Microcredential curriculum implementation for sportpreneurship: an extended UTAUT2 analysis of LMS acceptance

Microcredenciales y emprendimiento deportivo: análisis UTAUT2 de la aceptación del LMS

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Abstract

Introduction: The achievement of United Nations 4 and 8 in Indonesia requires universities to strengthen both pedagogical competencies and economic independence among prospective physical education teachers through sport-based digital entrepreneurship. However, few studies have studied the factors influencing technology acceptance in microcredential programs for the development of sportpreneurship skills through Learning Management Systems (LMS).
Objective: This study examined the determinants of LMS acceptance using an extended Technology Acceptance and Use Theory (UTAUT2) model with sportpreneurship skills as the outcome variable.
Methodology: Data analysis was performed using PLS-SEM on 491 students of Pedagogi.id microcredential program.
Results The strongest predictor of LMS use behavior was facilitating conditions ($\beta = 0.469$; $p < 0.001$) while hedonic motivation did not have a significant effect on behavioral intention. The model explained 66.4 % of variance in sportpreneurship skills.
Discussion. The results show that in competency-based digital learning, institutional support and system functionality are more important than entertainment value.
Conclusions: Universities should pay attention to the sustainable digital infrastructure and full technical support systems, in order to improve LMS adoption and sportpreneurship competencies of prospective physical education teachers.
The extended UTAUT2 model also provides strong explanatory power for understanding technology-supported sport entrepreneurship learning in higher education contexts.

Keywords

Facilitating conditions; Indonesian higher education; LMS acceptance; micro-credential; sportpreneurship.

Resumen

Introducción: El logro de los objetivos 4 y 8 de las Naciones Unidas en Indonesia exige que las universidades fortalezcan tanto las competencias pedagógicas como la independencia económica de los futuros docentes de educación física mediante el emprendimiento digital en el ámbito deportivo. Sin embargo, existen pocos estudios que hayan explorado los determinantes de la aceptación de la tecnología en programas de microcredenciales orientados al desarrollo de competencias de emprendimiento deportivo a través de Sistemas de Gestión del Aprendizaje (LMS).
Objetivo: Este estudio analizó los factores que influyen en la aceptación de los LMS utilizando un modelo extendido de la Teoría de Aceptación y Uso de la Tecnología (UTAUT2), con las habilidades de emprendimiento deportivo como variable de resultado.
Metodología: Se analizaron datos de 491 estudiantes del programa de microcredenciales Pedagogi.id mediante PLS-SEM.
Resultados: Las condiciones facilitadoras fueron los predictores más fuertes del comportamiento de uso de los LMS ($\beta = 0,469$; $p < 0,001$), mientras que la motivación hedónica no tuvo un efecto significativo en la intención de comportamiento. El modelo explicó el 66,4% de la varianza en las habilidades de emprendimiento deportivo.
Discusión: Las universidades deben dar prioridad a una infraestructura digital sostenible y a sistemas integrales de soporte técnico, a fin de mejorar la adopción de los sistemas de gestión del aprendizaje (LMS) y robustecer las competencias de emprendimiento deportivo entre los futuros profesores de educación física. También, el modelo UTAUT2 extendido aporta mucho poder explicativo para entender el aprendizaje del emprendimiento deportivo apoyado en tecnología en escenarios de educación superior.

Palabras clave

Aceptación de LMS; condiciones facilitadoras; educación superior Indonesia; emprendimiento deportivo; microcredencial.

Introduction

In its efforts to achieve Sustainable Development Goals 4 and 8, Indonesia continues to innovate to improve access to quality education and inclusive economic growth, particularly for educators (Ramadhan, 2023). One key challenge is ensuring that prospective teachers not only master pedagogical competencies but also acquire entrepreneurial skills that can support their economic independence (Miço & Cungu, 2023; Robandi et al., 2025). This challenge is particularly salient within the context of physical education, as prospective sport educators need to negotiate the demands of professional teaching with the expanding field of sport-based digital entrepreneurship, herein referred to as sportpreneurship. The development of microcredential programs within universities has offered a flexible and scalable approach, expanding access to quality competency-based education for aspiring teachers (Alenezi et al., 2024; Alsobhi et al., 2023). These programs allow students to acquire sport entrepreneurial skills that aid in personal economic growth and contribute to sustainable national development (Jardim & Albright, 2021; L. Wang & Shao, 2023; Y. Wang et al., 2022). Therefore, integrating sport pedagogy and digital entrepreneurship into the microcredential curriculum is a strategic move to prepare future educators to be autonomous, innovative, and competitive in the digital age.

Teacher pedagogical education is a strategic framework that aims to provide prospective physical education teachers with knowledge, teaching skills, and an innovative entrepreneurial spirit. Pedagogy, as a science of methods and applications of knowledge in the design of learning programs, is the basis for the integration of teaching skills with entrepreneurial skills such as discipline, collaboration and leadership (Barakat Bishr Hussein, 2025; Rodrigues, 2023). Within the domain of physical education, sportpreneurship extends this framework by encouraging prospective teachers to commercialize their sport expertise through fitness coaching, sport event management, sport technology application, and digital sport content creation (Blaschke, 2021). Thus, mastery of pedagogy combined with the spirit of sportpreneurship is key in shaping educators who are not only critical and adaptive, but also competitive and economically resilient in the evolving sport education ecosystem (Efendi et al., 2024).

Sportpreneurship is a concept that has emerged in response to the requirements of increasingly complex, technology-based sport learning environments in the digital age. Modern physical education pedagogy demands that future teachers not only acquire traditional teaching skills but also be able to innovate, think critically and adapt to the evolution of digital technologies (Ajani, 2024; Jarilkapovich, 2025). Therefore, universities have to offer facilities and curricula that incorporate creative approaches, diverse methodologies, and technology-enhanced learning processes (Aithal & Maiya, 2023; Kuznetsova et al., 2024; Setiawardani). The key issue is determining how to improve digital websites to enhance the capacity for professional development of sports teachers, while making sure that future teachers incorporate scores of sportpreneurship into their teaching methods (Liu et al., 2024; Timotheou et al., 2023). Therefore, the mastery of sportpreneur skill (SP) is a prerequisite for prospective physical education teachers to become effective educators and agents of change, capable of creating innovative solutions in the digital sport education ecosystem.

Sportpreneurship is an essential competency for prospective sport educators in the digital era, integrating pedagogical skills, digital literacy, and an entrepreneurial spirit to foster adaptive, creative, and sustainable sport learning innovations (Keyhani & Kim, 2021; Sakariyahu et al., 2025). This competency can be cultivated when prospective teachers know how to operate digital tools, understand their benefits, and develop habitual usage. For this reason, lecturers need to utilize technology as both a learning medium and an assessment tool (Sujiarto & Setiawardani, 2025). With interactive media, learning can be connected to real-life sport phenomena, making it more meaningful across diverse learning styles (Karimah et al., 2021; Kaewsaiha & Chanchalor, 2021). One such website is a LMS in this study, Pedagogi.id developed as a digital learning medium for the entrepreneurship course in physical education teacher programs.

Prior studies confirm that LMS effectively enhances learning engagement, enabling students to learn anytime and anywhere without constraints of place and time (Prahani et al., 2022). LMS also enables interactive, student-centered learning that meets the diverse needs of higher education students. However, despite extensive research on LMS effectiveness, there remains a significant gap in understanding the factors that determine technology acceptance of LMS specifically within microcredential programs for sport education contexts. Most existing UTAUT2 studies have been conducted in generic

higher education settings, without examining how technology acceptance translates into domain-specific skill outcomes such as sportpreneurship mastery (Venkatesh et al., 2012; Tamilmani et al., 2021). This study addresses that gap by examining the factors influencing prospective physical education teachers' acceptance and use of Pedagogi.id in entrepreneurship learning, and their direct effect on SP development.

These factors are assessed using the extended UTAUT2 model (Venkatesh et al., 2012), which includes Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Learning Value (LV), and Habit (HB) as exogenous variables, with Behavioral Intention (BI) and Use Behavior (UB) as endogenous variables. This study extends the original UTAUT2 by incorporating SP as a novel downstream outcome variable, representing a theoretical contribution to the technology acceptance literature in sport pedagogy contexts.

In the original UTAUT2 framework, the construct "Price Value" refers to users' cognitive evaluation between the perceived benefits of a technology and the monetary cost associated with its use (Venkatesh et al., 2012). Because the Pedagogi.id platform was institutionally provided to students without direct financial cost, the construct was adapted into "Learning Value" to better reflect students' perceptions regarding the educational benefits, usefulness, and learning efficiency obtained through LMS participation in the microcredential programme.

Method

This study employed a quantitative approach using the extended Unified UTAUT2 model to identify factors influencing students' acceptance and use of the Pedagogi.id website in microcredential-based entrepreneurship learning. The UTAUT2 framework, originally proposed by Venkatesh et al. (2012), was selected due to its comprehensive coverage of technology acceptance constructs in consumer and educational contexts.

Research Design and Hypotheses

Based on the UTAUT2 theoretical framework, twelve hypotheses were formulated to examine the relationships among constructs:

H1: PE serves as a positive predictor of BI

H2: EE serves as a positive predictor of BI

H3: SI serves as a positive predictor of BI

H4: FC serves as a positive predictor of UB

H4a: Facilitating Conditions (FC) serve as a positive predictor of Behavioral Intention (BI).

H5: HM serves as a positive predictor of BI

H6: LV serves as a positive predictor of BI

H7: HB serves as a positive predictor of BI

H8: HB serves as a positive predictor of UB

H9: BI serves as a positive predictor of UB

H10: UB serves as a positive predictor of SP

H11: FC serves as a positive predictor of SP

H12: BI serves as a positive predictor of SP

Methodologically, this study contributes to the UTAUT2 literature by extending the model with sportpreneurship skills as a downstream competency outcome variable. Unlike previous LMS acceptance studies that mainly focused on behavioural intention and use behaviour, this research examines whether technology acceptance can directly contribute to professional competency development in

sport education. In addition, the study adapts the UTAUT2 constructs to the context of microcredential-based entrepreneurship learning in physical education using PLS-SEM analysis.

Participants

The population of this study comprised students enrolled in entrepreneurship courses from multiple universities in Indonesia who actively used the Pedagogi.id website as their primary LMS. A total of 491 students were recruited as participants using a stratified random sampling technique, wherein the sampling frame was divided by faculty and study program to ensure proportional representation across disciplines. Data were collected during the second semester of the 2024/2025 academic year through an online survey distributed via the Pedagogi.id website itself, over a four-week data collection period. Prior to participation, all respondents were informed of the study's purpose and voluntarily consented to participate.

Procedure

Data collection was conducted over a four-week period during the second semester of the 2024/2025 academic year using an online questionnaire distributed through the Pedagogi.id website. Prior to the main survey, the instrument was reviewed by three experts in educational technology and entrepreneurship education to ensure content validity, followed by a pilot test involving 40 students to evaluate reliability and construct validity. After being revised based on the pilot result, the final questionnaire was distributed to students from several universities in Indonesia who participated in the microcredential entrepreneurship programme. Participants volunteered, and were informed of the purpose of the study prior to giving consent. The collected data was then screened and analysed using SmartPLS 4.0 in two stages of PLS-SEM procedure; which includes the evaluation of the measurement model and assessment of the structural model.

Instrument

All constructs were measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The measurement items were adapted from validated instruments in prior UTAUT2 studies (Mikalef et al., 2016; and Venkatesh et al., 2012) and contextualised to reflect the microcredential entrepreneurship learning environment on Pedagogi.id. The complete item pool is presented in Table 1.

Table 1. Questionnaire Model UTAUT2

Items	Variables	References
	PE	
PE1	The Pedagogi.id website can support the effectiveness of student learning activities	
PE2	The website from Pedagogi.id has met the expectations of its site users	
PE3	The Pedagogi.id website can fulfill the expectations of me and others	
PE 4	The Pedagogi.id website makes it easier for me to achieve the desired competencies	
PE 5	In my opinion, the Pedagogi.id website is very easy to use for all ages	(Venkatesh et al., 2012; Mikalef et al., 2016)
	EE	
EE1	Pedagogi.id is easy to adapt based on user requirements	
EE2	The Pedagogi.id website can be used as a general learning medium	
EE3	I can find out the use of the Pedagogi.id website	
EE4	Based on observations of students, the Pedagogi.id website appears easy to use by all students	
	SI	
SI1	All groups of teachers and lecturers are happy to operate the Pedagogi.id website	
SI2	The Pedagogi.id website can have a good and positive impact	
SI3	The Pedagogi.id website is interactive because teachers can interact directly with all students.	
SI4	The Pedagogi.id website is able to interact directly in real time with other users	
	FC	
FC1	Android, Apple, and Windows systems can access the website from Pedagogi.id	
FC2	The Wi-Fi facility from the campus supports opening access to the Pedagogi.id website in my class	(Venkatesh et al., 2012)
FC3	Adequate building facilities on my campus are another support in accessing and operating the Pedagogi.id website properly	
FC4	Pedagogi.id website is very effective because it is easy to access and use	
FC5	Because Pedagogi.id is easy to access anywhere and anytime, I often access it	
	HM	
HM1	I feel happy using Pedagogi.id	
HM2	I enjoy learning with Pedagogi.id	
HM3	Using Pedagogi.id is very entertaining	

	LV
LV1	Learning through Pedagogi.id is worth more space and time to learn
LV2	Pedagogi.id allows me to share my knowledge quickly and easily with others
LV3	Pedagogi.id allows me to improve my knowledge and control my learning
	HB
HB1	Using Pedagogi.id has become an HB for me
HB2	I am addicted to using Pedagogi.id to complete pedagogy course assignments
HB3	I have to use Pedagogi.id to learn pedagogy
	BI
BI1	The appearance of the Pedagogi.id website is very attractive so I will use it later
BI2	I will provide recommendations for using the features on the Pedagogi.id website in studying other lesson materials
BI3	Based on my observations, the Pedagogi.id website makes students feel like they are in class, so it will be used more often in the future
	UB
UB1	The Pedagogi.id website is very suitable for studying pedagogical materials
UB2	The Pedagogi.id website is an important part of the teaching media during the learning process
UB3	My hope is that in the future all learning can use the Pedagogi.id website

(Source: Adapted from Venkatesh et al. (2012) and Mikalef et al. (2016).)

Before distributing to the full sample, the instrument underwent a two-stage validation process. First, content validity was assessed by three subject matter experts in educational technology and entrepreneurship education, who reviewed item relevance and clarity. Second, a pilot study involving 40 students (not included in the main sample) was conducted to test construct reliability and convergent validity (CV). Items with factor loadings below 0.70 or Average Variance Extracted (AVE) below 0.50 were revised. The final instrument demonstrated satisfactory reliability ($\alpha > 0.70$ for all constructs) and construct validity prior to full deployment.

Data analysis

Hypotheses were tested using PLS-SEM approach, operationalised through SmartPLS 4.0 (Hair et al., 2019). The analysis followed a two-step procedure: (1) assessment of the measurement model through indicator reliability, internal consistency, CV, and discriminant validity (DV); and (2) assessment of the structural model through path coefficients, coefficient of determination (R^2), and effect sizes (f^2).

Results

The SEM analysis was conducted in four sequential stages: (1) descriptive statistics of measurement instruments, (2) measurement model assessment, (3) structural model assessment, and (4) hypothesis testing. Each stage is reported below.

Descriptive Statistics

Table 2 presents the descriptive statistics for all measurement items, including mean scores, SD, excess kurtosis, and skewness scores derived from the responses of 491 participants.

Table 2. Descriptive Statistics

Latent Variables	Items	Mean	SD	Excess Kurtosis	Skewness
Performance Expectancy (PE)	PE1	3.293	0.510	−0.073	0.203
	PE2	3.177	0.498	0.872	0.226
	PE3	3.183	0.485	0.364	0.420
	PE4	3.198	0.530	0.855	−0.007
	PE5	3.163	0.573	0.739	−0.205
EE	EE1	3.214	0.491	1.255	0.209
	EE2	3.297	0.539	−0.124	−0.001
	EE3	3.326	0.514	−0.877	0.241
	EE4	3.299	0.524	0.405	0.008
SI	SI1	3.208	0.488	0.116	0.437
	SI2	3.236	0.487	−0.172	0.475
	SI3	2.951	0.643	−0.058	−0.140
	SI4	3.031	0.600	0.190	−0.125
Facilitation conditions (FC)	FC1	3.356	0.520	−0.455	0.072
	FC2	3.348	0.525	−0.385	0.039

	FC3	3.324	0.541	0.235	−0.118
	FC4	3.324	0.552	−0.243	−0.108
	FC5	3.324	0.525	−0.256	0.066
	HM1	2.916	0.653	0.348	−0.309
HM	HM2	2.894	0.655	0.373	−0.324
	HM3	2.927	0.637	0.474	−0.315
	LV1	3.187	0.504	0.205	0.297
LV	LV2	3.191	0.507	0.159	0.286
	LV3	3.147	0.584	0.602	−0.218
	HB1	2.523	0.753	−0.359	0.207
HB	HB2	2.605	0.760	−0.407	0.047
	HB3	2.617	0.766	−0.429	0.038
	BI1	3.112	0.508	1.530	−0.005
BI	BI2	3.094	0.530	1.930	−0.235
	BI3	3.035	0.579	1.872	−0.507
	UB1	3.462	0.564	0.606	−0.638
UB	UB2	3.446	0.525	−1.336	−0.080
	UB3	3.224	0.476	−0.031	0.561
	SP1	3.182	0.521	0.425	0.312
SP	SP2	3.241	0.538	0.187	0.145
	SP3	3.108	0.556	0.318	−0.089

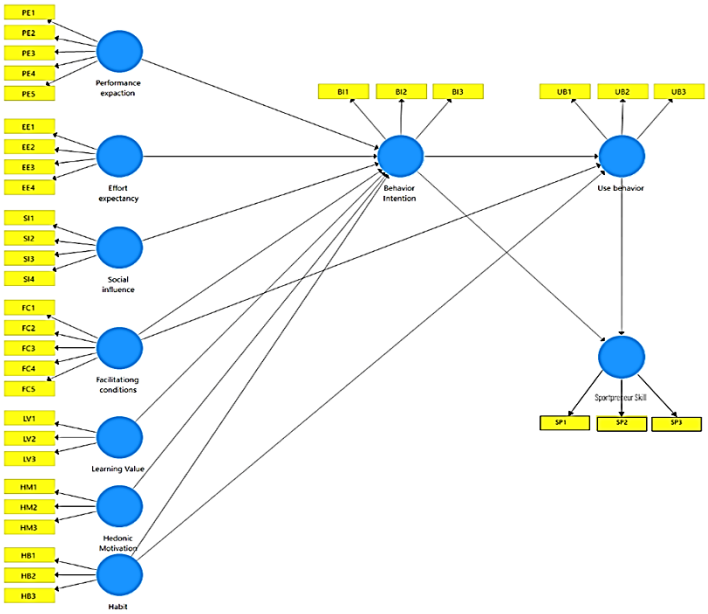
(Source: Authors' own calculation using SmartPLS 4.0.)

Overall, mean scores ranged from 2.523 (HB1) to 3.462 (UB1), indicating a moderate-to-neutral level of agreement across all items. Three noteworthy patterns emerge from the descriptive data. First, FC items recorded the highest mean scores (3.324–3.356), suggesting that students perceived campus infrastructure and technical support as the most prominent driver of LMS engagement consistent with the structural model result in which FC emerged as the strongest predictor of UB. Secondly, the means of HM items (2.894–2.927) and HB items (2.523–2.617) were particularly lower, indicating that students did not perceive that the use of Pedagogi.id was for enjoyment or deeply ingrained habitual behaviour, which is consistent with the non-significant effect of HM on Behavioural Intention in the structural analysis. Third, SP items yielded moderate means (3.108–3.241), indicating an emerging, but not yet robust, sportpreneurship competency among respondents consistent with the expectation that skills develop gradually through sustained LMS engagement.

Measurement Model

The measurement model was assessed to confirm indicator reliability, internal consistency reliability, CV, and DV before proceeding to structural model analysis. The path diagram of the extended UTAUT2 model is presented in Figure 1.

Figure 1. Path model.



(Source: Developed by the authors based on the extended UTAUT2 framework adapted from Venkatesh et al. (2012))

Indicator Reliability and CV

Researchers evaluated the reliability of the indicators based on the outer loading score, with a threshold of ≥ 0.70. CV was assessed using AVE ≥ 0.50 and composite reliability (CR) ≥ 0.70. Internal consistency was confirmed through α ≥ 0.70. Complete results can be seen in Table 3.

Table 3. Loading Factor, Validity, and Reliability

Variables	Items	Loading factor	t statistics	p-scores	α	rho_A	CR	AVE
PE	PE1	0.827	39.806	0.000	0.886	0.891	0.917	0.688
	PE2	0.878	61.251	0.000				
	PE3	0.874	62.204	0.000				
	PE4	0.805	39.112	0.000				
	PE5	0.757	26.397	0.000				
EE	EE1	0.791	31.413	0.000	0.881	0.882	0.918	0.738
	EE2	0.852	24.589	0.000				
	EE3	0.912	57.144	0.000				
	EE4	0.877	63.047	0.000				
SI	SI1	0.867	56.379	0.000	0.844	0.852	0.895	0.681
	SI2	0.822	37.099	0.000				
	SI3	0.781	30.865	0.000				
	SI4	0.829	40.778	0.000				
FC	FC1	0.969	88.547	0.000	0.983	0.984	0.986	0.935
	FC2	0.985	257.307	0.000				
	FC3	0.950	76.796	0.000				
	FC4	0.966	126.704	0.000				
	FC5	0.966	116.385	0.000				
HM	HM1	0.882	3.081	0.002	0.893	1.138[a]	0.921	0.794
	HM2	0.883	3.089	0.002				
	HM3	0.908	2.961	0.003				
LV	LV1	0.973	8.686	0.000	0.975	0.981	0.984	0.953
	LV2	0.984	8.480	0.000				
	LV3	0.972	8.089	0.000				
HB	HB1	0.958	15.870	0.000	0.968	1.013[a]	0.979	0.939
	HB2	0.977	27.056	0.000				
	HB3	0.971	27.571	0.000				
BI	BI1	0.894	66.260	0.000	0.882	0.899	0.926	0.808
	BI2	0.937	97.129	0.000				
	BI3	0.864	23.214	0.000				
UB	UB1	0.817	36.987	0.000	0.772	0.774	0.868	0.688
	UB2	0.872	62.575	0.000				
	UB3	0.797	42.834	0.000				
SP	SP1	0.882	45.312	0.000	0.875	0.882	0.921	0.795
	SP2	0.907	58.476	0.000				
	SP3	0.874	42.189	0.000				

The rho_A values for Hedonic Motivation (HM) and Habit (HB) slightly exceeded the recommended threshold of 1.0. According to Hair et al. (2019), this condition may occur in PLS-SEM when indicators are highly correlated within the same construct. To ensure that multicollinearity did not substantially affect the model, additional collinearity diagnostics were reviewed through bootstrapping and variance inflation factor (VIF) assessment. All VIF values remained below the critical threshold of 5.0, indicating that multicollinearity was not severe and the constructs remained acceptable for further structural analysis.

DV

Researchers conducted a DV assessment based on two complementary criteria, namely Fornell-Larcker and heterotrait-monotrait correlation ratio. According to the Fornell-Larcker criterion, DV is supported when the square root of the AVE of each construct (reported on the diagonal of Table 4) is greater than the highest inter-construct correlation in the same row and column. For the HTMT criterion, a score below 0.90 indicates adequate DV.

Table 4. DV (Fornell-Larcker Criterion Results)

Variable	BI	EE	FC	HB	HM	LV	PE	SI	UB
BI	0.899								
EE	0.627	0.859							
FC	0.498	0.600	0.967						
HB	0.082	0.013	-0.027	0.969					
HM	-0.052	-0.052	-0.016	-0.045	0.891				
LV	0.088	0.064	0.017	-0.033	-0.022	0.976			
PE	0.743	0.754	0.544	0.100	-0.067	0.075	0.829		
SI	0.699	0.689	0.524	0.152	-0.008	0.088	0.797	0.825	
UB	0.605	0.734	0.651	0.013	-0.073	0.079	0.771	0.65	0.82
SP	0.524	0.372	0.385	0.083	−0.038	0.073	0.403	0.362	0.42

Table 5. DV — HTMT Ratio

	BI	EE	FC	HB	HM	LV	PE	SI	UB	SP
BI	-									
EE	0.663	-								
FC	0.526	0.634	-							
HB	0.087	0.014	0.029	-						
HM	0.056	0.056	0.018	0.048	-					
LV	0.093	0.068	0.019	0.035	0.024	-				
PE	0.784	0.796	0.574	0.106	0.072	0.079	-			
SI	0.738	0.728	0.553	0.161	0.009	0.093	0.841	-		
UB	0.639	0.775	0.687	0.014	0.078	0.084	0.814	0.686	-	
SP	0.553	0.393	0.407	0.088	0.041	0.077	0.425	0.382	0.451	-

As shown in Table 4, the square root of AVE for each construct (diagonal scores ranging from 0.825 to 0.976) exceeded all corresponding inter-construct correlations in the same row and column, confirming DV according to the Fornell-Larcker criterion. Critically, the SP construct (√AVE = 0.892) exhibited the highest correlation with BI (r = 0.524) and UB (r = 0.427), yet the diagonal score remained above both, confirming that SP is empirically distinct from all predictor constructs. Furthermore, as reported in Table 5, all HTMT scores fell below the 0.90 threshold, with the highest score observed for the PE–SI pair (0.841), corroborating that no two constructs suffer from DV issues. Together, the measurement model results confirm that all constructs are reliable, convergent, and mutually discriminant, providing a sound basis for structural model analysis.

Structural Model

The structural model was assessed through path coefficients, t-statistics, p-scores, R^2, and model fit indices. Bootstrapping with 5,000 subsamples was applied to generate t-statistics and p-scores. A path coefficient is considered statistically significant when $p < 0.05$. Full results are presented in Table 6.

Table 6. Structural Model Results and Hypothesis Testing

Relationships	Sample Means	SD	T Statistics	P Scores
PE → BI	0.445	0.071	6.238	0.000
Effort Expectancy → BI	0.119	0.058	2.153	0.042
Social Influence → BI	0.260	0.068	3.742	0.000
FC → UB	0.469	0.047	9.848	0.000
HM → BI	−0.017	0.030	0.482	0.630
LV → BI	0.167	0.030	2.593	0.037
HB → BI	0.141	0.032	2.028	0.038
HB → UB	0.177	0.032	1.972	0.046
BI → UB	0.377	0.048	7.859	0.000
UB → SP	0.225	0.054	2.452	0.014
FC → BI	0.178	0.053	2.561	0.032
BI → SP	0.388	0.059	4.053	0.000

Of the twelve hypotheses tested, eleven were supported ($p < 0.05$). Only H5 (HM) → BI; $\beta = -0.017$; $p = 0.630$) was not supported, indicating that intrinsic enjoyment of the website did not significantly predict students' intention to continue using it. FC demonstrated the largest effect on UB ($\beta = 0.469$; $t = 9.848$), establishing it as the dominant driver of LMS adoption in this context. PE showed the second-largest

effect on BI (β = 0.445; t = 6.238), followed by BI's effect on UB (β = 0.377; t = 7.859) and BI's effect on SP (β = 0.388; t = 4.053).

H10–H12 in Structural Model

The final part of the structural model specifically evaluates the downstream effects on sportpreneurship skills (SP). H10 represents the direct influence of Use Behaviour (UB) on SP, indicating that continuous LMS engagement contributes to competency development. H11 evaluates the direct effect of Facilitating Conditions (FC) on SP through institutional and technological support mechanisms, while H12 reflects the contribution of Behavioural Intention (BI) toward improving sportpreneurship competency outcomes. These relationships are illustrated in the right-hand section of Figure 1, where SP functions as the ultimate endogenous construct in the extended model.

R^2

Table 7. R^2

Variables	R^2	R^2 Adjusted
BI	0.593	0.587
SP	0.671	0.664
UB	0.529	0.526

The exogenous constructs collectively explained 58.7% of the variance in BI, 52.6% of the variance in UB, and 66.4% of the variance in SP. All three R^2 scores exceed the threshold of 0.26 for a substantial effect, indicating that the extended UTAUT2 model has strong predictive relevance for LMS adoption and SP development in this microcredential context. The particularly high R^2 for SP (R^2_adj = 0.664) is especially noteworthy, demonstrating that the model's extended constructs particularly BI (β = 0.388) and UB (β = 0.225), together account for two-thirds of the variation in students' sportpreneurship competency outcomes.

Model Fit

Researchers conducted a global model fit evaluation based on the Standardized Root Mean Square Residual (SRMR) and Normed Fit Index (NFI). A model is fit if the SRMR is <0.080 and the NFI is >0.90. The evaluation results can be seen in Table 8.

Table 8. Modul Fit

	Saturated Model	Estimated Model	Threshold
SRMR	0.059	0.069	< 0.080
d_ULS	2081	2.855	-
d_G	2,654	2,756	-
Chi-Square	4998,426	5155.402	-
NFI	0.912	0.904	> 0.90

Both the saturated model (SRMR = 0.059; NFI = 0.912) and the estimated model (SRMR = 0.069; NFI = 0.904) satisfied the fit criteria, confirming that the extended UTAUT2 model provides an acceptable representation of the observed data structure. The difference between the saturated and estimated SRMR scores (Δ = 0.010) is small, indicating that the imposed structural constraints do not substantially distort the model's fit to the data.

Discussion

FC as the Dominant Driver of LMS Adoption

The support for H4 confirms that Facilitating Conditions (FC) were the strongest predictor of Use Behaviour (UB) in the microcredential learning environment. This finding indicates that students' actual use of Pedagogi.id depended largely on the availability of technological infrastructure, internet access, de-

vice compatibility, and institutional technical support. In the context of sportpreneurship learning, students were more likely to engage with the LMS when the system was stable, accessible, and supported by the university environment. This result is consistent with previous UTAUT2 studies in higher education, which reported that facilitating conditions significantly influence technology adoption in mandatory learning systems. The finding also suggests that LMS adoption in microcredential programmes is not only determined by students' motivation, but also by the quality of institutional digital readiness.

PE and SI: Motivation and Peer Dynamics

The findings also support H1 and H3, showing that Performance Expectancy (PE) and Social Influence (SI) positively affected Behavioural Intention (BI). PE emerged as one of the strongest predictors of intention, indicating that students were willing to use Pedagogi.id because they believed the LMS could improve learning effectiveness and support the development of sportpreneurship competencies. This suggests that students prioritize practical academic benefits when adopting educational technology. Meanwhile, the significant effect of SI indicates that lecturers, classmates, and peer interactions also influenced students' willingness to continue using the LMS. In collaborative learning environments such as microcredential programmes, recommendations and support from peers may strengthen confidence in technology adoption.

LV and HB: Emerging Predictors in Microcredential Contexts

The support for H6, H7, and H8 demonstrates that Learning Value (LV) and Habit (HB) contributed positively to students' behavioural intention and LMS usage. Students who perceived that Pedagogi.id improved their learning experience and provided meaningful educational benefits showed stronger intention to continue using the platform. Habit also showed a positive influence on both behavioural intention and actual use behaviour, although the effect size remained moderate. This result may be explained by the relatively recent implementation of the microcredential programme, where continuous LMS usage patterns are still developing among students. Nevertheless, the findings indicate that repeated exposure and familiarity with the LMS gradually strengthen long-term technology acceptance.

The Non-Significant Effect of HM: Theoretical Implications

H5 was not supported, indicating that Hedonic Motivation (HM) did not significantly influence Behavioural Intention (BI). This finding suggests that students did not use Pedagogi.id because of entertainment or enjoyment factors. Instead, students appeared to focus more on the functional and academic value of the LMS. Since the platform was implemented as part of a formal microcredential programme, students may have viewed it primarily as a compulsory academic tool rather than an enjoyable digital environment. The low mean scores of HM items also support this interpretation. These results are consistent with previous studies reporting that hedonic motivation tends to have weaker effects in formal educational systems compared to voluntary consumer technologies.

Extended Model: Sportpreneurship as a Novel Outcome Variable

One of the main contributions of this study is the support for H10 and H12, which demonstrate that Behavioural Intention (BI) and Use Behaviour (UB) significantly influenced Sportpreneurship Skills (SP). These findings indicate that students who actively intended to use and consistently engaged with the LMS showed better development of sportpreneurship competencies. The extended UTAUT2 model therefore not only explains technology acceptance but also demonstrates its relationship with competency development outcomes. The high R^2 value for SP further suggests that LMS acceptance factors play an important role in shaping students' entrepreneurial readiness in sport education contexts. This result expands previous UTAUT2 studies that mainly focused on behavioural outcomes without examining downstream competency development.

Cross-Contextual Applicability and Boundary Conditions

Although the findings provide strong support for the extended UTAUT2 framework, several limitations should be acknowledged. The participants were limited to students enrolled in the Pedagogi.id microcredential programme in Indonesia, which may affect the generalizability of the results to other educational settings or countries. Differences in digital infrastructure, institutional culture, and technology

readiness may influence LMS acceptance differently across contexts. Future studies are therefore encouraged to involve multiple institutions or cross-country comparisons to examine the stability of the proposed model in broader educational environments.

Conclusions

This study examined the factors influencing students' acceptance and use of the Pedagogi.id LMS within a microcredential sportpreneurship program and assessed the downstream effects on SP development using an extended UTAUT2 framework. Based on data from 491 students from multiple universities in Indonesia analyzed through PLS-SEM, eleven of the twelve hypothesized relationships were supported.

Three principal findings warranted emphasis. First, the leading predictor of LMS Use Behaviour (β = 0.469) was FC which included campus infrastructure, device accessibility, and technical support, highlighting that institutional readiness was a prerequisite for technology uptake in microcredential education settings . Second, PE and SI were the key determinants of Behavioural Intention, indicating that students' adoption decisions were indeed driven by perceived instrumental utility and peer-normative dynamics rather than hedonic enjoyment. Third and most importantly, the extended model showed strong predictive validity for SP (R^2adj = 0.664), suggesting that LMS adoption produced tangible domain-specific competency outcomes when the learning environment was technically supportive and motivationally aligned with professional skill development goals.

The study's theoretical contribution was the extension of the UTAUT2 model to include SP mastery as a new downstream outcome variable, thereby creating a competency-development pathway from technology acceptance to professional skills that existing frameworks had not previously modelled. In practice, the findings pointed university administrators and curriculum designers towards a clear investment priority – sustainable digital infrastructure ecosystems – as the foundational lever for improving both LMS adoption and sportpreneurship competency development among pre-service physical education teachers. Programmes that combined facilitating condition investments with pedagogically meaningful and PE aligned LMS content were best positioned to cultivate entrepreneurially capable sport educators required by Indonesia's SDG 4 and SDG 8 commitments .

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