KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI
DIREKTORAT JENDERAL PENDIDIKAN TINGGI, RISET, DAN TEKNOLOGI

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Nomor	:	0162/E5.4/DT.05.00/2023	6 Maret 2023
Lampiran	:	1 (satu) berkas	
Hal	:	Pengumuman Program Penelitian Lanjutan (*on going*) Tahun Anggaran 2023	

Yth.
1. Kepala Lembaga Layanan Pendidikan Tinggi Wilayah I s.d. XVI
2. Ketua LP/LPM/LPPM Perguruan Tinggi di lingkungan Ditjen Diktiristek

Berkenaan dengan pelaksanaan Program Penelitian lanjutan (*on going*) Tahun Anggaran 2023, Direktorat Riset, Teknologi, dan Pengabdian kepada Masyarakat (DRTPM), Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi, Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi telah melaksanakan kegiatan penilaian keberlanjutan Penelitian pelaksanaan Tahun Anggaran 2022.

Berdasarkan hasil penilaian keberlanjutan Program Penelitian pelaksanaan Tahun Anggaran 2022, bersama ini kami sampaikan daftar penerima pendanaan Program Penelitian lanjutan yang didanai Tahun Anggaran 2023 sebagaimana tercantum pada Lampiran.

Kami informasikan bahwa penerima pendanaan Program Penelitian lanjutan Tahun Anggaran 2023 telah memenuhi kewajiban sebagai berikut:
1. Mengunggah laporan kemajuan sampai dengan tahun 2022;
2. Mengunggah laporan akhir sampai dengan tahun 2022;
3. Mengunggah laporan keuangan dan catatan harian sampai dengan tahun 2022;
4. Melaksanakan evaluasi keberlanjutan secara daring;
5. Tidak sedang dalam status tugas belajar baik untuk ketua maupun anggota, kecuali anggota pada skema Penelitian Pascasarjana;

Apabila penerima pendanaan Program Penelitian lanjutan sebagaimana tercantum pada lampiran yang tidak memenuhi salah satu dari kewajiban di atas atau terdapat pelanggaran terhadap ketentuan Panduan Penelitian dan Pengabdian kepada Masyarakat Edisi XIII Revisi, maka pendanaannya dapat ditinjau kembali.

Berkenaan dengan hal tersebut, DRTPM mengucapkan selamat kepada penerima pendanaan Program Penelitian lanjutan Tahun Anggaran 2023. Bagi dosen yang belum mendapatkan pendanaan lanjutan tahun ini dapat mengusulkan proposal baru Program Penelitian dan Pengabdian kepada Masyarakat.

Atas perhatian dan kerjasamanya, kami ucapkan terima kasih.

Direktur Riset, Teknologi, dan
Pengabdian kepada Masyarakat,

M. Faiz Syuaib
NIP 196708311994021001

Tembusan:
Plt. Direktur Jenderal Pendidikan Tinggi. Riset, dan Teknologi

No	Kategori Institusi	Nama Institui	Nama	NIDN	Judul	Skema	Keterangan
		Nasional Veteran Jakarta					
1112	PTN	Universitas Pembangunan Nasional Veteran Jakarta	Wiwin Sulistyawati	0010097407	EFISIENSI ENERGI DENGAN MEMANFAATKAN GAYA MEKANIS FLIPPER SPRING SEBAGAI GAYA DORONG TAMBAHAN PADA KAPAL	PDUPT	Tahun Ke-2 dari 2 Tahun
1113	PTN	Universitas Pembangunan Nasional Veteran Jawa Timur	Endah Susilowati	0019036410	Studi Gender pada Etika Pembelajaran Daring di Masa Krisis Pandemi: Studi Kasus pada Mahasiswa dan Dosen Akuntansi	PDKN	Tahun Ke-2 dari 2 Tahun
1114	PTN	Universitas Pembangunan Nasional Veteran Jawa Timur	Euis Nurul Hidayah	0723107701	MITIGASI KUALITAS AIR MINUM AKIBAT KANDUNGAN VIRUS DAN BAKTERI TERHADAP PEMBENTUKAN SENYAWA KARSINOGENIK	PDUPT	Tahun Ke-2 dari 2 Tahun
1115	PTN	Universitas Pembangunan Nasional Veteran Jawa Timur	Indrawati Yuhertiana	0717106602	Pengembangan Model Creative Performance melalui Intrapersonal skill, Interpersonal Skill dan Digital Skill pada saat Work From Home	PDUPT	Tahun Ke-2 dari 2 Tahun
1116	PTN	Universitas Pembangunan Nasional Veteran Jawa Timur	Pangesti Nugrahani	0020036108	Nanoteknologi Kultur Jaringan pada Tanaman Pisang Cavendish	PDKN	Tahun Ke-2 dari 3 Tahun
1117	PTN	Universitas Pembangunan Nasional Veteran Yogyakarta	Dyah Sugandini	0517067101	MODEL ADOPSI E-LEARNING EDUCATION TECHNOLOGY PADA PENDIDIKAN TINGGI DI DAERAH ISTIMEWA YOGYAKARTA DAN SUMATERA SELATAN	PD	Tahun Ke-3 dari 3 Tahun
1118	PTN	Universitas Pembangunan Nasional Veteran Yogyakarta	Herianto	0021065910	KONSEP PEMANFAATAN ENERGI FLUIDA BUANG UNTUK ENERGI LISTRIK DENGAN SISTEM BINARY CYCLE PADA LAPANGAN PANASBUMI DI INDONESIA	PDUPT	Tahun Ke-3 dari 3 Tahun
1119	PTN	Universitas Pembangunan Nasional Veteran Yogyakarta	Prayudi	0504097301	MODEL KEBIJAKAN MANAJEMEN BRAND KOTA KREATIF KAWASAN ASIA BERBASIS EKONOMI KREATIF	PTUPT	Tahun Ke-2 dari 3 Tahun

KONTRAK PELAKSANAAN PROGRAM PENELITIAN LANJUTAN
TAHUN ANGGARAN 2022
NOMOR: 105A /UN62.21/PT/III/2022

Pada hari ini **Rabu** tanggal **Dua Puluh Tiga** bulan **Maret** tahun **Dua Ribu Dua Puluh Dua**, kami yang bertandatangan dibawah ini :

1. HENDRO WIDJANARKO : Kepala Lembaga Penelitian dan Pengabdian kepada Masyarakat, Universitas Pembangunan Nasional "Veteran" Yogyakarta, dalam hal ini bertindak untuk dan atas nama Universitas Pembangunan Nasional "Veteran" Yogyakarta, yang berkedudukan di Yogyakarta, untuk selanjutnya disebut **PIHAK PERTAMA**;

2. DYAH SUGANDINI : Dosen Fakultas Ekonomi dan Bisnis Universitas Pembangunan Nasional "Veteran" Yogyakarta, dalam hal ini bertindak sebagai pengusul dan Ketua Pelaksana Penelitian Tahun Anggaran 2022 untuk selanjutnya disebut **PIHAK KEDUA**.

PIHAK PERTAMA dan **PIHAK KEDUA**, selanjutnya disebut **PARA PIHAK** secara bersama-sama sepakat mengikatkan diri dalam suatu Kontrak **Penelitian Dasar** Tahun Anggaran 2022 dengan ketentuan dan syarat-syarat sebagai berikut:

Pasal 1
Ruang Lingkup Kontrak

PIHAK PERTAMA memberi pekerjaan kepada **PIHAK KEDUA** dan **PIHAK KEDUA** menerima pekerjaan tersebut dari **PIHAK PERTAMA,** untuk melaksanakan dan menyelesaikan Penelitian Dasar Tahun Anggaran 2022:

Judul : **Model Adopsi E-Learning Education Technology Pada Pendidikan Tinggi Di Daerah Istimewa Yogyakarta Dan Sumatera Selatan**
Ketua Tim Peneliti : DYAH SUGANDINI
Anggota Tim Peneliti : 1, YUNI ISTANTO
2. GARAIKA

Pasal 2
Dana Penelitian

(1) Besarnya dana untuk melaksanakan penelitian dengan judul sebagaimana dimaksud pada Pasal 1 adalah sebesar Rp. **205.177.000 *(Dua ratus lima juta seratus tujuh puluh tujuh ribu rupiah)* sudah termasuk pajak.

(2) Dana Penelitian sebagaimana dimaksud pada ayat (1) dibebankan pada Daftar Isian Pelaksanaan Anggaran (DIPA) Direktorat Riset, Teknologi, dan Pengabdian Kepada Masyarakat, Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Tahun Anggaran 2022, Nomor SP DIPA-023.17.1.690523/2022 Tanggal 17 November 2021.

Pasal 3
Tata Cara Pembayaran Dana Penelitian

(1) **PIHAK PERTAMA** akan membayarkan Dana Penelitian kepada **PIHAK KEDUA** secara bertahap dengan ketentuan sebagai berikut:
   a. Pembayaran Tahap Pertama sebesar 70% dari total dana penelitian yaitu 70% x Rp. 205.177.000 = Rp. **143.623.900** *(Seratus empat puluh tiga juta enam ratus dua puluh tiga ribu sembilan ratus rupiah)*, yang akan dibayarkan oleh **PIHAK PERTAMA** kepada **PIHAK KEDUA** setelah **PIHAK KEDUA** merevisi proposal penelitian dan mengunggah surat pernyataan kesanggupan pelaksanaan penelitian ke SIMLITABMAS.
   b. Pembayaran Tahap Kedua sebesar 30% dari total dana penelitian yaitu 30% x Rp. 205.177.000 = Rp. **61.553.100** *(Enam puluh satu juta lima ratus lima puluh tiga ribu seratus rupiah)*, dibayarkan oleh **PIHAK PERTAMA** kepada **PIHAK KEDUA** setelah **PIHAK KEDUA** mengunggah ke SIMLITABMAS yaitu: Laporan Kemajuan Pelaksanaan Penelitian, Laporan Penggunaan Anggaran 70% / Surat Pernyataan Tanggungjawab Belanja (SPTB) 70%, dan melengkapi Catatan Harian.

(2) Dana Penelitian sebagaimana dimaksud pada ayat (1) akan disalurkan oleh **PIHAK PERTAMA** kepada **PIHAK KEDUA** ke rekening sebagai berikut:

Nama	:	DYAH SUGANDINI
Nomor Rekening	:	1299825660
Nama Bank	:	Bank Negara Indonesia (BNI)

(3) **PIHAK PERTAMA** tidak bertanggung jawab atas keterlambatan dan/atau tidak terbayarnya sejumlah dana sebagaimana dimaksud pada ayat (1) yang disebabkan karena kesalahan **PIHAK KEDUA** dalam menyampaikan data peneliti, nama bank, nomor rekening, dan persyaratan lainnya yang tidak sesuai dengan ketentuan.

Pasal 4
Jangka Waktu

Jangka waktu pelaksanaan penelitian sebagaimana dimaksud dalam Pasal 1 sampai selesai 100%, adalah terhitung sejak **Tanggal 16 Maret 2022** dan berakhir pada **Tanggal 20 November 2022**.

Pasal 5
Target Luaran

(1) **PIHAK KEDUA** berkewajiban untuk mencapai target luaran wajib penelitian berupa: **Artikel di Jurnal Internasional Terindeks di Pengindeks Bereputasi.**
(2) **PIHAK KEDUA** diharapkan dapat mencapai target luaran tambahan penelitian berupa: **Artikel pada Conference/Seminar Internasional di Pengindeks Bereputasi.**
(3) **PIHAK KEDUA** berkewajiban untuk melaporkan perkembangan pencapaian target luaran sebagaimana dimaksud pada ayat (1) kepada **PIHAK PERTAMA.**

Pasal 6
Hak dan Kewajiban Para Pihak

(1) Hak dan Kewajiban **PIHAK PERTAMA**:
   a. **PIHAK PERTAMA** berhak untuk mendapatkan dari **PIHAK KEDUA** luaran penelitian sebagaimana dimaksud dalam Pasal 5;
   b. **PIHAK PERTAMA** berkewajiban untuk memberikan dana penelitian kepada **PIHAK KEDUA** dengan jumlah sebagaimana dimaksud dalam Pasal 2 ayat (1) dan dengan tata cara pembayaran sebagaimana dimaksud dalam Pasal 3.

(2) Hak dan Kewajiban **PIHAK KEDUA**:
   a. **PIHAK KEDUA** berhak menerima dana penelitian dari **PIHAK PERTAMA** dengan jumlah sebagaimana dimaksud dalam Pasal 2 ayat (1);
   b. **PIHAK KEDUA** berkewajiban menyerahkan kepada **PIHAK PERTAMA** Laporan Kemajuan, Laporan Akhir dan Luaran Penelitian Dasar dengan judul Model Adopsi E-Learning Education Technology Pada Pendidikan Tinggi Di Daerah Istimewa Yogyakarta Dan Sumatera Selatan serta catatan harian pelaksanaan penelitian;
   c. **PIHAK KEDUA** berkewajiban untuk bertanggungjawab dalam penggunaan dana penelitian yang diterimanya sesuai dengan proposal kegiatan yang telah disetujui;
   d. **PIHAK KEDUA** berkewajiban untuk menyampaikan kepada **PIHAK PERTAMA** laporan penggunaan dana sebagaimana dimaksud dalam Pasal 7.

Pasal 7
Laporan Pelaksanaan Penelitian

(1) **PIHAK KEDUA** berkewajiban untuk menyerahkan kepada **PIHAK PERTAMA** berupa Laporan Kemajuan (dijilid *soft cover* warna Merah Muda) dan Laporan Akhir (dijilid *hard cover* warna Merah Muda) dengan lampiran luaran penelitian dan rekapitulasi penggunaan anggaran sesuai dengan jumlah dana yang diberikan oleh **PIHAK PERTAMA** yang tersusun secara sistematis sesuai pedoman yang ditentukan oleh **PIHAK PERTAMA** sebanyak 1 (satu) eksemplar.

(2) **PIHAK KEDUA** berkewajiban menyerahkan dan mengunggah ke SIMLITABMAS: Laporan Kemajuan, Laporan Penggunaan Anggaran 70% dan Catatan Harian penelitian yang telah dilaksanakan paling lambat **16 Agustus 2022.**

(3) **PIHAK KEDUA** berkewajiban mengunggah ke SIMLITABMAS: Laporan Penggunaan Dana 30% dan melengkapi Catatan Harian penelitian yang telah dilaksanakan, paling lambat **20 November 2022.**

(4) **PIHAK KEDUA** berkewajiban menyerahkan dan mengunggah ke SIMLITABMAS: Laporan Akhir, Laporan Penggunaan Dana 100%, Capaian Hasil Penelitian, Poster, Artikel Ilmiah, dan Profil paling lambat **31 Desember 2022**.

(5) Laporan hasil penelitian ditulis dengan huruf Times New Roman, ukuran 12, spasi 1,5, pada kertas HVS ukuran A4, dengan margin kiri 4 cm, margin atas/kanan/bawah 3 cm.

(6) Pada sampul (cover) harus dicantumkan:

<div align="center">

Dibiayai oleh:
Direktorat Riset, Teknologi, dan Pengabdian kepada Masyarakat
Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi
Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi
Sesuai dengan Kontrak Penelitian
Nomor: 105A /UN62.21/PT/III/2022

</div>

Pasal 8
Monitoring dan Evaluasi

PIHAK PERTAMA dalam rangka pengawasan akan melakukan Monitoring dan Evaluasi internal terhadap kemajuan pelaksanaan Penelitian Tahun Anggaran 2022:
   a. Monitoring dan Evaluasi pertama   : 19 Juli 2022
   b. Monitoring dan Evaluasi kedua   : 4 November 2022

Pasal 9
Penilaian Luaran

(1) Penilaian luaran penelitian dilakukan oleh Komite Penilai/*Reviewer* Luaran sesuai dengan ketentuan yang berlaku.

(2) Apabila dalam penilaian luaran terdapat luaran tambahan yang tidak tercapai maka dana tambahan yang sudah diterima oleh peneliti harus disetorkan kembali ke kas negara.

Pasal 10
Perubahan Susunan Tim Pelaksana dan Substansi Pelaksanaan

Perubahan terhadap susunan tim pelaksana penelitian dapat dibenarkan apabila telah mendapat persetujuan dari Direktorat Riset, Teknologi, dan Pengabdian Kepada Masyarakat, Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi.

Pasal 11
Penggantian Ketua Pelaksana

(1) Apabila **PIHAK KEDUA** selaku ketua pelaksana tidak dapat melaksanakan Penelitian ini, maka **PIHAK KEDUA** wajib mengusulkan pengganti ketua pelaksana yang merupakan salah satu anggota tim kepada **PIHAK PERTAMA**.
(2) Apabila **PIHAK KEDUA** tidak dapat melaksanakan tugas dan tidak ada pengganti ketua sebagaimana dimaksud pada ayat(1), maka **PIHAK KEDUA** harus mengembalikan dana penelitian kepada **PIHAK PERTAMA** yang selanjutnya disetor ke Kas Negara.
(3) Bukti setor sebagaimana dimaksud pada ayat (2) disimpan oleh **PIHAK PERTAMA.**

Pasal 12
Sanksi

(1) Apabila sampai dengan batas waktu yang telah ditetapkan untuk melaksanakan Penelitian ini telah berakhir, namun **PIHAK KEDUA** belum menyelesaikan tugasnya, terlambat mengirim laporan Kemajuan, dan/atau terlambat mengirim laporan akhir, maka **PIHAK KEDUA** dikenakan denda sebesar 1/1000 (satu per mil) setiap hari sampai dengan setinggi-tingginya 5% (lima persen) dari nilai kontrak penelitian ini, terhitung dari batas waktu penyerahan Laporan Akhir berakhir sampai dengan waktu pengumpulan laporan akhir beserta bukti pengeluaran dana dan luaran hasil penelitian, serta PIHAK KEDUA akan dikenai sangsi akademik sesuai dengan aturan yang berlaku.
(2) Apabila **PIHAK KEDUA** tidak dapat mencapai target luaran sebagaimana dimaksud dalam Pasal 5, maka kekurangan capaian target luaran tersebut akan dicatat sebagai hutang **PIHAK KEDUA** kepada **PIHAK PERTAMA** yang apabila tidak dapat dilunasi oleh **PIHAK KEDUA**, akan berdampak pada kesempatan **PIHAK KEDUA** untuk mendapatkan pendanaan penelitian atau hibah lainnya yang dikelola oleh **PIHAK PERTAMA**.

Pasal 13
Pembatalan Perjanjian

(1) Apabila dikemudian hari terhadap judul Penelitian sebagaimana dimaksud dalam Pasal 1 ditemukan adanya duplikasi dengan Penelitian lain dan/atau ditemukan adanya ketidakjujuran, itikad tidak baik, dan/atau perbuatan yang tidak sesuai dengan kaidah ilmiah dari atau dilakukan oleh **PIHAK KEDUA**, maka perjanjian Penelitian ini dinyatakan batal dan **PIHAK KEDUA** wajib mengembalikan dana penelitian yang telah diterima kepada **PIHAK PERTAMA** yang selanjutnya akan disetor ke Kas Negara.
(2) Bukti setor sebagaimana dimaksud pada ayat (1) disimpan oleh **PIHAK PERTAMA.**

Pasal 14
Pajak-Pajak

Hal-hal dan/atau segala sesuatu yang berkenaan dengan kewajiban pajak berupa PPN dan/atau PPh menjadi tanggungjawab **PIHAK KEDUA** dan harus dibayarkan oleh **PIHAK KEDUA** ke kantor pelayanan pajak setempat sesuai ketentuan yang berlaku.

Pasal 15
Kekayaan Intelektual

(1) Hak Kekayaan Intelektual yang dihasilkan dari pelaksanaan penelitian diatur dan dikelola sesuai dengan ketentuan peraturan dan perundang-undangan.
(2) Setiap publikasi, makalah, dan/atau ekspos dalam bentuk apapun yang berkaitan dengan hasil penelitian wajib mencantumkan pemberi dana.
(3) Pencantuman pemberi dana sebagaimana dimaksud pada ayat (2), paling sedikit mencantumkan nama Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.

Pasal 16
Peralatan dan/alat Hasil Penelitian

Hasil Pelaksanaan Penelitian ini yang berupa peralatan dan/atau alat yang dibeli dari pelaksanaan Penelitian ini adalah milik Negara yang dapat dihibahkan kepada Universitas Pembangunan Nasional "Veteran" Yogyakarta sesuai dengan ketentuan peraturan perundang-undangan.

Pasal 17
Penyelesaian Sengketa

Apabila terjadi perselisihan antara **PIHAK PERTAMA** dan **PIHAK KEDUA** dalam pelaksanaan perjanjian ini akan dilakukan penyelesaian secara musyawarah dan mufakat, dan apabila tidak tercapai penyelesaian secara musyawarah dan mufakat maka penyelesaian dilakukan melalui proses hukum.

Pasal 18
Lain - Lain

(1) **PIHAK KEDUA** menjamin bahwa penelitian dengan judul tersebut di atas belum pernah dibiayai dan/atau diikutsertakan pada Pendanaan Penelitian lainnya, baik yang diselenggarakan oleh instansi, lembaga, perusahaan atau yayasan, baik di dalam maupun di luar negeri.
(2) Segala sesuatu yang belum cukup diatur dalam Perjanjian ini dan dipandang perlu diatur lebih lanjut dan dilakukan perubahan oleh **PARA PIHAK**, maka perubahan-perubahannya akan diatur dalam perjanjian tambahan atau perubahan yang merupakan satu kesatuan dan bagian yang tidak terpisahkan dari Perjanjian ini.

Perjanjian ini dibuat dan ditandatangani oleh PARA PIHAK pada hari dan tanggal tersebut di atas, dibuat dalam rangkap 2 (dua) dan bermeterai cukup sesuai dengan ketentuan yang berlaku, yang masing-masing mempunyai kekuatan hukum yang sama.

PIHAK PERTAMA   PIHAK KEDUA

HENDRO WIDJANARKO   DYAH SUGANDINI
NIDN. 0511077001   NIDN. 0517067101

Pengisian poin C sampai dengan poin H mengikuti template berikut dan tidak dibatasi jumlah kata atau halaman namun disarankan seringkas mungkin. Dilarang menghapus/memodifikasi template ataupun menghapus penjelasan di setiap poin.

C. **HASIL PELAKSANAAN PENELITIAN:** Tuliskan secara ringkas hasil pelaksanaan penelitian yang telah dicapai sesuai tahun pelaksanaan penelitian. Penyajian meliputi data, hasil analisis, dan capaian luaran (wajib dan atau tambahan). Seluruh hasil atau capaian yang dilaporkan harus berkaitan dengan tahapan pelaksanaan penelitian sebagaimana direncanakan pada proposal. Penyajian data dapat berupa gambar, tabel, grafik, dan sejenisnya, serta analisis didukung dengan sumber pustaka primer yang relevan dan terkini.

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1. Responden penelitian
   Penelitian dilakukan dengan menyebarkan kuesioner survei kepada mahasiswa Yogyakarta dan Sumatera Selatan Indonesia. Sebanyak 550 responden diperoleh untuk dianalisis lebih lanjut.

2. Pengembangan instrumen.
   Kuesioner yang digunakan dalam penelitian ini terdiri dari dua bagian. Bagian 1 berfokus pada pengumpulan demografi dasar responden, termasuk (1) jenis kelamin, (2) usia, dan (3) pendidikan. Bagian 2 membahas lima variabel penelitian: harapan kinerja, harapan usaha, pengaruh sosial, sikap terhadap komputer, dan niat perilaku untuk menggunakan terus menerus. Responden diminta untuk menilai kekuatan identifikasi mereka dengan item kuesioner pada skala tipe Likert 5 poin, dari 1 (sangat tidak setuju) hingga 5 (sangat setuju). Tabel 1 menunjukkan item kuesioner dan referensi mereka.

Tabel 1.

Research variables and questionnaire items.

Variables	Questionnaire items	References
Attitude to computer (ATT)	ATT1: Saya percaya bahwa menggunakan computer adalah ide yang bagus. ATT2: Saya percaya bahwa menggunakan komputer disarankan ATU3: Saya puas menggunakan komputer.	(Hu et al., 2022)
Effort Expectancy (EE)	EE1: Menggunakan aplikasi e-learning itu mudah EE2: Antarmuka pengguna dan menu fungsi aplikasi mudah digunakan EE3: Menggunakan aplikasi e-learning untuk belajar itu mudah.	(Huang & Chueh, 2022): (Akinnuwesi et al., 2022)
Performance Expectancy (PE)	PE1: Menggunakan aplikasi sangat membantu untuk belajar PE2: Menggunakan aplikasi dapat meningkatkan kemampuan saya PE3: Menggunakan aplikasi memungkinkan saya untuk belajar dengan cepat	(Huang & Chueh, 2022): (Akinnuwesi et al., 2022)
Social Influence (SI)	SI1: Dosen saya mendorong saya untuk menggunakan aplikasi untuk belajar SI2: Teman sekelas saya menggunakan aplikasi untuk belajar. SI3: Banyak orang yang belajar akan menggunakan aplikasi untuk melakukannya.	(Huang & Chueh, 2022):
Behavior intention (BI)	BI1: Saya bersedia untuk terus menggunakan aplikasi untuk belajar	(Huang & Chueh, 2022); (Hu et al., 2022)

| | BI2: Saya akan terus menggunakan e-learning di masa depan
BI3: Niat saya adalah untuk terus menggunakan e-learning di masa depan, setidaknya seaktif hari ini | |
| Anxiety | AN1: Merasa Gugup, cemas, atau gelisah
AN2: Tidak dapat menghentikan atau mengendalikan rasa khawatir | (Hu et al., 2022) |

3. Pengukuran

Penelitian ini menggunakan Smart-PLS dengan pendekatan Structural Equation Model (SEM) untuk menguji hipotesis. Pendekatan ini sering digunakan dalam studi ilmu sosial karena akurasinya dalam analisis model psikometrik Menurut Kim & Lee, (2020) dan (Wijaya et al., 2022), Smart-PLS digunakan karena alasan berikut: (1) pengujian hipotesis dapat dilakukan bila distribusinya tidak normal; (2) bisa digunakan dengan item yang kurang dari 3, dan (3) dapat digunakan tanpa memikirkan jumlah sampel Langkah PLS-SEM terdiri dari pengukuran reflektif dan penilaian model struktural. Penilaian model pengukuran reflektif mengungkapkan pemuatan indikator reflektif, keandalan konsistensi internal yang terdiri dari alfa Cronbach dan keandalan komposit, konvergen validitas melalui Average Variance Extracted, dan validitas diskriminan menggunakan Rasio Heterotrait-Monotrait (HTMT). Sementara itu, penilaian statistik seperti nilai VIF, koefisien jalur, statistik t, dan nilai-p digunakan untuk mengevaluasi model structural. Uji-t digunakan untuk menilai signifikansi hubungan antar varuiabel. Keandalan struktur kuesioner menggunakan nilai Cronbach dari setiap variabel untuk memverifikasi internal konsistensi antara item kuesioner.

Tabel 2

Hasil perhitungan loading factor, validity, dan reliability

Latent Variable	Indicator	Loading	t-Value	Composite Reliability	Cronbach's Alpha	AVE
Performance Expectancy (PE)	PE1	0.869	20.826	0.904	0.842	0.759
	PE2	0.862	25.117			
	PE3	0.883	26.598			
Effort Expectancy (EE)	EE1	0.803	17.937	0.879	0.794	0.708
	EE2	0.859	22.014			
	EE3	0.860	24.879			
Social Influence (SI)	SI1	0.897	19.254	0.916	0.863	0.785
	SI2	0.900	25.279			
	SI3	0.859	24.742			
Attitude to computer (ATT)	ATT1	0.878	28.398	0.914	0.859	0.780
	ATT2	0.888	24.247			
	ATT3	0.884	25.256			
Behavior intention (BI)	BI1	0.876	22.224	0.870	0.775	0.690
	BI2	0.812	21.361			
	BI3	0.803	20.221			

Tabel 2 menunjukkan loading factor untuk masing-masing variabel pada kisaran 0,803 sampai dengan 0,900 yang merupakan nilai yang baik. Setiap variabel menunjukkan nilai yang hampir merata dan konsisten (Hair et al., 2006); (hair et al., 2014). Tabel 2 juga memuat informasi mengenai model pengukuran, seperti factor loading, nilai t, konsistensi internal, Cronbach's alpha, dan AVE (Average Variance Extracted). Validitas konvergen model pengukuran ditunjukkan dengan mengamati: (1) reliabilitas item; (2) keandalan komposit; dan (3) Average Variance Extracted (AVE). Untuk reliabilitas butir soal menggunakan nilai cronbach's alpha. Tabel 2 menunjukkan bahwa semua konstruk nilai alpha Cronbach lebih signifikan dari ambang batas 0,70. Setiap konstruk pada Tabel 2 memiliki reliabilitas komposit lebih besar dari 0,5, menunjukkan reliabilitas konsistensi

internal yang baik di antara variabel laten. Selanjutnya untuk menganalisis varians, AVE semua konstruk memiliki nilai lebih besar dari 0,5 yang menunjukkan bahwa item-item tersebut memenuhi kriteria validitas konvergen. AVE yang tinggi menunjukkan bahwa proses pengukuran pada model yang dikembangkan berkualitas tinggi dan dapat menjelaskan model tersebut.

Table 3
Results of discriminant validity based on Fornell–Larcker criterion results

	Attitude to computer	Behavior intention	Effort Expectancy	Performance Expectancy	Social Influence
Attitude to computer	0.883				
Behavior intention	0.820	0.831			
Effort Expectancy	0.787	0.725	0.841		
Performance Expectancy	0.773	0.760	0.710	0.871	
Social Influence	0.697	0.666	0.786	0.707	0.886

Analisis validitas diskriminan dalam penelitian ini menggunakan kriteria Fornell-Larcker, yaitu menggunakan akar kuadrat dari AVE untuk setiap variabel laten dan koefisien korelasi antar variabel lainnya. Pada Tabel 3, kriteria Fornell-Larcker untuk validitas diskriminan disajikan dengan menunjukkan matriks korelasi antar item (elemen diagonal mewakili akar kuadrat dari AVE). Elemen diagonal yang diamati lebih besar dari nilai korelasi lainnya antara variabel laten lainnya, sehingga memenuhi syarat validitas diskriminan. Namun, beberapa penelitian menunjukkan bahwa menggunakan kriteria Fornell-Larcker tidak cukup untuk analisis validitas diskriminan. Untuk menentukan validitas diskriminan, diperlukan rasio HTMT. Menurut Naveed dkk. (2020) dan Teo et al., (2008), nilai ambang batas maksimum untuk HTMT adalah 0,9. Tabel 4 menunjukkan statistik HTMT yang mendukung validitas diskriminan.

Table 4. Analisis validity discriminant measurement results menggunakan HTMT.

	Attitude to computer	Behavior intention	Effort Expectancy	Performance Expectancy	Social Influence
Attitude to computer	0.805				
Behavior intention	0.847	0.816			
Effort Expectancy	0.808	0.837	0.861		
Performance Expectancy	0.810	0.813	0.855		
Social Influence				0.828	

HASIL
Deskripsi responden dan variabel
Penelitian ini merupakan penelitian kuantitatif yang menggunakan reponden mahasiswa. Jumlah sampel yang digunakan adalah 250 mahasiswa yang berdomisili di Yogyakarta dan Sumatera Utara. Penelitian ini memiliki tujuan untuk menguji model behavior intention pada adopsi e-learning dengan tingkat anxiety yang tinggi. Kuesioner disebarkan pada responden yang memiliki tingkat anxiety pada pembelajaran e-learning dan menghabiskan rentang waktu mulai dari 10 hingga 20 menit dalam mengisi kuesioner. Tabel 5 menunjukkan data responden penelitian. Table 6 menunjukkan deskripsi dari masing-masing variable penelitian.

Table 5. Deskripsi responden

Items	Type	Frequency	Percentage
Jenis kelamin	Male	142	56.6%
	Female	108	43.4%
Umur	18–20	52	20.6 %
	21–22	100	40.0%
	23–25	48	19.2%
	26-up	50	20.2%
Pendidikan	Bachelor's	156	62.6 %
	Master's	94	37.4%

Table 6.
Descriptive statistics of variable

Nama variabel	Rerata	Deskripsi
Tingkat kebosanan	4.34	Merasa Gugup, cemas, atau gelisah
	4.38	Tidak dapat menghentikan atau mengendalikan rasa khawatir
Performance Expectancy (PE)	4.28	Memiliki ekspektasi kinerja yang tinggi
Effort Expectancy (EE)	4.28	Kemudahan menggunakan tinggi
Social Influence (SI)	4.09	Pengaruh orang lain tinggi
Attitude to computer (AC)	4.01	Sikap pada computer baik
Behavior intention (BI)	4.36	Niat menggunakan tinggi

Evaluating the Structural Model and Hypothesis Testing

Evaluasi model struktural pada Gambar 1 menunjukkan hubungan dari hipotetis antar variabel yang diajukan. Model dasar menggunakan teori UTAUT, yang dilakukan untuk mengtahu niat adopsi e-learning dalam kondisi anxiety.
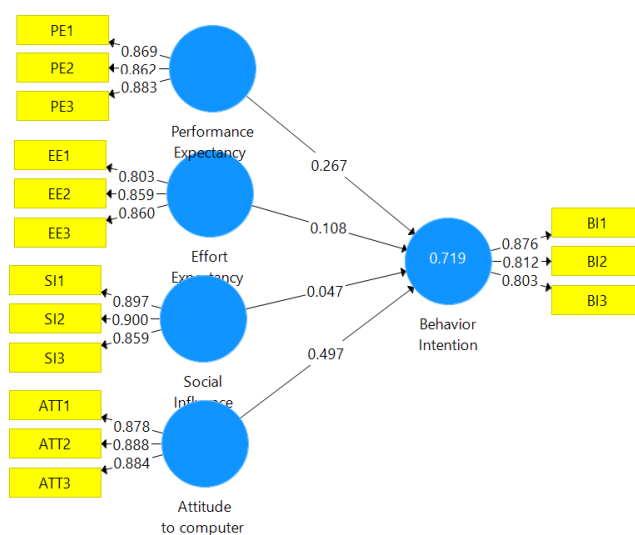
Gambar 1. Model niat adopsi e-Learning dalam kondisi kebosanan tinggi.

Gambar 1 menunjukkan model struktural berdasarkan yang memiliki 15 item. Hasil analisis model structural ditunjukkan pada table 7. Kesesuaian model yang dihasilkan dari Smart-PLS 3 menunjukkan kesesuaian yang dapat diterima. Hal ini ditunjukkan dari nilai R2 nya. Menurut Venkatesh et al., (2003) dan Alghazi et al., (2021) jika nilai R^2 lebih besar dari 0,67 dianggap tinggi, varians antara 0,33 hingga 0,67 dianggap sedang, sedangkan antara 0,19 dan 0,33 dianggap lemah. Secara keseluruhan, model yang diusulkan menyumbang 71,9% varians di niat menggunakan e-learning. Standardized Root Means Square Residual (SRMR) digunakan untuk menilai kecocokan model PLS. Kecocokan yang baik didefinisikan oleh nilai SRMR kurang dari 0,10 (Hu & Bentler, 1998). Nilai SRMR dalam penelitian adalah sebesar 0.065. Hu & Bentler (1998) menunjukkan bahwa model dianggap memenuhi kriteria model fit, jika nilai RMS Theta atau Root Mean Square Theta < 0,102 dan Nilai NFI > 0,9. Hasil penelitian ini menunjukkan bahwa nilai Theta sebesar 0.021 dan NFI sebesar 0.910. Sehingga menunjukkan model yang sangat cocok. Model memiliki keandalan, validitas, dan dapat menjelaskan hubungan yang dihipotesiskan sesuai dengan R^2 yang diukur. Tabel 7 menunjukkan informasi tentang pengaruh langsung pada setiap hubungan antar variabel.

Table 7.
Hypothesis testing of factors affecting the use of e-learning

Relationship	Path Coefficient	Sample Mean	Standard Deviation	t Statistic	p Values	Decision of Hypothesis
Attitude to computer → Behavior Intention	0.497	0.492	0.072	6.919	0.000	Significant
Effort Expectancy → Behavior Intention	0.108	0.110	0.064	2.693	0.041	Significant
Performance Expectancy → Behavior Intention	0.267	0.270	0.062	4.332	0.000	Significant
Social Influence → Behavior Intention	0.047	0.046	0.062	0.746	0.456	Not Significant

Tabel 7 menunjukkan nilai koefisien jalur, standar deviasi rata-rata sampel, t-statistik dan tingkat signifikansi (nilai p). Karena tidak semua jalur memiliki t-statistik yang lebih besar dari 1,96 dan p-value kurang dari 0,05, maka tidak semua jalur menunjukkan hasil yang signifikan. Attitude to computer menunjukkan pengaruh positif yang signifikan terhadap BI (mendukung Hipotesis 1). Effort Expectancy memiliki pengaruh positif signifikan terhadap BI (mendukung Hipotesis 2). Performance Expectancy memiliki pengaruh positif signifikan terhadap BI (mendukung Hipotesis 3). Social Influence tidak memiliki pengaruh positif signifikan terhadap BI (tidak mendukung Hipotesis 4).

D. **STATUS LUARAN**: Tuliskan jenis, identitas dan status ketercapaian setiap luaran wajib dan luaran tambahan (jika ada) yang dijanjikan. Jenis luaran dapat berupa publikasi, perolehan kekayaan intelektual, hasil pengujian atau luaran lainnya yang telah dijanjikan pada proposal. Uraian status luaran harus didukung dengan bukti kemajuan ketercapaian luaran sesuai dengan luaran yang dijanjikan. Lengkapi isian jenis luaran yang dijanjikan serta mengunggah bukti dokumen ketercapaian luaran wajib dan luaran tambahan melalui BIMA.

(1) Luaran Wajib:
   Terbit di Jurnal Scopus. (Jurnal scopus baru sehingga belum ada Q-nya)
   Nama jurnal: RIBER journal
   Judul artikel: Intention to Adopt E-Learning with Anxiety: UTAUT Model
   URL: http://buscompress.com/riber-11-s3.html
   Artikel sedang disubmit di Scopus oleh penerbitnya, sehingga DOI belum muncul.

(2) Luaran tambahan (1)
   Prosiding international conference
   Status: Terbit
   Nama conference: SIBR SEOUL 2022 CONFERENCE
   Lembaga penyelenggara: The Society of Interdisciplinary Business Research
   ISSN: 2304-1013
   URL: http://w.sibresearch.org/past-2022-seoul.html
   Judul: Information System Adoption on Higher Education in Indonesia

(3) Luaran tambahan (2)
   Judul Buku   : MODEL KESUKSESAN E-LEARNING PADA PERGURUAN TINGGI
   No ISBN   : 978-623-466-140-8
   Penerbit   : ZAHIR PUBLISHING (Anggota IKAPI D.I. Yogyakarta, No. 132/DIY/2020)

Intention to Adopt E-Learning with Anxiety: UTAUT Model

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ABSTRACT

This study aims to analyze the Intention model to adopt e-Learning in students with anxiety levels using computers. This study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model to examine several variables that affect the Intention to adopt e-learning in students with high levels of boredom on the computer. Several variables were used to predict. Intentions are performance expectation (PE), effort expectation (EE), Attitude towards use (ATU), and social influence. This study used 250 student respondents in South Sumatra and Yogyakarta, Indonesia. Each respondent is described as having a high level of boredom in using the computer. The analytical tool used is structural equation modeling (SEM), namely PLS-SEM. The results show that UTAUT can explain the Intention to adopt e-learning among students with general anxiety. The results of this study also show that performance expectations (PE), effort expectations (EE), and attitudes towards the use (ATU) of e-learning have a significant effect on the Intention to adopt e-learning. Social influence has no significant effect on behavioral Intention. UTAUT can be used as a feasible integrated theoretical framework, adequately designed and implemented in studies using SEM-PLS statistical analysis. UTAUT is very helpful as a future framework in designing and promoting the adoption and use of e-learning technologies among students.
Keywords: PE, EE, anxiety, Attitude, social influence, and Intention.

1. INTRODUCTION

Learning and teaching technology have shown significant acceptance under the COVID-19 pandemic. E-learning technology allows students and teachers to conduct remote learning on an unprecedented scale. Both lecturers and students feel the condition of social restrictions. Universities should rethink using available technology resources to provide higher education services and benefit from those services (Ayuni & Mulyana, 2019). This sudden change has put unprecedented pressure on Internet infrastructure and e-learning platforms (Favale et al., 2020); (Sugandini et al., 2022). Students are more aware of the uses and advantages of e-learning (Al-Fraihat et al., 2020). However, e-learning can cause tremendous difficulties for students and lecturers. Students often become isolated and alienated because of their reluctance to participate in online communities. The online community can stem from several factors, such as personality, sense of transactional distance in the online

environment, lack of trust and confidence in participants in the online community, lack of nonverbal communication, connection difficulties, poor writing skills, and language barriers (Rasheed et al., 2019). For lecturers, preparing online courses is much more time-consuming than preparing for face-to-face learning in class (Guri-Rosenblit, 2018). E-Learning is considered a future educational paradigm as an alternative to higher education standards developed for future generation Z (Dhawan, 2020). However, current e-learning developments are imperfect, and many scholars question the readiness for the future massive adoption of e-learning in higher education (Rapanta et al., 2020; Scherer et al., 2021). The shift in education to e-learning has caused tremendous difficulties for universities and has sparked comprehensive research discussions. Students' mental health vulnerabilities in e-learning environments and complex stresses were also revealed in online learning during the COVID-19 outbreak (Ayuni & Mulyana, 2019). According to Li et al. (2021), the prevalence of depression and anxiety for college students worldwide was 39% and 36%, respectively, during the COVID-19 pandemic. Thus, the effect of anxiety on e-learning adoption cannot be ignored. Technology anxiety, according to (Troisi et al., 2022), is a barrier to technology acceptance that can be a significant predictor or determinant of behavioral Intention. Technology anxiety is defined as a user's emotional state, such as nervousness, uncertainty, and fear related to learning to use technology. This concern arises because technology has negative consequences, such as losing important data or making mistakes. Anxiety can lead to technology rejection and technophobia, adverse emotional reactions to technology, and technostress (Daruwala, 2020); (Troisi et al., 2022).

Technology anxiety is a negative affective state towards technology that produces negative emotions (Davis, 1989). Low technology skills, trust in using technology, privacy, cost, technology dependence, and organizations that adopt technology are the causes of technology resistance or anxiety. On the other hand, technology anxiety can also negatively affect scores, privacy risks, and learning costs, and both are determinant factors that contribute negatively to the Attitude toward technology adoption (Ghasemaghaei, 2020). Because e-learning is a new technology for students, the learning process may be a perceived obstacle for them to adopt it. For students, perceived negative values will increase technology anxiety, and students assume that their previous knowledge is insufficient to adopt the application quickly. In addition, the perception of learning costs not only occurs before adoption but can also remain after (Hu et al., 2022).

This study continuously analyzes the Intention to use e-learning in students with high anxiety levels. The basic theory used is the Unified Theory of Acceptance and Use of Technology (UTAUT) model. This research is necessary because it can provide novelty related to the influence of anxiety as a control variable that affects the Intention to adopt e-learning. This research is expected to cover the shortcomings of previous research that has not involved the anxiety factor in the success of e-learning adoption. In addition, universities in new normal conditions after the Covid-19 pandemic also need information related to the sustainability of e-learning for their institutions. Previous research conducted by Hu et al. (2022); Abdous (2019), and Inan et al. (2022) show that anxiety can cause failure in e-learning adoption even though e-learning adoption is forced to be adopted as a form of learning during the Covid-19 pandemic. This study uses anxiety as an individual internal variable that e-learning users feel, but this variable is not included in the research model. Anxiety is used as a control variable. The goal is to choose users with a high level of anxiety so that this study can justify the Intention to adopt e-learning for users already saturated with e-learning. Thus, the results of this study can be used by universities to make policies for modifying hybrid learning. Hybrid learning is learning that practices online and face-to-face methods together. Researchers choose students who have a high level of saturation because researchers want to justify whether the Intention to adopt e-learning can be predicted by performance expectations (PE), social influence (SI), effort expectancy (EE), and attitudes towards the use (ATU). Previous research has analyzed these factors in the user's assumed good emotional state.

2. LITERATURE REVIEW

2.1. UTAUT and Intention to adopt

The basic concept underlying UTAUT is the Intention to use information technology. The Intention is a direct predictor of actual technology use. Behavioral intentions are conceptualized as technology acceptance (Venkatesh et al., 2003). Intention to adopt e-learning is defined as a person's Intention to adopt and use e-learning technology in the future (Al-Mamary, 2022); (Sugandini et al., 2022). UTAUT states that there are four main determinants of technology acceptance and use, namely: 1) The expected benefits that individuals will receive from using technology (Performance Expectancy), 2) the expected ease of use of technology (Effort Expectancy), 3) a significant perception of others to believe that technology should be used (Social Influence) and 4) expected technical support when using technology (Facilitation Conditions). Other moderating control factors were: age, gender, experience, and voluntary use (Venkatesh et al., 2003). The UTAUT model was initially developed and formulated in a workplace context (Venkatesh et al., 2003), but some have successfully applied UTAUT to the field of digitalization of education (Wijaya et al., 2022); (Al-Mamary, 2022); and (Shaqrah & Almars, 2022).

2.2. Attitudes towards the use of e-learning

Attitudes toward the use are the level of a person's positive or negative feelings about the target behavior (Davis, 1989). Attitude describes a positive or negative disposition toward a person, object, or situation. Attitude is an individual characteristic that describes positive or negative behavior and is a reflection of feelings and knowledge

about a particular object (Grimaldo & Uy, 2020). Previous research has found a significant relationship between attitudes and intentions to use technology (Wijaya et al., 2022). Users tend to develop their behavior based on the dispositions set on a technology (Andrews et al., 2021). Another finding shows that Attitude is a significant predictor of students' Intention to use E-learning and plays an essential role in student learning in the classroom. Hussein (2017) asserts that students' attitudes toward computers influence the Intention and perception of using e-learning.

H1: Attitudes towards the use of e-learning affect the Intention to use e-learning

2.3. Effort expectancy (EE)

Effort expectancy is the level of ease associated with the use of technology. Effort expectancy is another essential variable that builds behavioral intentions toward technology (Al-Mamary, 2022). Effort expectancy determines the ease of connecting with technology (Venkatesh et al., 2003). Venkatesh, Thong, & Xu (2016) show that the relationship between Effort expectancy and behavioral Intention is often found to be significant and positive. Meanwhile (Khechine et al., 2020) found an insignificant relationship between Effort expectancy and behavioral intentions. Ain et al. (2016) showed a non-significant relationship between Effort expectancy and behavioral intentions in the context of learning management systems and new technologies. (Wijaya et al., 2022) conducted a study to analyze the behavioral Intention of mathematics teachers in using micro-lectures in mathematics in China. The Unified Theory of Acceptance and Use of Technology (UTAUT) model is used as the design model. The results of his research show that Performance Expectancy, Effort Expectancy, and social influence affect behavioral Intention.

H2: Effort expectancy affects Intention to use e-learning

2.4. Performance expectations (PE)

Performance expectancy is the extent to which individuals believe that using the system will help to achieve gains in performance (Venkatesh et al., 2003). UTAUT, introduced by Venkatesh (2003), is a model that predicts user intention to use e-learning. UTAUT proposes two significant factors that influence behavioral Intention to use: performance expectations and effort expectations. Performance expectations are similar to perceived usefulness in TAM and refer to users' perceptions of how much information technology helps in their work. Effort expectations are the opposite of perceived ease of use in TAM, i.e., user-perceived effort to use information technology. Venkatesh et al. (2003) argue that performance and business expectations significantly influence users' behavioral Intention of users to use information technology. (Inan et al., 2022) conducted a study to test the adoption of IoT applications for educational purposes focusing on student perspectives at Taibah University Malaysia. The results showed that social support facilitated conditions, innovativeness, and effort expectancy substantially affected the acceptance and use of the respective IOET applications.

Meanwhile, performance expectations and perceived usefulness have the weakest effect on IoT adoption. Aqlan et al. (2021) show the results of a study on the effect of performance expectations on Intention to use technology. The study results state that Performance Expectancy determines a person's Attitude toward using this information system. The same report shows that performance expectations have a substantial and beneficial impact on someone who adopts behavioral goals and utilizes IT systems (Al-Mamary, 2022). Other similar studies have concluded that performance expectations will change their perception of adopting learning management systems.

H3: Performance expectations affect the Intention to use e-learning

2.5. Social influence

Social influence is the level of importance felt by individuals over the trust of others for them to use new technology (Venkatesh et al., 2003). Social influence consists of subjective norms, social factors, and image. Awang Kader et al. (2022) found that social influence did not affect technostress. In addition, most respondents admitted that other people or friends did not influence the decision to use online learning because it was mandatory during the COVID-19 outbreak. Furthermore, most respondents agreed that social influence did not influence their decision to use online learning as it has become mandatory to use the platform for learning and teaching during the COVID-19 lockdown. Haron et al. (2021) revealed a correlation between social influence and technostress and affected the Intention to adopt online learning.

H4: Social influence affects the Intention to use e-learning.

3. RESEARCH METHOD

3.1. Research participants

The research was conducted by distributing survey questionnaires to Yogyakarta students and South Sumatra Indonesia using Google Forms. A total of 250 were obtained for further analysis.

3.2. Instrument development.

The questionnaire used in this study consisted of two parts. Section 1 focuses on gathering the basic demographics of the respondents, including (1) gender, (2) age, and (3) education. Section 2 discusses five research variables: performance expectations, effort expectations, social influence, attitudes to computers, and behavioral intentions to use continuously. Respondents were asked to rate the strength of their identification with questionnaire items

on a 5-point Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree). Table 1 shows the questionnaire items and their references.

Table 1. Research variables and questionnaire items.

Variables	Questionnaire items	References
Attitude to the computer (ATT)	ATT1: I believe that using a computer is a good idea. ATT2: I believe that using a computer is recommended ATU3: I am satisfied with using the computer.	(Hu et al., 2022)
Effort Expectancy (EE)	EE1: Using the e-learning app is easy EE2: The user interface and application function menu are easy to use EE3: Using e-learning apps to learn is easy.	(Huang & Chueh, 2022): (Akinnuwesi et al., 2022)
Performance Expectancy (PE)	PE1: Using the app is very helpful for studying PE2: Using the app can improve my skills PE3: Using the app allows me to learn quickly	(Huang & Chueh, 2022): (Akinnuwesi et al., 2022)
Social Influence (SI)	SI1: My lecturer encourages me to use the app to study SI2: My classmate uses the app to study. SI3: A lot of learning people will use apps to do it.	(Huang & Chueh, 2022):
Behavior intention (BI)	BI1: I am willing to continue using the app to study BI2: I will continue to use e-learning in the future BI3: I intend to continue using e-learning in the future, at least as actively as today	(Huang & Chueh, 2022); (Hu et al., 2022)
Anxiety	AN1: Feeling Nervous, anxious, or restless AN2: Unable to stop or control worry	(Hu et al., 2022)

3.3. Measures

This study uses Smart-PLS with a Structural Equation Model (SEM) approach to test the hypothesis. This approach is often used in social science studies because of its accuracy in analyzing psychometric models. According to Kim & Lee (2020) and (Wijaya et al., 2022), Smart-PLS is used for the following reasons: (1) hypothesis testing can be performed if the distribution is not normal; (2) it can be used with less than three items, and (3) can be used regardless of sample size. The PLS-SEM step consists of reflective measurement and structural model assessment. The assessment of the reflective measurement model revealed the loading of reflective indicators, the reliability of internal consistency consisting of Cronbach's alpha and composite reliability, convergent validity through Average Variance Extracted, and discriminant validity using the Heterotrait-Monotrait Ratio (HTMT).

Meanwhile, statistical assessments such as VIF values, path coefficients, t-statistics, and p-values were used to evaluate the structural model. The t-test was used to assess the significance of the relationship between variables. The reliability of the questionnaire structure uses the Cronbach value of each variable to verify the internal consistency between the questionnaire items.

Table 2

Results of loading factor, validity, and reliability

Latent Variable	Indicator	Loading	t-Value	Composite Reliability	Cronbach's Alpha	AVE
Performance Expectancy (PE)	PE1	0.869	20.826	0.904	0.842	0.759
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	BI2	0.812	21.361			
	BI3	0.803	20.221			

Table 2 shows the loading factor for each variable in the range of 0.803 to 0.900, which is a good value. Each variable shows a value that is almost evenly distributed and consistent (Hair et al., 2006); (Hair et al., 2014). Table 2 also contains information about the measurement model, such as factor loading, t-value, internal consistency, Cronbach's alpha, and AVE (Average Variance Extracted).

The convergent validity of the measurement model is shown by observing: (1) item reliability, (2) composite reliability, and (3) Average Variance Extracted (AVE). For the reliability of the items using Cronbach's alpha value. Table 2 shows that all constructs of Cronbach's alpha value are more significant than the threshold of 0.70. Each construct in Table 2 has composite reliability greater than 0.5, indicating good internal consistency reliability among latent variables. Furthermore, to analyze the variance, the AVE of all constructs has a value greater than 0.5, indicating that these items meet the criteria of convergent validity. A high AVE indicates that the measurement process in the developed model is of high quality and can explain the model.

Table 3
Results of discriminant validity based on Fornell–Larcker criterion results

	Attitude to computer	Behavior intention	Effort Expectancy	Performance Expectancy	Social Influence
Attitude to computer	0.883				
Behavior intention	0.820	0.831			
Effort Expectancy	0.787	0.725	0.841		
Performance Expectancy	0.773	0.760	0.710	0.871	
Social Influence	0.697	0.666	0.786	0.707	0.886

The discriminant validity analysis in this study uses the Fornell-Larcker criteria, which uses the square root of the AVE for each latent variable and the correlation coefficient between other variables. In Table 3, the Fornell-Larcker criteria for discriminant validity are presented by showing the correlation matrix between items (diagonal elements represent the square root of the AVE). The observed diagonal element is greater than the other correlation values between other latent variables, thus fulfilling the discriminant validity requirements. However, several studies have shown that using the Fornell-Larcker criteria is insufficient for discriminant validity analysis. The HTMT ratio is required to determine discriminant validity. According to Naveed et al. (2020) and Teo et al. (2008), the maximum threshold value for HTMT is 0.9. Table 4 shows the HTMT statistics that support discriminant validity.

Table 4.
Additional validity discriminant measurement results based on HTMT.

	Attitude to computer	Behavior intention	Effort Expectancy	Performance Expectancy
Attitude to computer	0.805			
Behavior intention	0.847	0.816		
Effort Expectancy	0.808	0.837	0.861	
Performance Expectancy	0.810	0.813	0.855	
Social Influence				0.828

4. RESULTS

4.1. Description of respondents and variables

This research is a quantitative research that uses student respondents. The number of samples used is 250 students who live in Yogyakarta and North Sumatra. This study aims to examine the behavioral intention model on e-learning adoption with a high level of anxiety. Questionnaires were distributed to respondents who had anxiety levels in e-learning learning and spent a time ranging from 10 to 20 minutes filling out the questionnaire. Table 5 shows the data of research respondents, and table 6 describes each research variable.

Table 5.
Descriptive statistics of respondents

Items	Type	Frequency	Percentage
Gender	Male	142	56.6%
	Female	108	43.4%
Age	18–20	52	20.6 %
	21–22	100	40.0%
	23–25	48	19.2%
	26-up	50	20.2%
Education	Bachelor's	156	62.6 %
	Master's	94	37.4%

Table 6.
Descriptive statistics of variable

Variable name	Mean	Description
Anxiety	4.34	Feeling Nervous, anxious, or on edge
	4.38	Not being able to stop or control worrying
Performance Expectancy (PE)	4.28	Have high-performance expectations
Effort Expectancy (EE)	4.28	A high ease of use
Social Influence (SI)	4.09	The influence of others is strong
Attitude to the computer (AC)	4.01	Attitude on the computer is good
Behavior intention (BI)	4.36	Intention to use high

4.2. Evaluating the Structural Model and Hypothesis Testing
The evaluation of the structural model in Figure 1 shows the hypothetical relationship between the proposed variables. The basic model uses the UTAUT theory, which is carried out to determine the Intention to adopt e-learning in anxiety conditions.
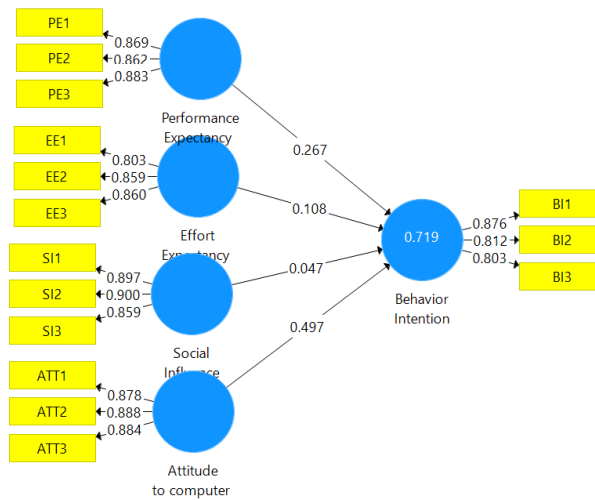
Figure 1. The conceptual framework model

Figure 1 shows a structural model based on which has 15 items. The results of the structural model analysis are shown in table 7. The suitability of the model generated from Smart-PLS 3 shows acceptable suitability. Its R2 value indicates this. According to Venkatesh et al. (2003) and Alghazi et al. (2021), if the R^2 value greater than 0.67 is considered high, the variance between 0.33 to 0.67 is considered moderate, while between 0.19 and 0. 33 is considered weak. The proposed model accounts for 71.9% of the variance in Intention to use e-learning. Standardized Root Means Square Residual (SRMR) was used to assess the suitability of the PLS model. A good fit is defined by an SRMR value of less than 0.10 (Hu & Bentler, 1998). The SRMR value in the study was 0.065. Hu & Bentler (1998) show that the model meets the model fit criteria if the RMS Theta or Root Mean Square Theta value is < 0.102 and the NFI value is > 0.9. The results of this study indicate that the Theta value is 0.021, and the NFI is 0.910. So, it shows a very suitable model. The model has reliability and validity and can explain the hypothesized relationship according to the measured R^2. Table 7 shows information about the direct effect on each relationship between variables.

Table 7.
Hypothesis testing of factors affecting the use of e-learning

Relationship	Path Coefficient	Sample Mean	Standard Deviation	t Statistic	p Values	Decision of Hypothesis
Attitude to the computer → Behavior Intention	0.497	0.492	0.072	6.919	0.000	Significant
Effort Expectancy → Behavior Intention	0.108	0.110	0.064	2.693	0.041	Significant
Performance Expectancy → Behavior Intention	0.267	0.270	0.062	4.332	0.000	Significant
Social Influence → Behavior Intention	0.047	0.046	0.062	0.746	0.456	Not Significant

Table 7 shows the path coefficient values, the standard deviation of the sample mean, t-statistics, and the significance level (p-value). Because not all paths have t-statistics greater than 1.96 and p-values less than 0.05, not all paths show significant results. The results of this study indicate that Attitude to the computer, effort expectancy, and performance expectancy significantly positively affects behavioral Intention (supporting Hypothesis 1,2,3). Social Influence does not have a significant positive effect on behavioral Intention (does not support Hypothesis 4).

5. DISCUSSION AND IMPLICATION

The research focuses on behavior intention in using e-learning with anxiety conditions in users. This study identifies factors in the UTAUT model that can affect behavior intention in using e-learning. The results of this study are broadly consistent with the results of other studies on the acceptance of e-learning technology. There is only one path that is not significant, namely social influence. The results of this study indicate that the effect of performance expectancy on BI is a significant positive. The result shows that although students are at a high level of anxiety due to the obligation to use e-learning, students' perceptions of the ability of e-learning to help to learn become good. The results of this study are consistent with the research findings of Venkatesh et al. (2003), Al-Mamary (2022), and Wijaya et al. (2022). The results of the second research show a significant effect of effort expectancy on behavior intention. Students consider that, overall, e-learning is easy to use and does not require significant effort to apply. The influence of EE on BI is relatively low, around 10.8%. This means that students during the two years of the pandemic and using online learning felt that they were used to this application, so they had not experienced many failures in running it.

The results of this study support (Al-Mamary, 2022); (Venkatesh et al., 2003); (Khechine et al., 2020) and (Wijaya et al., 2022). Social influence does not have a significant relationship with BI. This is because e-learning is a condition of necessity or involuntariness. So, the presence or absence of the influence of others has no impact on the Intention to use because users are forced to use this application (Venkatesh et al., 2003). So that other people's influence in using e-learning becomes useless or insignificant. Students will continue to use e-learning even though the social influence is not supportive, and vice versa. The results showed that in anxiety conditions, it turned out that a good attitude towards computers had the most significant influence in forming intentions to use e-learning. An interest in computers can overcome boredom due to using e-learning applications for too long. The results of this study are consistent with those of Wijaya et al. (2022), Andrews et al. (2021), and Hussein (2017). They confirmed that good intentions and attitudes in computer applications have a significant relationship.

6. CONCLUSIONS AND LILITATION

6.1. Conclusions
The primary purpose of this study is to examine behavior intention in a structural model influenced by Attitude to computers, PE, EE, and social influence. The results of model testing indicate that the fit model is met, which means that the model can explain the various variables used and has good validity and reliability. Three variables influence behavior intention: PE, EE, and Attitude to the computer, and one variable, social influence, is not significant in influencing behavior intention.

6.2. Limitations And Future Research
In this study, the sample was limited to students with a high level of anxiety. However, the proposed research model has not analyzed the moderating effect of this anxiety. So the researcher cannot justify further related the moderating effect of anxiety on each relationship between the observed variables. This study also did not analyze the moderating effect of experience. The results of a survey conducted by researchers show that the experience of using e-learning is one of the factors that cause students to reduce anxiety in using e-learning. Another limitation of this study is that the researcher did not use negative statements in the questionnaire, which might lead to inconsistencies in respondents' answers. Further research recommends using other methods such as interviews and observation to ensure more specific and convincing results. In future research, it is necessary to conduct further research on no significant social influence on behavior intention, and the influence of social influence needs to be studied further.

REFERENCES

Abdous, M. (2019). Influence of satisfaction and preparedness on online students' feelings of anxiety. *The Internet and Higher Education*, Volume. 41, pp. 34–44. https://doi.org/10.1016/J.IHEDUC.2019.01.001

Ain, N., Kaur, K., & Waheed, M. (2016). The influence of learning value on learning management system use: An extension of UTAUT2. *Information Development*, 32(5), 1306–1321. https://doi.org/10.1177/0266666915597546

Akinnuwesi, B. A., Uzoka, F.-M. E., Fashoto, S. G., Mbunge, E., Odumabo, A., Amusa, O. O., Okpeku, M., & Owolabi, O. (2022). A modified UTAUT model for the acceptance and use of digital technology for tackling COVID-19. *Sustainable Operations and Computers*, Volume 3, pp. 118–135. https://doi.org/10.1016/J.SUSOC.2021.12.001

Al-Fraihat, D., Joy, M., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. *Computers in Human Behavior*, Volume. 102, pp. 67-86. https://doi.org/10.1016/j.chb.2019.08.004

Alghazi, S.S., Kamsin, A., Almaiah, M.A., Wong, S.Y., & Shuib, L. (2021). For sustainable application of mobile learning: An extended UTAUT model to examine the effect of technical factors on the usage of mobile devices as a learning tool. *Sustainability*. Volume 13, pp. 1856. https://doi.org/10.3390/su13041856.

Al-Mamary, Y. H. S. (2022). Understanding the use of learning management systems by undergraduate university students using the UTAUT model: Credible evidence from Saudi Arabia. *International Journal of Information Management Data Insights*, 2(2), 100092. https://doi.org/10.1016/J.JJIMEI.2022.100092

Andrews, J. E., Ward, H., & Yoon, J. W. (2021). UTAUT as a Model for Understanding Intention to Adopt AI and Related Technologies among Librarians. *The Journal of Academic Librarianship*, volume. 47 (6), 102437. https://doi.org/10.1016/J.ACALIB.2021.102437

Aqlan, A. A., Al-Hakimi, W., Grada, M., Abdulrab, M., Al-Mamary, Y., & Alquhaif, A. S. Factors affecting behavioral Intention to use Learning Management Systems by instructors. *Dimensión Empresarial*, Volume 19 (2), 10.15665/dem.v19i2.2728

Awang Kader M. A. R. ., Abd Aziz, N. N., Mohd Zaki, S., Ishak, M., & Hazudin, S. F. (2022). The effect of technostress on online learning behaviour among undergraduates. *Malaysian Journal of Learning and Instruction*, 19 (1), pp. 183–211. https://doi.org/10.32890/mjli2022.19.1.7

Ayuni., V. D & Mulyana, A. (2019). Applying Service Quality Model as a Determinant of Success in E-learning: The Role of Institutional Support and Outcome. *Review of Integrative Business and Economics Research*, Vol. 8, Supplementary Issue 1. Pp. 145

Daruwala, N. A. (2020). Generation Lockdown: Exploring possible predictors of technology phobia during the Coronavirus self-isolation period Generation Lockdown: Exploring possible predictors of technology phobia during the Coronavirus self-isolation period. *Aloma: Revista de Psicologia, Ciències de l'Eduació i de l'Esport*. Vol.38. Nno.1. DOI:10.51698/ALOMA.2020.38.1.15-19

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*. Vol. 13, No. 3, pp. 319-340. https://doi.org/10.2307/249008

Dhawan, S., (2020). Online learning: a panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems.* Volume 49 (1), pp 5–22. https://doi.org/10.1177/0047239520934018

Favale, T., Soro, F., Trevisan, M., Drago, I., & Mellia, M. (2020). Campus traffic and eLearning during COVID-19 pandemic. *Computer Networks*, Volume 176, 107290. DOI:10.1016/j.comnet.2020.107290

Ghasemaghaei, M. (2020). The impact of in-depth online recommendation agents on consumer disorientation and cognitive absorption perceptions. Behaviour & Information Technology. Vol 39. (4). DOI: 10.1080/0144929X.2019.1598496

Grimaldo, J. R., & Uy, C. (2020). Factors Affecting Recruitment Officers' Intention to Use Online Tools. *Review of Integrative Business and Economics Research*, Vol. 9, Supplementary Issue 1. Pp. 1269.

Guri-Rosenblit, S. (2018). E-Teaching in Higher Education: An Essential Prerequisite for E-Learning. *Journal of New Approaches in Educational Research*, Volume 7(2), pp. 93-97. DOI: 10.12691/education-8-7-2

Hair, J.; Black, B.; Babin, B.; Anderson, R.E.; Tatham, R.L. *Multivariate Data Analysis*, 6th ed.; Prentice Hall: Hoboken, NJ, USA, 2006.

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128

Haron, H. @ N., Masrom, M., Ya'acob, S., & Sabri, S. A. (2021). The Challenges and Constraints of Online Teaching and Learning in the New Normal Environment. *International Journal of Academic Research in Business and Social Sciences*, 11(4), 1284–1295. http://dx.doi.org/10.6007/IJARBSS/v11-i4/9825.

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to under parameterized model misspecification. *Psychological Methods*, 3(4), 424–453. https://doi.org/10.1037/1082-989X.3.4.424

Hu, X., Zhang, J., He, S., Zhu, R., Shen, S., & Liu, B. (2022). E-learning intention of students with anxiety: Evidence from the first wave of COVID-19 pandemic in China. *Journal of Affective Disorders*, Volume. 309, pp. 115–122. https://doi.org/10.1016/J.JAD.2022.04.121

Huang, D. H., & Chueh, H. E. (2022). Behavioral Intention to continuously use learning apps: A comparative study from Taiwan universities. *Technological Forecasting and Social Change*, Volume 177, 121531. https://doi.org/10.1016/J.TECHFORE.2022.121531

Hussein, Z. (2017). Leading to Intention: The Role of Attitude in Relation to Technology Acceptance Model in E-Learning. *Procedia Computer Science*, Volume. 105, 159–164. https://doi.org/10.1016/j.procs.2017.01.196

Inan, D. I., Nizar Hidayanto, A., Juita, R., Andiyani, K., Hariyana, N., Tiffany, P., Prima Tangis Pertiwi, T., & Kurnia, S. (2022). Technology anxiety and social influence towards Intention to use of ride-hailing service in Indonesia. *Case Studies on Transport Policy*. https://doi.org/10.1016/J.CSTP.2022.05.017

Khechine, H., Raymond, B., & Augier, M. (2020). The adoption of a social learning system: Intrinsic value in the UTAUT model. *British Journal of Educational Technology*, *51*, 2306–2325. https://doi.org/10.1111/bjet.12905

Kim, J., & Lee, K.S. (2020). Conceptual model to predict Filipino teachers' adoption of ICT-based instruction in class: Using the UTAUT model. *Asia Pacific Journal of Education*. 1–15. https://doi.org/10.1080/02188791.2020.1776213

Li, Y., Wang, A., Wu, Y., Han, N., & Huang, H. (2021). Impact of the COVID-19 pandemic on the mental health of college students: A systematic review and meta-analysis. *Frontiers in Psychology*, 12. DOI: 10.3389/fpsyg.2021.669119

Naveed, Q. N.; Alam, M. M., Tairan, N. (2020). Structural equation modeling for mobile learning acceptance by university students: An empirical study. *Sustainability*. Volume 12(20), 8618; https://doi.org/10.3390/su12208618

Qiao, P., Zhu, X., Guo, Y., Sun, Y., & Qin, C. (2021). The Development and Adoption of Online Learning in Pre- and Post-COVID-19: Combination of Technological System Evolution Theory and Unified Theory of Acceptance and Use of Technology. *Journal of Risk and Financial Management*, 14(4), 162. https://doi.org/10.3390/jrfm14040162

Rapanta, C., Botturi, L., Goodyear, P., Gu'ardia, L., Koole, M. (2020). Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity. *Postdigital Science and Education*. Volume 2, pp. 923–945. https://doi.org/10.1007/s42438-020-00155-y

Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2019). Challenges in the Online Component of Blended Learning: A Systematic Review. *Computers & Education*, Volume 144, https://doi.org/10.1016/j.compedu.2019.103701

Scherer, R., Howard, S.K., Tondeur, J., Siddiq, F. (2021). Profiling teachers' readiness for online teaching and learning in higher education: Who's ready? *Computers in Human Behavior*. Volume 118, 106675. https://doi.org/10.1016/j.chb.2020.106675

Shaqrah, A., & Almars, A. (2022). Examining the internet of educational things adoption using an extended unified theory of acceptance and use of technology. *Internet of Things*, Vol. 19, 100558. https://doi.org/10.1016/J.IOT.2022.100558

Sugandini, D., Garaika., & Istanto, Y. (2022). E-Learning System Success Adoption in Indonesia Higher Education. *Academic Journal of Interdisciplinary Studies*, 149–158. https://doi.org/10.36941/ajis-2022-0013

Teo, T.S.H.; Srivastava, S.C.; Jiang, L. (2008). Trust and electronic government success: An empirical study. *Journal of Management Information System*. Volume 25, 2008 - Issue 3, pp. 99–132. https://doi.org/10.2753/MIS0742-1222250303.

Troisi, O., Fenza, G., Grimaldi, M., & Loia, F. (2022). Covid-19 sentiments in smart cities: The role of technology anxiety before and during the pandemic. *Computers in Human Behavior*, Volume. 126, 106986. https://doi.org/10.1016/J.CHB.2021.106986

Venkatesh, V.; Morris, M.G.; Davis, G.B.; Davis, F.D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*. Vol. 27, No. 3, pp. 425-478. https://doi.org/10.2307/30036540

Wijaya, T. T., Cao, Y., Weinhandl, R., Yusron, E., & Lavicza, Z. (2022). Applying the UTAUT Model to Understand Factors Affecting Micro-Lecture Usage by Mathematics Teachers in China. *Mathematics*. Vol. 10. Issue 7. 1008. https://doi.org/10.3390/math10071008

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Information System Adoption on Higher Education in Indonesia

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Abstract

This study examines the adoption model of information system by the academic community at universities in Indonesia, which involves technology readiness, information quality, innovativeness, usefulness, and leadership support. This research explores blended learning in Higher Education after the COVID-19 pandemic. This research was conducted under conditions that require the academic community to carry out blended learning. The respondents of this study were 300 people consisting of students, e-learning staff, and lecturers in Indonesia. The structured questionnaire was made on a five-point Likert scale. This study uses a single trait multi-method. The analytical tool used is a structural equation using a two-step approach to SEM. The survey results show that the blended learning adoption model is acceptable. The hypotheses proposed in this study were all accepted. Technology readiness, information quality, innovativeness, and leadership support significantly affect the usefulness and adoption of blended learning. The originality of this research is in using a single trait multi-method to bridge several research findings related to the adoption of blended learning, which forces all college academics to adopt it. This study's novelty is related to exploring individual internal and external factors in one model to predict the successful adoption of blended learning. The use of these two factors is expected to improve the prediction of successful adoption of blended learning better. This study will help understand the blended learning that must be intensified due to the sudden outbreak and help prepare a roadmap at the policy level that is useful for students, lecturers, and e-learning staff in Higher Education.
Keywords: Innovativeness, adoption information system, and blended learning.

1. Introduction

The COVID-19 pandemic has forced universities to conduct online or blended learning for the sake of continuous learning in the future. The COVID-19 pandemic lasted approximately two years and has changed online learning in Indonesia. Two years of this covid pandemic have passed, and students have started wanting face-to-face lectures again. Although e-learning has many benefits, it is psychologically wrong. Students lose time and playmates. Emotional closeness and intimacy with peers cannot be obtained without face-to-face interaction. These students have lost a lot of togetherness and experience while undergoing online lectures. Many students do not know each other, even though they are in a learning class. Indonesian people who are famous for their friendly nature and mutual help among their citizens grow into idealistic human beings whose tolerance level with each other is low. This threatens overall cultural change in Indonesia because learning without face-to-face learning begins in early childhood education. The success and sustainability of online learning have also begun to be questioned (García-Botero et al., 2018). Since the beginning of the pandemic, many universities have implemented face-to-face and online learning. Blended learning has become the most potential teaching strategy in education. The blended learning strategy has also been carried out by many universities in Indonesia and has increased the interest of researchers to research more about the sustainability of blended learning (Abbasi et al., 2020).

According to Jowsey et al. (2020), blended learning combines traditional teaching and face-to-face online. In blended learning, the teaching model is student-centered by combining the advantages of online learning, such as resource sharing, resources, flexibility, timely updates, and traditional teaching activities. The successful implementation of blended learning requires practical leadership support in managing an organization in a university. Day & Dragoni (2015) found that leadership understanding is still lacking in consideration of relevant ideas and indicators of online learning development. Regarding online learning during a pandemic, according to Wilde & Hsu (2019), Student-teacher interactions are bridged by design and technology and can significantly affect learning effectiveness (Bower, 2019; Gonzalez et al., 2020). Effective online learning must be carefully designed and planned (Bower, 2019). During the Covid-19 pandemic, the existence of information technology has changed educational innovation. The E-learning learning model dominates the implementation of learning at this time. Face-to-face learning in higher education has developed into a distance and online-based system (Klašnja-Milicevic & Ivanovi c, 2021).

This opportunity from the ease of learning and innovation in the field of education creates a new system, namely e-learning or blended learning. This system is one of the crucial topics in the development of learning in a country's

education field. Indonesia has many universities, and Yogyakarta is one of the city centers for its students. Universities in Yogyakarta have started to implement blended learning in their learning process. However, the adoption of e-learning itself requires a high level of readiness (e-readiness) on the part of universities, students, and lecturers (Wilde & Hsu, 2019). E-learning technology, if used effectively, can form a collaboration between students and teachers (Bower, 2019; Gonzalez et al., 2020). The effectiveness of blended learning is also highly dependent on user acceptance (Tarhini et al., 2017). The success of implementing hybrid learning is not only influenced by the readiness of universities to implement blended learning but also requires contributions from institutions, namely the quality of information management systems owned by universities. The ease of acceptance of online learning, supportive university leaders, and the perception of benefits felt by all higher education academics can also affect the success of blended learning. The delay in adopting blended learning has become a mainstream and growing concern in higher education (Kanwal & Rehman, 2017). Investment in educational technology should be the best thought because of the emergence of high competition, and the number of students concerned with information technology is also increasing (Sabelli & Harris, 2015; Mehta et al., 2019). Rogers et al. (2005) stated that the sustainability of innovation diffusion could be achieved when the abnormal period has passed and information technology adopters have become independent. Unfortunately, most adoption of hybrid learning from teaching practice in higher education failed to pass the critical period or point (Adiyarta et al., 2018). The failure to adopt blended learning innovations in academics in university teaching activities is faster due to the internet revolution on campus than anticipated. The need for high-speed computer and internet technology in universities will quickly generate interest. On the other hand, it also raises resistance to using information technology in university teaching practice (Kisanga & Ireson, 2015; El-Masri & Tarhini, 2017).

Research on the adoption of blended learning is interesting to study because the post-pandemic has forced all universities across the country to adopt and adapt to hybrid learning. However, technological innovation and the use of blended learning systems at universities in Indonesia, especially in the Special Region of Yogyakarta and South Sumatra, are still lagging in applying systems applications for online-based education. Many universities in Yogyakarta and South Sumatra have not prepared special e-learning applications. This university is still using e-learning platforms on the Internet, namely the zoom application and google-meet. Most of them still use applications that are not paid (Sugandini et al., 2022). Thus, the overall adoption of e-learning in universities is no longer a question and can become the main focus of researchers in education and technology user behavior.

Implementing blended learning in the new normal is essential for further analysis because, in the future, blended learning will become a new chapter of learning activities that all universities must carry out (Smith & Bukit, 2019). The readiness of blended learning infrastructure, information systems, and support from higher education leaders must be available for successful blended learning. In addition, the innovation of blended learning users also needs to be improved. Users of e-learning/blended learning must ensure that e-learning technology in blended learning has many benefits (Saichaie, 2020). This study aims to analyze several antecedents of successful adoption of blended learning so that it can be successfully applied in learning systems throughout Indonesia. This research analyzes the adoption of blended learning to create sustainable learning in times of crisis. In addition, this research also has a preliminary study to analyze the effect of organizational readiness to implement blended learning, the quality of higher education information systems, perceptions of the benefits of e-learning for the entire academic community, and leadership support to adopt blended learning.

This research was conducted at Higher Education in Yogyakarta and South Sumatra, Indonesia. The scope of this research is on adopting blended learning technology for learning during the new standard period of the Covid-19 pandemic. This research has a novelty that can be proposed related to the type of study conducted using the Single trait multi-method. Single trait-multimethod is research using one trait (instrument) measured from several methods (respondents). In this study, the respondents used to analyze and measure the variables related to e-learning were students, lecturers, and faculty e-learning staff. Single trait-Multimethod allows the measurement used in the research to be truly valid. The proposed model reflects the actual situation of the factors that influence the adoption of e-learning. Several studies have reported internal problems faced by students and lecturers related to innovativeness (Kim & Park, 2017) and the perceived benefits of using blended learning Zhu et al., (2018). External problems of individuals in adopting blended learning are related to their educational institutions, namely readiness to use e-learning, quality of information systems, and leadership support. Several factors that influence the adoption of blended learning are observed from the perspective of students, lecturers, and educational institutions. This study also intends to identify what factors still have the weakest and inconclusive influence when predicting the successful adoption of mixed learning. Furthermore, recommendations for new directions for future research will be set. Gao et al. (2020) also suggest that traditional teaching methods in the form of face-to-face and online learning each have advantages. The combination of these two learning methods needs to be done to increase the excellence of learning today. Testing the effectiveness of the blended learning approach also needs to be done to oversee its successful adoption. Because the practice of hybrid learning in higher education on several related types of research has also increased in recent years. Investigations on students' internal and external factors in hybrid learning are still limited, so further research is needed.

2. Literature Review and Hypotheses

2.1. Blended Learning Adoption

According to Kacetl & Semradova (2020), blended learning is a combination of face-to-face and online-based learning activities that are carried out intentionally to support and make learning successful. In recent years, blended learning has multiplied in the higher education sector. The results of previous studies have shown that blended learning has several advantages, including flexible time management, ease of discussion with fellow students and lecturers, more efficiency, adaptability to learning patterns with differential instruction, and increased involvement in learning materials (Du et al., 2022).

Cao et al. (2021) show that Blended learning has two instructional components: face-to-face and online. The two models are combined into one. The face-to-face implementation between students and lecturers will change online automatically. The practice of Blended learning will make it easier for students to organize and manage their assignments using computers based on information technology (Lu & Wang, 2022). Elgohary et al. (2022) have shown that from the results of research from several researchers, blended learning can provide several advantages over face-to-face or fully online learning. This is because blended learning has a more comprehensive understanding pattern of interrelated aspects of various disciplines. Thus, it can increase students' motivation and willingness to do blended learning. Blended learning also produces a better level of independence in the learning process and interaction between lecturers and students and supports knowledge exchange.

A study by Nambiar (2020) showed that 87.1% of students who liked traditional face-to-face learning were, and the remaining 12.9% preferred online learning. Abbasi et al. (2020) also confirmed the study's results by highlighting that students are not yet ready to accept e-learning fully. However, Elgohary et al. (2022) show that online learning is becoming teaching that is more attractive to students. In their meta-study, Gonzalez et al. (2020) stated that students who did hybrid learning had a better success rate than students in traditional classes. Elgohary et al. (2022) also added that students' readiness for hybrid learning activities in higher education is better because they explore their technical skills.

Chen & Yao (2016) stated that the success of blended learning is also influenced by student satisfaction when learning. Student satisfaction is important as a predictor in assessing the mixed learning model's effectiveness and the student's intention to continue using mixed learning. Suwannaphisit et al. (2021) proposed that blended learning that combines online and face-to-face teaching can improve learning efficiency and student and lecturer satisfaction. Combining the best traditional and online learning can create better effectiveness than traditional learning (Du et al., 2022). Unfortunately, not all studies show the same results. Suwannaphisit et al. (2001) found that students' learning experiences in traditional teaching methods were more satisfying than in mixed learning.

2.2. E-learning Readiness

Shirahada et al. (2019) states that technology readiness is the desire of universities to use new technology and prepare adequate infrastructure facilities to support the achievement of successful use of technology. Blut & Wang (2020) suggest that technology adoption is a complex activity that requires well-established readiness from an institution. Shirahada et al. (2019) shows that technology readiness has a strong impact in predicting the adoption of online learning. However, Shirahada et al. (2019) also stated that the relationship between these two variables still requires further analysis. Kim et al. (2019) shows that innovation plays an important role in the ability of universities to prepare technology. on the other hand, the insecurity factor can also hinder the readiness of technology adoption for students and lecturers. When talking about technology readiness, we must not forget about user behavior because both remain important factors in technology adoption. So when observing user behavior, internal factors (e.g., personality, learning) and external factors (e.g., social status, culture) also need to be considered when exploring technology readiness. The goal is to effectively study student interest in adopting new technologies (Shirahada et al., 2019).

    Hypothesis 1: e-Learning readiness has a direct effect on perceived usefulness

    Hypothesis 2: Technology readiness has a direct effect on blended learning adoption

2.3. Innovativeness

Kim & Park (2017) show that personal innovativeness is an internal factor in predicting the adoption of the most frequently used innovation. Serdyukov (2017) defines innovativeness as an individual's decision to respond to innovation freely and without being influenced by others. These individuals make innovative decisions not based on the experiences of others. Someone with a high level of innovation will certainly have good internal motivation to adopt new technology (Ni, 2013). OECD (2014) shows several research results related to the success of information technology systems, which also depend on one's internal factors.

On the other hand, innovativeness plays an essential role in determining the use of new technologies. Innovativeness refers to a person's tendency to be both a novice and a leader in using technology. Other research on innovation has also shown that individual internal characteristics have a relationship with novelty-seeking behavior and creativity, such as new product adoption (Blut & Wang, 2020). Thus, someone with a high level of innovativeness tends to show a high interest in trying new technologies, and this individual is an innovator or

early adopter. Individuals with high innovativeness will be optimistic and happy with technology, see more of the benefits of specific technologies, and worry less about the negatives (Blut & Wang, 2020). Shaqrah & Almars (2022) also show a strong and positive influence between innovativeness and intention to adopt intelligent sensor-based services. High innovativeness has an impact on increasing the perception of the usefulness of technology. This research positions innovativeness as an antecedent of blended learning technology.

Hypothesis 3: Personal Innovativeness affects the perceived usefulness.

2.4. System Quality

Dimah Al-Fraihat et al. (2020) show that system quality is related to information system features, availability, and reliability. The quality of learning information systems is usually seen in interactive features, communication components, assessments, and activities that vary in learning styles. The quality of this system also pays attention to ethical and legal issues that arise in the e-learning system. Cidra et al. (2020) show that e-learning users have a good experience with e-learning because the quality of the e-learning system they use can run well (Ahn et al., 2004). Elkaseh et al. (2016) argue that the system's quality in e-learning is a collection of systems that are easy to use, have clear navigation, and have easy to structure accessibility interfaces to streamline user tasks (Cidral et al., 2020). Tarhini et al. (2017) also show that several previous studies on e-learning have had a good significance level of the role of information system quality in influencing e-learning user satisfaction.

Hypothesis 4: System quality has a direct effect on perceived benefits

Hypothesis 5: System quality has a direct effect on blended learning adoption

2.5. Leader Support.

Leadership support is the level of understanding in justifying the importance of information systems for their institutions, according to Al-Mamary & Shamsuddin (2015); Nicholas-Omoregbe et al. (2017). This leader's support is also related to an adequate resource allocation strategy to support and encourage students and lecturers to use technology managers are usually the main decision-makers, adopting information systems for organizational effectiveness. (Achieng & Jagero, 2014), making the manager's role more critical to innovation success. Managers make all decisions from daily operations to future investments, so their role directly affects the IT adoption process (Al-Mamary & Shamsuddin, 2015). A better understanding of IT adoption and managers' innovation is critical to successful implementation (Aykol & Leonidou, 2014). Matikiti et al. (2018) stated that a manager's sound knowledge of innovation affects the adoption of an innovation system (Dalvi-Esfahani et al., 2018).

Hypothesis 6: Leadership support has a direct effect on Perceived Usefulness

2.6. Perceived Usefulness (PU)

Rogers (2005) defines innovation as "a new idea, practice, or object perceived as new by the target individual or community." Associated with web-based learning technology and e-learning, according to Hoehle et al. (2015), this e-learning technology can be seen as innovative learning. The technology in e-learning is an information technology infrastructure-based technology, so the Information and Communication Technology adoption model can be used to help explain the adoption of e-learning technology. Davis (1989), in his TAM model, explains and predicts the behavior and intentions of users in adopting technology. Two factors that play a role in determining technology adoption in TAM are perceived benefits and perceived convenience (Zhu et al., 2018). The TAM model shows that PU is defined as the level of trust of innovation users that technology can provide more benefits for them. Hoehle et al. (2015) demonstrated an expanded TAM-based framework in predicting the factors influencing e-learning adoption during Covid-19 among Higher Education students. Nikou & Ecoides (2017) show that perceived benefits can indicate the level of technology adoption from users. In the case of online learning, PU significantly affects the adoption of e-learning in learning (Ramírez-Correa et al., 2015). Sukendro et al. (2020) show that PU can increase student confidence in online learning performance during Covid-19. Gao et al. (2020) added that PU also had a significant positive effect on adopting e-learning during Covid-19. Gao et al. (2020) also stated that PU is a determining variable that has a significant effect on the success of online learning. Unfortunately, some of the factors proposed in predicting user behavior tend to be technology. Gao et al. (2020) propose a more comprehensive framework that involves the presence of students, lecturers, technology design, and the environment that can affect student acceptance of e-learning technology. Student satisfaction with online learning in a mixed learning environment is also a finding from the research of Gao et al. (2020). Chen & Yao (2016) added that related to technology design, PU is an essential factor in understanding online learning satisfaction (Chen & Yao, 2016); (Davis, 1989). Gao et al. (2020) show that several previous researchers have established TAM as an appropriate model to predict student satisfaction in mixed learning environments. TAM can predict student attitudes to mixed learning in various countries, and the PU in the TAM model can increase students' interest in focusing on blended learning content (Chen and Yao, 2016).

Hypothesis 7: Perceived Usefulness has effects on blended learning adoption

3. Research Methodology
3.1. *Research Design*

This study uses a deductive approach based on a theoretical relationship between concepts, followed by developing hypotheses tested in empirical studies (Sekaran & Bougie, 2016). Data were obtained through a survey using a questionnaire. This study uses a survey approach because it pays attention to several indicators that explain the existence of the phenomenon under study (MacKenzie & Lutz, 1989). The main strength of the survey method is its diversity because all abstract information can be collected by asking other people (Cooper & Schinler, 2014). The variables in this study are e-learning readiness, Innovativeness, quality of information systems, leadership support, and public works that affect the adoption of online learning in Higher Education. This research uses the Singletrait-Multimethod, where the type of data used is primary data. The unit of analysis used is the triad. The units of analysis are students, Faculty, e-learning staff, and lecturers. The number of respondents is 100 each, so the total number of respondents is 300 who are academics at Universities in South Sumatra and the Special Region of Yogyakarta, Indonesia. The criteria for the respondents are that all respondents are involved in using e-learning at the faculty. Primary data were obtained through in-depth personal interviews and filling out questionnaires. The questionnaire was made based on a five-point Likert scale.

The sample size of 300 is considered to have met the size of the sample adequacy if the data were analyzed using structural equation modeling techniques. According to Hair (1989), the sample size is at least 5-10 times the estimated parameters. In this study, the estimated parameters for the explanatory variables were 22. Thus, the sample size in this study was met.

3.2. *Research variables*

The first independent variable in this study is E-learning readiness. According to Park & Zang (2021), E-learning readiness is a level where a community is prepared to participate in a global network. The E-readiness model is designed to simplify obtaining the basic information needed to develop e-learning. The indicators for measuring the e-learning readiness variable from Park & Zang (2021) are as follows: (1) adequacy of hardware facilities. (2) Adequacy of software facilities. (3) Internet access speed is satisfactory. (4) I have access to a computer whenever I need it. The second independent variable in this study is innovativeness. Innovativeness is a rating of the speed with which individuals adopt e-learning innovations compared to other system members (Groza et al., 2021). Agarwal & Prasad (1997) use indicators to measure this variable: (1) Other students come to me to learn new digital learning technologies. (2) Generally, I use the latest digital learning technology before anyone in my group uses it. (3) Always update yourself with the latest technology for digital learning. (4) I do not need help knowing the latest digital learning technology.

The third independent variable in this study is the quality of the information system. Information system quality is the degree to which individuals believe that information technology (e-learning) is doing its job well. Information quality is a fundamental variable in system design. To measure the quality of information, Blut & Wang (2020) use several indicators to measure this variable as follows: (1) E-Learning has easy-to-operate navigation. (2) e-Learning has a clear flow of use. (3) Ease of access to the e-learning learning process. (4) E-Learning has access speed. (5) The academic monitoring process on e-learning has met security standards.

The fourth independent variable in this study is the leader support. Prause (2019) defines college leadership support as support from a leader who implements a technology plan and also shares the vision with teachers and stimulates teachers to use technology in their lessons. Prause (2019) uses indicators to measure this variable: (1) Leaders will invest funds in blended learning technology. (2) Leaders are willing to take risks in adopting blended learning. (3) Leaders are interested in adopting blended learning. (4) Leaders consider the adoption of blended learning as strategically important. (5) Leaders articulate the organization's vision or strategy in blended learning technology.The first dependent (endogenous) variable used in this study is the adoption of blended learning. According to Aguilera-Hermida (2020) and Elgohary et al. (2022), adopting blended learning is a user acceptance process and e-learning technology. The indicators to measure this variable are as follows: (1) Continue to use the blended learning system in the future. (2) If I have the opportunity to take another course through this mode, I will gladly do so. (3) I would recommend that other students use a blended learning platform in the classroom (Gao et al., 2020). The second endogenous variable that also functions as a mediating variable is the perceived usefulness of e-learning. Davis (1989) defines perceived usefulness as the degree to which a person believes using a particular system will improve job performance or the subjective likelihood that using technology will improve how users complete a given task. Khan et al. (2020) used several indicators to measure this variable: (1) Learning through a blended learning platform provides students the flexibility to study conveniently. (2) A blended learning platform allows people to learn regardless of where they are. (3) Using a blended learning platform makes it easier for students to take tests and submit assignments electronically. (4) Using a blended learning platform helps to complete learning effectively.

3.3. *Data analysis technique*

This research uses the Structural Equation Modeling (SEM) technique using AMOS 26 to test the hypothesis. SEM-AMOS is used because it has advantages in predicting the relationship of several interrelated variables. SEM-AMOS can show concepts that cannot be observed and measurement errors in the estimation process (Hair et al., 1998, Byrne, 2001). This research uses a single-trait-multimethod which shows that one trait (i.e., the object being analyzed is e-learning). This single-trait-multimethod is responded to or assessed by several methods indicated by three types of respondents: students, e-learning staff, and teaching lecturers. Single trait-multimethod is intended to better measure external validity in predicting e-learning adoption from various users.

3.4. *Hypothesis Testing and Causal Relationships*

This research uses standardized regression weights' CR (Critical Ratio) to observe the direct effect. The CR greater than two or a t-count greater than a t-table indicates a significant level of the existing relationship. Observation of the causal relationship between variables is seen from the direct, indirect, and total effect of the output of the AMOS program. The AMOS program can overcome the problem of identification in the analyzed model. Hair et al. (1998) showed that SEM-AMOS could test the model by considering the Goodness of Fit criteria. The goodness of fit criteria in SEM-AMOS form three groups: absolute fit measure, incremental fit measure, and parsimonious fit measure. Interpret the results of the latent construct measurement in the SEM-AMOS model referring to the significance level of the loading factor or lambda coefficient (λ). The relationship is considered significant if the p-value is ≤ 0.05. SEM-AMOS can test a complete model of successful adoption of blended learning derived from all constructs and indicators. The influence between variables was observed with the path coefficient (standard regression), direction, magnitude, and significance. The significance assessment is based on the probability value (p), the significance limit used is a p-value of ≤ 0.05.

4. Data analysis and results

Characteristics of respondents are a description of the presence of respondents in the research area. This study uses 300 respondents to analyze the adoption of e-learning from the perceptions of some users. This study took respondents using e-learning in universities, including students, lecturers, and e-learning staff at the Faculty. The description of respondents can be seen in table1.

Table 1.
Socio-Demographic Characteristics of the Respondents

No	Demographic Characteristics	e-learning staff		Teachers		Student	
		Total	%	Total	%	Total	%
1.	Gender						
	Male	65	65	54	54	47	47
	Female	35	35	46	46	53	53
2.	Age						
	< 25 years old	4	4	-	-	100	100
	25 years - 30 years	10	10	12	12	-	-
	31 years - 35 years	30	30	63	63	-	-
	> 35 years old	56	56	25	25		
3.	Length of time using e-learning						
	Two years	13	13	10	10	20	20
	2-5 years	76	76	80	80	72	72
	> 5 years	11	11	10	10	8	8
4.	Internet Usage Frequency						
	< 1 Hour	3	3	7	7	5	5
	1-2 Hours	32	32	26	36	36	36
	> 2-3 hours	27	27	30	30	27	27
	> 3-4 Hours	20	20	25	25	12	12
	> 4 hours	12	12	12	12	20	20
5.	Type of e-learning used.						
	University e-learning	20	20	9	9	15	15
	Zoom Meeting	42	42	46	46	45	45
	G-meet	38	38	45	45	40	30

4.1. Validity analysis

This research uses SEM-AMOS to analyze confirmatory factors. The six primary constructs, innovativeness, e-learning readiness, information system quality, leadership support, perceived usefulness, and e-learning adoption, have 22 questions. Confirmatory factor analysis was conducted to test construct validity. The analysis results show that of the twenty-two questions or instruments used in this research, they have a good level of validity because they have a factor loading of ≥ 0.5 (MacLean & Gray, 1998). The results of measuring factor loading for each item and construct using confirmatory factor analysis can be seen in Table 2.

Table 2.
Factor Loadings for each item and construct with Confirmatory Factor Analysis

Construct	Indicator	Components/Factors					
		1	2	3	4	5	6
Innovativeness	INN1	0.760					
	INN2	0.744					
	INN3	0.571					
	INN4	0.549					
E-learning readiness	ELR1		0.750				
	ELR2		0.873				
	ELR3		0.694				
	ELR4		0.817				
Information system quality	SQ1			0.793			
	SQ2			0.745			
	SQ3			0.858			
	SQ4			0.877			
Leadership support	LS1				0.722		
	LS2				0.780		
	LS3				0.711		
Perceived Usefulness	PU1					0.870	
	PU2					0.878	
	PU3					0.896	
	PU4					0.954	
Adoption blended learning	Adopt1						0.665
	Adopt2						0.857
	Adopt3						0.824

4.2. Reliability Analysis

This research resulted in an excellent internal consistency reliability test of each proposed construct because it has a Cronbach's Alpha coefficient of 0.7 (Hair et al., 1998; Sekaran & Bougie, 2016). Cronbach's Alpha internal consistency test was conducted to test construct reliability and required variance extraction. Both internal consistency tests can increase researchers' confidence that the indicators used to measure the construct already have the correct size. The results of the instrument reliability test with construct reliability and extracted variance showed a reliable instrument, which was indicated by a construct reliability value above 0.7. The results of the calculation of the reliability construct and variance extract can be seen in Table 3 below.

Table 3.
Calculation of Reliability and Variance Extracted

No	Construct	Reliability / Internal Consistency > 0.6	Variance Extracted > 0.5	Construct Reliability > 0,7
1	Innovativeness	0.763	0.863	0.961
2	E-learning readiness	0.819	0.916	0.978
3	System quality	0.846	0.907	0.954

4	Leadership support	0.841	0.900	0.964
5	Perceived Usefulness	0.903	0.951	0.983
6	Adoption blended learning	0.813	0.914	0.969

4.3. A two-step approach to SEM evaluation

This research uses a two-stage SEM. The first is estimating the measurement model, and the second is estimating the structural model. Before processing the data using AMOS 26, the magnitude of the error (ε) is calculated using the formula 0.1 times $\sigma 2$ and lambda (λ) terms using the formula 0.95 times σ (Anderson & Gerbing, 1988). After the error (ε) and lambda (λ) terms are known, these scores are entered as parameters in the analysis of the SEM measurement model. The results of the calculation of the standard deviation, lambda, and error term construct with the steps of a two-step approach are shown in Table 4.

Table 4.
Standard Deviation, Lambda, and Error terms

Construct	Standard Deviation (σ)	Lambda (λ)	Error (ε)
Innovativeness	0.39	0.22	0.039
E-learning readiness	0.82	0.62	0.091
System quality	0.84	0.67	0.077
Leadership support	0.24	0.10	0.020
Perceived Usefulness	0.79	0.71	0.035
Adoption blended learning	0.68	0.37	0.118

The results of testing with the structural equation model with the AMOS 26 program can be seen in Figure 1. Evaluation of the results of testing the model can be seen in Table 5.

Table 5.
Evaluation of Criteria for Goodness of Fit Indices

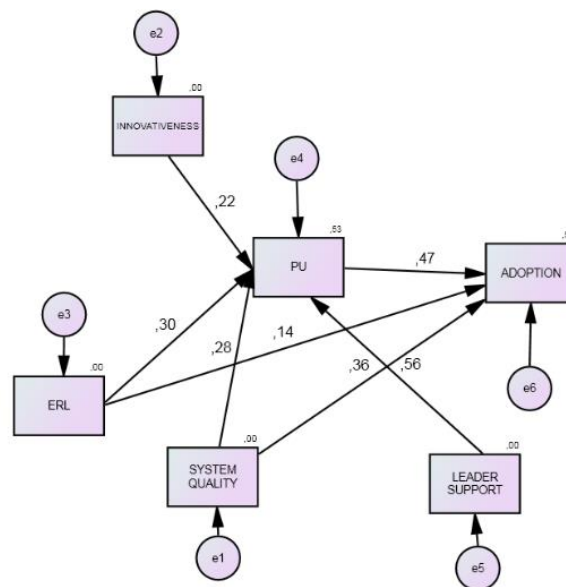| Criteria	Results	Critical Value *)	Model Evaluation
Cmin/DF	1.174	≤ 2.00	Excellent
Probability	0.070	≥ 0.05	Excellent
RMSEA	0.081	≤ 0.08	Excellent
GFI	0.979	≥ 0.90	Excellent
TLI	0.938	≥ 0.95	Excellent
CFI	0.979	≥ 0.94	Excellent

Figure 1. The Blended learning adoption model

The evaluation results of the proposed model show that all of the criteria used are good, meaning that the proposed model is good and acceptable. Furthermore, Table 6 shows the relationship between variables and the results of testing the proposed hypothesis.

Table 6.
Path Coefficient (Standardize Regression) between Variables

Path	Path Coefficient	CR	Probability (p)	Hypothesis
Innovativeness ➜ PU	0.224	2.658	0.008	Supported
E-learning readiness ➜ PU	0.297	4.686	***	Supported
E-learning readiness ➜ Adoption BL	0.144	2.159	0.031	Supported
System Quality ➜ PU	0.284	2.944	0.003	Supported
System Quality ➜ Adoption BL	0.365	4.727	***	Supported
Leader Support ➜PU	0.557	4.686	***	Supported
PU ➜ Adoption BL	0.467	7.822	***	Supported

Hypothesis testing (alternative) is done by comparing the probability (p) value. The hypothesis is said to be significant if the p-value is ≤ 0.05. With these criteria, it can be seen that all paths are significant.

5. Discussion and implications

This study uses the Single trait multi-method. Data were collected from 300 academics at universities in Yogyakarta and South Sumatra, Indonesia. The analysis results show that the questions presented are valid and reliable. Innovation, E-learning readiness, system quality, and leadership support significantly positively affect the Perceived Usefulness and adoption of blended learning. In other words, when students consider the blended learning platform to have good quality and value, students and the campus academic community feel the many benefits that can be obtained from blended learning. They are ultimately willing to use blended learning on an ongoing basis. The effect of readiness in e-learning/blended learning can also increase the adoption's success. A good significance value indicates this. E-learning readiness can increase e-learning benefits and adoption. The literature shows that higher technology readiness can increase intention and actual use (Blut & Wang, 2020). TAM also shows that the higher the technology readiness level, the more valuable the technology will be and easier to use, so the more likely they will use it. Thus, the usefulness of mediates e-learning readiness concerning adoption, and these results are consistent with Hoehle et al. (2015) and Zhu et al. (2018).

This study's faster rate of personal innovativeness increased the acceptance of e-learning technology and the perception of the benefits of blended learning. The results of this study are consistent with previous studies (Dimah Al-Fraihat et al., 2020; Elgohary et al., 2022). This study also finds that perceived benefits significantly impact the successful adoption of blended learning. This shows that universities, students, and lecturers share the same passion and pay attention to the practical value of blended learning platforms. When students think that the quality of the platform is more attractive, easier to use, and more useful for interaction with teachers, other students, and learning content, students are more likely to show positive emotional reactions to blended learning. This study shows that the effect of e-learning readiness is lowest in predicting the success of blended learning adoption.

This is because many universities do not provide digital platform infrastructure. University students, lecturers, and e-learning staff are still using the e-learning platform provided on the Google platform. Whether or not universities are ready for e-learning infrastructure does not affect students' perceptions of blended learning on campus. Unless the campus has prepared its e-learning platform in learning, the possible effect of infrastructure readiness can determine the adoption of blended learning.

The results of this study also show that the support of higher education leaders is the most significant determinant of the success of e-learning adoption. This is natural because the decision of higher education institutions to adopt blended learning is entirely under the authority of the leadership. The leaders at universities in Indonesia have a high commitment to the success of blended learning, considering the COVID-19 pandemic still haunts human life in the current new-normal era. PT must carry out blended learning to overcome the risk of the emergence of COVID-19 or other risks. Blended learning is expected to overcome learning in critical conditions because it is more flexible than online and face-to-face learning. In this study, perceived benefits highly impact the successful adoption of blended learning. This is in line with previous research (Hoehle et al., 2015). Zhu et al. (2018) also show that Perceived usefulness significantly predicts the adoption of technology use (Nikou & Ecoides, 2017) and has a significant relationship with the adoption of using e-learning during Covid-19 (Sukendro et al., 2020).

The results of this study indicate that the perceived quality of information from e-learning significantly affects the perceived benefits and adoption of blended learning. This shows that high quality means that the benefits obtained by using technology are also high. Quality is the primary driver of technology adoption. People who are

comfortable using technology increase the perception of higher quality and usefulness of technology as well. This perceived quality is consistent with their belief in the technology and willingness to adopt it. The results of this study are consistent with those (Dimah Al-Fraihat et al., 2020), Cidral et al., (2020), and (Elkaseh et al., 2016).

6. Conclusion

The development of technology for providing educational services and the Covid-19 pandemic requires students to interact more with blended learning technology. This study has several practical implications for Indonesia's blended learning education system. Higher education leaders are expected to consider using blended learning technology more effectively. This study proposes seven hypotheses, and all are accepted. Descriptive data shows that there is solid organizational support in the implementation of blended learning. Universities have prepared both hardware and software that support blended learning smoothly. This e-learning readiness also has full support from university leaders. Strong leadership support in blended learning can increase technology convenience and readiness.

7. *Limitations and Future Research Directions*

This study uses cross-sectional data to observe the adoption of blended learning in several universities. It has been proven that technology readiness, good system quality, and leadership support can make blended learning adoption successful. Perceived ease and innovativeness were also found to influence the successful adoption of blended learning. E-learning readiness has a minor effect on the adoption of blended learning, so it is hoped that it can be re-examined to confirm its effect on the adoption of blended learning. A longitudinal research approach should be carried out to observe the application of blended learning before the pandemic, during the pandemic, and after the new normal of the COVID-19 pandemic. This longitudinal study should explore the differences between the academic community in adopting blended earnings to obtain comprehensive knowledge. This study examines readiness in e-learning, leadership support, and the quality of the e-learning/blended learning system in predicting the adoption of blended learning as a variable that is beyond individual control. In addition, this study also analyzes internal factors in adopting blended learning, namely inventiveness and the perceived benefits of using blended learning by the entire academic community of higher education. Theoretically, this study extends the TAM model using technology readiness constructs. Another theoretical implication is that this study applies TAM in a mandatory adoption environment. This study used respondents from three groups in the campus academic community. Namely: students, lecturers, and e-learning staff. However, this study did not differentiate the results of each group.

Further research should further analyze these groups' roles in adopting blended learning. Thus, the data obtained will be more focused. Further research can also explore other external and internal factors affecting technology readiness to adopt the mandatory system.

References

[1] Abbasi, S., Tahera, A., Ayoob, T., & Malik, S. (2020). Perceptions of students regarding e-learning during COVID-19 at a private medical college. *Pakistan Journal of Medical Sciences Online*. 36(COVID19-S4). https://doi.org/10.12669/pjms.36.COVID 19-S4.2766

[2] Achieng, D. O., & Jagero, J. A. (2014). Management Support in Adoption of Computer Integrated Model in Financial Forecasting. *International Journal of Academic Research in Accounting, Finance and Management Sciences*. Vol.4, No.2, April, pp. 166–175. http://dx.doi.org/10.46886/IJARAFMS/v4-i2/837

[3] Adiyarta, K., Napitupulu, D., Rahim, R., Abdullah, D., & Setiawan, M. I. (2018). Analysis of e-learning implementation readiness based on integrated ELR model. *Journal of Physics: Conference Series*, Vol. 1007, https://doi.org/10.1088/1742-6596/1007/1/012041

[4] Agarwal, R., J. Prasad. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences*. 28 (3) (1997) 557–582. https://doi.org/10.1111/j.1540-5915.1997.tb01322.x

[5] Aguilera-Hermida, A. Patricia. (2020). College students use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open*. https://doi.org/10.1016/j.ijedro.2020.100011

[6] Ahn, T., Ryu, S., & Han, I. (2004). The impact of the online and offline features on the user acceptance of Internet shopping malls. *Electronic Commerce Research & Applications*, 3(4), 405–420. https://doi.org/10.1016/j.elerap.2004.05.001

[7] Al-Mamary, Y. H. S., & Shamsuddin, A. (2015). The Impact of Top Management Support, Training, and Perceived Usefulness on Technology. *Mediterranean Journal of Social Sciences*. Vol. 6 (6 S4), December, pp. 11-17. https://doi.org/10.5901/mjss.2015.v6n6s4p

[8] Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411–423. https://doi.org/10.1037/0033-2909.103.3.411

[9] Aykol, B., & Leonidou, L. C. (2014). Researching the Green Practices of Smaller Service Firms: A Theoretical, Methodological, and Empirical Assessment. Journal of Small Business Management. 53(4). April. https://doi.org/10.1111/jsbm.12118

[10] Blut, M., & Wang, C. (2020). Technology readiness: a meta-analysis of conceptualizations of the construct and its impact on technology usage. *Journal of the Academy of Marketing Science*. 48(2). https://doi.org/10.1007/s11747-019-00680-8

[11] Bower, M. (2019). Technology-mediated learning theory. *British Journal of Educational Technology*. 50(3). https://doi.org/10.1111/bjet.12771

[12] Byrne, B. M. (2001). *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*. Mahwah, NJ: Lawrence Erlbaum Associates.

[13] Cao, W., Hu, L., Li, X., Li, X., Chen, C., Zhang, Q., & Cao, S. (2021). *Massive Open Online Courses-based blended versus face-to-face classroom teaching methods for fundamental nursing course*. https://doi.org/10.1097/MD.0000000000024829

[14] Chen W., and Yao A., (2016). An Empirical Evaluation of Critical Factors Influencing Learner Satisfaction in Blended Learning: A Pilot Study. *Universal Journal College of Educational Research*. 4 (7), 1667-1671. https://doi.org/10.13189/ujer.2016.040719

[15] Cidral, W., Aparicio, M., & Oliveira, T. (2020). Students' long-term orientation role in e-learning success: A Brazilian study. *Heliyon*, 6(12), e05735. https://doi.org/10.1016/j.heliyon.2020.e05735

[16] Cooper, D. R., & Schindler, P. S (2014). *Bussines Research Methods*, 12ⁿᵈ Edition, New York: McGraw Hill

[17] Dalvi-Esfahani M., Shahbazi H., Nilashi M., Samad S., Mardani A., & Streimikiene D. (2018). Factors Influencing Beliefs Formation towards theAdoption of Social Commerce in SME Travel Agencies. *Economics and Sociology*. Vol. 11(3), pp. 207- 225. https://doi.org/10.14254/2071-789X.2018/11-3/13

[18] Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319-340. https://doi.org/10.2307/249

[19] Day, David V., & DragonI, Lisa. (2015). Leadership Development: An Outcome-Oriented Review Based on Time and Levels of Analyses. *Annual Review of Organizational Psychology and Organizational Behavior*. 2(1):150112145937002. https://doi.org/10.1146/annurev-orgpsych-032414-111328

[20] Dimah Al-Fraihat., Mike Joy., Ra'Ed Masa'deh., & Jane Sinclair. (2020). Evaluating E-learning Systems Success: An Empirical Study. *Computers in Human Behavior*. 102. https://doi.org/10.1016/j.chb.2019.08.004

[21] Du, L., Zhao, L., Xu, T., Wang, Y., Zu, W., Huang, X., Nie, W., & Wang, L. (2022). Blended learning vs traditional teaching: The potential of a novel teaching strategy in nursing education - a systematic review and meta-analysis. *Nurse Education in Practice*, *63*, 103354. https://doi.org/10.1016/J.NEPR.2022.103354

[22] Elgohary, M., Palazzo, F. S., Breckwoldt, J., Cheng, A., Pellegrino, J., Schnaubelt, S., Greif, R., & Lockey, A. (2022). Blended learning for accredited life support courses – A systematic review. *Resuscitation Plus*, *10*, 100240. https://doi.org/10.1016/J.RESPLU.2022.100240

[23] Elkaseh, Ali Mohamed., Wong, K. W., & Fung, Chun Che. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in libralyan higher education: a structural equation modeling analysis. *International Journal of Information and Education Technology*. 6(3):192-199. https://doi.org/10.7763/IJIET.2016.V6.683

[24] El-Masri, M., & Tarhini, A. (2017). Factors affecting the adoption of e-learning systems in Qatar and USA: Extending the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). *Educational Technology Research and Development*. 65(3):1-21. https://doi.org/10.1007/s11423-016-9508-8

[25] Gao, B. W., Jiang, J., & Tang, Y. (2020). The effect of blended learning platform and engagement on students' satisfaction, the case from the tourism management teaching. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *27*, 100272. https://doi.org/10.1016/J.JHLSTE.2020.100272

[26] Garcia Botero, G., Questier, F., Cincinnato, S., & He, T. (2018). Acceptance and usage of mobile-assisted language learning by higher education students. *Journal of Computing in Higher Education*. 30(5). https://doi.org/10.1007/s12528-018-9177-1

[27] González, T., M. Angeles De la Rubia., Hincz, K.P., & Comas-Lopez, M. (2020). Influence of COVID-19 confinement in students' performance in higher education. https://doi.org/10.35542/osf.io/9zuac

[28] Groza, M. D., Zmich, L. J., & Rajabi, R. (2021). Organizational innovativeness and firm performance: does sales management matter? *Industrial Marketing Management*. 97, 10–20. https://doi.org/10.1016/j.indmarman.2021.06.007

[29] Hair, Jr., Anderson, R.E., Tatham, R.L., and Black, W.C (1998). *Multivariate Data Analysis*, New Jersey: Prentice-Hall International, Inc.

[30] Hoehle, H., Zhang, X., & Venkatesh, V. (2015). An espoused cultural perspective to understand continued intention to use mobile applications: a four-country study of mobile social media application usability. *European Journal of Information Systems*. 24(3), 337–359. https://doi.org/10.1057/ejis.2014.43

[31] Jowsey, T., Foster, G., Cooper-Ioelu, P., and Jacobs, S. (2020). Blended learning via distance inpre-registration nursing education: A scoping review. *Nurse Education in Practice*, 44(102775). https://doi.org/10.1016/j.nepr.2020.102775

[32] Kacetl, J., & Semradova, I. (2020). Reflection on blended learning and e-learning - case study. *Procedia Computer Science*, 176, 1322–1327. https://doi.org/10.1016/j.procs.2020.09.141

[33] Kacetl, J., & Semradova, I. (2020). Reflection on blended learning and e-learning - case study. *Procedia Computer Science*, 176, 1322–1327. https://doi.org/10.1016/j.procs.2020.09.141

[34] Kanwal, F., & Rehman, M. (2017). "Factors Affecting E-Learning Adoption in Developing Countries–Empirical Evidence from Pakistan's Higher Education Sector." *IEEE*. Vol. 5. June. https://doi.org/10.1109/ACCESS.2017.2714379

[35] Khan, S. A., Zainuddin, M., Al Mahi, M., & Arif, I. (2020). Behavioral intention to use online learning during covid-19: an analysis of the Technology Acceptance Model. *International Conference on Innovative Methods of Teaching and Technological Advancements in Higher Educatio*n. At: European University, Georgia

[36] Kim, B., & Park, M. J. (2017). Effect of personal factors to use ICTs on e-learning adoption: comparison between learner and instructor in developing countries. *Information Technology for Development*. 24, Issue 4. Pages 706-732, https://doi.org/10.1080/02681102.2017.1312244

[37] Kim, H. J., Hong, A. J., & Song, H-D. (2019). The roles of academic engagement and digital readiness in students' achievements in university e-learning environments. International *Journal of Educational Technology in Higher Education*. 16(1). https://doi.org/10.1186/s41239-019-0152-3

[38] Kisanga, D., & Ireson, G. (2015). Barriers and Strategies on Adoption of E-Learning in Tanzanian Higher Learning Institutions: Lessons for Adopters. *International Journal of Education and Development Using Information and Communication Technology*, 11(2), 126–137. https://www.learntechlib.org/p/151845/.

[39] Klašnja-Mili ́cevi ́c, A., & Ivanovi ́c, M. (2021). E-Learning Personalization Systems and Sustainable Education. *Sustainability*. 13, 6713. https://doi.org/10.3390/su13126713

[40] Lu, H., & Wang, Y. (2022). The effects of different interventions on self-regulated learning of pre-service teachers in a blended academic course. *Computers & Education*, *180*, 104444. https://doi.org/10.1016/J.COMPEDU.2022.104444

[41] MacKenzie, S. B.., & Lutz, R. J. (1989). An Empirical Examination of the Structural Antecedents of Attitude Toward the Ad in an Advertising Pretesting Context. *Journal of Marketing*. 53(2):48–65. https://doi.org/10.2307/1251413

[42] MacLean, S., & Gray, K. (1998). Structural equation modeling in market research. Journal *of the Australian Market Research Society*.

[43] Matikiti, R., Mpinganjira, M. & Roberts-Lombard, M., (2018). Application of the technology acceptance model and the technology–organisation–environment model to examine social media marketing use in the South African tourism industry. *South African Journal of Information Management*. Vol. 20(1), a790. https://doi.org/10.4102/sajim.v20i1.790

[44] Mehta, A., Morris, N. P., Swinnerton, B., & Homer, M. (2019). The influence of values on e-learning adoption. *Computers and Education*. https://doi.org/10.1016/j.compedu.2019.103617

[45] Nambiar, D. (2020). The impact of online learning during COVID-19: Students' and teachers' perspective. *The International Journal of Indian Psychology*, 8(2), 783-793. https://doi.org/10.25215/0802.094

[46] Ni, A. (2013). Comparing the effectiveness of classroom and online learning: teaching research methods. Journal of Public Affairs Education, Vol. 1 No. 19, pp. 199-215. https://doi.org/10.1080/15236803.2013.12001730

[47] Nicholas A. I. Omoregbe., Ambrose Azeta., Idowu Aigbovo CHIAZOR., & Sharon Olanike Nicholas-Omoregbe. (2017). Predicting the adoption of e-learning management system: a case of selected private universities in Nigeria. Turkish Online Journal of Distance Education 18(2):106-121. https://doi.org/10.17718/tojde.306563

[48] Nikou, S., & Economides, A. A. (2017). Mobile-Based assessment: integrating acceptance and motivational factors into a combined model of self-determination theory and technology acceptance. Computers in Human Behavior. Volume 68, pp. 83-95. https://doi.org/10.1016/j.chb.2016.11.020

[49] OECD. (2014). *Measuring Innovation in Education: A new perspective*, OECD Publishing. Paris, available at: https://doi.org/10.1787/9789264215696-en.

[50] Park, H., & Zhang, Y. (2021). Technology readiness and technology paradox of unmanned convenience store users. *Journal of Retailing and Consumer Services*. 65 https://doi.org/10.1016/j.jretconser.2021.102523

[51] Prause, M. (2019). Challenges of industry 4.0 technology adoption for SMEs: The Case of Japan. Sustainability,11, https://doi.org/5807. 10.3390/su11205807

[52] Ramírez-Correa, P. E., Arenas-Gaitán, J., & Rondan-Cataluña, F. J. (2015). Gender and acceptance of e-learning: a multi-group analysis based on a structural equation model among college students in chile and spain. *PLoS ONE*, 10(10). https://doi.org/10.1371/journal.pone.0140460

[53] Rogers, E. M., Medina, U. E., Rivera, M. A., & Wiley, C. J. (2005). Complex adaptive systems and the diffusion of innovations. *The Innovation Journal*, 10(3). Article 29

[54] Sabelli, N. H., & Harris, C. J. (2015). The role of innovation in scaling up educational innovations. In C.K. Looi& L. W. Teh (Eds.). *Scaling educational innovations*. pp. 13- 30. Singapore: Springer. https://doi.org/10.1007/978-981-287-537-2_2

[55] Saichaie, K. (2020). Blended, flipped, and hybrid learning: definitions, developments, and directions. *New Directions for Teaching and Learning*. (164):95-104. https://doi.org/10.1002/tl.20428

[56] Sekaran, U., & Bougie, R. (2016). *Research Methods for Business: A Skill-Building Approach*. 7th Edition, Wiley & Sons, West Sussex.

[57] Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? Journal *of Research in Innovative Teaching & Learning*. Vol. 10 No. 1, pp. 4-33. https://doi.org/10.1108/JRIT-10-2016-0007.

[58] Shaqrah, A., & Almars, A. (2022). Examining the Internet of educational things adoption using an extended unified theory of acceptance and use of technology. *Internet of Things*, *19*, 100558. https://doi.org/10.1016/J.IOT.2022.100558

[59] Shirahada, K., Ho, B. Q., & Alan, W. (2019). Online public services usage and the elderly: Assessing determinants of technology readiness in Japan and the UK. Technology in Society 58. https://doi.org/10.1016/j.techsoc.2019.02.001

[60] Smith, K., & Hill, J. (2019). Defining the nature of blended learning through its depiction in current research. *Higher Education Research and Development*. Vol. 38(2),383–397. https://doi.org/10.1080/07294360.2018.1517732

[61] Sugandini, D., Garaika., & Istanto, Y. (2022). E-learning system success adoption in indonesia higher education. *Academic Journal of Interdisciplinary Studies*. Vol 11 No 1. https://doi.org/10.36941/ajis-2022-0013

[62] Sukendro, S., Habibi, A., Khaeruddin, K., Indrayana, B., Syahruddin, S., Makadada, F. A., & Hakim, H. (2020). Using an extended technology acceptance model to understand students' use of e-learning during Covid-19: Indonesian sports science education context. *Heliyon*, 6(11), e05410. https://doi.org/10.1016/j.heliyon.2020.e05410

[63] Suwannaphisit, S., Anusitviwat, C., Tuntarattanapong, P., & Chuaychoosakoon, C. (2021). Comparing the effectiveness of blended learning and traditional learning in an orthopedics course. *Annals of Medicine and Surgery*, *72*, 103037. https://doi.org/10.1016/J.AMSU.2021.103037

[64] Tarhini, A., *Hone*, K., Liu, X., & Tarhini, T. (2017). Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modeling of an extended technology acceptance model. *Interactive Learning Environments*, Volume. 25 (3). https://doi.org/10.1080/10494820- .2015.1122635

[65] Wilde, N., & Hsu, A. (2019). The influence of general self-efficacy on the interpretation of vicarious *experience* information within online learning. *International Journal of Educational Technology in Higher Education*. Volume 16, 26. https://doi.org/10.1186/s41239-019-0158-x

[66] Zhu, M., Sari, A., & Lee, M. M. (2018). A systematic review of research methods and topics of the empirical MOOC literature (2014–2016). *Internet and Higher Education,* 37(January), 31–39. https://doi.org/10.1016/j.iheduc.2018.01.002
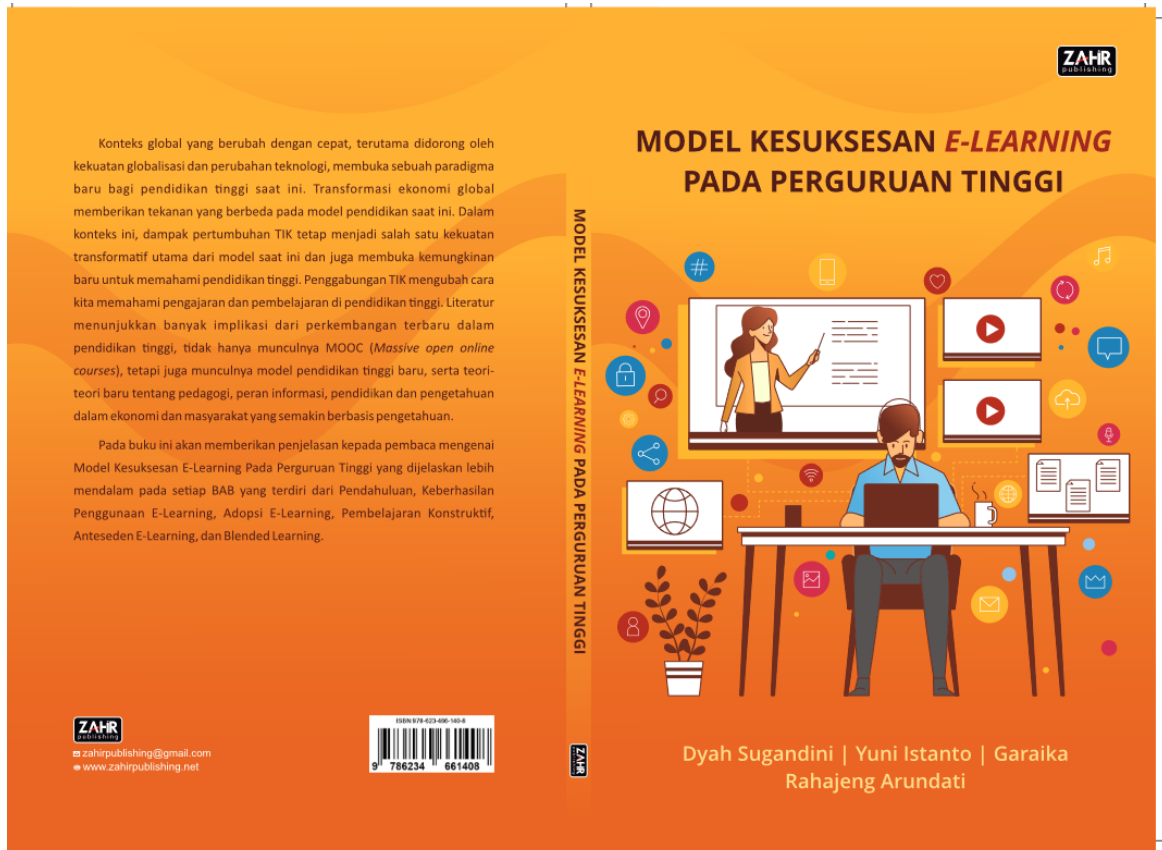
Luaran Tambahan 2: Buku Ber ISBN

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Konteks global yang berubah dengan cepat, terutama didorong oleh kekuatan globalisasi dan perubahan teknologi, membuka sebuah paradigma baru bagi pendidikan tinggi saat ini. Transformasi ekonomi global memberikan tekanan yang berbeda pada model pendidikan saat ini. Dalam konteks ini, dampak pertumbuhan TIK tetap menjadi salah satu kekuatan transformatif utama dari model saat ini dan juga membuka kemungkinan baru untuk memahami pendidikan tinggi. Penggabungan TIK mengubah cara kita memahami pengajaran dan pembelajaran di pendidikan tinggi. Literatur menunjukkan banyak implikasi dari perkembangan terbaru dalam pendidikan tinggi, tidak hanya munculnya MOOC (*Massive open online courses*), tetapi juga munculnya model pendidikan tinggi baru, serta teori-teori baru tentang pedagogi, peran informasi, pendidikan dan pengetahuan dalam ekonomi dan masyarakat yang semakin berbasis pengetahuan.

Pada buku ini akan memberikan penjelasan kepada pembaca mengenai Model Kesuksesan E-Learning Pada Perguruan Tinggi yang dijelaskan lebih mendalam pada setiap BAB yang terdiri dari Pendahuluan, Keberhasilan Penggunaan E-Learning, Adopsi E-Learning, Pembelajaran Konstruktif, Anteseden E-Learning, dan Blended Learning.

MODEL KESUKSESAN E-LEARNING PADA PERGURUAN TINGGI

Dyah Sugandini
Yuni Istanto
Garaika
Rahajeng Arundati

KATA PENGANTAR

Puji Syukur kehadirat Allah SWT yang telah melimpahkan Rahmat dan KaruniaNya, sehingga buku dengan judul "Model Kesuksesan *E-Learning* Pada Perguruan Tinggi" sebagai panduan untuk penerapan Model Kesuksesan *E-Learning* pada Peguruan Tinggi telah kami selesaikan.

Buku ini membahas tentang beberapa faktor yang mempengaruhi kesuksesan sistem pembelajaran e-learning dan blended learning. Masa-masa setelah Pandemi Covid-19 banyak Perguruan Tinggi yang harus kembali ke pembelajaran luring, namun juga tidak meninggalkan pembelajaran online yang sudah menjadi kewajiban semasa ada pembatasan social. Buku ini berisi tentang Paradigma baru untuk pendidikan tinggi, Model Penerimaan Teknologi dalam e-learning, Adopsi teknologi informasi pada perguruan tinggi, Pembelajaran konstruktivis, Blended learning dan Teori keberhasilan sistem informasi. Buku ini bisa digunakan dan bermafaat untuk mahasiswa, dosen dan pengelola Perguruan tinggi sebagai informasi agar dapat melakukan proses pembelajaran online dan hybrid dengan lebih baik.

Terakhir penulis mengucapkan banyak terima kasih kepada semua pihak yang sudah mendukung selesainya buku ini. Semoga buku ini bisa memberi manfaat bagi para akademisi, praktisi dan bagi mahasiswa peguruan tinggi.

DAFTAR ISI

E. **PERAN MITRA:** Tuliskan realisasi kerjasama dan kontribusi Mitra baik *in-kind* maupun *in-cash* (untuk Penelitian Terapan, Penelitian Pengembangan, PTUPT, PPUPT serta KRUPT). Bukti pendukung realisasi kerjasama dan realisasi kontribusi mitra dilaporkan sesuai dengan kondisi yang sebenarnya. Bukti dokumen realisasi kerjasama dengan Mitra diunggah melalui BIMA.

Penelitian ini tidak memiliki mitra

F. **KENDALA PELAKSANAAN PENELITIAN**: Tuliskan kesulitan atau hambatan yang dihadapi selama melakukan penelitian dan mencapai luaran yang dijanjikan, termasuk penjelasan jika pelaksanaan penelitian dan luaran penelitian tidak sesuai dengan yang direncanakan atau dijanjikan.

Kendala pada saat publikasi, perjalanan artikel dari tahap submit, review, accepted dan terbit tidak dapat diprediksi peneliti.

G. **RENCANA TAHAPAN SELANJUTNYA:** Tuliskan dan uraikan rencana penelitian di tahun berikutnya berdasarkan indikator luaran yang telah dicapai, rencana realisasi luaran wajib yang dijanjikan dan tambahan (jika ada) di tahun berikutnya serta *roadmap* penelitian keseluruhan. Pada bagian ini diperbolehkan untuk melengkapi penjelasan dari setiap tahapan dalam metoda yang akan direncanakan termasuk jadwal berkaitan dengan strategi untuk mencapai luaran seperti yang telah dijanjikan dalam proposal. Jika diperlukan, penjelasan dapat juga dilengkapi dengan gambar, tabel, diagram, serta pustaka yang relevan. Pada bagian ini dapat dituliskan rencana penyelesaian target yang belum tercapai.

Tahap selanjutnya untuk penelitian di tahun ketiga, meneliti tentang keefektifan e-learning bagi civitas akademika universitas, dan strategi untuk meningkatkan keefektifan e-learning sebagai alternatif pembelajaran yang dipadukan dengan pembelajaran offline

H. **DAFTAR PUSTAKA:** Penyusunan Daftar Pustaka berdasarkan sistem nomor sesuai dengan urutan pengutipan. Hanya pustaka yang disitasi pada laporan akhir yang dicantumkan dalam Daftar Pustaka.

1. Abbasi, S., Tahera, A., Ayoob, T., & Malik, S. (2020). Perceptions of students regarding e-learning during COVID-19 at a private medical college. *Pakistan Journal of Medical Sciences Online*. 36(COVID19-S4). https://doi.org/10.12669/pjms.36.COVID 19-S4.2766
2. Abdous, M. (2019). Influence of satisfaction and preparedness on online students' feelings of anxiety. *The Internet and Higher Education*, Volume. 41, pp. 34–44. https://doi.org/10.1016/J.IHEDUC.2019.01.001
3. Achieng, D. O., & Jagero, J. A. (2014). Management Support in Adoption of Computer Integrated Model in Financial Forecasting. *International Journal of Academic Research in Accounting, Finance and Management Sciences*. Vol.4, No.2, April, pp. 166–175. http://dx.doi.org/10.46886/IJARAFMS/v4-i2/837
4. Adiyarta, K., Napitupulu, D., Rahim, R., Abdullah, D., & Setiawan, M. I. (2018). Analysis of e-learning implementation readiness based on integrated ELR model. *Journal of Physics: Conference Series*, Vol. 1007, https://doi.org/10.1088/1742-6596/1007/1/012041
5. Agarwal, R., J. Prasad. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences*. 28 (3) (1997) 557–582. https://doi.org/10.1111/j.1540-5915.1997.tb01322.x
6. Aguilera-Hermida, A. Patricia. (2020). College students use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open*. https://doi.org/10.1016/j.ijedro.2020.100011
7. Ahn, T., Ryu, S., & Han, I. (2004). The impact of the online and offline features on the user acceptance of Internet shopping malls. *Electronic Commerce Research & Applications*, 3(4), 405–420. https://doi.org/10.1016/j.elerap.2004.05.001

8. Ain, N., Kaur, K., & Waheed, M. (2016). The influence of learning value on learning management system use: An extension of UTAUT2. *Information Development*, 32(5), 1306–1321. https://doi.org/10.1177/0266666915597546

9. Akinnuwesi, B. A., Uzoka, F.-M. E., Fashoto, S. G., Mbunge, E., Odumabo, A., Amusa, O. O., Okpeku, M., & Owolabi, O. (2022). A modified UTAUT model for the acceptance and use of digital technology for tackling COVID-19. *Sustainable Operations and Computers*, Volume 3, pp. 118–135. https://doi.org/10.1016/J.SUSOC.2021.12.001

10. Al-Fraihat, D., Joy, M., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. *Computers in Human Behavior*, Volume. 102, pp. 67-86. https://doi.org/10.1016/j.chb.2019.08.004

11. Alghazi, S.S., Kamsin, A., Almaiah, M.A., Wong, S.Y., & Shuib, L. (2021). For sustainable application of mobile learning: An extended UTAUT model to examine the effect of technical factors on the usage of mobile devices as a learning tool. *Sustainability*. Volume 13, pp. 1856. https://doi.org/10.3390/su13041856.

12. Al-Mamary, Y. H. S. (2022). Understanding the use of learning management systems by undergraduate university students using the UTAUT model: Credible evidence from Saudi Arabia. *International Journal of Information Management Data Insights*, 2(2), 100092. https://doi.org/10.1016/J.JJIMEI.2022.100092

13. Al-Mamary, Y. H. S., & Shamsuddin, A. (2015). The Impact of Top Management Support, Training, and Perceived Usefulness on Technology. *Mediterranean Journal of Social Sciences*. Vol. 6 (6 S4), December, pp. 11-17. https://doi.org/10.5901/mjss.2015.v6n6s4p

14. Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411–423. https://doi.org/10.1037/0033-2909.103.3.411

15. Andrews, J. E., Ward, H., & Yoon, J. W. (2021). UTAUT as a Model for Understanding Intention to Adopt AI and Related Technologies among Librarians. *The Journal of Academic Librarianship*, volume. 47 (6), 102437. https://doi.org/10.1016/J.ACALIB.2021.102437

16. Aqlan, A. A., Al-Hakimi, W., Grada, M., Abdulrab, M., Al-Mamary, Y., & Alquhaif, A. S. Factors affecting behavioral Intention to use Learning Management Systems by instructors. *Dimensión Empresarial*, Volume 19 (2), 10.15665/dem.v19i2.2728

17. Awang Kader M. A. R. ., Abd Aziz, N. N., Mohd Zaki, S., Ishak, M., & Hazudin, S. F. (2022). The effect of technostress on online learning behaviour among undergraduates. *Malaysian Journal of Learning and Instruction*, 19 (1), pp. 183–211. https://doi.org/10.32890/mjli2022.19.1.7

18. Aykol, B., & Leonidou, L. C. (2014). Researching the Green Practices of Smaller Service Firms: A Theoretical, Methodological, and Empirical Assessment. Journal of Small Business Management. 53(4). April. https://doi.org/10.1111/jsbm.12118

19. Ayuni., V. D & Mulyana, A. (2019). Applying Service Quality Model as a Determinant of Success in E-learning: The Role of Institutional Support and Outcome. *Review of Integrative Business and Economics Research*, Vol. 8, Supplementary Issue 1. Pp. 145

20. Blut, M., & Wang, C. (2020). Technology readiness: a meta-analysis of conceptualizations of the construct and its impact on technology usage. *Journal of the Academy of Marketing Science*. 48(2). https://doi.org/10.1007/s11747-019-00680-8

21. Bower, M. (2019). Technology-mediated learning theory. *British Journal of Educational Technology*. 50(3). https://doi.org/10.1111/bjet.12771

22. Byrne, B. M. (2001). *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*. Mahwah, NJ: Lawrence Erlbaum Associates.

23. Cao, W., Hu, L., Li, X., Li, X., Chen, C., Zhang, Q., & Cao, S. (2021). *Massive Open Online Courses-based blended versus face-to-face classroom teaching methods for fundamental nursing course*. https://doi.org/10.1097/MD.0000000000024829

24. Chen W., and Yao A., (2016). An Empirical Evaluation of Critical Factors Influencing Learner Satisfaction in Blended Learning: A Pilot Study. *Universal Journal College of Educational Research*. 4 (7), 1667-1671. https://doi.org/10.13189/ujer.2016.040719

25. Cidral, W., Aparicio, M., & Oliveira, T. (2020). Students' long-term orientation role in e-learning success: A Brazilian study. *Heliyon*, 6(12), e05735. https://doi.org/10.1016/j.heliyon.2020.e05735

26. Cooper, D. R., & Schindler, P. S (2014). *Bussines Research Methods*, 12nd Edition, New York: McGraw Hill

27. Dalvi-Esfahani M., Shahbazi H., Nilashi M., Samad S., Mardani A., & Streimikiene D. (2018). Factors Influencing Beliefs Formation towards theAdoption of Social Commerce in SME Travel Agencies. *Economics and Sociology*. Vol. 11(3), pp. 207- 225. https://doi.org/10.14254/2071-789X.2018/11-3/13

28. Daruwala, N. A. (2020). Generation Lockdown: Exploring possible predictors of technology phobia

during the Coronavirus self-isolation period Generation Lockdown: Exploring possible predictors of technology phobia during the Coronavirus self-isolation period. *Aloma: Revista de Psicologia, Ciències de l'Eduació i de l'Esport*. Vol.38. Nno.1. DOI:10.51698/ALOMA.2020.38.1.15-19

29. Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*. Vol. 13, No. 3, pp. 319-340. https://doi.org/10.2307/249008

30. Day, David V., & DragonI, Lisa. (2015). Leadership Development: An Outcome-Oriented Review Based on Time and Levels of Analyses. *Annual Review of Organizational Psychology and Organizational Behavior*. 2(1):150112145937002. https://doi.org/10.1146/annurev-orgpsych-032414-111328

31. Dhawan, S., (2020). Online learning: a panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*. Volume 49 (1), pp 5–22. https://doi.org/10.1177/0047239520934018

32. Dimah Al-Fraihat., Mike Joy., Ra'Ed Masa'deh., & Jane Sinclair. (2020). Evaluating E-learning Systems Success: An Empirical Study. *Computers in Human Behavior*. 102. https://doi.org/10.1016/j.chb.2019.08.004

33. Du, L., Zhao, L., Xu, T., Wang, Y., Zu, W., Huang, X., Nie, W., & Wang, L. (2022). Blended learning vs traditional teaching: The potential of a novel teaching strategy in nursing education - a systematic review and meta-analysis. *Nurse Education in Practice*, *63*, 103354. https://doi.org/10.1016/J.NEPR.2022.103354

34. Elgohary, M., Palazzo, F. S., Breckwoldt, J., Cheng, A., Pellegrino, J., Schnaubelt, S., Greif, R., & Lockey, A. (2022). Blended learning for accredited life support courses – A systematic review. *Resuscitation Plus*, *10*, 100240. https://doi.org/10.1016/J.RESPLU.2022.100240

35. Elkaseh, Ali Mohamed., Wong, K. W., & Fung, Chun Che. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in libralyan higher education: a structural equation modeling analysis. *International Journal of Information and Education Technology*. 6(3):192-199. https://doi.org/10.7763/IJIET.2016.V6.683

36. El-Masri, M., & Tarhini, A. (2017). Factors affecting the adoption of e-learning systems in Qatar and USA: Extending the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). *Educational Technology Research and Development*. 65(3):1-21. https://doi.org/10.1007/s11423-016-9508-8

37. Favale, T., Soro, F., Trevisan, M., Drago, I., & Mellia, M. (2020). Campus traffic and eLearning during COVID-19 pandemic. *Computer Networks*, Volume 176, 107290. DOI:10.1016/j.comnet.2020.107290

38. Gao, B. W., Jiang, J., & Tang, Y. (2020). The effect of blended learning platform and engagement on students' satisfaction, the case from the tourism management teaching. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *27*, 100272. https://doi.org/10.1016/J.JHLSTE.2020.100272

39. Garcia Botero, G., Questier, F., Cincinnato, S., & He, T. (2018). Acceptance and usage of mobile-assisted language learning by higher education students. *Journal of Computing in Higher Education*. 30(5). https://doi.org/10.1007/s12528-018-9177-1

40. Ghasemaghaei, M. (2020). The impact of in-depth online recommendation agents on consumer disorientation and cognitive absorption perceptions. Behaviour & Information Technology. Vol 39. (4). DOI: 10.1080/0144929X.2019.1598496

41. González, T., M. Angeles De la Rubia., Hincz, K.P., & Comas-Lopez, M. (2020). Influence of COVID-19 confinement in students' performance in higher education. https://doi.org/10.35542/osf.io/9zuac

42. Grimaldo, J. R., & Uy, C. (2020). Factors Affecting Recruitment Officers' Intention to Use Online Tools. *Review of Integrative Business and Economics Research*, Vol. 9, Supplementary Issue 1. Pp. 1269.

43. Groza, M. D., Zmich, L. J., & Rajabi, R. (2021). Organizational innovativeness and firm performance: does sales management matter? *Industrial Marketing Management*. 97, 10–20. https://doi.org/10.1016/j.indmarman.2021.06.007

44. Guri-Rosenblit, S. (2018). E-Teaching in Higher Education: An Essential Prerequisite for E-Learning. *Journal of New Approaches in Educational Research*, Volume 7(2), pp. 93-97. DOI: 10.12691/education-8-7-2

45. Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, *26*(2), 106–121. https://doi.org/10.1108/EBR-10-2013-0128

46. Hair, Jr., Anderson, R.E., Tatham, R.L., and Black, W.C (1998). *Multivariate Data Analysis*, New Jersey: Prentice-Hall International, Inc.

47. Haron, H. @ N., Masrom, M., Ya'acob, S., & Sabri, S. A. (2021). The Challenges and Constraints of Online Teaching and Learning in the New Normal Environment. *International Journal of Academic Research in Business and Social Sciences*, 11(4), 1284–1295. http://dx.doi.org/10.6007/IJARBSS/v11-i4/9825.

48. Hoehle, H., Zhang, X., & Venkatesh, V. (2015). An espoused cultural perspective to understand continued intention to use mobile applications: a four-country study of mobile social media application usability. *European Journal of Information Systems*. 24(3), 337–359.

https://doi.org/10.1057/ejis.2014.43

49. Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to under parameterized model misspecification. *Psychological Methods*, 3(4), 424–453. https://doi.org/10.1037/1082-989X.3.4.424

50. Hu, X., Zhang, J., He, S., Zhu, R., Shen, S., & Liu, B. (2022). E-learning intention of students with anxiety: Evidence from the first wave of COVID-19 pandemic in China. *Journal of Affective Disorders*, Volume. 309, pp. 115–122. https://doi.org/10.1016/J.JAD.2022.04.121

51. Huang, D. H., & Chueh, H. E. (2022). Behavioral Intention to continuously use learning apps: A comparative study from Taiwan universities. *Technological Forecasting and Social Change*, Volume 177, 121531. https://doi.org/10.1016/J.TECHFORE.2022.121531

52. Hussein, Z. (2017). Leading to Intention: The Role of Attitude in Relation to Technology Acceptance Model in E-Learning. *Procedia Computer Science*, Volume. 105, 159–164. https://doi.org/10.1016/j.procs.2017.01.196

53. Inan, D. I., Nizar Hidayanto, A., Juita, R., Andiyani, K., Hariyana, N., Tiffany, P., Prima Tangis Pertiwi, T., & Kurnia, S. (2022). Technology anxiety and social influence towards Intention to use of ride-hailing service in Indonesia. *Case Studies on Transport Policy*. https://doi.org/10.1016/J.CSTP.2022.05.017

54. Jowsey, T., Foster, G., Cooper-Ioelu, P., and Jacobs, S. (2020). Blended learning via distance inpre-registration nursing education: A scoping review. *Nurse Education in Practice*, 44(102775). https://doi.org/10.1016/j.nepr.2020.102775

55. Kacetl, J., & Semradova, I. (2020). Reflection on blended learning and e-learning - case study. *Procedia Computer Science*, *176*, 1322–1327. https://doi.org/10.1016/j.procs.2020.09.141

56. Kanwal, F., & Rehman, M. (2017). "Factors Affecting E-Learning Adoption in Developing Countries–Empirical Evidence from Pakistan's Higher Education Sector." *IEEE*. Vol. 5. June. https://doi.org/10.1109/ACCESS.2017.2714379

57. Khan, S. A., Zainuddin, M., Al Mahi, M., & Arif, I. (2020). Behavioral intention to use online learning during covid-19: an analysis of the Technology Acceptance Model. *International Conference on Innovative Methods of Teaching and Technological Advancements in Higher Educatio*n. At: European University, Georgia

58. Khechine, H., Raymond, B., & Augier, M. (2020). The adoption of a social learning system: Intrinsic value in the UTAUT model. *British Journal of Educational Technology*, *51*, 2306–2325. https://doi.org/10.1111/bjet.12905

59. Kim, B., & Park, M. J. (2017). Effect of personal factors to use ICTs on e-learning adoption: comparison between learner and instructor in developing countries. *Information Technology for Development*. 24, Issue 4. Pages 706-732, https://doi.org/10.1080/02681102.2017.1312244

60. Kim, H. J., Hong, A. J., & Song, H-D. (2019). The roles of academic engagement and digital readiness in students' achievements in university e-learning environments. International *Journal of Educational Technology in Higher Education*. 16(1). https://doi.org/10.1186/s41239-019-0152-3

61. Kim, J., & Lee, K.S. (2020). Conceptual model to predict Filipino teachers' adoption of ICT-based instruction in class: Using the UTAUT model. *Asia Pacific Journal of Education*. 1–15. https://doi.org/10.1080/02188791.2020.1776213

62. Kisanga, D., & Ireson, G. (2015). Barriers and Strategies on Adoption of E-Learning in Tanzanian Higher Learning Institutions: Lessons for Adopters. *International Journal of Education and Development Using Information and Communication Technology*, 11(2), 126–137. https://www.learntechlib.org/p/151845/.

63. Klašnja-Mili ́cevi ́c, A., & Ivanovi ́c, M. (2021). E-Learning Personalization Systems and Sustainable Education. *Sustainability*. 13, 6713. https://doi.org/10.3390/su13126713

64. Li, Y., Wang, A., Wu, Y., Han, N., & Huang, H. (2021). Impact of the COVID-19 pandemic on the mental health of college students: A systematic review and meta-analysis. *Frontiers in psychology*, 12. DOI: 10.3389/fpsyg.2021.669119

65. Lu, H., & Wang, Y. (2022). The effects of different interventions on self-regulated learning of pre-service teachers in a blended academic course. *Computers & Education*, *180*, 104444. https://doi.org/10.1016/J.COMPEDU.2022.104444

66. MacKenzie, S. B.., & Lutz, R. J. (1989). An Empirical Examination of the Structural Antecedents of Attitude Toward the Ad in an Advertising Pretesting Context. *Journal of Marketing*. 53(2):48–65. https://doi.org/10.2307/1251413

67. MacLean, S., & Gray, K. (1998). Structural equation modeling in market research. Journal *of the Australian Market Research Society*.

68. Matikiti, R., Mpinganjira, M. & Roberts-Lombard, M., (2018). Application of the technology acceptance model and the technology–organisation–environment model to examine social media marketing use in the South African tourism industry. *South African Journal of Information Management*. Vol. 20(1), a790. https://doi.org/10.4102/sajim.v20i1.790

69. Mehta, A., Morris, N. P., Swinnerton, B., & Homer, M. (2019). The influence of values on e-learning adoption. *Computers and Education.* https://doi.org/10.1016/j.compedu.2019.103617

70. Nambiar, D. (2020). The impact of online learning during COVID-19: Students' and teachers' perspective. *The International Journal of Indian Psychology*, 8(2), 783-793. https://doi.org/10.25215/0802.094

71. Naveed, Q. N.; Alam, M. M., Tairan, N. (2020). Structural equation modeling for mobile learning acceptance by university students: An empirical study. *Sustainability.* Volume 12(20), 8618; https://doi.org/10.3390/su12208618

72. Ni, A. (2013). Comparing the effectiveness of classroom and online learning: teaching research methods. Journal of Public Affairs Education, Vol. 1 No. 19, pp. 199-215. https://doi.org/10.1080/15236803.2013.12001730

73. Nicholas A. I. Omoregbe., Ambrose Azeta., Idowu Aigbovo CHIAZOR., & Sharon Olanike Nicholas-Omoregbe. (2017). Predicting the adoption of e-learning management system: a case of selected private universities in Nigeria. Turkish Online Journal of Distance Education 18(2):106-121. https://doi.org/10.17718/tojde.306563

74. Nikou, S., & Economides, A. A. (2017). Mobile-Based assessment: integrating acceptance and motivational factors into a combined model of self-determination theory and technology acceptance. Computers in Human Behavior. Volume 68, pp. 83-95. https://doi.org/10.1016/j.chb.2016.11.020

75. OECD. (2014). *Measuring Innovation in Education: A new perspective*, OECD Publishing. Paris, available at: https://doi.org/10.1787/9789264215696-en.

76. Park, H., & Zhang, Y. (2021). Technology readiness and technology paradox of unmanned convenience store users. *Journal of Retailing and Consumer Services.* 65 https://doi.org/10.1016/j.jretconser.2021.102523

77. Prause, M. (2019). Challenges of industry 4.0 technology adoption for SMEs: The Case of Japan. Sustainability,11, https://doi.org/5807. 10.3390/su11205807

78. Qiao, P., Zhu, X., Guo, Y., Sun, Y., & Qin, C. (2021). The Development and Adoption of Online Learning in Pre- and Post-COVID-19: Combination of Technological System Evolution Theory and Unified Theory of Acceptance and Use of Technology. *Journal of Risk and Financial Management*, 14(4), 162. https://doi.org/10.3390/jrfm14040162

79. Ramírez-Correa, P. E., Arenas-Gaitán, J., & Rondan-Cataluña, F. J. (2015). Gender and acceptance of e-learning: a multi-group analysis based on a structural equation model among college students in chile and spain. *PLoS ONE*, 10(10). https://doi.org/10.1371/journal.pone.0140460

80. Rapanta, C., Botturi, L., Goodyear, P., Gu'ardia, L., Koole, M. (2020). Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity. *Postdigital Science and Education.* Volume 2, pp. 923–945. https://doi.org/10.1007/s42438-020-00155-y

81. Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2019). Challenges in the Online Component of Blended Learning: A Systematic Review. *Computers & Education*, Volume 144, https://doi.org/10.1016/j.compedu.2019.103701

82. Rogers, E. M., Medina, U. E., Rivera, M. A., & Wiley, C. J. (2005). Complex adaptive systems and the diffusion of innovations. *The Innovation Journal*, 10(3). Article 29

83. Sabelli, N. H., & Harris, C. J. (2015). The role of innovation in scaling up educational innovations. In C.K. Looi& L. W. Teh (Eds.). *Scaling educational innovations.* pp. 13- 30. Singapore: Springer. https://doi.org/10.1007/978-981-287-537-2_2

84. Saichaie, K. (2020). Blended, flipped, and hybrid learning: definitions, developments, and directions. *New Directions for Teaching and Learning.* (164):95-104. https://doi.org/10.1002/tl.20428

85. Scherer, R., Howard, S.K., Tondeur, J., Siddiq, F. (2021). Profiling teachers' readiness for online teaching and learning in higher education: Who's ready? *Computers in Human Behavior.* Volume 118, 106675. https://doi.org/10.1016/j.chb.2020.106675

86. Sekaran, U., & Bougie, R. (2016). *Research Methods for Business: A Skill-Building Approach.* 7th Edition, Wiley & Sons, West Sussex.

87. Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? Journal *of Research in Innovative Teaching & Learning.* Vol. 10 No. 1, pp. 4-33. https://doi.org/10.1108/JRIT-10-2016-0007.

88. Shaqrah, A., & Almars, A. (2022). Examining the internet of educational things adoption using an extended unified theory of acceptance and use of technology. *Internet of Things*, Vol. 19, 100558. https://doi.org/10.1016/J.IOT.2022.100558

89. Shaqrah, A., & Almars, A. (2022). Examining the Internet of educational things adoption using an extended unified theory of acceptance and use of technology. *Internet of Things*, *19*, 100558. https://doi.org/10.1016/J.IOT.2022.100558

90. Shirahada, K., Ho, B. Q., & Alan, W. (2019). Online public services usage and the elderly: Assessing

determinants of technology readiness in Japan and the UK. Technology in Society 58. https://doi.org/10.1016/j.techsoc.2019.02.001

91. Smith, K., & Hill, J. (2019). Defining the nature of blended learning through its depiction in current research. *Higher Education Research and Development*. Vol. 38(2),383–397. https://doi.org/10.1080/07294360.2018.1517732

92. Sugandini, D., Garaika., & Istanto, Y. (2022). E-Learning System Success Adoption in Indonesia Higher Education. *Academic Journal of Interdisciplinary Studies*, 149–158. https://doi.org/10.36941/ajis-2022-0013

93. Sukendro, S., Habibi, A., Khaeruddin, K., Indrayana, B., Syahruddin, S., Makadada, F. A., & Hakim, H. (2020). Using an extended technology acceptance model to understand students' use of e-learning during Covid-19: Indonesian sports science education context. *Heliyon*, 6(11), e05410. https://doi.org/10.1016/j.heliyon.2020.e05410

94. Suwannaphisit, S., Anusitviwat, C., Tuntarattanapong, P., & Chuaychoosakoon, C. (2021). Comparing the effectiveness of blended learning and traditional learning in an orthopedics course. *Annals of Medicine and Surgery*, *72*, 103037. https://doi.org/10.1016/J.AMSU.2021.103037

95. Tarhini, A., *Hone*, K., Liu, X., & Tarhini, T. (2017). Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modeling of an extended technology acceptance model. *Interactive Learning Environments*, Volume. 25 (3). https://doi.org/10.1080/10494820- .2015.1122635

96. Teo, T.S.H.; Srivastava, S.C.; Jiang, L. (2008). Trust and electronic government success: An empirical study. *Journal of Management Information System*. Volume 25, 2008 - Issue 3, pp. 99–132. https://doi.org/10.2753/MIS0742-1222250303.

97. Troisi, O., Fenza, G., Grimaldi, M., & Loia, F. (2022). Covid-19 sentiments in smart cities: The role of technology anxiety before and during the pandemic. *Computers in Human Behavior*, Volume. 126, 106986. https://doi.org/10.1016/J.CHB.2021.106986

98. Venkatesh, V.; Morris, M.G.; Davis, G.B.; Davis, F.D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*. Vol. 27, No. 3, pp. 425-478. https://doi.org/10.2307/30036540

99. Wijaya, T. T., Cao, Y., Weinhandl, R., Yusron, E., & Lavicza, Z. (2022). Applying the UTAUT Model to Understand Factors Affecting Micro-Lecture Usage by Mathematics Teachers in China. *Mathematics.* Vol. 10. Issue 7. 1008. https://doi.org/10.3390/math10071008.

100. Wilde, N., & Hsu, A. (2019). The influence of general self-efficacy on the interpretation of vicarious *experience* information within online learning. *International Journal of Educational Technology in Higher Education*. Volume 16, 26. https://doi.org/10.1186/s41239-019-0158-x

101. Zhu, M., Sari, A., & Lee, M. M. (2018). A systematic review of research methods and topics of the empirical MOOC literature (2014–2016). *Internet and Higher Education,* 37(January), 31