

E-Learning Effectiveness: An Explorative Study in the Tunisian Context

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Abstract: *The present study aims to identify a set of determinants of online learning efficiency. It is about exploring and understanding the concepts that influence the e-learning effectiveness. In this case, these concepts fall into two categories: individual determinants (motivation , individual efficacy, anxiety towards technology) and one situational determinant (feedback). An exploratory study has been conducted with exploratory interviews.*

Keywords: e-learning - effectiveness - motivation- feedback- anxiety

1. Introduction

Tunisia recognized the importance of the online knowledge . In fact, the competitiveness of the different societies goes through the importance of learning and knowledge competitiveness. Thereby, the different companies have to acquire new methods to maintain a vision of the environment development. As an emergent nation , Tunisia is concerned with the search of the new way of learning by using new information technologies to cope with competitiveness.

The objective of this study is to work out a conceptual model of the efficiency of online learning. In that line, we will mobilize the conceptual fields treated in a meta analysis . In fact, this meta analysis proved to be highly useful considering that it underscored four concepts that are essential to efficient online learning. It is about motivation, individual efficiency of a computer, anxiety towards technology, and feedback.

Thus our research question arises: How can motivation, individual efficacy , anxiety towards technology and feedback determine e-learning effectiveness?

Through following a qualitative and exploratory approach, our study aims to explore the determinants of e-learning effectiveness for learners as well as practices in a Tunisian context.

We will attempt to use the theoretical framework developed for the qualitative and exploratory interviews of which we will present the results. After that, we will suggest the hypothesis of our research, while relying on the results of the qualitative interviews as well as the theoretical framework.

2. The qualitative and Exploratory Analysis

The qualitative and exploratory analysis is realized in order to better identify the constructed objects of study, in the Tunisian context. Thereby, the chosen qualitative approach in our research rests on the qualitative and exploratory interviews of 15 students and 8 teachers. These interviews aimed at exploring the investigation ground and completing the measurement scales extracted from literature. Our work went through 2 stages; first of all, we have prepared and

elaborated 2 interviewing guidelines which we have submitted to students and teachers. Second, we have established an analysis of the thematic content of the interviews .The outcomes of these interviews were useful for the elaboration of the hypothesis. The period of our investigation dates back to the year 2016.

At this level, we will analyze the qualitative data. In this framework, we will present, first, the modalities of the qualitative study. Second, we will deal with the investigation field. Third, we will address the analysis of the thematic content.

Among the various forms of interview, we chose the semi-structured interview consisting of a free conversation on topics previously defined and linked to the issue of our research..

To make communication possible, we followed the recommendations of Wacheux (1996) by creating a climate of trust in order to facilitate exchanges and make the interlocutor comfortable. In this regard, we have guaranteed anonyma, confidentiality and the return of transcripts of the interviews (Wacheux, 1996). The interview guides addressed to actors consist of two parts. The first part consists of five questions enabling the identification of the interviewee (sex, age, and education level). The second part is devoted to the detection of elements of general order such as the importance of online learning on the one hand and deals with issues allowing detecting the factors determining the effectiveness of learning and knowledge transfer in class, on the other.

The interviews were conducted at an average of one hour. The first few minutes were dedicated to the explanation of the purpose of research and themes to be covered. Subsequently, we left the floor to the interlocutor to answer questions we asked him while following the interview guide. However, responses reformulations were made in some cases, non-compliance with the order of the guide questions or elimination of certain questions to which the interviewee responded spontaneously. These actions were intended to help the interlocutor, to make him comfortable or verify some concepts that we felt were ambiguous.

During these interviews, we were not allowed to use the tape as recording mode of the speech of the interlocutor. For this, we used a sheet to store the outline of the speech.

Subsequently, we proceeded to the development of fact sheets where we retranscribed all the stages of the interview.

2.1 The field of investigation

Our sample consists of students and teachers. Indeed, the sample was selected using two criteria. First, there are the students who used the online learning platform. Second, it is made of teachers who went through the teaching experience via an online platform-learning.

The sample selection criteria must meet the principle of theoretical saturation which led to the formation of a sample of 15 students and 8 teachers.

The following two tables describe the two samples.

Table 17: Description of the sample.1

Sample 1	Sex	age	function
Interviewee 1	Male	21	student
Interviewee 2	Female	19	student
Interviewee 3	Female	20	student
Interviewee 4	Male	21	student
interviewee	Male	22	student
interviewee	Female	20	student
Interviewee 7	Female	19	student
Interviewee 8	Male	21	student
Interviewee 9	Male	24	student
Interviewee 10	Male	21	student
Interviewee 11	Female	23	student
Interviewee 12	Male	21	student
Interviewee13	Female	19	student
Interviewee14	Female	23	student
Interviewee 1	Male	19	student

Sample 2	Sex	Age	Function
Interviewee 1	Female	28	Assistant
Interviewee 2	Male	30	Master assistant
Interviewee 3	Female	31	Assistant
Interviewee 4	Female	29	Assistant
Interviewee 5	Male	33	Master assistant
Interviewee 6	Female	31	Master assistante
Interviewee 7	Male	34	Master assistant
Interviewee 8	Male	38	Master of lecturer

We will analyze the content of the exploratory interviews.

The interviews with exploratory nature were a significant contribution both theoretically and empirically. Thus, at the theoretical level, these interviews helped us to better understand the factors that influence the effectiveness of online learning by learners in the Tunisian context. Empirically, these interviews enabled us to provide information for the generation of items required for the measurement of the concepts of research.

2.2 The Importance of motivation for online Learning

We asked interviewees to comment on the degree of motivation for online learning. In this context, all of the individuals interviewed in the sample1 and Sample 2 emphasize the importance of motivation for learning.

We quote the testimony indication of the learner 10 explaining the interest of motivation: "improving my skills is due to the online training program." Likewise, other learners believe that motivation positively influences learning: "I must say that motivation is essential to ensure effective learning" (interview 3). In the same vein, interviewees explained their motivation to learn online. In this context, interviewee 10 says "I have the desire to learn new skills." This regard is taken by interviewee 11 who recalls "I am motivated to learn online content."

In the same context, other respondents state motivation precisising that they have "good will" (14 respondents), "an energetic effort" (2 interviewees), "an opportunity" (3 interviewees), "a strong desire to learn "(5 interviewees),"online learning interests me "(2 interviewees)," I gave maximum effort "(3 interviewees). Further, online learning allows students to progress at their own pace. In addition, they can refresh their minds.

These findings were confirmed by most teachers. In addition, the majority of them claim that courses administered online target what is essential to remember for te learner (5 interviewees).

However, six interviewed teachers said that there are students who are not motivated to follow a distance course. Thus, teacher 2 says "there are students who express an unwillingness early vis-à-vis training for lack of time or because they are not interested." Interviewee 4 demonstrates that "some learners enroll as a curiosity." A slight majority of interviewed teachers (two) argue that learners are not going all the way of learning because of the lack of technological means (ADSL at home).

Furthermore, the analysis of the interviews revealed that respondents with a strong motivation to learn online think that there is a strong dependency between motivation and learning. On the contrary, those who have low motivation do not link between motivation and learning.

These views converge with Noe (1986); Mathieu et al. (1992, 1993); Colquitt et al. (2000); Lim et al. (2007); Guillemet (2014b) who suggested that motivation to learn predicts the results of learning. Thus, researchers have shown that learner motivation seems to have an influence on learning.

2.3 Importance of self-efficacy for online learning

The majority of interviewees say they have confidence in their ability to use computers. In this context, interviewee 11 states "I have confidence in my ability to use such a system" .The interviewees use several terms to describe their level of computer literacy tool. They utter expressions such as "able to use the computer" (interviewee 3), "I believe in my computer usage skills" (3 respondents) "technology is not a handicap for me" (interviewed 1), "the computer tool is familiar to me" (interview 4), "I have experience in the use of computers" (interviewee 2).

However, a small majority state that they found it difficult to use the computer tool (3 respondents). In this line, the

majority of respondents feel they can complete their learning activities using the manual system for reference (10 respondents). On the other hand, interviewee 3 suggests that: "there is a support of the integrated system." Still, two interviewees stress the important role played by the instructor:

"There is an instructor assisting us to make simulations and showing us how to use computers" (interviewee 5).

In addition, other interviewees confirmed the importance of the instruction guide for mastering computer skills (5 interviewees).

Most of the interviewees answer in sample 2 indicate that the majority of learners master the use of computers (5 interviewees). Thus, respondent 4 states that "The majority of students I helped are effective in the use of the computer."

Moreover, the majority of respondents in sample 2 join and confirm the opinions advanced by the learners. Thus, they indicate that there is technical assistance for learners who find difficulties in the use of the computer tool (5 interviewees). In addition, they argue that there is an instruction guide that can help learners to use computers (4 interviewees).

Furthermore, other interviewees raised the logistical problem (3 respondents). Another important idea was raised by two interviewees; these are the beliefs of learners about their ability to perform the desired objectives. Thus, interviewee 2 advances in this direction: "The learners are confident in their ability to use computers." In contrast, a slight majority of interviewees consider that learners are efficient in the use of computers. This is what was concluded by respondent 7 who state explicitly that "learners who are efficient in their use of computers may not grow best in online learning."

Referring to the literature, many researchers have established that the individual efficiency contributes to the improvement of learning (Gist et al 1989; Gist et al 1991; Tannenbaum et al 1991; ; Compeau and Higgins, 1995).. In this context, Gist et al. (1989) pointed to a positive relationship between learning and individual effectiveness. Also, Compeau and Higgins (1995, 1999) examined the relationship between individual efficiency of computer use and efficiency of learning. For their part, Wang and Newlin (2002) showed that self-efficacy is an essential feature in online learning contexts.

2.4 Importance of anxiety towards technology for learning

Another important element was raised by respondents. It is about anxiety towards the use of technology. Thus, the majority of respondents said that they are at ease and comfortable when using computers. In this context, respondent says 11 "I'm comfortable and I feel comfortable when using computer tools." However, 6 interviewees admitted that they are embarrassed towards the use of technology. On the other hand, students have expressed their feelings vis-à-vis using computer tools.

As an illustration, interviewee 2 states the following «the use of computers does not make me nervous." Also, respondent 7 states "the use of computers makes me nervous." In addition, respondent 6 affirms "I feel I'm skeptical of using computer tools.", While, interviewee 7 adds "I do not feel I am skeptical about using technology tools." In the same vein of thought, respondents 9 claims respectively "the use of computers does not scare me," "I'm not embarrassed in the use of computers" In this context, the word "nervous" has been used 9 times by the interviewees. In addition, the word "skeptical" was used 13 times by respondents. More than that, the words "fear" and "discomfort" were used 9 times and 8 times, respectively.

Furthermore, the analysis of interviews in sample 2 confirmed what the learners said. In this context, three respondents state that there exist learners who are anxious during the use of computers. Thus, they argue that learners can be nervous, skeptical, frustrated, and annoyed at the idea of using computers. On the contrary, 5 respondents state that learners are not afraid of the use of computers.

"Learners are not afraid of the use of computers" (interviewee 3).

"I find that students are quiet throughout online learning" (interviewee 2).

"I think that the relationship between learners and computer skills is a relationship of trust. For this reason, they are comfortable when learning online" (interviewee 8).

These words converge on the results of several studies in the literature (Chou, 2001; Brosman, 1998). Thus, Chou (2001) posits that computer anxiety influences negatively learning. Specifically, (Brosman 1998) reported a strong negative influence of anxiety on computer learning.

2.5 Importance of perception of interviewed about the role of the instructor in online learning (Feedback)

The majority (twelve) of the interviewees in sample 1 emphasized the crucial role played by the instructor throughout learning. For information, respondent 12 mentions "my instructor helps me throughout learning." Respondent 11 notes "when I manage well the time of my apprenticeship, he tells me." Other interviewees said the following words "expresses his appreciation" (10 respondents), "expresses his satisfaction and dissatisfaction" (12 respondents). In addition, respondent 14 states "praises me when I learn correctly." "When my results do not meet the expectations of my instructor, he tells me." Moreover, interviewee 10 says "when I provide false answers, he tells me." Learner 13 adds in the same vein "my instructor guides me, encourage me and helps me throughout my training."

Respondents in sample 2 confirm the statements advanced by respondents in sample 1. In this context, a large majority believes that there is a great effort by teachers to assist learners. For information, respondent 6 states "considerable assistance efforts are employed by the teachers." In addition, respondents described this role played by them as "assistance throughout the learning" (interviewee 4),

"encouraging and monitoring the level of progression" (interviewee 5), "monitoring of learning outcomes" (interviewee 3) , "Yes, we are interested in responses submitted by learners" interviewee 6 adds.

Even more, the vast majority of teachers said they express their satisfaction or dissatisfaction concerning the progression in online learning (7 respondents).

Most respondents argue that learners participate in applications of online courses and receive feedback on their progress and their results (7 respondents).

These remarks have allowed us to confirm the results found in the literature regarding the importance of this variable. Thus, many researchers have shown a positive relationship between feedback and learning (Shea and Howell, 1999; Chakrabarty et al. 2008).

2.6 Importance of feelings, and impressions for online learning (Reaction):

Another concept that influences the effectiveness of online learning has been implemented by interviewees in sample 1 and sample 2. In this context, the students said they have not encountered problems with the learning tools (15 respondents). This idea was confirmed by most of the interviewed teachers. To illustrate, one of the teachers mentioned that "online learning tools are understandable" (interview 4) .Another idea was mentioned by students relating to the ease and friendliness of the online learning platform. In this context, all learners feel that the website is user friendly. To illustrate, respondent 15 advances "the training site was easy and friendly to keep learning." In addition, interviewed learners added that the speed of the system responses facilitated their learning. Other students suggested that the platform provides examples of application of administered online courses. (6 Interviewees). On the other hand, the majority of the interviewed students reported satisfaction and insisted on the importance of learning for their education (13 respondents). We quote for illustration the statement of respondent 11 "I am satisfied with the learning platform."

"This training is important for my studies." (Interviewee 10)

These words were confirmed by interviewees in sample 2. So far, teachers have reported that most learners have found no difficulty in the use of the platform for learning.

To illustrate, one of the teachers mentioned that "the tools of training are easy to use by learners. In addition, the website is user friendly, clear fostering learning "(interviewee 7). These three adjectives were used 8 times by the interviewees. In addition, interviewees confirmed that the training site promoted a high speed response to questions from learners.

A number of researchers (Tracey et al 2001. Leach and Liu 2003; Tan et al 2003) have shown that the reaction is significantly related to learning. However, several other

researchers have found no significant links between reaction and learning (Noe and Schmitt, 1986; Dixon, 1990).

2.8 Importance of online learning:

The majority (eleven) of interviewed learners, stressed the importance of online learning. In this context, different descriptions have been made by these "allows personal development" (10 respondents), "very effective," "opportunity," "constructive experience ... useful", "solutions to problems, to present in class, "" learning experience was well distributed from the perspective of time and effort "(11 respondents)..

In addition, several students shared their positive feelings and attitudes vis-à-vis online learning. To illustrate, eight interviewees claimed that they want to attend another course online. In addition, they claimed that they loved the learning experience and satisfied with it. Other important ideas were mentioned by the 8 learners. These are the following illustrations:

"I took more responsibility than usual" (interviewee 4), "I am satisfied with this learning" (interviewee 6), "I could clear up some of my values," "I realized some of my goals." (Interviewee 5).

However, three respondents did not share the ideas stated by their colleagues. These are the following illustrations: "I did not like the course" (respondent 15), "it is an experience of no interest to me" (respondent 14), "I did not collect important knowledge" "this course has not influenced my personal development." (Respondent 12).

The remarks advanced by learners have been confirmed by the teachers. Thus, as an indication, teacher n 2 says that "most learners have enjoyed the course administered online." Another teacher n 4 states in this direction, "the majority of learners expressed signs of satisfaction vis-à-vis online learning."

However, a small minority of teachers (two) discussed another important point, it is the case when learners do not give importance to learning. For information, , teacher 6 states that "there are learners who did not appreciate learning. They now consider this online course as worthless "

Referring to the literature, several studies have shown the importance of online learning (Lim et al 2007;. Mbarek, 2008).

2.9 Importance of transfer

The vast majority of respondents of sample 1 (twelve) indicated the importance of learning for their every day education. Thus, they claim they use, apply and transfer what they have learned in class. Moreover, they add that they find enough time to transfer new knowledge.

For example, we report some illustrations of the interviewees:

9) *"In fact, I use what I learned in class." (Interviewee 3)*
"Obviously, this course is important for my every day education." (interviewee3)
"I find enough time to apply new knowledge." (interviewee 12).
"The applications and illustrations we realized throughout this training helped me to transfer acquired knowledge" (interviewee 11).

These opinions converge with those provided by the interviewees in sample 2. Thus, the majority stated that students who pursue their learning online, do apply what they have learned in class.

So far, three teachers argue that applications and illustrations discussed during the online course were of great importance to transfer what is learned in class.

In addition, four teachers attest that there is a great improvement in the performance of classroom applications.

"The online course proves a great chance and opportunity for learners. Indeed, they can transfer what they have learned during the course without problems" (interviewee 4).

"I found that classroom applications have improved after learning" (interviewee 7)

These statements are consistent with several results found in the literature. Thus, several studies have shown that learning has a positive effect on the transfer of acquired knowledge and skills (Baldwin and Ford 1988;. Kraiger et al 1993;. Holton, 1996; Ford et al 1998 ; Colquitt et al 2000;.. Lim et al 2007).

Ultimately, this qualitative study has been of great help. Indeed, this exploratory phase allowed to better understand the conceptual framework for online learning efficiency. The analyses were used to refine the theoretical concepts and then test hypotheses that turn out from the theoretical framework. The analyzes have shed light on the measurement scales to be adopted methodologically.

We will now formulate the research hypotheses.

H1: The motivation to learn influences positively learners' reactions.
H1-1: Motivation to learn influences positively the technological satisfaction of learners.
H1-2: Motivation to learn influences positively the importance of content for learners.
H2: The motivation to learn influences positively the learning of learners.
H2-1: Motivation to learn influences positively the value of online courses.
H2-2: Motivation to learn influences positively the online course content .
H2-3 Learning motivation influences positively personal learning.
H2-4: Motivation to learn influences positively the behavioral learning.
H 3: Computer self efficacy of learners influences positively their reactions vis-à-vis online learning.
H 3-1 : Computer self efficacy of learners influences positively their technological satisfaction vis-à-vis online learning.
H 3-2 : Computer self efficacy of learners influences positively the importance of content for them.
H 4: Computer individual efficiency of learners influences positively learning.
H 4.1: Computer individual efficiency of learners influences positively the value of online courses
H 4-2 : Computer individual efficiency of learners influences positively the capacity to achieve the content of the online course.
H 4-3 : Computer individual efficiency of learners influences positively personal online learning.
H 4-4 Computer individual efficiency of learners influences positively behavioral online learning.
H5: learners' technology anxiety influences negatively their reactions vis-à-vis online learning.
H5-1 : learners' technology anxiety influences negatively their technological satisfaction vis-à-vis online learning.
H5-2 learners' technology anxiety influences negatively the importance of content for them.
H6 learners' technology anxiety influences negatively online learning.
H6-1 learners' technology anxiety influences negatively the value of online learning.
H6-2 : learners' technology anxiety influences negatively the achievement of the content of online learning.
H6-3 : learners' computer anxiety influences negatively personal online learning.
H6-4 : learners' computer anxiety influences negatively behavioral online learning.
H7: learners who receive a positive feedback clarify a more significant positive reaction that learners who receive negative feedback.
H7-1: Learners who receive positive feedback are satisfied with technology more significantly than learners who receive negative feedback.
H7-2: Students who receive a positive feedback clarify the importance of the course more significantly than learners who receive negative feedback.
H8 : Feedback influences positively online learning.
H8-1 : Positive feedback influences positively and more significantly the value of the online course of learners such as negative feedback.
H8-2 : Positive feedback influences positively and more significantly the achievement of the content of online course of learners than negative feedback.
H8-3 : Positive feedback influences positively and more significantly learners' personal online learning than negative feedback.
H8-4 : Positive feedback influences positively and more significantly behavioral online learning of learners than negative feedback;
H9: Positive feedback influences more positively and more significantly the motivation of learners than negative feedback.
H10 : The individual efficiency of a computer influences positively the motivation of learners:
H11: The individual efficiency of computer influences positively learners' technology anxiety
H12 : The reaction of learners influences positively online learning.
H12-1 : The technological satisfaction of learners influences positively the value of online learning.
H12-2 : The technological satisfaction of learners influences positively the achievement of the content of online learning.

H12-3 : The technological satisfaction of learners influences positively personal learning.
H12-4 : The technological satisfaction of learners influences positively behavioral learning.
H12-5: The importance of content for learners influences positively the value of online courses.
H12-6: The importance of content for learners influences positively the achievement of the learning content.
H12-7: The importance of content for influences positively personal learning.
H12-8: The importance of content for learners influences positively behavioral learning.
H13: Online learning influences positively the transfer of learning in the classroom.
H13-1: The online course value influences positively the transfer of learning in the classroom.
H13-2: The online course content influences positively the transfer of learning in the classroom.
H13-3: Personal learning influences positively the transfer of learning in the classroom.
H13-4: Behavioural learning influences positively the transfer of learning in the classroom.

Thus, our conceptual model of research can be viewed in the following figure

3. Conclusion and discussion

This study revealed the different determinants of e-learning effectiveness. These findings confirmed the literature review. In fact, via exploratory study, we focused on the examination of the existence of these factors in the Tunisian context. Particularly, we thought study, hence extended the literature and called attention for the individual and a situational characteristics that influences training outcomes.

The findings of this research revealed a conceptual model as presented in figure 1.

In fact, the research investigation enables us to refine the definition of the different concepts.

First, the findings of this qualitative research confirmed the importance of individual concepts (self efficacy, motivation and anxiety from technology) which predicts learners reaction, learning and transfer. The past studies emphasized the influence of these concepts on the success of e-learning. Second, the results of this study revealed that feedback was important to training outcomes. Subsequently, the current study in the Tunisian context confirmed the literature and called attention for the importance of the individual characteristics. Thus, managers should consider various mechanism through which self efficacy, motivation and anxiety from the technology would enhance the results of online training.

In addition, managers should prepare necessary information for the learners in order to reduce the anxiety from the technology and increase the motivation and self efficacy required to attend the online training. Also, trainer should provide feedback to the trainees to increase their motivation, and self efficacy. Consequently, the individual and situational characteristics play an important role to the strength and the success of online training.

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