINGGI DAN  
DAMPAKNYA DALAM PEMBELAJARAN MAHASISWA**

Oleh;

Ketua: Zulherman, M.Pd (0329078602)

Anggota 1: H. Mohamad Zaelani, M.Pd (0308016901)

Anggota Mahasiswa:

1. Mardhiyah Widya Ningsih (1801025273)
2. Elsa Ananda Putri (18010252365)

Nomor Kontrak Penelitian:

Dana Penelitian: Rp.8.000.000,-

**PROGRAM STUDI PENDIDIKAN GURU SEKOLAH DASAR  
FAKULTAS KEGURUAN & ILMU PENDIDIKAN  
UNIVERSITAS MUHAMMADIYAH PROF.DR.HAMKA  
TAHUN 2022**



UNIVERSITAS MUHAMMADIYAH PROF. DR. HAMKA  
**LEMBAGA PENELITIAN DAN PENGEMBANGAN**

Jln. Tanah Merdeka, Pasar Rebo, Jakarta Timur  
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**SURAT PERJANJIAN KONTRAK KERJA PENELITIAN  
LEMBAGA PENELITIAN DAN PENGEMBANGAN  
UNIVERSITAS MUHAMMADIYAH PROF DR HAMKA**

Nomor : 657/ F.03.07 / 2021  
Tanggal : 22 Desember 2021

***Bismillahirrahmanirrahim***

Pada hari ini, Rabu, tanggal Dua Puluh Dua, bulan Desember, Tahun Dua Ribu Dua Puluh Satu, yang bertanda tangan di bawah ini **Dr. apt. Supandi M.Si.**, Ketua Lembaga Penelitian dan Pengembangan Universitas Muhammadiyah Prof. DR. HAMKA, selanjutnya disebut sebagai **PIHAK PERTAMA**; **ZULHERMAN S.Pd,M.Pd.**, selanjutnya disebut sebagai **PIHAK KEDUA**.

PIHAK PERTAMA dan PIHAK KEDUA sepakat untuk mengadakan Perjanjian Kontrak Kerja Penelitian yang didanai oleh RAPB Universitas Muhammadiyah Prof. DR. HAMKA

**Pasal 1**

PIHAK KEDUA akan melaksanakan kegiatan penelitian dengan judul : **FAKTOR-FAKTOR YANG MEMPENGARUHI PENERIMAAN TEKNOLOGI E-LEARNING DI PERGURUAN TINGGI DAN DAMPAKNYA DALAM PEMBELAJARAN MAHASISWA** dengan luaran wajib dan luaran tambahan sesuai data usulan penelitian Batch 1 Tahun 2021/2022 melalui [simakip.uhamka.ac.id](http://simakip.uhamka.ac.id).

**Pasal 2**

Kegiatan tersebut dalam Pasal 1 akan dilaksanakan oleh PIHAK KEDUA mulai tanggal 22 Desember 2021 dan selesai pada tanggal 22 Juni 2022.

**Pasal 3**

- (1) Bukti progres luaran wajib dan tambahan sebagaimana yang dijanjikan dalam Pasal 1 dilampirkan pada saat Monitoring Evaluasi dan laporan.
- (2) Luaran penelitian, dalam hal luaran publikasi ilmiah wajib mencantumkan ucapan terima kasih kepada pemberi dana penelitian Lemlitbang UHAMKA dengan menyertakan nomor kontrak dan Batch 1 tahun 2021/2022.
- (3) Luaran penelitian yang dimaksud wajib PUBLISH, maksimal 1 tahun sejak tanggal SPK.

**Pasal 4**

Berdasarkan kemampuan keuangan lembaga, PIHAK PERTAMA menyediakan dana sebesar Rp.8.000.000,- (Terbilang : *Delapan Juta*) kepada PIHAK KEDUA untuk melaksanakan kegiatan tersebut dalam Pasal 1. Sumber biaya yang dimaksud berasal dari RAB pada Lembaga Penelitian dan Pengembangan Universitas Muhammadiyah Prof. DR. HAMKA Tahun Anggaran 2021/2022.

**Pasal 5**

Pembayaran dana tersebut dalam Pasal 4 akan dilakukan dalam 2 (dua) termin sebagai berikut;  
(1) Termin I 70 % : Sebesar 5.600.000 (Terbilang : *Lima Juta Enam Ratus Ribu Rupiah*) setelah PIHAK KEDUA menyerahkan proposal penelitian yang telah direview dan diperbaiki sesuai saran reviewer pada

kegiatan tersebut Pasal 1.

(2) Termin II 30 % : Sebesar 2.400.000 (Terbilang: *Dua Juta Empat Ratus Ribu Rupiah*) setelah PIHAK KEDUA mengunggah laporan akhir penelitian dengan melampirkan bukti luaran penelitian wajib dan tambahan sesuai Pasal 1 ke [simakip.uhamka.ac.id](http://simakip.uhamka.ac.id).

#### Pasal 6

(1) PIHAK KEDUA wajib melaksanakan kegiatan tersebut dalam Pasal 1 dalam waktu yang ditentukan dalam Pasal 3.

(2) PIHAK PERTAMA akan melakukan monitoring dan evaluasi pelaksanaan kegiatan tersebut sebagaimana yang disebutkan dalam Pasal 1. Bila PIHAK KEDUA tidak mengikuti Monitoring dan Evaluasi sesuai dengan jadwal yang ditentukan, tidak bisa melanjutkan penyelesaian penelitian dan harus mengikuti proses Monitoring dan Evaluasi pada periode berikutnya.

(3) PIHAK PERTAMA akan membekukan akun SIMAKIP PIHAK KEDUA jika luaran sesuai pasal 3 ayat (3) belum terpenuhi.

(4) PIHAK PERTAMA akan mendenda PIHAK KEDUA setiap hari keterlambatan penyerahan laporan hasil kegiatan sebesar 0,5 % (setengah persen) maksimal 20% (dua puluh persen) dari jumlah dana tersebut dalam Pasal 4.

(5) Dana Penelitian dikenakan Pajak Pertambahan Nilai (PPN) dari keseluruhan dana yang diterima oleh PIHAK PERTAMA sebesar 5 % (lima persen).

(6) PIHAK PERTAMA akan memberikan dana penelitian Termin II dalam pasal 5 ayat (2) maksimal 31 Juli 2022.

Jakarta, 22 Desember 2021

PIHAK PERTAMA  
Lembaga Penelitian dan Pengembangan  
Universitas Muhammadiyah Prof. DR. HAMKA  
Ketua,

PIHAK KEDUA  
Peneliti,



*Supandi*  
Dr. apt. Supandi M.Si.



ZULHERMAN S.Pd,M.Pd

Mengetahui  
Wakil Rektor II UHAMKA



Dr. ZAMAH SARI M.Ag.



**MONITORING/ PENGAWASAN PENELITIAN DANA INTERNAL  
UNIVERSITAS MUHAMMADIYAH PROF DR. HAMKA Tahun 202X**

Judul : Faktor-faktor yang mempengaruhi penerimaan teknologi e-learning di perguruan tinggi dan dampaknya dalam pembelajaran mahasiswa

Ketua Peneliti : Zulherman, M.Pd

Skema Hibah : Peneiltian Dasar Keilmuan

Fakultas : Fakultas Keguruan dan Ilmu Pendidikan

Program Studi : Pendidikan Guru Sekolah Dasar

**Luaran Wajib**

N o	Judul	Nama Jurnal/ Penerbit/Prosiding	Level SINTA/S CIMAGO	Progress Luaran (Draf/Submit/in review/accepted/publish)
1	Factors of using e-learning in higher education and its impact on student learning	International Journal of Evaluation and Research in Education	Quartile 3 (Scopus Indexed)	Accepted

**Luaran Tambahan**

N o	Judul	Nama Jurnal/ Penerbit/Prosiding	Level SINTA/SC IMAGO	Progress Luaran (Draf/Submit/in review/accepted/publish)
1	Students Acceptance to Use Moodle Based LMS: Extended TAM Model	International Conference on Advance & Scientific Innovation (ICASI)	AIP Conference s (Scopus Indexed)	Accepted

**Komentar Reviewer**

.....  
 Penelitian telah dilaksanakan dengan baik, dan luaran penelitian telah dipenuhi  
 .....  
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Mengetahui,  
Ketua Program Studi



**Ika Yatri, M.Pd**  
NIDN. 0307098401

Ketua Peneliti



**Zulherman, M.Pd**  
NIDN. 0329078602

Menyetujui,  
Dekan Fakultas Keguruan & Ilmu  
Pendidikan



**Dr. Desvian Bandarsyah, M.Pd**  
NIDN. 0317126903

Ketua Lemlitbang UHAMKA

**Dr. apt. Supandi, M.Si**  
NIDN. 0319067801

## LAPORAN AKHIR

<p>Judul (Title)</p> <p>Faktor-faktor yang mempengaruhi penerimaan teknologi e-learning di perguruan tinggi dan dampaknya dalam pembelajaran mahasiswa</p>
<p><b>Latar Belakang (Background)</b></p> <p>Kemajuan ilmu pengetahuan dan teknologi, khususnya TIK, memiliki potensi implikasi yang luas terhadap kondisi pembelajaran saat ini. TIK dapat digunakan untuk membantu proses belajar peserta didik di pendidikan dasar, menengah, dan pendidikan tinggi. Selain teknik multimedia yang dapat meningkatkan penggambaran interaktif suatu proses pendidikan, kualitas yang diberikan adalah kecepatan dan kemudahan mendapatkan informasi atau sumber daya. Implementasi e-learning saat ini sudah menjadi kebutuhan belajar (Sailin &amp; Mahmor, 2018). Dalam kasus virus covid-19, pembelajaran menggunakan e-learning menjadi penting dalam situasi saat ini, sehingga proses pembelajaran salah satunya di perguruan tinggi bisa tetap terlaksana. E-learning memiliki banyak manfaat, termasuk menyediakan layanan yang lebih nyaman yang memfasilitasi pembelajaran melalui ruang elektronik atau online, memungkinkan pengguna untuk mengakses konten pendidikan dan pembelajaran yang fleksibel, membuat proses pembelajaran lebih mudah diakses, meningkatkan kinerja pembelajaran, dan mempromosikan pengalaman belajar (Zulherman et al., 2021).</p> <p>Selanjutnya, karena melibatkan penggunaan teknologi internet dalam penyampaian pembelajaran, e-learning memberikan kontribusi terhadap peningkatan kualitas sistem pendidikan. Berikut ini adalah kriteria e-learning utama: (i) E-learning adalah jaringan yang mampu memperbarui, menyebarkan, dan berbagi bahan ajar dan informasi, dan (ii) mengirimkan informasi kepada pengguna melalui komputer konvensional. Ungkapan e-learning, di sisi lain, mengacu pada penggunaan internet dan interpretasi teknologi pendidikan. E-learning adalah sistem pendidikan yang menggunakan aplikasi elektronik untuk meningkatkan proses belajar mengajar dari media online, jaringan komputer. Namun, harus diakui bahwa pembelajaran berbasis internet merupakan salah satu platform e-learning yang paling banyak digunakan saat ini.</p>

**Tujuan Riset (Objective)**

Penelitian sebelumnya tentang kesiapan beberapa universitas untuk menggunakan model E-learning Readiness (ELR) pada penerapan sistem e-learning menemukan bahwa lima faktor ELR, yaitu sumber daya manusia, keuangan, infrastruktur, inovasi, dan pengetahuan, mempengaruhi kemudahan penggunaan yang dirasakan siswa dari sistem e-learning, sehingga penggunaan e-learning sangat terasa dalam masa pandemik. Penelitian lebih lanjut diperlukan untuk menentukan faktor-faktor yang mempengaruhi siswa dalam menerima teknologi e-learning untuk mengatasi masalah pembelajaran online dalam masa pandemik. Tingkat penerimaan siswa terhadap teknologi dapat digunakan untuk mengukur tingkat minat penggunaan e-learning. Ketika tingkat penerimaan pengguna tinggi, maka minat terhadap kebutuhan dalam menggunakan e-learning juga tinggi, sehingga dapat diasumsikan bahwa implementasi e-learning berhasil. Akibatnya, tingkat penerimaan pengguna e-learning sangat berpengaruh di dalam penelitian ini.

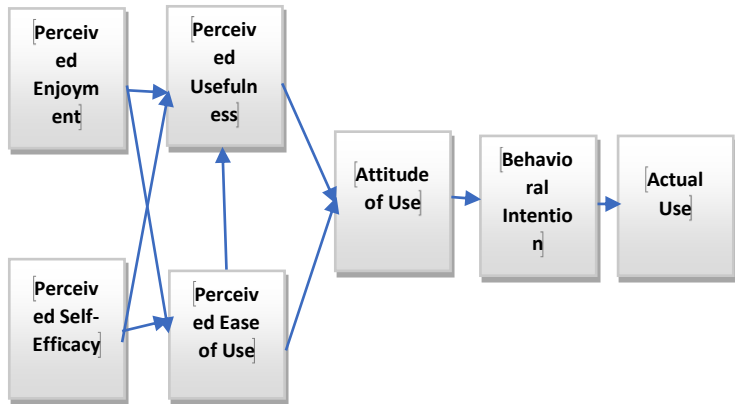
**Metodologi (Method)**

Model Penelitian yang diusulkan dievaluasi secara empiris menggunakan kuesioner yang dikelola sendiri dalam penelitian ini (Macedo, 2017). Studi ini merupakan bagian dari proyek yang lebih besar yang berusaha untuk menyelidiki dan mengumpulkan data dari sampel mahasiswa dalam mengidentifikasi faktor-faktor penting yang mempengaruhi penerimaan aplikasi berbasis e-learning moodle.

Para mahasiswa diminta untuk berbagi pengalaman belajar online selama pandemi Covid-19 melalui berbagai kegiatan pembelajaran di Indonesia. Penelitian ini bertujuan untuk memperjelas tujuan utama dari proyek ini: untuk menguji penerimaan mahasiswa ketika menggunakan E-learning selama pandemi Covid-19. Temuan dalam penelitian ini menguji teori model UTAUT dengan penambahan factor kepercayaan sebagai novelty dalam kajian ini.

Pengambilan data menggunakan kuesioner menggunakan skala Likert antara 1 (sangat tidak setuju) sampai 5 (sangat setuju) untuk mengukur 26 item dalam konstruk model. Konstruksi yang digunakan dalam kuesioner ini ditunjukkan pada table dibawah ini:

Berikut rencana model penelitian:



Gambar 1. Pengujian model penerimaan teknologi

Indikator dalam instrumen yaitu:

- 1) Perceived Self-Efficacy (PSE)
- 2) Perceived Enjoyment (PEN)
- 3) Perceived Ease of Use (PEOU)
- 4) Perceived Usefulness (PUS)
- 5) Attitude of Use (ATU)
- 6) Behavioral Intention (BI)
- 7) Actual Use (AU)

### Hasil dan pembahasan

Penelitian ini bertujuan untuk menguji dimensi model TAM dalam penerapan e-learning di perguruan tinggi dengan mempelajari faktor-faktor yang mempengaruhi kemauan mahasiswa menggunakan e-learning. BI adalah salah satu faktor penting dalam AUE-learning. Efektivitas sampel tersebut dikendalikan oleh partisipasi mahasiswa dalam model. Oleh karena itu, penting untuk mengevaluasi



penerimaan mahasiswa untuk memastikan bahwa mahasiswa mengadopsi platform pembelajaran ini di akhir kursus. Temuan penting dari penelitian ini adalah bahwa variabel eksternal, yaitu Perceived Enjoyment (PEN) dan Perceived Self-Efficacy (PSE), memainkan peran penting dalam secara khusus memengaruhi pemahaman tentang keuntungan dan harapan kemudahan penggunaan. Setiap hasil menarik dari penelitian ini tampaknya bahwa variabel eksternal, persepsi kesenangan, dan self-efficacy dianggap memainkan peran penting dalam mempengaruhi persepsi keuntungan e-learning dan persepsi kemudahan penggunaan.

Berdasarkan sepuluh hipotesis yang diuji, ternyata hasil penelitian menunjukkan bahwa semua hipotesis terbukti dan diterima, sehingga penelitian ini berhasil. Meskipun terdapat banyak determinan dalam penelitian, namun tidak mempengaruhi kebenaran hasil penelitian ini. Dua variabel konstruk eksternal yaitu PSE dan PEN juga berpengaruh signifikan terhadap hasil pada PEOU dan PUS, sebagaimana disebutkan dalam hipotesis 1 sampai 2 antara PSE dengan PUS dan PEOU, hasil tersebut didukung oleh temuan dari (Thongsri et al., 2019) menurut (Valencia-Vallejo et al., 2019) dan (Ahmed et al., 2018). PSE merupakan cerminan diri siswa ketika menggunakan e-learning dan hal ini berdampak langsung ketika memikirkan aspek kemanfaatan dalam menggunakan e-learning. Sementara itu, PEOU ini menunjukkan bahwa efikasi siswa penting dalam menentukan cara berpikir tentang kemudahan penggunaan e-learning. Pada hipotesis 3 dan 4, PEN berpengaruh positif signifikan terhadap PEOU dan PU hasilnya didukung oleh (Su & Chiu, 2021) dan menurut (Holdack et al., 2020; Winarno et al., 2021), sehingga persepsi kesenangan pada siswa berdampak pada keputusan siswa yang dengan menggunakan e-learning dengan nyaman dan mampu menggali kreativitas. Pada hipotesis 5 dan 6, PEOU berpengaruh positif signifikan terhadap PUS dan ATU. Temuan ini bersamaan dengan temuan di (Abdullah & Ward, 2016; Tarhini et al., 2016; Zulherman, Nuryana, et al., 2021) menurut (Zain et al., 2019).

Pada hipotesis 7 dan 8, PUS berpengaruh positif langsung terhadap ATU dan BI. Temuan ini mirip dengan temuan di (Abdullah & Ward, 2016), dan terkait dengan (Salehudin et al., 2021). Dua hipotesis terakhir, hipotesis ke-9 yaitu ATU terhadap BI menunjukkan pengaruh positif yang signifikan, mirip dengan temuan pada (Cheung & Vogel, 2013; Cho et al., 2017) untuk mendukung (Klaus & Changchit, 2019; Shih, 2008; Wu & Zhang, 2014), dan hipotesis ke-10 BI pada AU, nilai signifikansi tertinggi adalah temuan dari (Kurdi, 2020) didukung oleh (Mohammad AlHamad, 2020; Zulherman, Zain, et al., 2021). Ini semakin memperkuat kebenaran temuan penelitian saat ini.

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Analyzing Indonesian Students' Google Classroom Acceptance During COVID-19 Outbreak: Applying an Extended Unified Theory of Acceptance and Use of Technology Model. *European Journal of Educational Research*, 10(4), 1697–1710. <https://doi.org/10.12973/eu-jer.10.4.1697>

**Target Jurnal & conference Internasional terindeks scopus (Output) :**

- 1) International Journal of Evaluation and Research in Education.
- 2) International Conference on Advance & Scientific Innovation (ICASI)

## Lampiran LuaranWajib

### Bukti Submitted

1. International Journal of Evaluation and Research in Education.

The screenshot displays the IJERE website interface. At the top, there is a navigation bar with the journal's logo, ISSN information (ISSN 2527-8822, e-ISSN 2628-5440), and logos for ERIC, SINTA, and Scopus. A Q4 badge is visible with impact factors: 0.199, 0.450, and 0.9. The main navigation menu includes HOME, ABOUT, USER HOME, SEARCH, CURRENT, ARCHIVES, and ANNOUNCEMENTS.

The user is logged in as 'pallarsam'. The page shows the submission summary for article #23912. The submission details are as follows:

SUBMISSION	
<b>Submission</b>	
Authors	Zulfherman Zulfherman, Farah Mohamad Zain, Siti Nazwar Sakin
Title	Factors of using e-learning in higher education and its impact on student learning
Original file	23912-46832-1-518.DOCX 2022-02-10
Supp. files	None <a href="#">ADD A SUPPLEMENTARY FILE</a>
Submitter	Zulfherman Zulfherman
Date submitted	February 18, 2022 - 05:39 AM
Section	Educational Approaches
Editor	Rafael Derisati (Review) Lena Lindeskov, Ph.D. (Review) Maja Lubovic, Ph.D. (Review) Asghar Soltani, Ph.D. (Review)
Author comments	Thank you for your feedback.
<b>Status</b>	
Status	In Review
Initiated	2022-02-10
Last modified	2022-02-18

On the right side, there are sections for USER (logged in as pallarsam), CITATION ANALYSIS (Google Scholar, Scholar Metrics, Scopus, etc.), QUICK LINKS (Author Guidelines, Editorial Boards, etc.), and AUTHOR (Submissions: Active (2), Archived (0)).

## Lampiran Luaran Tambahan

### 2. International Conference on Advance & Scientific Innovation (ICASI)

to me ▾

Dear Author,

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 Account Number : 1704561212  
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And for another choice you can send crypto coin/token as replacement with same amount as your payment to this wallet:

1. [0xcedb168141ad17df32d585c5416d7050d545d4](#) , THIS WALLET FOR ELDN(ERC20)
2. [0xcedb168141ad17df32d585c5416d7050d545d4](#) , THIS WALLET FOR GLCH(ERC20)
3. [0x01d50c8b268fa2133be689a2881871112e6dc](#) , THIS WALLET FOR INJ (BSC)

We received payment no later than 30 March 2022, proof of payment you can send back to us by **replying this email message**, and fee that have been PAID cannot be REFUND WITH ANY REASON. If you not from Indonesia Country and when do payment Bank Transfer, please remember bank charge (paypal fee it will be yours. Thank you very much.

Revised:

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# Students Acceptance to Use Moodle Based LMS: Extended TAM Model

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**Abstract.** Online learning has become a necessity during a pandemic. Many media are used to support learning, one example: Moodle-based LMS at the University. Research has been carried out as 182 students have filled out questionnaires and analyzed using SEM SmartPLS, which aims to test student acceptance from the Perceived Enjoyment aspect of interest in technology acceptance. Of the eight hypotheses tested, seven succeeded in having a significant effect, and only one was rejected (no effect). It can be concluded that the study had a dominant impact on students' interest in using Moodle-based LMS at the University.

**Keywords:** Moodle, LMS, TAM model

## INTRODUCTION

Education has been affected by the Covid-19 pandemic. The pandemic has forced the public to comply with the Implementation of Community Activity Restrictions (PPKM) in Indonesia. This indicates that students must learn from home. The fact that happened requires a strategy that must be applied. So, the learning process continues with the strengthening of technology and information. In essence, education must continue under any conditions. The role of IT as a strategy is a must for all elements of education [1]. This support is realized in online teaching and learning activities, evaluating and managing education [2], [3]. One of the realizations that must be done is learning evaluation. This evaluation is difficult to do with PPKM rules. Thus, the evaluation must be done in the form of an online exam.

Our lives are increasingly reliant on technology. E-learning is gaining popularity in educational settings because it allows document sharing and student-to-student interaction without time or space constraints [4]. The software that supports e-learning by designing/managing the learning environment, tracking students' progress, and distributing learning materials is called a Learning Management System (LMS) [5]. Accepting such technologies will improve students' learning experience and academic success. The TAM, e-TAM, and other derived models are used to find students' behavior towards system adoption. Finding variables of student acceptability and intention to use e-learning systems is critical to improving the learning environment and retaining students. Accepting such technology will improve students' learning experience and academic success. An extended TAM and other derived models are used to find students' behavior towards system adoption. Finding student acceptance and intention to use e-learning systems is critical to improving the learning environment and retaining students.

This model has been widely used in various domains, from business to government to education, that uses information technology in its business processes. There are already several researchers working in education who are utilizing TAM to explain user acceptance of technologies such as e-learning, multimedia learning technology, digital libraries, and e-journals. Park (2009) researched several university students in Korea to determine their interest in e-learning, which was then presented to the participants [6]. His research findings demonstrate that TAM is a unified theory for analyzing user acceptance of e-learning programs.

The TAM is the most widely used theoretical framework for analyzing users' technological acceptance by measuring perceived usefulness (PU) and perceived ease of use (PEOU). PU is when people believe utilizing a

particular technology will improve their performance, while PEOU is when they believe using a particular system will be easy. Behavioral intentions (BI) are determined simultaneously by ATU and PU, while PU is heavily influenced by PEOU. Some experts have even stated that, compared to students' cognition, PE has a higher impact on their attitude, particularly for children and teens. Age-related cognitive and social-emotional developmental differences can be attributed to distinct effects.

Perceived Enjoyment or PE is defined as consumers' perceptions or experiences of delight when utilizing technology. Some e-learning studies indicated that PE promotes university students' IT acceptance behavior and usage intentions. When students have fun using e-learning systems or services, they are more likely to think positively about the system's ease of use and utility, which increases their desire to utilize it. TAM models, like previously said, comprise five factors: perceived ease of use, perception of usefulness, attitudes toward usage, intention to use, and actual use. The TAM model was modified to include Perceived Enjoyment (PE) during its evolution.

Based on the previous literature analysis, a conceptual model was built by merging TAM with PE to study the intents of students in primary school teacher education courses to adopt and use a moodle-based LMS.

H1: Perceived enjoyment has a substantial influence on perceived usefulness?

H2: Perceived enjoyment has a substantial influence on perceived ease of use?

H3: Perceived ease of use influences perceived usefulness?

H4: Is it true that perceived ease of use influences attitudes toward use?

H5: Does perceived usefulness affect attitudes toward use?

H6: Does perceived usefulness affect behavioral intentions?

H7: Do attitudes about use have a significant impact on behavioral intentions?

H8: Do behavioral intentions affect actual use?

## METHODS

The TAM (Technology Adoption Model) assesses user acceptance of e-learning technology. The sample in this study were active students of a private university in Jakarta, Indonesia, in the primary school teacher education study program. The number of respondents who answered was 182 people. G\*Power 3.0 application used in multiple regression approach to calculating suitable sample size. The number of predictors examined was set at six according to a proposed model based on the work of Cohen (1994) by [7], and the mean effect sizes, alpha, and power were .15, .05, and .95, respectively. The minimal sample size is estimated at 146.

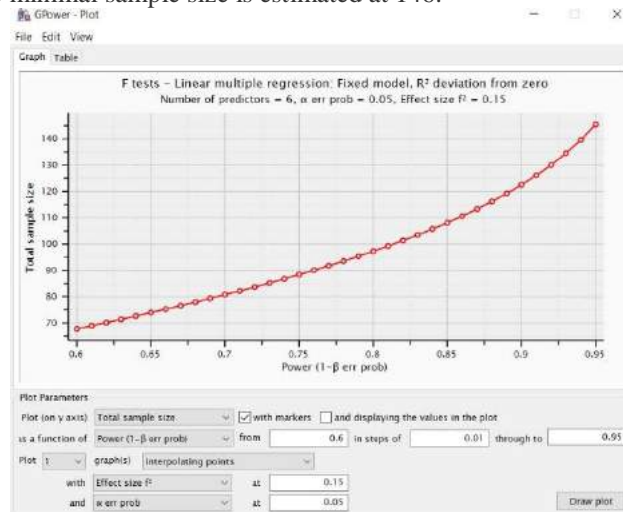


FIGURE 1. G-power 3.0

SEM is a method for assessing structural components (path model) and measurements (factor model) in one model. When the data utilized, do not match the assumptions of normalcy (multivariate), large sample size, or independence, PLS is a practical structural equation modeling approach to test the proposed model and latent variables. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum. This study used Smart-PLS 3.0 [8] to investigate the construct validity and structural relationships among the dimensions. The instrument, which took the form of a research questionnaire, was developed using a Likert scale with five scales: 1 for "strongly disagree," 2 for "disagree," 3 for "neutral," 4 for "agree," and 5 for "strongly agree" (Likert scale) [9].

## RESULTS AND DISCUSSION

This model's reliability, convergent validity, and discriminant validity were evaluated. Convergent validity was assessed using average variance retrieved from composite reliability (CR) (AVE). Good individual item reliability was indicated by all item loadings above the usual minimum of 0.70 (Table 1). Overall, construct dependability was acceptable, as measured by Cronbach's alpha values reaching the required threshold of 0.70 [10].

**TABLE 1.** Convergent Validity

Construct	Item	Outer loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
PE	PE1	0.913	0.937	0.79
	PE2	0.932		
	PE3	0.936		
	PE4	0.762		
PUS	PUS1	0.91	0.913	0.729
	PUS2	0.928		
	PUS3	0.652		
	PUS4	0.894		
PEOU	PEOU1	0.935	0.956	0.846
	PEOU2	0.937		
	PEOU3	0.945		
	PEOU4	0.859		
ATU	ATU1	0.877	0.931	0.818
	ATU2	0.924		
	ATU3	0.912		
BI	BI1	0.944	0.949	0.822
	BI2	0.923		
	BI3	0.94		
	BI4	0.815		
AU	AU1	0.948	0.956	0.879
	AU2	0.937		
	AU3	0.926		

The AVE and overall variance in the indicators accounting for each component were more significant than the specified threshold value of 0.5 (Hair et al., 2006), indicating good convergent validity. Good discriminant validity is indicated by a square root of the AVE for each component (Table 2) [11]. Convergent and discriminant validity was thus acceptable.

**TABLE 2.** Discriminant Validity

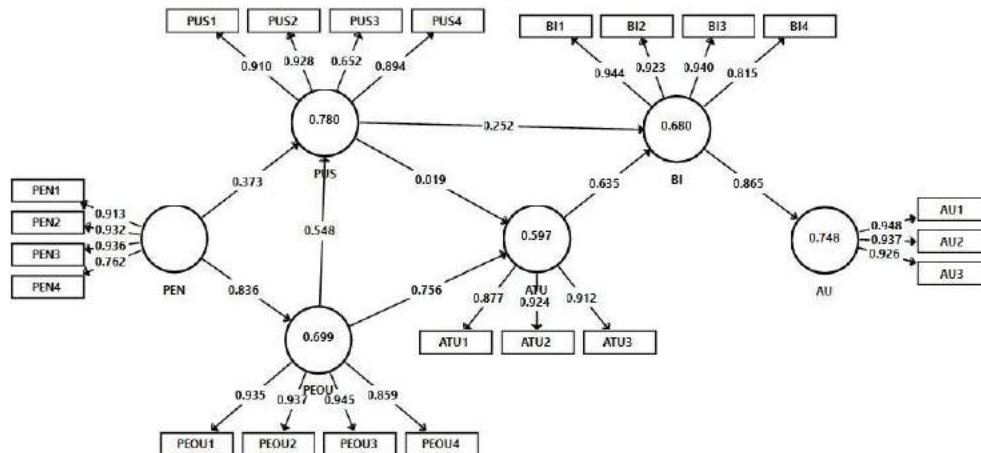
	ATU	AU	BI	PEN	PEOU	PUS
ATU	0.905					
AU	■	0.937				
BI	■	■	0.907			
PEN	■	■	■	0.889		
PEOU	■	■	■	■	0.92	
PUS	■	■	■	■	■	0.854

**TABLE 3.** Path coefficients

	Hypothesis	Std.Betta	Std.Error	T-values	P-Values	Decision
H1	PE -> PUS	0.373	0.099	3.786	0	Supported
H2	PE -> PEOU	0.836	0.035	23.715	0	Supported
H3	PEOU -> PUS	0.548	0.099	5.554	0	Supported
H4	PEOU -> ATU	0.756	0.103	7.336	0	Supported

H5	PUS -> ATU	0.019	0.158	0.119	0.452	Rejected
H6	PUS -> BI	0.252	0.1	2.511	0.006	Supported
H7	ATU -> BI	0.635	0.104	6.111	0	Supported
H8	BI -> AU	0.865	0.037	23.294	0	Supported

From the eight hypotheses tested in table 3 showed, it is known that as many as seven hypotheses are accepted, namely Hypothesis 1,2,3,4,6,7,8, and only H5 is rejected. The 1st hypothesis (H1) is that Perceived Enjoyment (PE) has a significant effect on Perceived Usefulness (PUS), where the T-value (3.786), while the 2nd Hypothesis (H2) is Perceived Enjoyment (PE) on Perceived Ease Of Use (PEOU) has a significant effect, where the T-value (23,715). For the 3rd hypothesis (H3), the Perceived Ease Of Use (PEOU) has a significant effect, where the T-value (5.554) and the 4th Hypothesis (H4) is the Perceived Ease Of Use (PEOU). On Attitudes To Use (ATU) has a significant effect, where the value of T-value (7,336). In the 5th hypothesis (H5), Perceived Usefulness (PUS) on Attitudes To Use (ATU) has no significant effect, with a T-value (0.119), but in the 6th hypothesis (H6) is Perceived Usefulness (PUS) on Behavior Intention (BI) has a significant effect, with a T-value (2,511). The 7th hypothesis (H7) is that Attitudes To Use (ATU) on Behavior Intention (BI) has a significant effect, with a T-value (6.111). Moreover, the 8th hypothesis (H8) is that Behavior Intention (BI) on Actual Use has a significant effect, with a T-value (23,294).



**FIGURE 2.** Results of structure model

Based on other studies where Perceived Enjoyment (PE) has a significant effect on Perceived Usefulness (PUS) and Perceived Ease Of Use (PEOU) by [12], where the results show that students' enjoyment of using a moodle-based LMS has an impact on interest. The finding from [12] is that the Perceived Ease Of Use (PEOU) aspect has a significant effect on the Perceived Usefulness (PUS) and Attitude To Use (ATU) of students, so it also has an impact on students' interest in using the [13] Moodle-based LMS. Meanwhile, Perceived Usefulness (PUS) only has a significant impact on Behavior Intention (BI) but has no significant effect on Attitude To Use (ATU), so it does not give results on changes in student attitudes [14]. The aspect of Attitude To Use (ATU) affects Behavior Intention (BI), according to [15], where student attitudes have an impact on student interest in using Moodle-based LMS. Lastly, Behavior Intention (BI) has a significant effect on Actual Use, by the findings by [16] that interest determines the application of using a Moodle-based LMS.

## CONCLUSIONS

Based on the tests that have been carried out, it is concluded that the Perceived Enjoyment (PE) in students impacts interest in using Moodle-based LMS so that it fosters enthusiasm for learning and is expected to improve learning achievement. So it would be better to do further research with the addition of the latent variables to make it more perfect than now.

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## Factors of using e-learning in higher education and its impact on student learning

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### ABSTRACT

This research was conducted to evaluate the adoption of e-learning in higher education and its impact on students. The quantitative research design was used in this study, and the Technology Acceptance Model (TAM) was used with two external variables Perceived Enjoyment (PEN) and Perceived Self-Efficacy (PSE), to analyse the validity and reliability of items and to test the hypotheses. This study was conducted among 592 undergraduate students who were selected using a random sampling technique. The findings of this study have successfully proven all ten hypotheses. It was evident that the students enjoyed E-learning's adoption, which had succeeded in increasing students' motivation to learn, increased students' confidence, and expanded students' knowledge.

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## 1. INTRODUCTION

The development of science and technology, particularly ICT, also has a lot of potential impacts on the current progress of learning. Primary, secondary, and special education may use ICT to help learners' learning processes. The quality presented is indeed the pace and ease of obtaining information or resources, other than multimedia tools that can improve the interactive representation of an educational process [1],[2]. The implementation of e-learning is now a requirement rather than merely a right or temptation. In the current circumstance, e-learning is unavoidable due to the virus outbreak, making it compulsory to avoid face-to-face interactions. E-learning has many benefits, such as providing a more convenient service that facilitates learning through electronic or online space, enabling users to access flexible education and learning content, making learning processes more accessible, enhancing learning performance, and promoting learning experiences.

Moreover, e-learning assists the improvement of the quality of the education system as it involves the use of internet technologies in the delivery of learning. The main criteria of e-learning are: (i) e-learning is a network capable of updating, distributing, and sharing teaching and information materials, (ii) sending end users the information by using standard computers. However, the term e-learning is related to the use of the internet and the interpretation of educational technology. E-learning is a system of education that uses electronic applications to support the internet media, computer networks, and stand-alone computing teaching

and learning processes. However, it cannot be denied that internet-based learning is among the widely used e-learning platform today [3].

In earlier research [4], a study on the readiness of several universities to use the E-learning Readiness (ELR) model on the application of e-learning systems found that five ELR factors, namely human resources, finance, infrastructure, innovation, and organizations influence the instructors' perceived ease of use and perceived usefulness of the e-learning system and consequently their actual use. The study, however, found that instructors are not yet ready for the implementation of e-learning. These findings raise the question of whether the use of e-learning will succeed or not. In order to address this particular issue, more research needs to be conducted to find out how e-learning technology is embraced by users. The level of usage can be described by the degree of consumer acceptance of technology. The use of technology is high when the level of user acceptance is high, and when the principle [5] applies to it, it can be assumed that the implementation of e-learning is successful. Therefore, the confidence level of user acceptance of the e-learning program is evaluated in this study. The performance quality of e-learning programs is expected to be achieved.

Online learning is practiced in almost all universities and tertiary institutions across the globe over the last ten years. Since then, it has adopted the traditional approaches to teaching and learning, allowing students to use a digital system that manages courses, materials, discussions, and assignments and tests through the internet [6],[7]. Universities worldwide have invested millions of dollars in designing and maintaining their e-learning programs. Moodle and Blackboard are among the popular online learning systems. Many universities use their personally-developed e-learning systems. Therefore, it is vital to know the underlying reasons as to why students choose or avoid using the e-learning system to ensure that it is fully implemented and its benefit is enjoyed [8],[9]. Online education and e-learning are characterized by an Internet connection to facilitate the delivery of teaching content, communication, and collaboration in a virtual environment between students and teachers. Furthermore, e-learning also provides face-to-face contact with academic staff [10].

### **Theoretical Background**

Technology Acceptance Model (TAM) is a theoretical framework that has been widely used in various fields such as industry and education that supports information technology processes. Many academicians in education have used TAM to clarify consumers' adoption of technology, including e-learning, immersive learning tools, digital libraries, and e-journals. TAM provides different factors to track external influences on two central inner values: perceived usefulness (PU) and perceived ease of use (PEOU). [11] stated that the perceived ease of use is the extent to which a person believes that using a particular system would be effort-free and valuable to the degree a person believes using a particular system would improve his employee's productivity. Each of these values impacts the mind-sets of consumers towards the use of information systems (IS).

While e-learning is a resource to improve education and training, it is of no use unless users embrace it as a learning tool. As e-learning uses computer technology, TAM is commonly used and expanded in an e-learning area of study. The two TAM constructs (perceived usefulness and ease of use) were used to assess the acceptance of student websites as a practical learning resource by university students. The findings showed that the website's perceived usefulness and ease of use are essential factors for accepting and using the website as a secure and effective learning technology. In order to know an e-learning engineer's acceptance, Bauwens (2020) suggested a construct that tests the degree to which one assumes a specific system is free of threats to privacy and health [12],[13]. Their empirical analysis promotes the perceived quality of engineers' intention to use e-learning, suggesting that students must be assured that they are free of the threats to privacy and safety.

### **Research model & hypotheses development**

Based on the preceding literature analysis, a conceptual model was established by merging TAM with PEN and PSE to examine the intents of students to adopt and implement E-learning technologies in online learning. The conceptual model and related hypotheses are depicted in Figure 1.



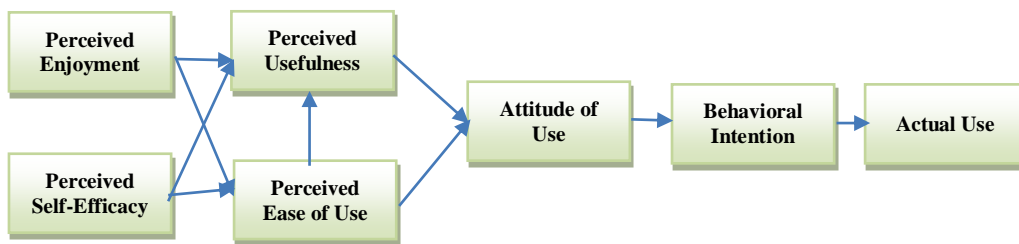


Figure.1 Research Model

### Perceived Self-Efficacy (PSE)

The user's understanding of self-efficacy is his ability to use this content to accomplish a topic. Regarding PUS, the user understands everyone's potential for using e-learning. Regarding self-efficacy, the [14] study shows that the key to explaining the use of technology in classroom education is self-efficacy. [15] research showed that users have an excellent mindset to e-learning, including awareness of self-efficacy, pleasure, utility, and purpose of using the behavior. It was then suggested the following hypotheses:

H1: PSE has a direct and robust effect on the use of e-learning by PUS

H2: PSE has a direct and robust influence on PEOU's use of e-learning.

### Perceived Enjoyment (PEN)

Perceived Enjoyment is how instructors believe that e-learning teaching is a good and enjoyable activity. Davis and colleagues' findings demonstrate that people's intention of using computers is impacted by their perceptions of improving work performance and their entertainment level [16]. The results indicate that responsiveness and perceived gratification play a significant role in shaping users' attitudes and expectations in online learning media [17]. Therefore, concerning e-learning, we can postulate a positive relationship between perceived pleasure and e-learning intent. Thus, the third and fourth hypotheses are as follows:

H3: The PEN has positive and direct effects on the PUS of e-learning.

H4: PEN has positive and direct effects on the PEOU of e-learning.

### Perceived Ease of Use (PEOU)

PEOU is defined as how effortlessly technology is to be used [18]. In this study, the e-learning of PEOU is interpreted by how easy it is for users to use E-learning. The analysis shows that the acceptance of technology is growing as PEOU increases [19]. This study identifies the PEOU traits for the educational use of E-learning and the impact of PEOU on PUS and ATU. The following hypotheses were then proposed:

H5: PEOU has positive and direct effects on the E-learning PUS

H6: PEOU has positive and direct effects on ATU e-learning.

### Perceived Usefulness (PUS)

PUS are described as how users feel a particular system will enhance productivity [20]. PUS E-learning is defined in this study as the extent that users believe the use of e-learning will improve educational performance. Literary review in various academic fields has emphasized the significance of PUS in the development of new technologies [21]. The research uses PUS characteristics to examine the effect of E-learning on students and the impact of PUS on ATU and BI. The following hypotheses were then proposed:

H7: PUS has positive and direct effects on ATU e-learning

H8: PUS has substantial and direct effects on e-learning BI.

### Attitude of Use (ATU)

Several studies on ATU regarding technology acceptability have shown that ATU can improve BI [22]. In studying online, PEOU and PUS [23], affect ATU. In this analysis, the feature of ATU is to test students' acceptability of E-learning. The following theory was formulated:

H9: ATU has positive and direct effects on e-learning BI

### **Behavioral Intention (BI)**

BI is a behavioral propensity in the future to continue using a tool [24]. Several studies have studied BI's acceptance of technology, and results showed that BI has a strong relationship with AU [25]. Researchers have investigated the BI attributes of actual use in this study. Then the following hypothesis was suggested:

H10: BI has a positive and direct impact on the E-learning AU.

### **Actual Use (AU)**

The full range of modern technologies is AU. The intensity and length of the use of technology can be assessed. According to [26], the AU systems offer substantial practical significance for information and technology impact assessment. AU defines the time and frequency of usage that interacts with advanced technologies [27]. In this study, researchers measured students' AU based on the time allotted to e-learning.

## **2. METHOD**

### **Participant**

Questionnaires were distributed to 592 undergraduate students from universities in Indonesia, aged between 18 to 23. The respondents were surveyed about their experience using the E-learning during the Covid-19 pandemic from September 2021 until January 2022. The study was well-balanced in gender (58% women and 42% men). As university students, the answers varied across the research.

### **Data Collection**

The university students were asked to share their online learning experience during the Covid-19 pandemic through various learning activities in Indonesia. This study aims to clarify the main objectives of this project: to find out the effectiveness of the use of E-learning during the Covid-19 pandemic in Indonesia. The university's findings can be used by the university to evaluate the effectiveness of e-learning in Indonesia. Besides, the findings could also inform the Indonesian Ministry of Education on the effect of online learning in Indonesia. In this study, the researchers worked with the university to help distribute the questionnaire to university students, and it only took 10-13 minutes for the respondents to fill out the questionnaire. A total of 600 respondents have filled in the questionnaires, but it turned out that only 592 respondents fulfil the criteria. Eight were incomplete and thus excluded from the study. The questionnaire used a Likert scale between 1 (in strong disagreement) and 5 (strong agreement) to measure 26 items in the model construct. The constructs used in this questionnaire are shown in Appendix A.

### **Measures**

In this study, data analysis was conducted using the Structural Equation Modelling (SEM) method. The Smart PLS version 3.0 program [28]. PLS is a well-known method for the evaluation of the path coefficients of structural models and has become more popular with marketing research in general, in the last decade, due to its ability to model latent structures in irregular and small to medium sample size conditions [29]. Nevertheless, PLS research has been carried out and has proven appropriate as one element in this study. The PLS algorithm mechanism is also used to evaluate the set, weight, and path coefficients and determine the hypothesis's significance by using the bootstrap method (5000 sample). The measurement model is accurate and effective for the empirical validation protocol for the structural model dependency structure [30]. Finally, the blindfold technique was used for developing and evaluating the reliability of the theoretical frameworks.

## **3. RESULTS AND DISCUSSION**

Data that had been collected and suitable for processing are subsequently tested using Smart PLS 3.0.

### **Results**

#### **3.1. Measurement Model Evaluation**

The evaluation of the measurement model (outer model) is carried out to find out the relationship between latent variables and the indicators being studied to explain each indicator associated with the latent variable. This is related to the validity and reliability of the instruments used [31]. The validity of these instruments was tested using discriminant validity and convergent validity.

Table 1. Measurement Instrument

Constructs	Items	Sources
Perceived Self-Efficacy	PSE1 I feel confident in myself when I teach e-learning	[32]
	PSE2 I am happy with e-learning	
	PSE3 I feel anxious before I teach e-learning.	
Perceived Enjoyment	PEN1 E-learning as a tool is satisfactory	[33]
	PEN2 E-learning is enjoyable as a teaching resource	
	PEN3 The use of e-learning as a method is encouraging.	
Perceived Ease of Use	PEOU1 I consider e-learning easy to use	[34]
	PEOU2 E-learning courses are accessible to schedule and coordinate.	
	PEOU3 I can easily and intuitively use E-learning in my classes.	
	PEOU4 The graphical interface design of e-learning components is clear and comprehensible.	
	PEOU5 The e-learning platform makes it easy for me to achieve my goals.	
Perceived Usefulness	PUS1 E-learning increases the work efficiency	[35][33], [36]
	PUS2 The use of E-learning helps me to save time.	
	PUS3 Using E-learning helps to increase one's work performance.	
	PUS4 Using E-learning makes my job easier.	
Attitude of Use	ATU1 It is a good idea to use e-learning	
	ATU2 E-learning is a pleasant way to learn.	
	ATU3 The use of e-learning is a positive idea.	
Behavioral Intention	BI1 I expect to continue using e-learning to promote classes.	
	BI2 I plan to use e-learning as much as possible in my classes.	
	BI3 I will discuss the positive benefits of e-learning in my classes.	
	BI4 I expect that in the next I would use e-learning.	
Actual Use	AU1 I use E-learning on a daily basis	
	AU2 I use E-learning frequently	
	AU3 I use E-learning to help my studies.	
	AU4 I use E-learning in my group.	

3.2. Convergent Validity

Research results for [37] are evaluated by evaluating the loading factor value of every indicator in the displayed structure

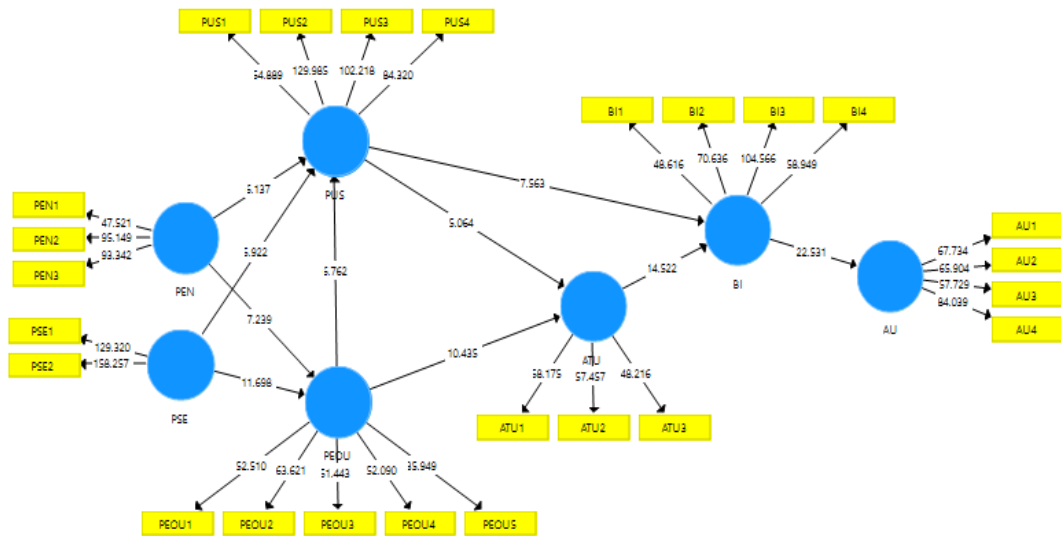


Figure 2. Outer Loading Model

All indicators have a loading factor value that satisfies the validity criteria, more significant than 0.70 (> 0.70). This subsequently implies convergent validity. The load of the PSE3 indicator is below the minimum

level ( $< 0.70$ ), which means that both indicators must be eliminated. It is in line with the statement from [38], where each indicator is a good item if it has a loading factor above 0.70.

The loading factor values of all indicators ranged between 0.804 and 0.938 based on Table 2 for the completion. This proves that sufficient requirements have been established as all values exceed 0.70 ( $> 0.70$ ), implying convergent validity. As an observed variable in the measuring model, there are 25 valid indicators (items). After completing the iteration process, discrimination validity was examined based on the cross-loadings from the final iteration of the measuring model, as shown in Table 2.

### 3.3. Discriminant Validity

The table 2 below provides the results of an assessment of discrimination based on each indicator's cross-loading factor. The correlation value of the indicator with the intended construct should, according to Chin (2010), be higher than the significance level of the identifier with other constructions. Table 2 shows that the indicator X has a significant load factor with ATU1, ATU2, and ATU3, which are higher than the load factor outside the loading factor, i.e., the ATU1 to BI (0.609), ATU1 to PEN(0.490), ATU1 to PEOU (0.523), ATU1 to PSE(0.495), ATU1 to PUS (0.503). The ATU1 can, therefore, be described as a valid discriminant.

Table 2. Cross loading testing

Indicator	ATU	AU	BI	PEN	PEOU	PSE	PUS
ATU1	0.848	0.557	0.609	0.49	0.523	0.495	0.503
ATU2	0.858	0.575	0.551	0.487	0.486	0.431	0.397
ATU3	0.823	0.505	0.524	0.486	0.517	0.426	0.37
AU1	0.556	0.854	0.543	0.37	0.541	0.498	0.428
AU2	0.56	0.875	0.533	0.458	0.559	0.497	0.469
AU3	0.566	0.865	0.503	0.441	0.541	0.51	0.49
AU4	0.57	0.883	0.566	0.423	0.599	0.546	0.469
BI1	0.543	0.487	0.811	0.492	0.527	0.514	0.517
BI2	0.563	0.495	0.873	0.44	0.522	0.437	0.437
BI3	0.599	0.58	0.896	0.48	0.555	0.494	0.469
BI4	0.579	0.545	0.839	0.421	0.507	0.5	0.453
PEN1	0.475	0.413	0.44	0.838	0.411	0.489	0.482
PEN2	0.533	0.432	0.476	0.9	0.483	0.507	0.508
PEN3	0.518	0.437	0.497	0.901	0.493	0.525	0.517
PEOU1	0.525	0.543	0.517	0.472	0.819	0.546	0.531
PEOU2	0.519	0.538	0.517	0.421	0.852	0.478	0.46
PEOU3	0.482	0.512	0.505	0.41	0.835	0.44	0.443
PEOU4	0.497	0.528	0.522	0.5	0.827	0.55	0.539
PEOU5	0.469	0.548	0.488	0.355	0.804	0.424	0.393
PSE1	0.491	0.532	0.525	0.531	0.546	0.934	0.556
PSE2	0.514	0.573	0.54	0.547	0.567	0.938	0.564
PUS1	0.47	0.479	0.478	0.492	0.511	0.506	0.877
PUS2	0.438	0.479	0.5	0.503	0.525	0.562	0.929
PUS3	0.459	0.48	0.495	0.536	0.528	0.558	0.915
PUS4	0.465	0.491	0.509	0.535	0.527	0.539	0.899

### 3.4. Cronbach's Alpha, Composite Reliability & AVE

Instrument reliability testing is performed by evaluating the composite reliability value (CR), Average Extracted Variance (AVE), Alpha Cronbach, and Rho A values, as shown in Table 3.

Table.3 Reliability test measurement model

Indicator	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
ATU	0.797	0.800	0.881	0.711
AU	0.892	0.894	0.925	0.756
BI	0.877	0.879	0.916	0.732
PEN	0.854	0.859	0.912	0.775
PEOU	0.885	0.889	0.916	0.685
PSE	0.858	0.859	0.934	0.876
PUS	0.926	0.927	0.948	0.820

From the results in Table 3, composite reliability (CR) coefficients surpassed the basic threshold of 0.881 to 0.948 ( $> 0.7$ ). The Cronbach Alpha coefficient ranged from 0.797 to 0.926. All coefficients were higher than the lower limit ( $> 0.7$ ) and were acceptable. Rho A has the lowest score of 0.800 and the highest score of 0.927, which are also higher than 0.7. The average Extracted Variance Value (AVE) was between 0.711 and 0.876. This shows that the AVE value achieved was higher than the minimum recommended score. The reliability tests showed excellent internal consistency.

### 3.5. Structural Model Evaluation

The determination coefficient (R Square) is usually used to measure the model's predictive power to evaluate the structural model. This is the square correlation between the actual value and the prediction of particular endogenous buildings. The coefficients represent the combined effects on latent endogenous variables of exogenous variables. Since the range of R Square is 0-1 with higher values suggesting a higher prediction point, it is challenging to create an appropriate thumb rule for R Square. This is because the values PEN on the complexity of the model and the discipline of research. As presented in table 4, PSE and PEN are possible to prove 0.404 PEOU variants with satisfactory results. PSE, PEN & PEOU will then jointly describe 0.477 PUS variants to include sufficient levels, then PUS to ATU with a sufficient number of levels. ATU to BI reveals a variation of 0.505 to an acceptable level, and finally BI to AU 0.382 to a reasonable degree of BI to AU 0.382.

Table.4 R Square

Indicator	R Square	R Square Adjusted
ATU	0.402	0.400
AU	0.382	0.380
BI	0.505	0.504
PEOU	0.404	0.402
PUS	0.477	0.474

Table 5.Hypothesis Testing

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
ATU -> BI	0.525	0.526	0.036	14.522	<b>0.000</b>	Supported
BI -> AU	0.618	0.619	0.027	22.531	<b>0.000</b>	Supported
PEN -> PEOU	0.275	0.277	0.038	7.239	<b>0.000</b>	Supported
PEN -> PUS	0.265	0.266	0.043	6.137	<b>0.000</b>	Supported
PEOU -> ATU	0.467	0.469	0.045	10.435	<b>0.000</b>	Supported
PEOU -> PUS	0.267	0.268	0.040	6.762	<b>0.000</b>	Supported
PSE -> PEOU	0.436	0.436	0.037	11.698	<b>0.000</b>	Supported
PSE -> PUS	0.287	0.286	0.048	5.922	<b>0.000</b>	Supported
PUS -> ATU	0.236	0.237	0.047	5.064	<b>0.000</b>	Supported
PUS -> BI	0.282	0.282	0.037	7.563	<b>0.000</b>	Supported

The hypothesis regarding the interaction between the buildings was checked for the strength between the structures listed in the conceptual framework. To use it, the structural equation model was tested by calculating the path coefficient between structures and by evaluating the significance of the path coefficient and the level of importance. In Smart PLS, T values were calculated using the bootstrap method and a two-tail t-distribution table to evaluate the critical level of the direction. Path coefficients and significance rates were reached by using Smart PLS with 5000 samples. Bootstrapping. Table 5 displays the findings and is accompanied by Figure 2.

Table.5 and Figure 2 show that H1 through H10 hypotheses are supported by structural models where each hypothesis reinforces one another. The first hypothesis (H1) shows that with the support of t-value 5.922 ( $> 1.65$ ) and P-value 0.000 ( $< 0.05$ ), PSE has a significant positive effect on EFA. The second hypothesis (H2) indicates that PSE has significant effect of 11.698 ( $> 1.65$ ) and 0.000 ( $< 0.05$ ) t-values on the PEOU. The PEN hypothesis also has a significant and positive impact on the PEOU with a t value of 6.137 ( $> 1.65$ ) and the P-value of 0.000 ( $< 0.05$ ), with a t-value of 7.239 ( $> 1.65$ ) and a P-value of 0.000 ( $< 0.05$ ) in the 3rd hypothesis (H3) PEN. The fifth hypothesis of the PEOU with a t-value of 6,762 ( $> 1,65$ ) and a p-value of 0,000 ( $< 0,05$ ), and the sixth hypothesis that a PEOU has an impact on ATU with t-value of 10,435 ( $> 1,96$ ) at P of 0,000 ( $< 0,05$ ) which was positively affected. In the seventh hypothesis, in which PUS affects ATU significantly and positively with the t value of 5.064 ( $> 1.65$ ) and the value P of 0.000 ( $< 0.05$ ), a hypothesis of PUS 8 with the value t 7.563 ( $> 1.65$ ) and the value P of 0.000 ( $< 0.05$ ) was also significantly positive in BI. Besides, the ninth hypothesis of ATU on BI showed a positive and meaningful effect of t 14,522 ( $> 1.65$ ) and P 0,000 ( $< 0,05$ ), and the tenth hypothesis (H10) of BI on AU indicated the highest positive value of t 22,531 ( $> 1,65$ ) and P of 0,000 ( $< 0,05$ ). Based on the results, the ten hypotheses were accepted.

## Discussion

This study aimed to examine the dimensions of the TAM model for implementing e-learning in higher education by studying the factors influencing the willingness of students to use e-learning. BI is one of the critical factors in AU E-learning. The effectiveness of such a sample is controlled by the participation of university students in the model. Therefore, it is essential to evaluate university students' acceptance to ensure that students adopt this learning platform at the end of the course. An important finding of this research is that the external variables, namely Perceived Enjoyment (PEN) and Perceived Self-Efficacy (PSE), play a crucial role in specifically impacting the understanding of the advantages and expectations of ease of use. Each exciting outcome of this research seems to be that external variables, pleasure perception, and self-efficacy are considered to play a significant role in impacting the perception of e-learning advantages and perceptions of ease of use.

Based on the ten hypotheses that were tested, it turned out that the results showed that all hypotheses were proven and accepted, and thus this study was successful. Although there are many determinants in research, it does not affect the truth of this research results. Two external construct variables, namely PSE and PEN, also significantly influence the results on PEOU and PUS, as mentioned in hypotheses 1 to 2 between PSE to PUS and PEOU, the results were supported by the findings from [14] according to [15] and [8]. The PSE is a reflection of students' self when using e-learning and this has a direct impact when thinking about aspects of usefulness in using e-learning. Meanwhile, this PEOU shows that student efficacy is important in determining how to think about the ease of using e-learning. In hypotheses 3 and 4, PEN has a significant

positive effect on PEOU and PU the were results were supported by [16] and according to [39], [40], so perceptions of pleasure in students have an impact on students' decisions that by using e-learning comfortably and being able to explore creativity. In hypotheses 5 and 6, PEOU has a significant positive effect on PUS and ATU. This finding is concurrent with the findings in [41]–[43] according to [44].

In hypotheses 7 and 8, PUS has a direct positive effect on ATU and BI. This finding is similar to the findings in [41], and related to [45]. The last two hypotheses, the 9th hypothesis, which is ATU on BI, showed significant, positive effect, similar to the findings in [46], [47] to support [48]–[50], and the 10th hypothesis of BI on AU, the highest significant value is the findings from [51] supported by [52], [53]. These further strengthening the truth of this current research findings.

#### 4. CONCLUSION

The results of this current study have shown that students enjoy their e-learning experience and have posited that e-learning is an effective teaching and learning method to help the teaching and learning process. E-learning aims to promote interactive, positive, and generative education. This finding suggests that e-learning is a student-centered learning approach that could increase students' understanding, confidence, and knowledge development.

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











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