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User acceptance of learning management systems in Moroccan higher education: A TAM2-based study

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Abstract:

The present study aims to evaluate the experience of e-learning students in the context of higher education regarding the use of a learning management system (LMS) named Marketing PSJ. This platform aims to participate in the digital transition by making marketing education accessible to a wide audience of students and professionals, in a sustainable development approach in Morocco. This study is based on a quantitative analysis employing a form filled out by 240 users.

The study explores different technology acceptance models, referring to the technology acceptance model TAM (Davis, 1986), the revised version TAM 2 (Venkatesh and Davis, 2000), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, and Davis, 2003). This exploration allowed us to choose our framework based on TAM2, as it is generally a robust option for evaluating a distance learning platform (LMS).

Preliminary results show positive feedback regarding the use of the PSJ marketing platform. With a sample that constitutes 40% of the population, which is considered very significant, the validity tests that have been carried out indicate an excellent score with a KMO index of 0.907 and a favorable sphericity index. All this constitutes a strong starting point for pursuing research in this same direction in order to validate our hypothesis extracted from the TAM 2 model.

The results confirm the validity of several hypotheses. First, the perception of usefulness (H1) and attitude towards use (H3) which are significant factors in predicting the intention to use the platform. These two variables show high and significant coefficients, this underlines the importance of the perceived functionality of the platform and positive feelings towards its use on the intention to use.

Social influence (H4), is also validated as a predictive factor of the intention to use. This highlights the role of social impact in the students' decision. On the other hand, perceived ease of use (H2) and facilitating conditions (H5) do not have a statistically significant effect on the intention to use. These results may suggest that, for students, the perception of ease of use and available resources is not a major criterion, unlike perceived usefulness and social influence.

This study highlights the main factors that influence the acceptance and use of online learning platforms in higher education, thus offering avenues to strengthen students' engagement with digital tools in the Moroccan context. The results highlight the importance of appropriate design and promotion of platforms to meet students' needs and motivations. This research lays the foundation for further study of technology adoption in education, supporting the continued integration of digital solutions to enrich learning experiences in higher education in a rapidly changing world, especially in terms of technology.

Keywords: e-learning, learning management systems (LMS), technology acceptance model(TAM),Unified Theory of Acceptance and Use of Technology (UTAUT) .
JEL Classification: I23, M15, D83
Paper type: Empirical study

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1.Introduction

Education is undergoing significant change stimulated by several factors, the most important of which are digital transformation and the emergence of new technologies that contribute to a significant change in the student experience that becomes more competitive and student-oriented (Ennouari et al, 2023).

The COVID-19 pandemic that humanity has undergone has had a negative impact on the healthcare system and the socioeconomic landscape, as we can consider it a moment of instability. It has also been a catalyst for the acceptance of technology, which has led to a rapid transformation of the education sector. (Hassan, 2023)

The profile of the modern learner has also played a crucial role in this transformation. Only in a single decade, we have seen the number of internet users around the globe double, from 2.6 billion in 2013 to 5.4 billion in 2023 according to the International Telecommunications Union, with a generation that has become increasingly connected and requires us to adapt educational content that aligns with its lifestyle and learning preferences (Kotler, Juidette et al. 2024).

The education sector is following this transition. According to a World Bank report in 2023, the value of the EdTech sector between 1990 and 2022 reached $332 billion, with most of the growth occurring in the US, China, India, and Europe.

Based on Tawafak et al. (2023), Barsak et al. (2018), and Alhindawi (2023), e-learning can be defined as learning using technological devices. The goal is to increase the flexibility and relevance of students' educational experiences, no matter where they live. This innovative approach to education offers many benefits for student achievement and plays an important role in democratizing access to academic material and positioning itself as a contemporary approach to education.

According to Mokhtar Brika et al. (2022), the origins of e-learning date back to 1990. This new learning method brought more personalization to the learning experience and blended a different instructional design and pedagogy than the traditional one.

In this context, in order to monitor the progress of modernization and pedagogical innovation in Morocco, the Ministry of Higher Education has established several projects aimed at the digitalization of training, particularly through the Pact Eseri launched in 2022.

According to a statement released by the Ministry of Higher Education, Scientific Research, and Innovation, annual calls for projects are launched in partnership with the CNDE (National Center for Digitalization and Distance Learning) and aim to digitize university courses through the creation of digital educational resources. A total budget of 14.4 billion dirhams has been allocated to this initiative, according to the same source.

The efforts of faculty members are also proving important in participating in this transition.

A study conducted on research in Africa and students' acceptance of LMS confirmed that most LMS (Learning Management Systems) adoption studies originate from developed countries, particularly from Europe, Asia, and Anglo-Saxon countries, while studies at the african level reliance few (Bervell & Umar, 2017; Sulaiman et al., 2023).

The purpose of our study is to assess the acceptance of this new pedagogical innovation among students through a quantitative study based on users of a digital platform offering asynchronous courses that is part of a flipped pedagogy approach. This study will allow us to explore a topic that is rapidly emerging in our local context for economics students.

Through this study we will explore different technology acceptance models, referring to the technology acceptance model TAM (Davis, 1986), the revised version TAM 2 (Venkatesh and Davis, 2000), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, and Davis, 2003). This exploration allowed us to choose our framework based on TAM2, as it is generally a robust option for evaluating a distance learning platform (LMS).

In the following sections, our article will be divided into five parts: our literature review, in which we will explore the various empirical studies conducted previously and the main concepts; the second section devoted to methodology; the third section devoted to results; the fourth section devoted to discussion of the results; and the final section devoted to limitations and avenues for future development.

2.Literature review:

Masalimova and colleagues discuss the impact of COVID-19 on the adoption of distance learning strategies in higher education settings. With the advent of COVID-19, the pandemic severely accelerated the transition to online learning until it became the only alternative at that time. Those circumstances pushed e-learning development to higher levels, and institutions worldwide developed new methods for delivering instructional programs using e-learning platforms.

International studies have been conducted that confirm that students and teachers' acceptance of this technology is influenced by factors such as usefulness, ease of use, and social influence (Bervell & Umar, 2017; Sulaiman et al., 2023). Most of these studies are concentrated in Europe and Anglo-Saxon countries. In contrast, in Morocco and even in northern Africa, there are still few studies investigating the acceptance of this technology in higher education (Alami, 2022; Safsouf et al., 2020).

Learning management system (LMS)

Both Bradley (2021) and Furqon et al. (2023) emphasize the significant role of learning management systems (LMS) in education. The LMS is defined as a platform that serves students and teachers by helping them provide and manage online educational content. It helps the two sides share courses and feedback, which creates a collaborative environment.

2.1 Scientific models of technology acceptance:

To evaluate the LMS learning experience in higher education, we will be exposing some scientific models. These frameworks dive into various aspects, such as student satisfaction, system effectiveness, and student acceptance.

According to Marikyan, D., and Papagiannidis, S. (2023), the Technology Acceptance Model (TAM) developed by Davis (1986) came to help understand the individual acceptance of information systems. The model referring to the same study is based on the Theory of Reasoned Action (TRA), which focuses on a psychological perspective (Fishbein and Azjen 1975).

The model aims to measure user acceptance based on key variables that should be validated through empirical research: perceived usefulness, perceived ease of use, and behavioral intention to use (Figure 1).

Many studies have validated this framework, particularly in education (Camilleri, 2021; Belew et al., 2024). In 2016, Yeou found that PU and PEOU influence the acceptance of Moodle in a blended learning context. However, this model has certain limitations as it does not take into account factors such as social and contextual roles (van Raaij & Schepers, 2008).

The work by Francisco Javier Rondan-Cataluña and Jorge Arenas-Gaitán, titled "A comparison of the different versions of popular technology acceptance models: A non-linear perspective published in 2015 offers an overview of the TAM model and its extensions.

According to the study, the model TAM has evolved over time to have a better understanding of user acceptance of technology, beginning with the second version, which appeared in 2000 and was introduced by Venkatesh and Davis. This model introduced additional factors, such as social influence factors and cognitive instrumental processes. Studies conducted around the world have shown that Tam2 is a robust framework for technology acceptance. In Jordan (Altawalbeh, 2023), research results showed that there is a statistically significant positive

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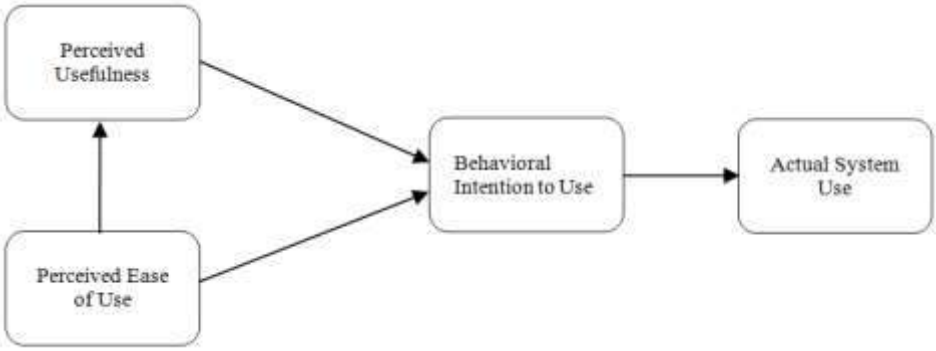
effect that adds social influence and job relevance to the model. In Vietnam, Khoa et al. (2020) also confirmed that social influence and job relevance increase perceived usefulness, which predicts intention. However, in the local context, research remains limited, giving this article its originality.

Figure 1: TAM Model, Davis (1986)



Source: Adapted from Davis (1989), Perceived usefulness, perceived ease of use, and user acceptance of information technology, MIS Quarterly, 13(3), 319–340.

In 2008, Venkatesh and Bala came up with another updated version, introducing factors like computer self-efficacy, perception of external control, computer anxiety, and enjoyment.
In 2003, Venkatesh, Morris, and Davis introduced the UTAUT (Unified Theory of Acceptance and Use of Technology). This model incorporated many previous models, including TAM, and moderated variables such as age, gender experience, and some other core determinants of intention and usage of technology.
UTAUT2, published in 2012 by Venkatesh, Thong, and Xu, was considered a new extension of UTAUT, adding three new constructs to the original model: hedonic motivation, price value, and habit.

2.2 Hypotheses Development

Based on TAM 2 (Venkatesh and Davis, 2000), we chose to adopt these factors: perceived utility, perceived ease of use, attitude towards use, influence, intention to use, and enabling conditions. Our hypothesis will be defined as follows: Research has confirmed that PU is a powerful factor in terms of intention use (Camilleri, 2021; Belew et al., 2024). In the Moroccan context, Alami 2022 notes that this factor is key to digital learning acceptance, so we would maintain this as our first hypothesis.

H1: Perceived usefulness influences the intention to use the LMS.

Research conducted by Altawalbeh, 2023, Khoa et al, 2020 showed that Perceived Ease of Use (PEOU) influences PU and intention to use, while other studies, such as that by Camilleri (2021), found that for students who are familiar with digital platforms, the effect of this factor becomes less impactful. These studies show that this factor has an influence, but its impact varies depending on the context.

H2: Perceived ease of use influences the intention to use the LMS.

In the systematic review by Bervell and Umar (2017) on the acceptance of LMS in the sub-Saharan context, the study confirmed that attitude is an essential element in the intention to use. A Moroccan study by Alami 2022 also emphasizes the powerful relationship between these two factors.

H3: Attitude toward use influences the intention to use the LMS.

Social norms play a fundamental role in the acceptance of technology. This assertion is based on the work of several authors citing the work of Altawalbeh (2023) in the Jordanian context,

as well as Khoa et al. (2020) in Vietnam, and also Morocco through the study by Tariq and Aoujil (2023) on the use of LMS for improving writing skills.

H4: Social influence influences the intention to use the LMS.

Enabling conditions also play an important role in the intention to use technology. Ahmad et al. (2023) found in their systematic review that a lack of resources and solid infrastructure can limit the adoption of technology. In Morocco, authors such as Safsouf et al. (2020) have also supported this finding. However, Tariq and Aoujil (2023) state that the role of this factor remains less important than factors such as PU or social influence.

H5: Facilitating conditions influences the intention to use the LMS.

3.Methodology

3.1 Research Design

This study aims to evaluate the e-learning experience of higher education students in the field of economics. The research will rely on the platform Marketing PSJ, founded by Moroccan professor, to assess the student's acceptance of the e-learning experience. The platform Marketing PSJ, created in 2022, provides various educational materials and resources related to the field of marketing. It targets students and professionals who seek to improve their understanding of strategic and operational marketing. The content supplied includes several multimedia forms, like articles, tutorials, and scheduled courses. The website was the tool deployed for a scripted asynchronous course designed to allow students to engage in formative assessment after each chapter of the course in the form of automatically corrected Multiple Choice Questions (MCQs) (Holmes & Gardner, 2006). The MCQ tests are completed by students at home, enabling them to revisit gaps and misunderstandings in their learning. This study is a quantitative cross-sectional study based on the collection of responses from our target group, taking an exploratory approach through hypothesis testing. The questionnaire is based on the revised Technology Acceptance Model TAM2 (Venkatesh and Davis, 2000), as it is generally a robust option for evaluating a distance learning platform (LMS). This model takes into consideration various crucial aspects, such as utility perception, ease of use, social influence, and enabling conditions. The approach we have adopted for the construction of measuring scales is based on the Churchill paradigm (1979). This approach allows us to build rigorous questionnaire-type measuring instruments for multiple scales.

Since our variables are quantitative, we opted for a Likert scale (1932).

3.2 Sample and data

Our study focuses on evaluating the e-learning experience, so our population will be the students that use the marketing PSJ platform. Given the time and cost constraints, we needed to find a sampling method that would meet our needs while allowing us to achieve relatively precise results. For this reason, we opted for a non-probability method called convenience sampling. The advantage of this method is its ability to cover a large number of respondents in a very short time and with a minimum budget (Malhotra, 2014). Our population in this study is the students who took the marketing course on the LMS platform, which numbered around 600 users for the 2023-2024 academic year. Our sample calculated with a confidence level of 90% and a margin of error of 4.5% is 216 according to the following formula (Cochran (1977):

$$n = \frac{Z_{\alpha} S}{E}$$

- n: the sample size.
- α: the desired level of significance.
- E: the level of precision sought.

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- Z: a constant extracted from the tables of normal law.
- s: the standard deviation of observations.

Thus, after distributing our questionnaire, which was done through class representatives and covered the entire sample, we were able to collect 240 responses using Google Forms. This is considered optimal for our estimated population of 600, with a response rate of 40% (Sekaran & Bougie, 2016). The majority of the sample are women, making up 72.9% of the sample, with an average age of 21 years and a standard deviation of 2.12, which reflects a young academic audience. A significant part of our sample is still in their first year (42.5%) and second academic year (55.4%), which indicates that the platform is used by undergraduate students.

3.3 Data analysis technique and research model

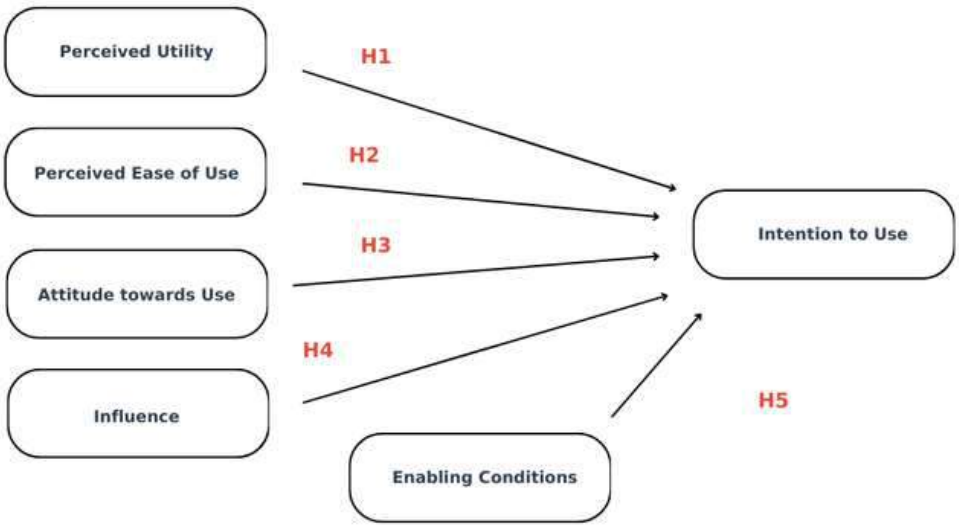
In order to analyze the data, we collected, we opted for SPSS software, which is well known in the field of social sciences for quantitative analysis.

The processing procedure consisted of five main phases: data verification and preparation for decoding. Since the data was on a Likert scale, we converted it into numbers from 1 to 5. We then performed a descriptive analysis to get an idea of the general pattern of responses, followed by reliability and validity testing, correlation analysis, and finally regression analysis to confirm or refute our hypotheses.

The revised TAM2 model adds additional dimensions to the original TAM model, making it more comprehensive for evaluating the acceptance and use of a technology. The following is a brief overview of the key dimensions of the revised TAM 2:

- Perceived Utility
- Perceived Ease of Use
- Attitude towards Use
- Influence
- Enabling Conditions
- Intention to Use

Figure 2: My conceptual model based on TAM2 (Venkatesh & Davis, 2000)



Source: Prepared by the authors

To validate or denounce these hypotheses, we sent a questionnaire to a sample group of learners based on the following questions that we can classify by construct (to items for each construct):

Table 1: Questions by construct

Construct	*Question*
Perceived Utility	To what extent do you think using the platform improves your academic performance?
	Does the platform facilitate your learning tasks effectively?
Perceived Ease of Use	Is the platform easy to use?
	Are the platform features intuitive?
Attitude towards Use	In general, how would you rate your attitude towards using the platform?
	How supportive are you of continued use of the platform?
Influence	To what extent does your entourage (teachers, classmates) influence your decision to use the platform?
	Do the opinions of others affect your attitude towards using the platform?
Enabling Conditions	Are the resources and support needed to use the platform easily accessible?
	Is the platform compatible with your current technology?
Intention to Use	To what extent do you intend to use the platform in the future?
	Would you recommend the platform to other students?

Source: Prepared by the authors

The study will be based on a linear regression where the construct of Intention to Use (ITU) is influenced by the other constructs of the TAM2 model. Thus, our dependent variable is Intention to Use (ITU), while the independent variables are Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude toward Use (ATT), Social Influence (SI), and Facilitating Conditions (FC), according to the following linear regression equation:

$$ITU = \beta 0 + \beta 1\ PU + \beta 2\ PEOU + \beta 3\ ATT + \beta 4 SI + \beta 5 FC + \varepsilon$$

4.Results analysis

4.1 Descriptive analysis

Descriptive analysis based on responses coded from 1 to 5 (1 for strongly disagree and 5 for strongly agree) indicates highly positive feedback for perceptions of usefulness and attitude toward the platform, while the other constructs show different variations.
The following table shows the results of the descriptive analysis. For clarity, we have opted for short labels instead of question phrases.

Table 2: Item descriptive statistics

Construct	Item	N	Mean	SD
PU	PU1	240	4.25	0.78
	PU2	240	4.35	0.79
PEOU	PEOU1	240	4.19	0.99
	PEOU2	240	3.97	0.87
ATT	ATT1	240	4.17	0.80
	ATT2	240	4.14	0.89
SI	SI1	240	3.85	01.03
	SI2	240	2.85	1.26
FC	FC1	240	4.13	01.04
	FC2	240	4.41	0.87
ITU	ITU1	240	04.08	0.83
	ITU2	240	4.38	0.84

Source: Prepared by the authors

The first step involves conducting factor analysis on primary components to ensure that all the selected items for a construct are correlated and measure only one dimension when they are

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collected. Our factor analysis requires a sample size that is four times larger than the number of items. The number of respondents in our case is 240, which exceeds the number of items, which is 12 items. We will use SPSS to perform factor analysis on all our items and analyze the results. First, we checked if there was a correlation between the items. For this reason, we will conduct the Bartlett sphericity test. The null hypothesis is that there are no correlations between the items. Then we analyze the Kaiser-Meyer-Olkin index (KMO). The closer this index is to 1, the more relevant the factor analysis.

After our manipulation in SPSS software, we obtained a KMO score of 0,907, which is an excellent result. This score indicated that our variables share a substantial amount of common variance, and our data is great for further examination. The Bartlett's Test also indicated a large number of 1,265,357 degrees of freedom at 66 and a significance level (sig.) of 0.000, which means that our data are obviously related, affirming their suitability for factor analysis.

4.2 Principal Component Analysis (PCA)

Now we will move to another step in our research which is the principal component analysis PCA that will help us to identify the key structures in our database while minimizing the loss of information provided.

According to the total variance table provided by SPSS and Kaiser principle the three first principal components explain 64.296% of the total variance in the data. We decided to keep also the third component 0.947 that explains 8% of the variance. This indicates that these three components capture the majority of the information in our 12 variables.

Now we will be interested in the matrix of representation qualities of the global model. The latter tells us about the value of the variance that an item shares with all the other items that belong to its same dimension.

We note that all items have an extraction value greater than 0.6 except an item ("Is the platform compatible with your equipment?") has a relatively low communality (0.356), suggesting that it is less well explained by the principal components.

Despite its low communality, we decided to keep this question due to its importance in the research.

After the factor analysis of our global model, we do the same thing for each of our variables to ensure that they are valid.

Table 3: Summary Table of Validity and Reliability Analysis Results

Variable	Nb.items	KMO	%variance	Alpha de Cronbach
Perceived Utility	2.00	0.50	80.47	0.76
Perceived Ease of Use	2.00	0,50	72.51	0.76
Attitude towards Use	2.00	0,50	84.55	0.75
Influence	2.00	0,50	68.38	0,76
Enabling Conditions	2.00	0,50	71,2	0.76
Intention to Use	2.00	0,50	83.08	0.75

Source: Prepared by the authors

We observe that all KMO indices are greater than 0.5 and that the percentage of variance explained by each factor is greater than 68%.

The Cronbach index is also greater than 0.7 so we can say that the variables are reliable.

After checking the reliability and validity of our scales we will proceed to the verification of Hypothesis.
But first we will create new variables by calculating the arithmetic mean.

4.3 Verifying Hypotheses

In order to test the previously defined hypotheses we have opted for the linear regression method that will allow us to estimate the relationship between our dependent variable and the others independent variables.
Before we proceed to the regression analysis, we must ensure that the conditions of its application are verified.

4.3.1 Residual Independence

We note that the value of the Durbin-Watson test is close to 2 so the independence of the residues is verified.

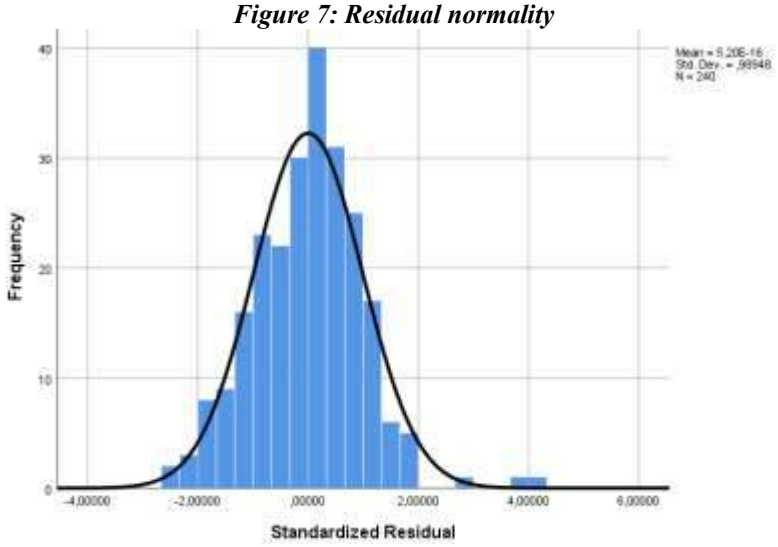
Table 4 : Residual Independence using Durbin Watson test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	
1	.727[a]	0.529	0.518	0.52899	0.529	52.472	5	234	0	2.099

Source: Prepared by the authors

4.3.2 Residual Normality

Figure 7: Residual normality



Source: Prepared by the authors

We notice that the residues follow a normal law, the histogram of the standardized residues follows the Gauss curve and we also find that all data are closer to the reference line in the P-P plot.
So, we can say that the normality is verified.

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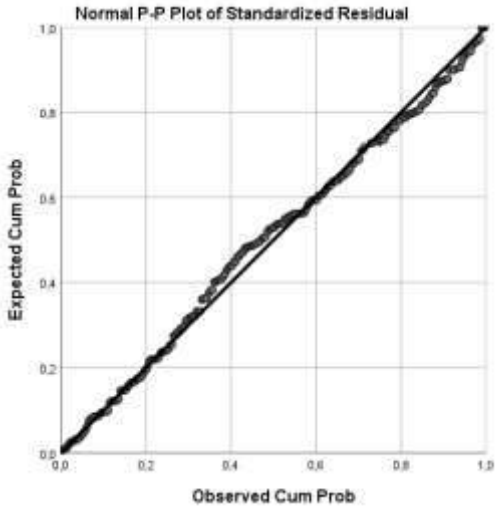
Figure 8: Histogram of the standardized residues

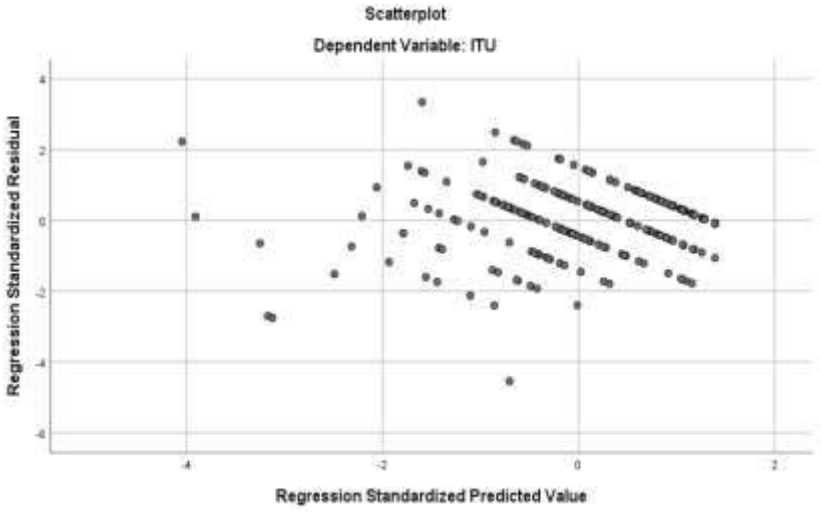


Source: Prepared by the authors

4.3.3 Homoscedasticity

After plotting a scatter plot of the residuals versus the fitted values, we noticed some dispersion values that form; a definite pattern, thus rejecting the homoscedasticity hypothesis. The Breusch-Pagan test was then applied to confirm this hypothesis, with results of 31.45 for the Lagrange multiplier statistic and a p-value of 7.6e-6, which confirms the same result.
To overcome this heteroscedasticity in order to ensure reliable inferences, the model was fitted with robust standard errors (HC3), resulting in an R-squared of 57.2%. The main coefficients of the model, such as PU (0.4208, $p < 0.001$) and ATU (0.2748, $p = 0.001$), are significant, this validates the effect of these variables on our dependent variable Intention to use. This method allowed us to confirm the statistical validity of the model without modifying the data, through the adjustment of standard errors.

Figure 9: Homoscedasticity Scatter Plot



Source: Prepared by the authors

4.3.4 Multicollinearity

All VIF values are less than 5, which indicates low multicollinearity between the predictor variables. This means that the variables are sufficiently independent of each other. Therefore, multicollinearity is not a problem in this model.

Table 5: Coefficients table

Model	Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.	Tolerance	VIF
1	(Constant)	0.397	0.226	–	1.759	0.080	–	–
	PU	0.421	0.067	0.386	6.267	0.000	0.482	2.077
	PEOU	0.016	0.058	0.017	0.279	0.780	0.508	1.967
	ATT	0.275	0.068	0.276	4.042	0.000	0.391	2.557
	Influence	0.124	0.038	0.153	3.268	0.001	0.837	1.194
	ECond	0.093	0.054	0.098	1.714	0.088	0.563	1.776

Source: Prepared by the authors

The model is overall significant and explains well the variance of the dependent variable. With an R-square of 57.2% and a significant F, the model seems to be a good fit to predict our dependent variable intention to use based on our five predictors (ECond, Influence, PU, PEU, ATU). The Durbin-Watson close to 2 indicates an absence of autocorrelation in the residuals, which confirms the validity of our model.

Table 11: Linear Regression Model Summary and ANOVA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	0.757	0.572	0.563	0.51006	0.572	62.667	5	234	0.000	1.891

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	81.518	5	16.304	62.667	0.000
Residual	60.878	234	0.260		
Total	142.396	239			

Source: Prepared by the authors

4.4 The multiple regression equation

The multiple regression equation, which is obtained after analyzing the coefficients of each predictor in the table above, is

$$ITU=0,397+(0,421\times PU)+(0,016\times PEU)+(0,275\times ATU)+(0,124\times Influence)+(0,093\times ECond)+\varepsilon$$

With ε = residuals

H1 (Perceived Utility -> Intent to Use): *The analysis shows a positive and significant coefficient for PU (0.421, $p < 0.05$), which confirms that the perception of the platform's usefulness is indeed positively associated with the intention to use. This hypothesis is validated.*

H2 (Perceived Ease of Use -> Intent to Use): *The coefficient for PEU is positive but not significant (0.016, $p = 0.780$), which indicates that the perceived ease of use has no statistically significant link with the intention to use. We can say that Hypothesis H2 is not validated.*

H3 (Attitude towards Use -> Intent to Use): *ATU presents a positive and significant coefficient (0.275, $p < 0.05$), which confirms that the positive attitude towards the use of the platform effectively predicts the intention to use. Hypothesis H3 is validated.*

H4 (Influence -> Intent to Use): *The coefficient for Influence is also positive and significant (0.124, $p < 0.05$), this validates the idea that social influence is positively associated with the intention to use the platform. H4 is then validated.*

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H5 (Enabling Conditions -> Intent to Use): *Finally, ECond shows a positive but marginally insignificant coefficient (0.093, p = 0.088). Although there is a positive effect, the statistical significance is not sufficient to formally validate H5.*

Table 12: Summary of Hypotheses Validation

Hypothesis	Description	Coefficient	Significance (p-value)	Validation
H1	Perceived Utility (PU) is positively associated with Intent to Use (ITU).	0.421	$p < 0.05$	Validated
H2	Perceived Ease of Use (PEU) is positively associated with Intent to Use (ITU).	0.016	$p = 0.780$	Not validated
H3	Attitude towards Use (ATU) positively predicts Intent to Use (ITU).	0.275	$p < 0.05$	Validated
H4	Social Influence (Influence) is positively associated with Intent to Use (ITU).	0.124	$p < 0.05$	Validated
H5	Enabling Conditions (ECond) are positively associated with Intent to Use (ITU).	0.093	$p = 0.088$	Marginally invalidated

Source: Prepared by the authors

Our study provides a solid foundation for an in-depth analysis of the evaluation of an LMS platform in higher education, guided by the TAM 2 model of technology acceptance. Preliminary results show positive feedback regarding the use of the PSJ marketing platform. With a sample that constitutes 40% of the population, which is considered very significant, the validity tests that have been carried out indicate an excellent score with a KMO index of 0.907 and a favorable sphericity index. All this constitutes a strong starting point for pursuing research in this same direction in order to validate our hypothesis extracted from the TAM 2 model.

This study is based on the TAM 2 model to assess the acceptance and experience of using the LMS Marketing PSJ platform among higher education students at the National School of Commerce and Management in Casablanca. The results confirm the validity of several hypotheses. First, the perception of usefulness (H1) and attitude towards use (H3) which are significant factors in predicting the intention to use the platform. These two variables show high and significant coefficients, this underlines the importance of the perceived functionality of the platform and positive feelings towards its use on the intention to use.

Social influence (H4), is also validated as a predictive factor of the intention to use. This highlights the role of social impact in the students' decision. On the other hand, perceived ease of use (H2) and facilitating conditions (H5) do not have a statistically significant effect on the intention to use. These results may suggest that, for students, the perception of ease of use and available resources is not a major criterion, unlike perceived usefulness and social influence.

5.Discussion

Our results show that our proposed research model explains a significant portion of the intention to use variable. We find that three independent variables have a significant influence, namely Perceived Usefulness (PU), Attitude toward Use (ATT), and Social Influence (SI), while the influence of the variables Perceived Ease of Use (PEOU) and Facilitating Conditions is not significant.

Perceived Usefulness (PU) is a very important factor in our study. This result is shared with many previous studies that show that students adopt platforms such as LMS when they perceive clear learning benefits, citing as an example the 2021 study by Camilleri, which found that usefulness beliefs strongly influence students' intention to use LMS in the post-COVID-19 context.

Attitude toward Use (ATT) is also an important predictor in our model. A study conducted in 2024 (Belo AVM et al) confirms our findings by noting that PU and PEOU do not directly influence intention to use but influence attitude, which in turn influences intention to use, which is similar to our results.
Social influence also indicates that peers and teachers, as role models, have a major impact on students' intention to use. This agrees with studies that deployed the TAM model and the UTAUT model for practice development contexts or transition contexts. A study in the MENA region also highlighted the importance of this factor (Muneer et al 2021).
The impact of Perceived Ease of Use is not significant in our study. This can be explained by the fact that students are already familiar with similar platforms or change their perception of the difficulty of using the platform with experience. A longitudinal study confirmed this finding (Venkatesh 2022) using the same TAM model.
As for the Facilitating Conditions (FC) factor, which is not significant in our study, studies based on LMS show that facilitating conditions have an impact on usage behavior when compared to intention. If students have all the technological resources they need to work and obtain the support they want, this factor becomes insignificant (Venkatesh 2003).
In the Moroccan context of higher education, specifically in a business school, the results lead us to consider prioritizing elements that demonstrate the benefits of training and proposing solutions for obtaining continuous feedback on the experience with the platform. We must also consider boosting the role of social influence by creating word of mouth between students and teachers to use this technology and, finally, consider usability and support factors to ensure optimal experience for students.

6. Conclusion

Despite the promising results of this study, it has certain limitations. First, the sampling was conducted for convenience to ensure time-efficient data collection on a platform used by a specific profile of students at the National School of Commerce and Management, which could limit the generalizability of the results. A more diverse sample, composed of institutions specializing in economics or from different fields, could offer different perspectives and strengthen the external validity of our study. Second, although the analysis of explained variance (R^2 of 57.2%) is satisfactory, this means that 42.8% of the variance in intention to use remains unexplained. Other contextual or individual factors, not included in the TAM 2 model, could potentially be explored to complement the model, such as personal motivation, for example.
Finally, to further this research, a longitudinal approach would allow us to examine the evolution of platform acceptance over time, such as analyzing intention to use the platform at the beginning and end of the semester to gain insight into progression after familiarization. Researching another sophisticated model, integrating other technology acceptance models or adding user satisfaction variables, could provide a more comprehensive view of student engagement with the LMS platform in higher education.
Our study opens the door to other future studies, especially since many institutional and individual initiatives are constantly evolving.
In summary, this study highlights the main factors that influence the acceptance and use of online learning platforms in higher education, thus offering avenues to strengthen students' engagement with digital tools in the Moroccan context. The results highlight the importance of appropriate design and promotion of platforms to meet students' needs and motivations. This research lays the foundation for further study of technology adoption in education, supporting the continued integration of digital solutions to enrich learning experiences in higher education in a rapidly changing world, especially in terms of technology.

In order to support this change, it is recommended that institutions and faculty make greater efforts to offer courses adapted to the new generation of students. This transition can also be reinforced by institutional efforts and the creation of e-learning departments and studios in various faculties and schools in Morocco. It is important not to forget to integrate students into the course creation process throughout production that allows us to gain pedagogical effectiveness.

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