T I E Journal
Volume 4 Issue 1, 2026
http://ijtie.com/v401/n40111
ISSN: 2820-7521

The International Journal of Technology, Innovation, & Education

Investigating university students' attitudes toward the Rosetta Stone Platform using the unified theory of acceptance and use of technology model

Abdel Moula El Guermat *, **Abdellah El Boubekri**, **Oussama Moussaoui**, **and Mohammed Benamrane**

Applied Communication in Context Lab, Faculty of Letters and Human sciences, English studies Department, University of Mohammed First, Oujda, Morocco

abdelmoula.elguermat@gmail.com
* Corresponding author

Received: October 27, 2025; **Accepted**: December 09, 2025; **Published**: February 01, 2026

Abstract

This study investigates the attitudes of S5 students in the English Excellence Track at the Faculty of Letters and Human Sciences, Mohammed First University in Oujda, toward using the Rosetta Stone platform for learning English. A mixed-methods approach was used, combining quantitative data from a questionnaire and qualitative data from exam responses. Based on the Unified Theory of Acceptance and Use of Technology (UTAUT), the questionnaire focused on performance expectancy, effort expectancy, social influence, and facilitating conditions. The quantitative data were analyzed using descriptive statistics, Pearson and Spearman correlation, and regression. The qualitative data were analyzed using thematic analysis. The findings show that students' attitudes are strongly influenced by performance expectancy, particularly when they see the platform as helpful. However, effort expectancy did not have a direct effect unless digital literacy was considered. Technical issues, such as problems with pronunciation detection and time tracking, were significant sources of frustration. The study suggests that universities should offer digital literacy training, improve technical features, and reconsider making the platform a mandatory tool.

Keywords: Rosetta Stone, technology integration, attitudes, computer-assisted language learning, higher education

El Guermat, A. M., El Boubekri, A., Moussaoui, O., & Benamrane, M. (2026) Investigating university students' attitudes toward the Rosetta Stone Platform using the unified theory of acceptance and use of technology model. *The International Journal of Technology, Innovation, and Education*, *4*(1), 72–103. https://ijtie.com/v401/n40111

1. Introduction

Globalization and technological advancements have transformed the modern job market and created a demand for skills often overlooked by traditional education. In response, universities around the world, including those in Morocco, have started reconsidering their curricula design, teaching methods, and overall institutional objectives (Houssami, 2024). For instance, higher education in Morocco has recently introduced new reforms aimed at modernizing university programs. These reforms have particularly heightened the need for university students to acquire essential foreign languages that would ultimately prepare them to function within today's globalized market (Mackie, 2023).

One approach to achieving this has been the adoption of Rosetta Stone as a Computer-Assisted Language Learning (CALL) tool. This platform provides students with a personalized and exceptional educational experience (Houmane et al., 2024); it makes use of audio recordings, texts and images to enhance learners' language proficiency (Slimani & Jabal, 2023). Such a technological advanced tool necessitates that all participants in educational practices change and adapt (Özturk, 2013).

That is said, the integration of new CALL tools, however, often raises concerns among educators and stakeholders about their effectiveness as pedagogical mediums (Daud, 2013). Efforts and attention should be invested in investigating the various factors that may shape students' attitudes. It is important to do so because any intervening factor may influence students' behavioral intentions and consequently their interaction with the platform. Succinctly put, having a sense of awareness of things which might turn out impactful would be of great assistance to guide educators and stakeholders predict the platform's success and identify ways to maximize student engagement with it. To illustrate, an effective integration of a technological tool as a pedagogical medium initially requires a basic level of digital literacy from the part of students to ensure a smooth interaction and an easy access to the platform (Lei et al., 2021). A lack of such literacy might go against the development of the learning process and make it difficult to evaluate the platform's effectiveness. This extension of UTAUT represents the study's main conceptual contribution, as it explores whether students' digital literacy strengthens or weakens the link between effort expectancy and attitudes toward using the Rosetta Stone platform.

Drawing on prior teaching experience with the target participants, we observed that students often expressed different complaints about the platform. Notably, some attributed their disengagement to difficulties in navigating the system, finding it complex and unintuitive. This observation informed our hypothesis that digital literacy acts as a moderating factor between students' perception of platform ease of use (effort expectancy) and their overall attitude. Specifically, it assumes that students with a high level of digital literacy are more likely to embrace and engage with learning through the Rosetta platform, unlike those with lower digital literacy who may be less receptive. In particular, this hypothesis is informed by studies conducted by Elatrachi et al. (2022) and Ghazali and Benbrahim (2024), which found that students' proficiency with digital tools impacts their engagement and satisfaction with e-learning platforms. For example, Benbrahim's (2024) study on the integration of e-learning in Moroccan universities revealed that variations in students' digital literacy levels played a crucial role in the successful adoption and effective use of these technologies.

Indeed, the growing prevalence and relatively short life cycle of certain technologies require corporations, educational institutions, and other organizations to establish comprehensive educational programs that promote the effective use of information technology (Straub, 2009). In this context, the study employs the Unified Theory of Acceptance and Use of Technology (UTAUT) as a theoretical framework to examine the impact of potential factors on students' attitudes and behavioral intentions. To achieve this, it attempts to answer the following question: To what extent performance expectancy, effort expectancy, social influence, and facilitating conditions influence students' attitudes towards using the Rosetta Stone Platform? With this in mind, the study posits the following main hypotheses:

- **H1**: Performance expectancy has a positive effect on students' attitudes toward using the Rosetta Stone platform.
- **H2**: Effort expectancy positively influences students' attitudes toward using the Rosetta Stone platform.
- **H3**: Social influence has a positive effect on students' attitudes toward using the Rosetta Stone platform.
- **H4**: Facilitating conditions have a positive impact on students' attitudes toward using the Rosetta Stone platform.

The null hypotheses, which serve as the opposite predictions, are as follows:

- **H0-1**: Performance expectancy does not significantly affect students' attitudes toward using the Rosetta Stone platform.
- **H0-2**: Effort expectancy does not significantly affect students' attitudes toward using the Rosetta Stone platform.
- **H0-3**: Social influence does not significantly affect students' attitudes toward using the Rosetta Stone platform.
- **H0-4**: Facilitating conditions do not have a significant impact on students' attitudes toward using the Rosetta Stone platform.

As has been mentioned earlier, a moderating hypothesis is proposed to examine how students' digital literacy influences the strength of the relationship between effort expectancy and students' attitudes:

- **H5**: The relationship between effort expectancy and students' attitudes toward using the Rosetta Stone platform is moderated by their digital literacy, such as students' familiarity with digital tools and their usage patterns.

2. Literature Review

2.1. Rosetta Stone as a Pedagogical Platform

Computer-assisted language learning (CALL) refers to the use of computers to support language teaching and learning in a variety of ways (Egbert, 2005, p. 3, as cited in Şanverdi, 2021). Language teachers and learners utilize CALL as a medium of instruction to develop the language learning process (Cummins, 2008). A concept closely related to CALL is mobile-assisted language learning (MALL). The latter involves technology-based instruction on mobile devices (Şanverdi, 2021). In other words, MALL is associated with CALL; however, it differs in the sense that mobile technology can assist learners through portable devices that accommodate with their mobile lifestyles (Kukulska-Hulme, 2009). Albadry (2018) identifies three critical components of "mobility": the mobility of the device, the mobility of learners, and the mobility of context. The first component focuses on a technological perspective, while the second emphasizes the learner's viewpoint. The last component entails a broader perspective in that it integrates the previous two along with aspects of time, physical technology, and conceptual space.

On account of this, Rosetta Stone as an online mediating interface comes in between; that is, it is regarded as both CALL and MALL-based platform that supports language acquisition and instruction. Founded in 1992, the company aimed to teach languages through technology using an immersion-like approach. Its objective has focused on promoting natural learning by mainly avoiding drills and translation, much like the way a first language is acquired. The application improves learners' vocabulary, pronunciation, reading, listening, writing, and grammar through context-rich multimedia content (Şanverdi, 2021).

In its essence, Rosetta Stone uses an image-text-audio matching approach that aims to teach through inductive exposure rather than explicit rules. Research has described strengths and limits of this design. An IALLT Journal study found that vocabulary presentation and practice were the most positively rated features: "The most positively assessed feature of the Rosetta Stone program overall was its presentation and practice of vocabulary" (Lord, 2016, p. 14). At the same time, learners "were frequently lost and not sure what they were supposed to be doing or learning" and missed explicit guidance and teacher support (Lord, 2016, p. 14). The paper concludes that current data "do not yet provide indication that the Rosetta Stone program…would be capable of replacing the classroom language learning experience" (Lord, 2016, p. 1). These results suggest that Rosetta Stone can support lexical growth and practice, but students benefit when classroom instruction or teacher scaffolding is present. This corresponds with our focus on effort expectancy and with our moderating hypothesis on digital literacy, since navigation skill and basic ICT know-how affect how easily students work with the platform.

2.2. Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT was first proposed in Management Information System (MIS) and brought together eight earlier models to explain technology use (Venkatesh et al., 2003). In language education, many studies have tested UTAUT to predict students' intentions and actual use of digital tools. For English learning with mobile or online platforms, studies often confirm the core paths from performance expectancy, effort expectancy, social influence, and facilitating conditions to intention and use. For example, a CALL-EJ study with 342 EFL pre-service teachers reported that "the usage behavior of mobile technology had been influenced by four main variables of UTAUT, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC)" (Al Arif et al., 2022, p. 18). Broader e-learning work in higher education has also shown that UTAUT explains both intention and use in university systems,

which supports its use in TELL contexts (Abbad, 2021). These results help situate our four main hypotheses within a TELL evidence base and justify using UTAUT to study students' attitudes toward Rosetta Stone.

The UTAUT model was developed by Venkatesh et al. (2003) as a result of an extensive review and synthesis of existing technology acceptance models. This model integrates various theories, including the theory of reasoned action, the technology acceptance model, and the theory of planned behavior (Imna et al., 2022). Venkatesh and his colleagues aimed to create a unified framework to explain technology acceptance across different contexts (Hakimi et al., 2024). At its core, the theory posits that the likelihood of adopting technology is influenced by four key factors: performance expectancy, effort expectancy, social influence, and facilitating conditions (see figure 1). Additionally, the impact of these predictors is moderated by factors such as age, gender, experience, and the voluntariness of use (Venkatesh et al., 2003). This theory can therefore be particularly useful in investigating students' attitudes toward Rosetta Stone; it helps identify what motivates them to use the platform and what prevents them from doing so.

2.2.1. *Performance Expectancy (PE)*

Venkatesh et al. (2016) define performance expectancy as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". It indicates how convenient the system is to use. Also, it is said that the effort expectancy factor influences behavioral intention in both voluntary and mandatory usage contexts (Ayaz & Yanartaş, 2020).

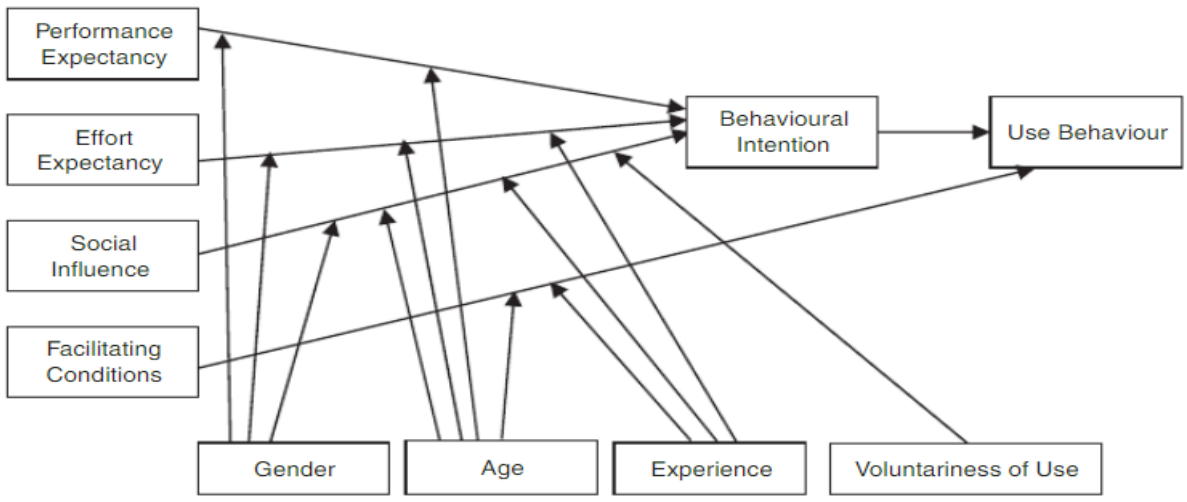

Figure 1. *Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003, p. 447)*

2.2.2. *Effort Expectancy (EE)*

Venkatesh et al. (2016) define it as "the degree of ease associated with using the system.". The formation of effort expectancy is based on the similarities among constructs from various models, including perceived ease of use, complexity, and ease of use, which are derived from the Technology Acceptance Model (TAM), the Model of PC Utilization (MPCU), and the Innovation Diffusion Theory (Altalhi, 2021). The UTAUT model suggests a direct influence of behavioral intention on performance expectancy regarding technology adoption.

2.2.3. *Social Influence (SI)*

It refers to the extent to which individuals considered important by a person believe that they should use a new system (Venkatesh et al., 2003). Social influence may not have an impact in situations where technology use is voluntary; however, it becomes significant when the use of technology is mandatory (Ayaz & Yanartaş, 2020). Factors such as gender, age, voluntariness of use, and experience can affect social influence (Venkatesh et al., 2003). The social influence factor encompasses the impact of various influences on user behavior, including the opinions of friends and hierarchical superiors (Afonso et al., 2012).

2.2.4. *Facilitating Factors (FF)*

Venkatesh et al. (2016) define facilitating factors as the belief that an organization has the necessary technical infrastructure to support system use. This belief positively influences the intention to use the system, although its impact diminishes after the initial use. As a result, according to the model, facilitating conditions have a direct and significant effect on usage behavior (Tamilmani et al., 2021). Finally, there are moderating factors that influence each individual adopter: gender, age and voluntariness of use.

2.3. Digital literacy

As it was defined back in the late of 1999s, digital literacy refers to:

> …a set of skills to access the internet, find, manage and edit digital information; join in communications, and otherwise engage with online information and communication network. Digital literacy is the ability to properly use and evaluate digital resources, tools and services, and apply it to lifelong learning processes (1997, p. 220).

Paul's definition has transformed the concept of literacy. Traditionally, literacy was mainly defined as the ability to read and write. Leaning (2019) noted that since the inception of mass education systems, a primary objective has been to teach students to read and write in their native language. However, by the mid-20th century, this conventional understanding of literacy faced challenges (Ilomäki et al., 2023). For example, the belief that literacy should be limited to textual comprehension was called into question due to the emergence of communication practices that extend beyond print media. In alignment with this idea, Rivoltella (2008) said:

> It is necessary to extend this concept of literacy beyond written forms to include the vast range of other media, and in addition to "the how" (ability and competencies), include "the what" (genres, styles, formats, codes, registers). In other words, the development of a new literacy must expand from the teaching of the mother tongue to the awareness of language and, consequently to the awareness of media. (p. 69)

Though Paul's definition provides a good starting point for characterizing a digitally literate individual, there is a drive to standardize the concept of "digital literacy" to ensure that its definition can be measured and compared in such a globalized educational setting (Pangrazio et al.,2020). A number of frameworks have been introduced for capturing then digital literacies, such as Technological Pedagogical and Content Knowledge (TPACK) and the Digital Competence of Educators (DigCompEdu). We mention "Digital literacies" in a plural form since it is closely related to other literacies, including new literacies, media literacy, and even multiliteracies; it is not an easily understood as a single concept. It entails other dimensions and elements that are connected and dynamic. However, digital literacy, in its essence, often appears to focus most intently on digital technologies and on individuals' technical knowledge of using Information and Communication Technologies (ICTs). Thus, our understanding of digital literacy in this study is similar to that of Paul's (1999).

In this study, however, digital literacy is understood in Paul's original, more technical sense. It highlights students' practical ability to access, manage, and evaluate digital information, as well as their capacity to use digital platforms effectively in learning. This focus guided the design of the digital literacy section of the questionnaire, which asked participants to rate their confidence in (a) finding and managing online information, (b) evaluating the reliability of digital sources, and (c) using various digital tools and platforms for learning.

These items do reflect Paul's (1999) emphasis on functional and technical competence rather than broader critical or socio-cultural aspects of digital literacy. Thus, while the concept can encompass many dimensions, this study centers on students' technical digital skills, as these are directly relevant to their engagement with the Rosetta Stone platform.

2.4. Previous Studies on Students' Attitudes towards Rosetta Stone

In an effort to modernize higher education in Morocco, former Minister of Higher Education, Scientific Research, and Innovation, Abdellatif Miraoui, introduced a new initiative called "The ESRI 2030 Pact." This initiative seeks to "restore the value and attractiveness of open access faculties and consolidate their efficient contribution to the professional training and personal development of students who constitute the human capital that the country relies on for its development" (Taouil & Taouil, 2024).

These reforms acknowledge the value of language learning and have therefore incorporated Rosetta Stone, which we previously discussed, as a pedagogical tool. This integration encourages further investigation by researchers and academics. Recent studies have examined Moroccan university students' attitudes toward the Rosetta Stone language learning platform. Houmane et al. (2024) conducted research at Hassan II University in Casablanca, involving 291 first-year students. Utilizing the Technology Acceptance Model (TAM), they assessed perceptions of the platform's usefulness and ease of use. The results indicated that despite that the majority of respondents found Rosetta Stone moderately useful and easy to use, their overall attitude toward the platform was negative. Important positive correlations were found between perceived ease of use, perceived usefulness, and attitude toward the platform. Qualitative insights revealed both strengths and shortcomings of the platform. Notably, the study concluded that although Rosetta Stone is perceived as helpful and user-friendly, improvements in technical functionality, adaptability, and content relevance could improve more learning outcomes and student satisfaction.

Likewise, a report by Hespress EN (Masaiti, 2024) showed frustrations among Moroccan university students regarding the mandatory use of Rosetta Stone for learning French and English. Students reported technical issues, such as difficulties logging in and inaccurate tracking of study time, as well as concerns about the lack of coordination between online and in-person language classes. Similarly, in his 2024 study, Asrif examined the relationship between self-directed learning (SDL) readiness and the acceptance and use of Rosetta Stone

among students at Moulay Ismail University. The research revealed that students with higher levels of self-management and a strong desire to learn were more inclined to engage positively with the platform. However, despite these favorable attitudes, actual usage patterns remained limited. This was attributed to factors beyond self-directed learning readiness, including technical challenges like accessibility and compatibility issues, as well as methodological concerns such as poor integration with traditional classroom instruction and the absence of explicit grammar teaching.

3. Methodology

3.1. Research Design

To investigate undergraduate students' attitudes toward the use of the Rosetta Stone platform for learning English, this study employs a mixed-methods design. The latter "combines or associates both qualitative and quantitative forms" (Creswell, 1994, p. 23). Data were collected from 61 respondents through a questionnaire based on the Unified Theory of Acceptance and Use of Technology (UTAUT), as well as their exam responses, where they were asked to directly express their experiences and attitudes toward Rosetta Stone as a teaching and learning tool (T&L). The UTAUT is deemed relevant to the aim of this study, since it focuses on the factors of performance expectancy, effort expectancy, social influence, and facilitating conditions, and their impact on students' attitudes and behavioral intentions.

Adopting a mixed-method design best serves the aim of the study, which seeks to gain comprehensive insights into students' attitudes toward the Rosetta Stone platform and understand the reasons behind either their engagement or disengagement with the platform. Specifically, the study uses a sequential mixed-method approach, which "begins with a quantitative method in which a theory or concept is tested, followed by a qualitative method involving detailed exploration with a few cases or individuals" (Creswell, 1994, p. 31). The decision to adopt a mixed-methods design was driven by two key considerations. First, after collecting, analyzing, and discussing the quantitative data, it became clear that it was insufficient to fully address the main research question (see inferential analysis). Second, when given research aims to investigate participants' attitudes, quantitative data alone may not be adequate and fall short, and qualitative methods, in such case, can provide deep insights to complement the findings (Creswell, 1994).

3.2. Sample

The participants in this study were selected using convenience sampling, a method where individuals are chosen based on their accessibility and availability (Babbie, 1990, as cited in Creswell, 2009, p. 148). The sample included students from the Excellence Track, a program under the ESRI 2030 Pact, in the English Department at Mohammed First University. They were chosen because the first author, Abdel Moula El Guermat, had direct instructional access to them during semester five (S5). The course content complemented the use of the Rosetta Stone platform, and classroom discussions often focused on students' learning experiences with the software, which motivated this investigation into their experiences and attitudes.

3.3. Data Collection & Analysis

The quantitative data was collected using Google Forms, which was distributed via a WhatsApp group to the target students. The data collection period lasted approximately one week. The questionnaire was administered to 65 students, of whom 61 responded. Qualitative data was gathered from students' exam answers, with 65 responses in which students described their experiences and opinions regarding Rosetta Stone. They were encouraged to provide honest and concise feedback. Additional qualitative data were derived from the first author's observations, documented through class discussions and student feedback collected over the six-week semester. It is worth noting that although this technique was not methodologically structured and occurred spontaneously, it provided deeper insights into how students genuinely experienced their learning with the platform. Through our observations, we were able to formulate the study's main hypothesis.

The quantitative data collected from the questionnaire were analyzed using the Statistical Package for the Social Sciences (SPSS), version 27. The analysis was conducted in two steps. First, we conducted descriptive statistics to determine the mean scores of the key factors in the study. This was followed by inferential analyses, including correlation and linear regression, to explore relationships between variables. For the qualitative data, we followed Braun and Clarke's (2006) thematic analysis approach to identify and interpret patterns within the responses. This involved familiarization with the data, generation of initial codes, organization of themes, and interpretation of findings in relation to the study objectives.

3.4. Instruments

To investigate the attitude of students toward using Rosetta Stone as a tool of learning the English language, this study employs the UTAUT theory that suggests the use of technology is determined by behavioral intention. The UTAUT was developed by Venkatesh et al. in 2003 through the review and consolidation of eight prominent models and theories that explain information systems usage behavior. These foundational models include Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Model of Personal Computer Utilization (MPCU), Diffusion of Innovations Theory (DOI) and Social Cognitive Theory (SCT). These models altogether informed the development of UTAUT (Oye et al., 2012).

In addition to the questionnaire, qualitative data were collected from students' written exam responses. The exam included one open-ended question that invited students to reflect on their experience with the Rosetta Stone platform, describe any challenges they faced, and comment on how it supported their language learning. These responses were suitable for thematic analysis because they encouraged honest and thoughtful reflection in a formal yet familiar context.

Regarding the study hypothesis on the role of digital literacy as a moderating factor, the questionnaire includes a section to assess students' digital literacy level. This section is not designed to evaluate the various dimensions of digital literacy in detail; rather, it aims to provide an overall picture of students' digital literacy. Students are asked to rate their ability to find and manage information, evaluate the reliability of digital resources, and use different digital platforms for the learning process. These questions are informed by Hobbs' model of media and digital literacy (2010, 2011). That is said, the questionnaire used a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). A five-point scale was chosen because it provides a balanced range of options with a neutral midpoint, which enables respondents to express moderate or undecided views when appropriate. To ensure transparency and replicability, the full questionnaire is provided in the Appendix.

To assess the reliability of the questionnaire instrument, and given that the questionnaire includes a Likert scale with multiple items measuring the same construct, Cronbach's alpha test was conducted across all sections (See Table 1). The results demonstrated high reliability for all sections except one: Performance Expectancy (.877), Effort Expectancy (.946), and Social Influence (.848). However, the Facilitating Conditions section exhibited a lower reliability

score of (.590). This could be attributed to redundancy between the first two questions, since they, somewhat, appear to address similar aspects, and the limited scope of the section which has been narrowed to merely focus on internet and device reliability rather than broader facilitating conditions such as technical support, environment, or training.

Table 1. *Reliability Test*

Section title	Cronbach's Alpha
Performance Expectancy	*.877*
Effort Expectancy	*.946*
Social Influence	*.848*
Facilitating Conditions	*.590*
Digital Literacy	*.908*
Attitude	*.926*

Note. *Cronbach's Alpha values above .70 indicate acceptable internal consistency*

4. Results & Discussion

The results are presented and discussed simultaneously to provide a clear interpretation of the findings and their relevance to the study's objectives. We start with the quantitative results, acknowledging their limitations, and then move on to the qualitative results that offer additional insights and complement the quantitative data.

4.1. Quantitative Results

4.1.1. *Descriptive statistics*

In this section, we present the descriptive analysis that shows the mean scores for each variable derived from the UTAUT theory to provide insights into students' use of the platform, as well as their attitudes and digital literacy. Next, we provide the inferential analysis. In this part, we undertake correlation and linear regression analyses to examine the relationships between each variable and students' attitudes, so as to identify the key variables that most significantly influence their perceptions of the platform.

1) UTUAT Mean Scores

Table 2 demonstrates the Mean scores of the variables influencing students' attitudes toward using the Rosetta Stone platform. The scores reveal moderate perceptions across all dimensions.

Effort expectancy comes at the top with the highest mean (3.27). This indicates that students generally find the platform somewhat easy to use, though experiences vary. Social influence follows with a mean of 3.20, showing a moderate role of external factors such as peers or instructors in shaping attitudes. Facilitating conditions has a mean of 3.01 (SD=0.92SD = 0.92SD=0.92), which suggests consistent perceptions of adequate support and resources. Finally, performance expectancy has the lowest mean (2.90, SD=1.14SD = 1.14SD=1.14), and this does reflect varied views on the platform's ability to meet learning objectives.

Table 2. *Variables' Mean Scores*

	Performance Expectancy	Social Influence	Effort Expectancy	Facilitating Conditions
Number Valid	61	61	61	61
Mean	2.9016	3.2022	3.2678	3.0164

With most of these scores indicate a moderate effect of the factors under study on students' attitudes, this is in fact inadequate to identify what factors that exactly are of most impact. In other words, this neutral disposition calls for further analysis to gain deeper insights into students' experiences and attitudes toward such educational technology, through using statistical techniques such as Spearman, Pearson, and Linear Regression. These findings are further complemented by qualitative analysis.

2) Attitudes

Table 3 provides descriptive statistics for the participants' responses to three statements about Rosetta Stone to indicate their overall attitude. The mean ratings for enjoyment (2.43), intent to continue use (2.57), and perceived educational benefit (2.74) indicate slightly below-neutral attitudes that suggests mixed or somewhat unfavorable views. The median values for enjoyment and intent are 2.00, while for educational benefit, it is 3.00. This shows that half the participants rated the benefit at neutral or above. The mode of 1 for all statements suggests that the most frequent response was the lowest rating. The standard deviations (approximately 1.37–1.40) indicate moderate variability in responses which states some spread and variety in opinions. In general, the data suggests a range of opinions, with a slight trend toward unfavorable or neutral views of Rosetta Stone.

Table 3. *Attitudes' Mean Scores*

	I enjoy using Rosetta Stone for language learning.	I intend to continue using Rosetta Stone in the future.	I believe using Rosetta Stone is beneficial for my education.
Number Valid	61	61	61
Mean	2.43	2.57	2.74
Mode	1	1	1
Std. Deviation	1.372	1.372	1.401

3) Digital Literacy

Drawing on Hobbs' model of media and digital literacy (2010, 2011), Table 4 provides an overview of students' digital literacy levels. It shows that students are most confident in their ability to find and manage information online, with a mean score of 3.51 (SD = 1.22). Their comfort with using digital platforms for learning is also relatively strong, reflected in a mean score of 3.48 (SD = 1.26). However, the ability to evaluate the reliability of digital resources scores the lowest, at 3.15 (SD = 1.21), suggesting this is an area where students may need more support. All in all, the results point to a reasonable level of digital literacy but meanwhile indicate the importance of improving critical evaluation skills to ensure more well-rounded digital competency.

Table 4. *Digital Literacy Mean Scores*

	N	**Mean**	**Std. Deviation**
I am confident in my ability to find and manage information online.	61	3.51	1.220
I know how to evaluate the reliability of digital resources.	61	3.15	1.209
I am comfortable using various digital platforms for learning purposes.	61	3.48	1.260

4.1.2. *Inferential Analysis*

4.1.2.1. *Correlation Analysis.*

Before performing the correlational analysis, it is crucial to assess the normality of the data to ensure the use of appropriate statistical techniques. Given the relatively small sample size of 60, the Kolmogorov-Smirnov test was selected as a widely accepted and reliable method for evaluating whether the dataset follows a normal distribution (Razali & Yap, 2011). The results (see Table 5) reveal that most sections have p-values smaller than .05. This indeed indicates

that they follow a normal distribution and should be analyzed using Pearson's correlation (Field & Miles, 2000). However, the "social influence" section deviates from normality, with a p-value of 0.64. As a result, Spearman's correlation is more suitable for analyzing this section (Sheskin, 2004) (see Table 5).

Table 5. *Normality Test*

	Statistic	Sig.	Statistic
Performance expectancy	.126	.018	.937
Effort expectancy	.248	.000	.854
Social influence	.110	.064	.969
Facilitating conditions	.165	.000	.921
Digital literacy	.208	.000	.897
Attitudes	.143	.003	.898

Note: *A p-value greater than .05 indicates that the data are normally distributed*

Table 6 illustrates the relationship between performance expectancy, effort expectancy, and social influence with students' attitudes toward using the Rosetta Stone platform. Both performance expectancy and effort expectancy show strong positive correlations with students' attitudes, as indicated by their respective coefficients of .854 and .562, with p-values < .001. In contrast, the social influence variable does not appear to be correlated with students' attitudes, as evidenced by its statistically insignificant p-value of .291.

Table 6. *Correlation between Performance Expectancy and Effort Expectancy*

		Performance Expectancy	Effort Expectancy	Social Influence
Attitudes	Pearson's Correlation	*.854***	*.562***	*N/A*
	Sig. (2-tailed)	*.000*	*.000*	*.291*
	Spearman's Correlation	*N/A*	*N/A*	*.137*

Note. *Correlation is significant at the 0.01 level (2-tailed).*

These findings lead to the rejection of null hypotheses **H0-1**and **H0-2**, while null hypothesis **H0-3** is accepted. The acceptance of null hypothesis **H0-3** confirms that there is no significant correlation between social influence and students' attitudes, leading to the conclusion that social influence has no impact on their attitudes (as the lack of correlation, confirmed by Spearman's correlation, makes further linear regression analysis unnecessary). On the other hand, rejecting

the null hypotheses for performance expectancy and effort expectancy shows a strong relationship between these variables and students' attitudes.

To further explore the nature and extent of these relationships, a linear regression analysis is necessary. This test will provide insights into the predictive power and direction of performance expectancy and effort expectancy in influencing students' attitudes toward using the Rosetta Stone platform.

4.1.2.2. Linear Regression.

As shown in Table 7 below, the R^2 value of 0.736 indicates that 73.6% of the variance in students' attitudes toward the Rosetta Stone platform can be attributed by the combination of performance expectancy and effort expectancy; this in turn explain the significant role of these predictors. The adjusted R^2 value of 0.727 further confirms the robustness of the model, accounting for the number of predictors and the sample size. This suggests that students' perceptions of the platform's performance and ease of use are critical factors influencing their attitudes. However, the remaining 26.4% of the variance is attributed to factors not included in the model, like prior experience, external motivation, or personal preferences; which perhaps can an influence on their attitudes.

Table 7. *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.858[a]	.736	.727	.67425

Note. *R^2 shows the proportion of variance explained by the predictors.*

Regarding the ANOVA results, Table 8 shows an F-statistic of 80.716 with a p-value of < 0.001. This indicates that the overall regression model is statistically significant, and it demonstrates that performance expectancy and effort expectancy, when considered together, significantly account for the variance in students' attitudes. In practical terms, this suggests that students' perceptions of the platform's usefulness and ease of use are strong predictors of their attitudes toward adopting and engaging with the Rosetta Stone platform.

Last, as for the coefficient results, the unstandardized coefficient for performance expectancy (B = 0.900) (see Table 9) indicates that for every 1-unit increase in performance expectancy, attitudes toward the Rosetta Stone platform increase by 0.900 units, holding effort expectancy constant. The standardized coefficient (Beta = 0.796) shows a strong positive impact, with performance expectancy being the dominant predictor in the model. The significance (p-value

< 0.001) confirms this relationship is highly reliable and it makes performance expectancy a significant predictor of students' attitudes. In contrast, the unstandardized coefficient for effort expectancy (B = 0.101) suggests that for every 1-unit increase in effort expectancy, attitudes toward the platform increase by 0.101 units, holding performance expectancy constant. However, the standardized coefficient (Beta = 0.099) indicates a much weaker effect compared to performance expectancy. The significance (p-value = 0.239) reveals that this relationship is not statistically significant; meaning, effort expectancy does not directly influence attitudes toward the platform in this model.

Table 8. *Anova Results*

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	73.389	2	36.694	80.716	.000[b]
Residual	26.367	58	.455		
Total	99.756	60			

Note. *[b] p-value less than .05 shows that the model is statistically significant*

Table 9. *Coefficients[a]*

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
Model	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.364	.266		-1.368	.177		
Performance Expectancy	.900	.094	.796	9.592	.000	.661	1.513
Effort Expectancy	.101	.085	.099	1.189	.239	.661	1.513

Note. *B = unstandardized coefficient, SE = standard error, Beta = standardized coefficient. P < .05 indicates significance.*

Given that effort expectancy showed no significant direct influence and considering the qualitative data in which students reported challenges regarding effort with the platform, we ran a multiple linear regression to test the moderating hypothesis. This approach permitted us to examine whether or not the moderator variable could strengthen the relationship between effort expectancy and attitudes.

4.1.2.3. *Moderating hypothesis.*

To test the moderating effect of digital literacy on the relationship between effort expectancy and attitudes, an interaction term (effort expectancy × digital literacy) was included in the regression model (see Table 10). The results showed that effort expectancy became a significant

predictor of attitudes (B = 1.342, β = 1.307, t = 3.609, p < .001) when moderated by digital literacy. Digital literacy had a marginally significant direct effect (B = 0.580, β = 0.508, t = 1.852, p = .069), while the interaction term (B = -0.233, β = -1.205, t = -2.312, p = .024) revealed that higher digital literacy weakens the relationship between effort expectancy and attitudes. These findings show the critical role of performance expectancy in shaping students' attitudes. Effort expectancy's impact on attitudes is stronger for students with lower digital literacy, while those with higher digital literacy are less influenced by it. In general, effort expectancy is not of a significant factor unless moderated by digital literacy.

Table 10. *Regression Results for the Moderating Effect of Digital Literacy*

Unstandardized Coefficients		**Standardized Coefficients**	**Sig.**	**Collinearity Statistics**	
B	Std. Error	Beta		B	Std. Error
-.944	.827		.259	-.944	.827
1.342	.372	1.307	.001	1.342	.372
.580	.313	.508	.069	.580	.313
-.233	.101	-1.205	.024	-.233	.101

Note. *Sig. values below .05 indicate statistically significant effects.*

4.2. Qualitative Results

The qualitative analysis of students' exams responses regarding their preferred aspects of the Rosetta Stone platform reveals important patterns. Although the qualitative data were collected from exam responses, the open-ended and reflective nature of the question allowed students to share detailed personal experiences. This made the responses a valid and rich source for understanding their attitudes toward the platform.

Interestingly, all participants recognized the platform's value as a learning tool, particularly in improving their language skills. Many students openly expressed its effectiveness in helping them acquire new vocabulary and improve pronunciation. For example, one participant stated: "For each unit, I learn new vocabulary, and I correct the pronunciation of so many words I used to mispronounce." Another participant emphasized the platform's comprehensive approach, noting: *"It is a good platform through which one can develop writing, speaking, listening, and reading."*

A key feature students appreciated was the platform's flexibility. They liked being able to access it on both smartphones and computers that has allowed them to learn at their

convenience. In fact, this flexibility brings into line the growing importance of adaptable digital tools in modern education, particularly in language learning, where consistent engagement across multiple contexts is of critical importance.

Despite its acknowledged benefits, students expressed several frustrations with the platform. A recurring issue was technical problems, which affected their motivation and overall perception of the platform. For instance, many participants reported that the platform failed to automatically count the time they spent on activities. One student remarked: "The platform overall is full of technical issues, such as not counting the hours, which can demotivate learners to use it." Additionally, some students noted that the platform struggled to detect their pronunciation accurately, often marking correct attempts as incorrect. Such technical shortcomings appear to undermine the platform's credibility and students' trust in its functionality.

Another point of dissatisfaction was related to the platform's assessment methods. Several students believed that the tests were not efficient, because they did not adequately evaluate speaking and writing skills. One participant stated: "The test was not credible for that it did not take into account speaking and writing." This feedback suggests a potential misalignment between the platform's testing features and the comprehensive language skills it claims to develop.

Students also raised concerns about the mandatory nature of using the platform. Many felt that being required to use it as a condition for passing the semester created unnecessary pressure and reduced their enjoyment of learning. One student suggested that the platform should be complementary rather than obligatory, allowing learners to engage with it at their own pace and interest. This demonstrates the importance for the platform to balance structured learning requirements with learner autonomy to maintain motivation and engagement.

Administrative issues further compounded students' dissatisfaction. Some participants reported delays in receiving the professional email accounts required to access the platform. Yet, even when emails were provided, they sometimes failed to grant access, leaving students unable to log in. These logistical challenges reflect broader systemic issues that could hinder the effective implementation of digital learning tools in educational institutions.

Last, opinions were divided regarding the content of the platform. Some students appreciated its engaging and informative design. Others criticized it for lacking relevance to their cultural context. One participant noted: "Most of the content is about American culture and nothing

relates to our culture as Moroccans." This feedback shows the importance of culturally inclusive content in digital learning platforms, particularly when used in diverse educational settings. Given this, students recommended the importance of addressing technical challenges, such as resolving issues with audio functionality, microphone accuracy, and proper time tracking for activities. They also suggested refining the mobile application's design for a smoother user experience and adding culturally relevant content to make the platform more engaging and aligned with their educational context.

In conclusion, these findings correspond with what has been found in the quantitative results. In the latter, performance expectancy emerged as the most significant factor influencing students' attitudes toward the Rosetta Stone platform. The qualitative data reinforce this conclusion, since students consistently acknowledged the platform's value in helping them acquire new vocabulary, improve pronunciation, and develop overall language skills. However, the qualitative findings also expand on the quantitative results by revealing areas of dissatisfaction not fully captured in the statistical analysis. Despite effort expectancy was shown to have a weaker and non-significant correlation with students' attitudes, the qualitative responses suggest that technical challenges, such as issues with time logging and pronunciation detection, may contribute to this. These technical frustrations likely diminish students' perceptions of the platform's ease of use, which in turn affects their overall experience and engagement. Interestingly, the qualitative data also shed light on students' dissatisfaction with the platform's mandatory nature and culturally specific content, which might explain why social influence did not correlate significantly with attitudes in the quantitative data. That is to say, when students feel disconnected from the content or coerced into using the platform, external encouragement from peers or instructors may have little impact on their attitudes. These findings align with previous research in the Moroccan context.

Another point Is that of the relatively low reliability score of .590 for the *Facilitating Conditions* construct deserves attention. This result may reflect two possible explanations. First, the items measuring this factor might not have fully captured students' understanding of the concept, which can affect internal consistency. Second, the score may also point to real challenges in the learning environment, such as limited technical support or unstable internet access, which students mentioned during class discussions. In either case, the result suggests that *Facilitating Conditions* require closer examination in future studies, possibly through a revised or expanded set of items that better reflect the realities of the students' digital learning context.

With this being said, it is important to admit that this study used a small convenience sample of sixty-one students from a single specialized track in the English Department. Because the participants came from one program, the findings cannot be generalized to all university students or other educational contexts. The results should therefore be understood as indicative rather than representative. Future research could include larger and more diverse samples across different programs or universities to strengthen the validity and generalizability of the findings.

5. Conclusion

The conducted study' aims at examining the influence of performance expectancy, effort expectancy, social influence, and facilitating conditions on students' attitudes and behavioral intentions. The findings indicate that performance expectancy significantly influences students' attitudes and suggests that when students perceive the platform as beneficial for their language learning, they develop a more positive attitude toward its use. However, effort expectancy did not show a significant direct effect on students' attitudes. This may be due to the presence of technical issues reported by students, such as problems with pronunciation detection and time tracking, which could mitigate the perceived ease of use. In addition, the factor o effort expectancy alone did not show a significant direct effect on students' attitudes. However, when considering the moderating role of digital literacy, effort expectancy became a significant predictor.

The study's findings align with previous research on Moroccan university students' attitudes toward the Rosetta Stone platform. Houmane et al. (2024) found that, despite students perceiving the platform as moderately useful and user-friendly, their overall attitudes were negative, recommending the need for technical and content improvements. Similarly, a report by Hespress EN (Masaiti, 2024) documented student frustrations due to technical issues and a lack of integration between online and in-person classes. Additionally, Asrif's (2024) study at Moulay Ismail University revealed that although students with higher self-directed learning readiness had positive attitudes toward the platform, actual usage was limited by technical challenges and misalignment with traditional instruction methods.

5.1. Implications & Recommendation

The findings of this study have several important implications. First, the critical role of digital literacy in moderating the relationship between effort expectancy and attitudes shows the need for universities to integrate digital literacy training into their curricula. Such programs could

help students navigate digital platforms more effectively and reduce their reliance on ease of use as a determining factor in their attitudes. Additionally, there is a need to address technical and content-related issues. The study revealed significant dissatisfaction due to technical problems, such as inaccurate time tracking and audio detection that negatively impact students' motivation and perceptions. Furthermore, the lack of culturally relevant content and the platform's mandatory use were also major concerns. Many students expressed frustration with examples and situations that felt distant from their cultural context, which may have reduced their motivation and connection to the platform. To address this issue, developers and policymakers should collaborate closely with local educators to adapt the content and scenarios to the learners' linguistic and cultural environment. Localized materials can make learning more relatable, improve comprehension, and strengthen students' overall engagement with the platform.

With this in mind, several recommendations can be made. Universities should implement digital literacy workshops to boost students' confidence and skills when using digital platforms. Developers must address technical shortcomings by improving platform functionality, such as fixing time-tracking issues and ensuring compatibility across devices, and stakeholders must rethink shifting the platform from a mandatory requirement to a complementary learning tool. Having said so, future research can further examine this topic by investigating the studied factors in diverse educational settings, particularly by examining other factors like prior experience and cultural context that may also shape attitudes toward such platforms. Moreover, this study focuses exclusively on students' attitudes, as they are the primary concern. Future research can examine the attitudes of university instructors teaching in-person courses that complement the Rosetta Stone program. It would be valuable to investigate whether their teaching practices and approaches align with the strategies and content students are exposed to in the course. In simpler terms, are these instructors pedagogically equipped and informed to teach this course effectively?

5.2. Limitations

This research provides useful insights but has certain limitations. The sample included only 61 students from the English department's excellence track, which may limit the relevance of the results to other contexts. Self-reported data could also be influenced by social desirability bias. Additionally, the cross-sectional design reflects opinions at a single point in time and does not account for changes over a longer period. The analysis of students' platform use through the

UTAUT model showed a neutral response, which we believe is not enough to draw strong conclusions. Future research could explore this topic using other educational technology theories.

Declaration

Availability of data and materials:

The dataset supporting the conclusions of this article is available in the Google Drive repository, https://docs.google.com/spreadsheets/d/18eTK2MTvc4TcXAMtUm6gvH2JQksaWled/edit?gid=1610016401#gid=1610016401

Acknowledgments

I, the first author, acknowledge the financial support provided by the National Center for Scientific and Technical Research (CNRST) under the PhD-Associate Scholarship – PASS. The authors also acknowledge the use of ChatGPT (OpenAI), which was employed in two limited ways: (i) to proofread and enhance the clarity of the manuscript, and (ii) to assist in structuring and interpreting the data analysis. All outputs from the tool were critically reviewed and revised by the authors, who take full responsibility for the final content.

Disclosure Statement

The authors declare that there is no conflict of interest regarding the publication of this article. No financial, personal, or professional relationships have influenced the research, analysis, or conclusions presented in this work.

Authors' contributions

Abdel Moula El Guermat (first author) was responsible for all sections of the article, including the review of literature, methodology, data collection, analysis, discussion, and conclusion. Oussama Moussaoui and Mohammed Benamrane contributed to the data analysis. Abdellah El

Boubekri reviewed the manuscript for language accuracy and compliance with academic writing standards.

Funding

This research received no external funding.

Ethics approval and consent to participate

The study protocol was reviewed and approved by the coordinator, who is also a co-author of this paper, of the Excellence Track in Translation and Digital Communication, English Department, Faculty of Letters and Human Sciences, Mohammed First University. All methods were carried out in accordance with the guidelines and regulations of the faculty aof Letters and Human Sciences, Mohammed First University, and in line with institutional ethical standards.

Consent for publication

All participants were informed about the purpose of the study and voluntarily agreed to take part. Informed consent to publish their anonymized data was obtained from all participants.

Notes on Contributors

Abdel Moula El Guermat is pursuing doctoral studies in the English Department at Mohammed First University. He completed his MA in Communication, Culture, and Translation in 2023. Now, supported by the "PhD-Associate Scholarship (PASS)" program, his research interests include Media Studies, Intercultural Communication, English Language Teaching, and Information and Communication Technology integration.

abdelmoula.elguermat.d24@ump.ac.ma

Abdellah El Boubekri is a researcher in Moroccan cultural studies. He got his Master degree in colonial/postcolonial discourses from the University of Mohammed I, Oujda, in January 2007. He got a Ph.D. degree in Moroccan cultural studies from the University of Mohamed Ben Abdellah, Fez,

Morocco, in November 2013. He is a former Fulbright FLTA at Drury University, Missouri State from 2007-2008. He is also a former full-time trainee trainer at Teacher Training Center (CRMEF), Oujda. Currently, he is a full-time professor of Cultural Studies at the University of Mohamed I, and a part-time instructor of English at the American Language Center, Oujda. He has taken part in Collaborative Online International Learning (COIL), spring and fall 2017. Currently, he is the ETII coordinator and teacher trainer at the Oujda ALC.

aelboubekri2@gmail.com

Oussama Moussaoui is a second-year PhD student at Mohammed First University. His academic interests include translation studies, pragmatics, sociolinguistics, and language education. He has co-authored several research papers and focuses his work on issues related to digital literacy, transversal competences, and the sociopragmatic aspects of religious translation.

oussama.moussaoui.d24@ump.ac.ma

Mohammed Benamrane is a second-year doctoral student affiliated with Applied Communication in Context Lab, in the Department of English Studies at the Faculty of Letters and Human Sciences, Mohammed First University, Oujda. His research interests lie in Critical Discourse Studies, Media Studies, and Digital Humanities, with a focus on online discourse, hate speech, and social media narratives. His work explores the role of language in shaping public opinion, political discourse, and digital interactions, using Critical Discourse Analysis as a primary set of approaches.

mohammed.benamrane.d24@ump.ac.ma

ORCID

Abdel Moula El Guermat *https://orcid.org/0009-0006-6109-5279*

Abdellah El Boubekri *https://orcid.org/0000-0003-1882-1598*

Oussama Moussaoui *https://orcid.org/0009-0004-4121-9495*

Mohammed Benamrane *https://orcid.org/0009-0001-0893-5025*

References

Abbad, M. M. M. (2021). Using the UTAUT model to understand students' usage of e-learning systems in developing countries. *Education and Information Technologies, 26*, 7205–7224. https://doi.org/10.1007/s10639-021-10573-5

Afonso, C. M., Salgueiro, J. L. R., Franco, M. J. S., & De La O González, M. (2012). The moderator role of Gender in the Unified Theory of Acceptance and Use of Technology (UTAUT): A study on users of Electronic Document Management Systems. *En 7th International Conference on Partial Least Squares and Related Method*. https://idus.us.es/handle/11441/76315

Al Arif, T. Z. Z., Sulistiyo, U., Ubaidillah, M. F., Handayani, R., Junining, E., & Yunus, M. (2022). A look at technology use for English language learning from a structural equation modeling perspective. *Computer-Assisted Language Learning Electronic Journal, 23*(2), 18–37. https://callej.org/index.php/journal/article/view/394

Albadry, H. F. A. (2018). *Using mobile technology to foster autonomy among language learners*. https://theses.ncl.ac.uk/jspui/bitstream/10443/4112/1/Albadry%2c%20H.%202018.pdf

Altalhi, M. M. (2021). Towards understanding the students' acceptance of MOOCs: A Unified Theory of Acceptance and Use of Technology (UTAUT). *International Journal of Emerging Technologies in Learning (iJET)*, *16*(02), 237. https://doi.org/10.3991/ijet.v16i02.13639

Amin, S. I. M., Hamid, S. N. A., & Norhisam, N. H. (2022). Faktor Penentu Niat Penggunaan e-Dompet pasca Pandemik COVID-19 di Malaysia: Integrasi Model UTAUT dan MAT. *Jurnal Pengurusan*, *66*. https://doi.org/10.17576/pengurusan-2022-66-09

Asrif, Y. (2024). Students' acceptance and use of Artificial Intelligence-Assisted Language Learning for Self-Directed. *ResearchGate*. https://doi.org/10.13140/RG.2.2.28601.38242

Ayaz, A., & Yanartaş, M. (2020). An analysis on the unified theory of acceptance and use of technology theory (UTAUT): Acceptance of electronic document management system (EDMS). *Computers in Human Behavior Reports*, *2*, 100032. https://doi.org/10.1016/j.chbr.2020.100032

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Creswell, J. W. (1994). *Research Design: Qualitative, quantitative, and mixed methods approaches*. http://www.revistacomunicacion.org/pdf/n3/resenas/research_design_qualitative_quantitative_and_mixed_methods_approaches.pdf

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Cummins, J. (2008). Computer assisted text scaffolding for curriculum access and language learning/acquisition. *Retrieved December, 14*, 2009

Daud, N. M. (2013). Issues in CALL implementation and its implications on teacher training. *CALICO Journal*, *10*(1), 69–78. https://doi.org/10.1558/cj.v10i1.69-78

Elatrachi, M., Sattar, H., & Oukarfi, S. (2022). The impact of ICT use on the academic student performance in Morocco. In *Lecture notes in networks and systems* (pp. 114–130). https://doi.org/10.1007/978-3-030-98012-2_10

Field, A., & Miles, J. (2000). *Discovering statistics using SPSS*. http://ci.nii.ac.jp/ncid/BA90312900

Ghazali, A. E., & Benbrahim, L. (2024). Integration of E-Learning platforms in Moroccan higher Education: Assessing the technological leap and addressing the digital divide among urban and rural students. *Research and Advances in Education*, *3*(5), 12–22. https://doi.org/10.56397/rae.2024.05.02

Hakimi, T. I., Jaafar, J. A., Mohamad, M. A., & Omar, M. (2024). Unified theory of acceptance and use of technology (UTAUT) applied in higher education research: A systematic literature review and bibliometric analysis. *Multidisciplinary Reviews*, *7*(12), 2024303. https://doi.org/10.31893/multirev.2024303

Hobbs, R. (2010). *Digital and Media Literacy. A Plan of Action. The Aspen Institute.*

Hobbs, R. (2011). *Digital and Media Literacy: Connecting Culture and Classroom.*

Houmane, J., Zaher, A., Brigui, H., & Omari, A. E. (2024). Digital Citizenship and Language learning: Attitudes toward Rosetta Stone in Moroccan higher education. *ResearchGate*. https://doi.org/10.9790/7388-1404025260

Houssami, N. S. (2024). Higher education reform in Morocco: Challenges, insights, and global perspectives. *World Journal of Advanced Research and Reviews*, *24*(2), 953–960. https://doi.org/10.30574/wjarr.2024.24.2.3425

Ilomäki, L., Lakkala, M., Kallunki, V., Mundy, D., Romero, M., Romeu, T., & Gouseti, A. (2023). Critical digital literacies at school level: A systematic review. *Review of Education*, *11*(3). https://doi.org/10.1002/rev3.3425

Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, *21*(2), 157–165. https://doi.org/10.1017/s0958344009000202

Leaning, M. (2019). An Approach to Digital Literacy through the Integration of Media and Information Literacy. *Media and Communication*, *7*(2), 4–13. https://doi.org/10.17645/mac.v7i2.1931

Lei, H., Xiong, Y., Chiu, M. M., Zhang, J., & Cai, Z. (2021). The relationship between ICT literacy and academic achievement among students: A meta-analysis. *Children and Youth Services Review*, *127*, 106123. https://doi.org/10.1016/j.childyouth.2021.106123

Llorent-Bedmar, V. (2014). Educational reforms in Morocco: evolution and current status. *International Education Studies*, *7*(12). https://doi.org/10.5539/ies.v7n12p95

Lord, G. (2016). Rosetta Stone for language learning: An exploratory study. *IALLT Journal of Language Learning Technologies,* *46*(1), 1–35. https://journals.ku.edu/iallt/article/view/8552

Mackie, C. (2023, October 6). *Education in Morocco*. WENR. https://wenr.wes.org/2022/10/education-in-morocco

Masaiti, A. E. (2024, November 27). Moroccan university students frustrated with Rosetta Stone language learning app. *HESPRESS English - Morocco News*. https://en.hespress.com/96885-moroccan-university-students-frustrated-with-rosetta-stone-language-learning-app.html?utm_source=chatgpt.com

Oye, N. D., AIahad, N., & AbRahim, N. (2012). The history of UTAUT model and its impact on ICT acceptance and usage by academicians. *Education and Information Technologies*, *19*(1), 251–270. https://doi.org/10.1007/s10639-012-9189-9

Özturk, N. (2013). Using CALL in Language Teaching and Learning, in consideration of its Strengths and Limitations. *Journal of European Education*, *3*(1). https://doi.org/10.18656/jee.02273

Pangrazio, L., Godhe, A., & Ledesma, A. G. L. (2020). What is digital literacy? A comparative review of publications across three language contexts. *E-Learning and Digital Media*, *17*(6), 442–459. https://doi.org/10.1177/2042753020946291

Razali, N. M., & Yap, B. W. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *ResearchGate*. https://www.researchgate.net/publication/267205556_Power_Comparisons_of_Shapiro-Wilk_Kolmogorov-Smirnov_Lilliefors_and_Anderson-Darling_Tests

Rivoltella, P. C. (2008). *Digital Literacy: Tools and Methodologies for Information Society*. http://ci.nii.ac.jp/ncid/BA89604578

Şanverdi, M. (2021). The use of Rosetta Stone application for vocabulary improvement in English: a review study. *ResearchGate*. https://www.researchgate.net/publication/357770342_The_Use_of_Rosetta_Stone_Application_for_Vocabulary_Improvement_in_English_A_Review_Study

Sheskin, D. J. (2004). Handbook of Parametric and Nonparametric Statistical Procedures. *Technometrics*, *46*(3), 369–370. https://doi.org/10.1198/tech.2004.s209

Slimani, N., & Jabali, K. (2023). Language learning platforms: Connecting the Dots Around Rosetta Stone Platform. *European Journal of Education Studies, 10*(7), 101-111. https://doi.org/10.46827/ejes.v10i7.4876

Straub, E. T. (2009). Understanding Technology Adoption: Theory and Future Directions for Informal learning. *Review of Educational Research*, *79*(2), 625–649. https://doi.org/10.3102/0034654308325896

Tamilmani, K., Rana, N. P., Wamba, S. F., & Dwivedi, R. (2021). The extended Unified Theory of Acceptance and Use of Technology (UTAUT2): A systematic literature review and theory evaluation. *International Journal of Information Management*, 57, 102269. https://doi.org/10.1016/j.ijinfomgt.2020.102269

Taouil, K., & Taouil, K. (2024, October 3). ESRI Pact 2030 in action for a new model of Moroccan universities. *Atalayar*. https://www.atalayar.com/en/articulo/society/esri-

pact-2030-in-action-for-new-model-of-moroccan-universities/20241003190000205933.html

Venkatesh, N., Morris, N., Davis, N., & Davis, N. (2003). User acceptance of information Technology: toward a unified view. *Management Information Systems Quarterly*, *27*(3), 425. https://doi.org/10.2307/30036540

Venkatesh, V., Thong, J., & Xu, X. (2016). Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road ahead. Journal of the Association for Information Systems, 17(5), 328–376. https://doi.org/10.17705/1jais.00428

Appendix

Section A: General Questions

Age:

18-25/ 25-30/ 30 or above

Gender:

Male/ Female

Frequency of Rosetta Stone Usage:

Never/ Rarely/ Sometimes / Often/ Always

Section B: Performance Expectancy

Please rate how much you agree with the following statements.

a. ***Using the Rosetta Stone platform improves my language learning performance.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

b. ***Rosetta Stone helps me learn languages more efficiently than traditional methods***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

c. ***The platform improves my ability to acquire new vocabulary and pronunciation skills.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

Section C: Effort Expectancy (EE)

Please rate how much you agree with the following statements.

a. ***The Rosetta Stone platform is easy to use.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

b. ***I find it simple to navigate the features of Rosetta Stone.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

c. ***Learning how to operate the platform is easy.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

Section D: Social Influence (SI)

Please rate how much you agree with the following statements.

a. ***People whose opinions I value encourage me to use Rosetta Stone.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

b. ***My teachers recommend using Rosetta Stone for language learning.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

c. ***My peers think I should use the platform regularly.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

Section E: Facilitating Conditions (FC)

Please rate how much you agree with the following statements.

a. ***I have access to reliable internet and technology to use Rosetta Stone.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

b. ***The university provides sufficient technical support for using Rosetta Stone.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

c. ***The platform works well with the devices I use.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

Section F: Digital Literacy (DL)

Please rate how much you agree with the following statements.

a. ***I am confident in my ability to find and manage information online.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

b. ***I know how to evaluate the reliability of digital resources.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

c. ***I am comfortable using various digital platforms for learning purposes.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

Section G: Attitude and Behavioral Intention (BI)

Please rate how much you agree with the following statements.

a. ***I enjoy using Rosetta Stone for language learning.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

b. ***I intend to continue using Rosetta Stone in the future.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)

c. ***I believe using Rosetta Stone is beneficial for my education.***
(Strongly Disagree/ Disagree/ Neutral/ Agree/ Strongly Agree)