

University students' attitude, satisfaction, and future preference of online learning: Empirical evidence from an emerging country

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Abstract

Following the COVID-19 outbreak, online learning was only available option to cope with the quarantine policies while continuing education. Still, the debate on the effectiveness of this teaching approach and its potential to thrive in the future has been continuing. This debate has nonetheless received relatively less attention in developing countries. Through an integrated conceptual model based on the technology acceptance model and the theory of planned behavior, the current study attempts to investigate attitude, online satisfaction, academic achievement, and future preference of online learning among university students in an emerging country (i.e., Morocco). The proposed conceptual model is assessed using a sample of 588 Moroccan university students, and data is assessed using the partial least square technique. Managerial implications are suggested to universities, educators and policy makers.

Keywords: *Attitude, online learning satisfaction, academic achievement, future preference, Morocco.*

1. Introduction

On January 30, 2020, the World Health Organization (WHO) proclaimed COVID-19 a worldwide public health emergency of international concern, and on March 11, 2020, a pandemic (Kordrostami & Seitz, 2021). The outbreak pushed schools, colleges, and universities throughout the world to close so that students and instructors could practice social distance. However, the transition from a traditional school setting to remote and virtual learning could not occur overnight. This fast change is connected to several hurdles and problems at this time (Amir et al., 2020).

While reviewing extent literature, four main gaps were identified. First, online learning is a complicated and multidimensional study field. It encompasses a variety of research questions, ranging from those centered on technology infrastructures to those with significant socio-

cultural impacts (Baber, 2021; Bono et al., 2024; Wu et al., 2010). Although it is necessary to have a comprehensive conceptual model illustrating the complexity of online learning implementation, the majority of the literature articles are irregular, and often deliver inconsistent results. Reports often have a small sample size, and in many cases a potential bias on the part of the study authors due to their dual role as instructors (Ali, 2020; Aguilera-Hermida, 2020; Ismaili, 2021). Second, numerous research on online learning primarily assess the short-term effects of technology. Thus, there is a steady recurrence of the same question, with just the learning process or technology changing (Lei & So, 2021; Lima et al., 2020).. Third, the majority of relevant work focuses on certain factors to assess student's perception of online learning, such as instructor perceived performance (Shehzadi et al., 2020), ease of use of the platform (K. Mukhtar et al, 2020), information quality (A. Ahmad et al., 2020), interaction (Baber, 2020), perceived usefulness (Alawamleh, et al., 2020), attitude towards online learning (M. Adnan et al., 2020). Consequently, their results do not account for intercorrelated and diverse factors that might simultaneously impact students' perception of online learning.

In an attempt to fill in the gaps on the antecedents and variables of students' perception of online learning, the current study investigates the impact of instructor perceived performance, ease of use of the platform, information quality, interaction, and perceived usefulness on students' attitude towards online learning in Morocco. Moreover, we investigate how the attitude towards online learning can positively or negatively shape online learning satisfaction and academic achievement which also influence the future preferences of students. We presume that in order to reshape the future of Moroccan education, all academic parties need to take these variables into consideration; An academic strategy without direction will inevitably result in failure and uncertainty. We also analyze the moderating effects of the tools used during online learning. Our research is based on data gathered from a survey of 588 Moroccan university students.

2. Literature review and hypotheses development

2.1. Research motivation

Covid-19 and the rapid increase in internet use, both, significantly contributed to the adoption of online learning for Moroccan universities. More online classes are offered and enrolling in them is steadily rising. At first, Moroccan universities did not have the best initial operations, instructors were forced to communicate with students through WhatsApp or Facebook. Online learning remained a new educational experience in Morocco, obstacles naturally started to emerge; slow internet connection, a shortage of computers and other necessary technologies, and other challenges such as negative attitude towards online learning, or the little to no interaction between instructors and students (Draissi & ZhanYong, 2020). Although instructors made incredible efforts, some students were still unsatisfied with the online learning experience. They claimed that they were unable to connect to classes, had difficulties understanding the new

conferencing applications, comprehending the material, and keeping up with the rapid course pace (Razkane et al., 2021). It is also evident that many students have encountered numerous challenges, such as lack of motivation and enthusiasm to attend classes and were not as satisfied as face-to-face classes (Hibbi et al., 2021).

2.2. Hypotheses development

Leng Lei (2021) argues that the student model of satisfaction is significantly affected by both instructor performance and technological innovations. In addition, scholars agree that the overall student's impression of online learning is highly affected by an instructor's content expertise (Kordrostami & Seitz, 2021). Finally, K. Mukhtar et al. (2020) make a similar recommendation, arguing that we should push teachers to design lessons that ease students' minds while keeping them engaged. Therefore, we presume that instructor perceived performance positively influences students' attitude towards online learning.

H1: Instructor perceived performance positively impacts students' attitude towards online learning.

Students now have access to more resources through the most recent platforms and modern technology (Alawamleh, et al., 2020). Hence, the convenience of online learning helps to promote student engagement and improve learner retention (Lei & So, 2021). Incorporating the three dimensions of the students' scenario (interpretation, understanding, and prediction), research shows that students now prefer online platforms (Al-Marouf et al., 2021). Therefore, we assume that students' disposition toward online education is enhanced when the platform is user-friendly:

H2: Ease of use of the platform positively impacts students' attitude towards online learning.

Technology is advancing year after year, information and communication quality are becoming one of the key factors that lead students engaging in online learning to be satisfied with the new way of learning. Online learning is becoming technologically, commercially, and operationally feasible (Lei & So, 2021). Lima et al.(2020) highlight that the quality of information is a key resource, and attaining it necessitates consideration for the social aspect and involvement of information systems. Hence, we presume that information quality positively influences student's attitude towards online learning.

H3: Information quality positively impacts students' attitude towards online learning.

Numerous studies have demonstrated the importance of interaction in online learning, and yet a recurring theme in the research on the subject is that student-led online discussions result in improved learning outcomes and interesting personal applications of course themes and theories (Baber, 2020). Prior research indicates that students interact with one another and the instructor; they exchange opinions on a variety of topics (Alawamleh, et al., 2020). One of the common

implications of prior research is that a blended e-learning system should provide good engagement tools and professors should publicly encourage interaction to be successful and to positively impact motivation and academic achievement (Wu et al., 2010; Baber, 2021). Therefore:

H4: Class Interaction positively impacts students' attitude towards online learning.

Students' perception of the perceived usefulness is significantly influenced by their general impression of the online classes, their consistency with traditional education, and the instructor's reactivity and attentiveness (Aristovnik et al., 2016). However, the online class's structure and the class workload had no significant impact on perceived usefulness. A university portal could be a valuable instrument for both teachers and students by encouraging the former to evaluate their teaching and learning practices and identify areas of improvement and to seek assistance if needed (Rets et al., 2021). Therefore, we hypothesize that:

H5: Perceived usefulness positively impacts students' attitude towards online learning.

Satisfaction is the level of fulfillment and contentment of students with various components of online learning (Murillo-Zamorano et al., 2019). Ismaili (2021) argues that online learning is still in its preliminary stages, and while traditional teaching methods are invaluable still in the Arab world, post-COVID-19, The majority of students perceive distance learning favorably and are eager to take part of the classes which demonstrates that online learning in higher education institutions has a promising future. Potential e-learning proposals are viewed as dependent on the attitudes and beliefs of students regarding e-learning, as well as their gratification with technology and previous online learning experiences. Therefore, we presume:

H6: Students' attitude towards online learning positively impacts their satisfaction with regards to online learning.

Motivation cannot be considered a "separate component". rather, it is a combination of factors such as potential, personality, task values, goals, and accomplishment intentions (Trevino & DeFreitas, 2014). Researchers suggest that students' motivation was increased when their basic psychological needs were met, which was also associated with greater knowledge transfer and improved academic performance in the online learning environment (Hsu et al., 2019). We presume that students' attitudes toward online education have a profound and positive effect on their performance in the classroom. Learning about how students feel about online learning is crucial to improving its efficiency. Hence:

H7: Students' attitude towards online learning positively impacts their academic achievement.

Students from developing countries' universities have mixed feelings about online education, but are typically favorable (El-Gamal & El-Aziz). This was backed by Nassoura (2021), who

found that many students regarded e-learning favorably due to its positive effect on their self-efficacy and motivation. Contentment with the quality of online interactions has been the subject of other research. For instance, Shehzadi et al. (2020) found that when students weren't actively engaged in their coursework, they developed a negative attitude toward online learning. Hence, we presume that student's positive attitude towards online learning positively impacts their future preference of online learning. Therefore:

H8: Students' attitude towards online learning positively impacts their future preference of online learning.

Online learning relies heavily on student evaluations. A recent study by the Quality Assurance Agency for Higher Education found that students' feedback is a vital component in the instructor's structure of the class and it is a way for them to improve the learning outcomes and shape student's future preferences (Quality Assurance Agency for Higher Education, 2018). The effectiveness of face-to-face instruction in a blended course has not been assessed by Al-Busaidi (2021) or Lin and Wang (2021). Since the blended learning mode exposes students to both online and face-to-face learning resources and components, it may have a substantial impact on whether or not students choose to continue their education online. Therefore:

H9: Students' satisfaction positively impacts students' future preference of online learning.

Recent research indicates that a variety of characteristics serve as predictors of academic accomplishment in online learning environments. Each researcher categorised these variables differently (Ong et al., 2021; Amir et al., 2020; Schlenz et al., 2020). Other factors that affect students' performance in online learning include gender, age, employment status, Internet or computer self-efficacy, characteristics, and learning styles (Schlenz et al., 2022). According to Lei & So.; (2021) Students who are motivated and self-aware are more likely to achieve better grades therefore prefer to engage in more online classes in the future. Hence, we presume that students' academic achievement in online learning settings positively impacts their future preferences.

H10: Students' academic achievement positively impacts students' future preference of online learning.

Based on the above, the conceptual model is illustrated in Figure 1:

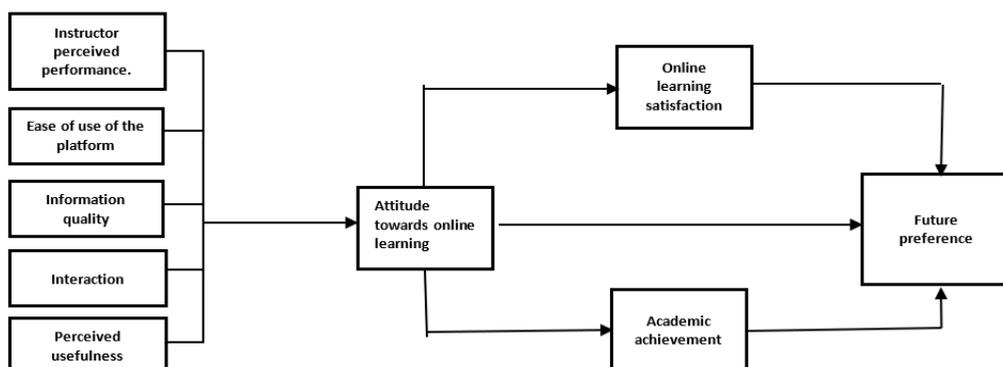


Fig 1. Conceptual model (proposed by authors)

3. Research methods

3.1. Measurements

The research model constructs were derived from existing literature as well as our surveys. Because French is so widely spoken in Morocco, we made sure to provide both French and English versions of our questionnaire's scales and questions (Lebdaoui and Chetioui, 2020). To make the transition from English to French, we used the back-translation technique (Brislin, 1986). All constructs were measured using a five-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). To assess students' general online learning experience, seven questions were asked.

3.2. Sample and data collection

Our survey was answered by 588 Moroccan university students, from both the public and the private academic sector. Our surveys were distributed in all social media as well as sent in Moroccan universities' emails. There is a roughly equal number of males and females in the sample (47.96% Male and 52.04% Female). In terms of age distribution, those between the ages of 18 and 25 made up the largest share (88.27%), followed by those between the ages of 26 and 30 (9.18%) and 31 and older only made up (2.55%) of the survey. Seventy percent of respondents held a bachelor's degree, followed by 27.55% Masters Students, and finally 2.38% of the sample were PhD students. With regard to the device used during online learning, most of the respondents (75.34%) used a desktop/ laptop, followed by smartphone users (22.11%) and finally tablet users (2.55%). With respect to internet quality and access, 78.40% of the respondents had good quality internet, while 21.60% had limited access. Regarding camera use

during online classes, 44.73% don't use cameras, 31.46% answered it depends, and 23.81% used the camera during all their online classes.

4. Results

To assess the main relationships proposed in the conceptual model, structured equation modeling (SEM) was employed. In view of the early stage of the theoretical development, the predictive nature of the theoretical framework, and complexity of relationships of the structural model (Hair et al., 2019), the use of Partial Least Squares (PLS) was considered the most suitable for the current research. Before testing the structural model, the measured model was analyzed in terms of construct reliability, convergent and discriminant validity.

4.1. Assessment of the Measurement Model

The initial stage in establishing indication reliability is to ensure that loadings are larger than 0.70. (Chin, 1998; Hair & Anderson, 2010; Henseler et al., 2009). In our case, each item's loading is greater than 0.70, indicating that the indicator's dependability has been attained. Second, we used Cronbach's alpha (CA) and composite reliability to examine the construct's dependability (CR). Our results illustrate that all of our constructions have CR and CA values more than 0.70, suggesting their dependability (J. Henseler et al., 2009). Third, to evaluate convergent validity, the average variance extracted (AVE) must be equal or greater than 0.5 to be regarded as adequate to explain more than half of the variation of its indicators on average (Hair & Anderson, 2010; Henseler et al., 2009). All of the AVEs are greater than 0.5, which denotes convergent validity (The tables of validity are available upon request).

As for discriminant validity, we used the HTMT table as suggested by Hair et al. (2021). Our results suggest that all values are below the cutoff value of 0.9 (Jörg Henseler, Ringle, & Sarstedt, 2015). Thus, the discriminant validity of the notions is met by all of the measurements. The satisfying results for construct reliability, convergent validity, and indicator reliability suggest that the constructs may be utilized to evaluate the conceptual model (The HTMT table is available upon request).

As for the model fit, our model's standardized root mean squared residual (SRMR) value is 0.061, which is below the threshold of 0.08 (Henseler et al., 2014), indicating a good fit of the measurement model. The normed fit index (NFI) value is also above 0.9 (NFI=0.915), indicating an acceptable fit. Lastly, all variation inflation factor (VIF) values are below the threshold of 3.3; the model is therefore free of pathological collinearity and of common method bias (Kock, 2015).

4.2. Assessment of the Structural Model:

First, our research explains 62% of the variation in Attitude towards online learning. As expected, instructor perceived performance ($\beta = 0.327$; $p < 0.001$), ease of use of platform ($\beta = 0.222$; $p < 0.001$), Information quality ($\beta = 0.247$; $p < 0.001$), Interaction ($\beta = 0.139$; $p < 0.001$), and perceived usefulness ($\beta = 0.358$; $p < 0.001$) had a significant positive impact on student's attitude towards online learning, approving H1, H2, H3, H4, and H5 (see table 1). Students' attitude towards online learning mainly depends upon instructor perceived performance and impacts positively on it. Moreover, online technological skills and online process skills are crucial factors demonstrating enthusiasm. So the instructor's perceived performance during online education is enhanced when the platform is user-friendly. Studies show that the primary goal of information quality is to facilitate online learning for students and provide them with correct and relevant information (Lima et al., 2020). On top of that, one of the common implications of prior research is that e-learning classes should provide good engagement tools and professors should publicly encourage interaction to be successful and to positively impact motivation and academic achievement. Therefore, Hypotheses H1, H2, H3, H4, H5 are proven to positively impact students' attitudes towards online learning.

Second, 42% of the variation in online learning satisfaction is explained by the conceptual model. Attitude was confirmed to significantly impact students online learning ($\beta = 0.649$; $p < 0.001$), approving H6. This suggests that a positive attitude toward online learning partially influences the connections between intrinsic drive to learn and extrinsic incentive to succeed, as well as between each of the engagement dimensions. Negative attitudes towards online learning were proven to further diminish the chance of student participation. Students who have a positive attitude towards their online classes are more likely to participate and engage with instructors. Hence, they are more satisfied with the class and are more likely to keep engaging during online sessions.

Third, the conceptual model accounts for 41.7% of the variation in academic achievement. Attitude was confirmed to significantly impact students' academic achievement ($\beta = 0.644$; $p < 0.001$), approving H7. This suggests that students with a more optimistic outlook on distance education have a higher chance of academic success. Students like this typically excel academically and in class discussions with teachers and peers. However, students who have a negative outlook on online education are more likely to view their classes as a waste of time. As a result, they perform poorly in school.

Finally, our research explains 50.8% of the variation of Future preference for online learning. The hypotheses of Attitude towards online learning ($\beta = 0.359$; $p < 0.01$) Academic achievement ($\beta = 0.275$; $p < 0.01$), Online learning satisfaction ($\beta = 0.183$; $p < 0.01$) are statistically significant. Therefore, hypotheses H8, H9, and H10 are supported. The results put forward the fact that a positive attitude towards online learning, a positive academic achievement during

online learning, and satisfaction with the new way of learning all lead students into choosing and enrolling in more online classes.

Table 1. Direct effects (developed by the authors based on SmartPLS 3 output)

| Hypotheses | Relationships | Beta | STDEV | t-statistics | p-values |
|------------|--|-------|-------|--------------|----------|
| H1 | Instructor perceived performance -> Attitude towards online learning | 0.327 | 0.044 | 3.891 | 0.000 |
| H2 | Ease of use -> Attitude towards online learning | 0.222 | 0.042 | 5.238 | 0.000 |
| H3 | Information quality -> Attitude towards online learning | 0.247 | 0.051 | 4.894 | 0.000 |
| H4 | Interaction -> Attitude towards online learning | 0.139 | 0.048 | 2.878 | 0.004 |
| H5 | Perceived usefulness -> Attitude towards online learning | 0.358 | 0.043 | 8.295 | 0.000 |
| H6 | Attitude towards online learning -> Online learning satisfaction | 0.649 | 0.030 | 21.517 | 0.000 |
| H7 | Attitude towards online learning -> Academic achievement | 0.644 | 0.031 | 20.868 | 0.000 |
| H8 | Attitude towards online learning -> Future preference | 0.359 | 0.052 | 6.960 | 0.000 |
| H9 | Online learning satisfaction -> Future preference | 0.183 | 0.046 | 3.967 | 0.000 |
| H10 | Academic achievement -> Future preference | 0.275 | 0.049 | 5.573 | 0.000 |

5. Discussion and conclusions

This study seeks to examine students' perception towards online learning as a training mode, particularly on their experience with the Covid-19 pandemic. This technology for distance education was mandated by the Moroccan government's confinement and social distancing policies. In this research, we were able to determine the main determinants of the adoption and acceptance of e-learning as a distance learning mode. We conducted quantitative research using a questionnaire to gather data and concluded that most of the 588 student respondents had a positive experience with online learning. The majority of the students provided a positive evaluation of this distant learning experience. Students also reported that their experiences working on virtual teams in their online classes were engaging and interactive with the instructors (Adnan et al., 2020; Bono et al., 2024).

From a managerial point of view, the results of our research suggest that policy makers should engage in awareness-raising and communication campaigns with students to highlight the contribution of online learning modality to their performance and academic development. This study also conveys important insights for the Moroccan university instructors; in online learning, the updating of knowledge and courses is more important than in the classroom. Teachers are highly recommended to update their courses, to adapt them and to make them as comprehensible as possible; indeed, putting courses online makes them public and accessible to everyone, which then exposes them to control and criticism and leads teachers to propose quality teachings. Our study suggests that interaction between instructors and students is key to a positive attitude for students. Instructors are encouraged to make their online classes more

interactive by offering diverse activities where students can give their opinions and work with their classmates. Indeed, enhancing student satisfaction and academic achievement in online learning requires a multifaceted approach that addresses both the technological and pedagogical aspects of online education. For a better satisfaction and academic achievement among Moroccan students, Moroccan policy makers and instructors are urged to use interactive Learning Materials, maintain regular communication with students through announcements, emails, and discussion forums, provide clear instructions, expectations, and timely feedback on assignments, incorporate group projects and peer-to-peer interactions to foster a sense of community and encourage active participation, ensure that course materials are accessible to all students, implement strategies to keep students engaged (I.e., gamification elements, real-world applications, and case studies), and offer technical support and training to students. By implementing these strategies, instructors can create a supportive and engaging online learning environment that promotes both student satisfaction and academic achievement.

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