Moroccan Higher Education in the Era of E-Learning: Challenges and Future Directions

Achraf Elaouaqi*, Hicham Aberbach and Abdelouahed Sabri

Laboratory of Engineering, Modeling and Systems Analysis, Faculty of Science Dhar-Mahraz, University of Sidi Mohamed Ben Abdellah, P.B 1796 Atlas-Fez, Morocco

ABSTRACT

The digital transformation of education systems globally has led to the emergence of e-learning as a pivotal component of the teaching-learning ecosystem. The COVID-19 pandemic further accelerated this shift by necessitating abrupt transitions to online education for over 1.5 billion students and 63 million educators worldwide. This paper explores the evolution and significance of e-learning, particularly in the context of Moroccan universities, amidst the backdrop of a traditional education system. Through a comprehensive literature review, it delves into the various definitions and conceptualizations of e-learning, highlighting its multifaceted nature and the myths surrounding its implementation. Methodologically, the study adopts a rigorous approach, utilizing online questionnaires to gather insights into the current status, challenges, and potential enhancements of e-learning in Moroccan higher education. The findings reveal both the advantages and challenges associated with e-learning, offering a nuanced understanding of its impact on students and educators. Moreover, the paper provides actionable recommendations for improving e-learning experiences in Morocco, ranging from infrastructure development to pedagogical training and learner support mechanisms. Overall, this research contributes to a deeper understanding of e-learning dynamics in Morocco and offers pragmatic solutions for optimizing its utilization in higher education settings.

*Corresponding author

Achraf Elaouaqi, Laboratory of Engineering, Modeling and Systems Analysis, Faculty of Science Dhar-Mahraz, University of Sidi Mohamed Ben Abdellah, P.B 1796 Atlas-Fez, Morocco.

Introduction

The digital revolution across all levels of education has paved the way for the adoption of a new teaching-learning model known as e-learning. The COVID-19 pandemic led to classroom closures worldwide, forcing over 1.5 billion students and 63 million educators to abruptly transition their in-person academic activities to remote formats wherever feasible [1,2]. This circumstance exposed both the capabilities and limitations of education systems in confronting the challenges posed by digitalization. From an economic standpoint, the e-learning industry has experienced remarkable growth over the past decade. According to Statista, the global e-learning market is projected to surpass \$185 billion by 2024 [3].

As previously mentioned, the world is an ever-changing place, and technology is forever evolving. Out with the old and in with the new. E-Learning is the most efficient, effective, and convenient way to learn. It is easily accessible, economical, and can cater to a vast amount of people. E-Learning is no longer just correspondence, as it now includes multimedia, discussion forums, live chats, and video conferencing. Learning in today's world has become so advanced that students can earn a degree without even stepping into a classroom. E-Learning is quickly replacing traditional learning methods and the use of hardcopy materials. As there are many dissimilarities between E-Learning and traditional learning, it is still essentially a form of learning; therefore, it has found its place in the education system [4].

Education in Morocco has come a long way from where it started, but up until this day, it still faces many challenges. With all the advancement of technology across the globe and its importance in today's world, the Moroccan education system remains traditional [5]. The introduction of the E-Learning program has become a new and popular alternative in today's society. Therefore, this paper will discuss the E-Learning program in Moroccan universities, its importance, and the significant challenges.

Our objective is to investigate what factors explain this learner satisfaction towards online training in the context of higher education in Morocco. For this purpose, in the following section we will review the literature on theories and models that present a number of factors that can help to improve learner satisfaction. In section 3, we will talk about the main objectives of our research and the hypotheses guiding this study. Section 4 describes the data collection method and the evaluation and a debate of the results obtained. Section 5 presents a conclusion with the limits of our research as well as perspective.

Definition of E-Learning

According to Aparicio et al., the e-learning concept was not the first term to be used in conceptualizing the use of computerized systems to enable or facilitate the learning process [6]. They identified 23 concepts that relate to the use of computers for learning purposes (e.g., Computer-Assisted Instruction, Collaborative Learning,

online learning, Blended Learning, virtual learning, distance education, m-learning, MOOC, learning management systems).

E-learning is a mode of learning that is enabled or mediated by electronic technology, often conducted remotely or asynchronously, and typically involving the internet or other computer networks [7]. E-learning encompasses the use of electronic media and information and communication technologies in education, often including online courses, web-based learning, virtual classrooms, and digital collaboration tools [8]. Online learning refers to learning experiences activated or supported by computer technology, involving notably online communication and collaboration [9].

According to Rodrigues et al., online learning is described as an innovative system that relies on the use of the web and digital technologies, as well as various other educational materials [10]. Its main objective is to create a learner-centered, open, enjoyable, and interactive personalized learning environment that supports and enhances the learning processes.

According to Njenga and Fourie, they identified 10 myths about online learning in higher education, stemming from emerging educational practices, information provided by technology providers, and academic literature [11]: (1) Online learning is an extremely powerful tool, and all educational institutions should universally adopt it; (2) Online learning has the potential to replace human interaction; (3) Online learning leads to reduced economic costs of education; (4) Expanding the academic program and providing vast amounts of information intrinsically enhances learning outcomes; (5) Digital technologies should serve as the primary means or resource for learning in higher education; (6) Leisure activities, such as gaming and entertainment, are distinct from learning; (7) Online learning reinforces the competitiveness of university institutions; (8) Defining the infrastructure (hardware and software) for online learning poses the greatest challenge; (9) Online learning heralds the end of traditional campuses; (10) Online learning has the potential to reduce absenteeism and dropout rates among university students.

This systematic literature review aims to debunk these and other misconceptions surrounding e-learning by analyzing research conducted over the past decade. Through this review, the primary study themes and research directions providing scientific insights into the present and future of educational technology are identified.

Methodology
The use of e-learning is becoming increasingly widespread in the education sector in Morocco. More and more universities and educational institutions in Morocco are adopting online learning methods to complement traditional classroom teaching [12]. The use of e-learning offers numerous benefits to students, teachers, and educational institutions [5]. However, despite its growing adoption, there are still challenges to be addressed to enhance the use of e-learning in Morocco [12]. The aim of this study is to analyze the current use of e-learning in Morocco, explore improvement perspectives, and propose recommendations to optimize its utilization [13].

Numerous studies have explored the use of online education in Moroccan universities, particularly in higher education institutions. These inquiries have focused on various aspects such as the implementation of e-learning systems, the effectiveness of e- learning methods, and the impact of e-learning on student performance and overall educational outcomes [14,15]. Some research has analyzed particular e-learning platforms like Moodle and their influence on teaching and learning results [16]. Additionally, other studies have investigated the factors contributing to the success of e-learning systems during the COVID-19 pandemic by gathering data from online questionnaires filled out by students in Moroccan higher education institutions [17,18]. The findings of these studies have provided valuable insights into the use of e-learning in Moroccan universities and have highlighted the positive outcomes associated with incorporating e-learning platforms and strategies.

Design and Procedures
To ensure the quality of our study on the use of e-learning in Morocco, we have implemented a rigorous research methodology based on solid scientific principles. With this aim in mind, we chose to utilize an online questionnaire as the primary data collection instrument. This questionnaire was specifically designed to survey e-learning users in Moroccan universities. Participants in our study were selected to represent a diverse sample of e-learning users, including students from various academic levels, teachers, university administrators, and other key stakeholders in the field of online education in Morocco. They were invited to respond to a series of questions covering various aspects of their experience with e-learning, including their usage patterns, perceptions of this learning method, and the challenges they face in their daily use.

Data Collection and Data Analysis
The amassed data will undergo a comprehensive analysis, integrating quantitative and qualitative methodologies, to offer a profound understanding of e-learning adoption in Morocco and avenues for enhancement.

Quantitative analysis will utilize statistical techniques to scrutinize trends, correlations, and emerging patterns gleaned from an online questionnaire. This will facilitate the identification of crucial parameters such as e-learning usage frequency, user preferences for diverse content types, and prevalent challenges.

Simultaneously, qualitative analysis will delve into a meticulous evaluation of open-ended responses provided by participants in the questionnaire. These responses provide invaluable insights into users' individual experiences, perspectives, concerns, and recommendations for advancing e-learning in Morocco.

By amalgamating these two analytical approaches, we will construct a holistic view of the present state of e-learning in Morocco, discerning its strengths and areas necessitating improvement. This comprehensive understanding of challenges and opportunities will guide the formulation of recommendations and strategies to fortify the adoption and efficacy of e-learning within the Moroccan educational landscape.

Experimental Results and Discussions
Advantages of E-Learning
The advantages of e-learning are perceived differently by students and teachers who have shared their experiences. Here is a summary of the advantages mentioned by these different profiles:

Table 1: The Advantages of E-Learning

Advantages	Student Responses	Teacher Responses
Ease of Use	72	31
Interactivity	26	21
Access to Resources Anytime	76	
Possibility of Communication with Teachers and Peers	14	
Tracking Student Progress		17
Integration with Other Tools		15

Table 2: E-learning Platforms

Platforms	Student Responses	Teacher Responses
Moodle	60	28
Canvas	10	5
Coursera	50	12
edX	8	1
Udemy	2	1

Table 3: Types of Online Resources Used

Resources	Teacher Responses
Slides/PPT	31
Videos (lecture recordings,	24
Discussion Forums	10
Online Quizzes	16
Collaboration Tools	21
LMS Platform	10

E-learning in Morocco offers numerous scientific advantages. This method of learning provides access to a wide range of educational resources and online courses, facilitating the acquisition of new knowledge and skills. Additionally, e-learning allows interaction with experts and professors from around the world, enriching the learning experience and enabling exploration of various scientific fields. Through interactive and innovative online learning platforms, students in Morocco can benefit from high-quality education tailored to their needs and learning pace, thereby enhancing their engagement and motivation in their scientific pursuits.

E-learning provides several advantages, including flexibility, interactivity, resource ac- cessibility, and ease of platform use for both learners and educators. These advantages enrich the online learning experience and improve the effectiveness of distance education.

Challenges of E-Learning
E-Learning in Morocco, despite its numerous advantages, faces several challenges. Firstly, access to the internet and technology remains limited for certain populations in Morocco, which may hinder participation in online courses and accessing scientific resources. Additionally, the quality of online educational content may vary and may not always adhere to international academic standards, potentially impacting the relevance and reliability of available scientific information. Furthermore, the training and technical support of teachers to effectively integrate digital tools into their scientific courses pose a significant challenge. It is essential to ensure that teachers possess the necessary skills to design high-quality online courses and to support learners in their scientific learning journey.

The challenges of e-learning are perceived differently by students and teachers who have shared their experiences. Here is a summary of the challenges mentioned by these different profiles:

Table 4: The Challenges of E-learning

Challenges	Student Responses	Teacher Responses
Technical issues	41	18
Lack of real-time interaction	40	15
Difficulty in staying motivated	51	8
Lack of training		7
Difficulties in accessing online	2	1

The question of interactivity and student engagement in an online learning environment remains a challenge to address. It is important to foster meaningful interactions among students, instructors, and scientific content while maintaining a high level of motivation and engagement in the learning process.

The development of e-learning in Morocco in the scientific field requires overcoming challenges such as access to technologies, quality of content, teacher training, and student engagement to ensure an effective and enriching online learning experience for all involved stakeholders.

Improvement of Online Learning Experiences
Improving online learning experiences in Morocco relies on a thorough understanding of the needs and challenges faced by both professors and students. Through surveys and interviews, we have gathered valuable insights that shed light on pathways to effective solutions tailored to our local context.

Professors have emphasized the importance of ongoing training to fully leverage available technological tools and develop specific pedagogical skills for e-learning. They have also expressed the need for increased institutional support for creating quality content and implementing innovative teaching strategies.

On the students' side, feedback has underscored the significance of interactivity and engagement in online courses. They have expressed a desire for a greater variety of pedagogical resources, as well as transparent communication with instructors to clarify course expectations and objectives.

Suggestions for Improving E-learning
Infrastructure and Internet Access
* Improve Internet connectivity.
* Develop digital infrastructure.
* Reduce Internet access costs.

Teacher Training
* Strengthen online pedagogical training.
* Promote the use of digital tools in the classroom.

- Implement continuous training programs.

Adapted Educational Content
- Develop content in Arabic language.
- Adapt content to Moroccan cultural specificities.
- Integrate engaging multimedia resources.
- Offer personalized learning pathways.

Learner Support
- Implement an online tutoring system.
- Provide technical support to learners.
- Encourage interaction among learners.

Assessment and Learning Monitoring
- Implement online assessment tools.
- Ensure regular monitoring of learner progress.

Awareness and Promotion of E-learning
- Inform education stakeholders about the benefits of e-learning.
- Organize events and conferences on e-learning.
- Communicate successes and benefits of e-learning in Morocco.

Conclusion

In recent years, the use of e-learning has gained prominence as a powerful tool for education and training. E-learning, or electronic learning, refers to the use of digital technologies and media in delivering educational content and facilitating learning [19]. This approach allows learners to access educational resources and materials online, participate in interactive activities, and communicate with instructors and peers remotely [20]. It is evident that e-learning has a significant impact on education in Morocco, particularly within universities. The adoption of e-learning in Moroccan universities allows for greater flexibility and accessibility in terms of education. Students are no longer limited to traditional classroom settings or physical locations, as they can access courses and learning materials from anywhere with an internet connection.

The use of e-learning in Moroccan universities is accompanied by various strategies and methods to ensure effective learning outcomes. These strategies may include the development of online courses and learning management systems, the use of multimedia resources and interactive tools, and the incorporation of collaborative learning activities to promote engagement and knowledge sharing among students. Moreover, e- learning in Morocco offers several advantages. Firstly, it allows for personalized and self-paced learning, giving students the flexibility to study at their own convenience and progress at their own pace. Secondly, e-learning provides access to a wide range of educational resources and materials, including videos, articles, simulations, and interactive exercises. This diverse range of materials enhances the learning experience and caters to different learning styles. Thirdly, e-learning promotes active learning and critical thinking through interactive activities and assessments. In addition, e-learning facilitates communication and collaboration among students and instructors through online discussion forums, chat rooms, and video conferencing tools. These communication tools enable students to engage in meaningful discussions, seek clarifications, and receive timely feedback from instructors. Furthermore, e-learning in Morocco presents some challenges that need to be addressed. Some of these challenges include: the need for reliable internet connectivity and access to devices, ensuring the quality and credibility of online courses and materials, training instructors on effective online teaching methods and providing ongoing technical support for students and instructors.

To overcome these challenges, the Moroccan government and universities must invest in improving internet infrastructure and providing affordable access to devices for students. They should also prioritize the training and professional development of instructors in online teaching methodologies and ensure the availability of technical support services for students. Moreover, efforts should be made to continuously monitor and evaluate the quality of online courses and materials to maintain credibility and effectiveness [19].

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