

E-Learning in the Algerian Universities in the Time of Crisis: Case Study of the University of Mascara in the Era of COVID-19.

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Abstract: *e-Learning was used as a magic solution to complete educational programs, especially in Algerian universities, and in the time of crisis like the Coronavirus pandemic, which recently has paralyzed all institutions without exception. Since the use of this technology is a new thing in our country, as is the apparition of Covid-19, we thought that it is more convenient to study this new phenomenon in the world of teaching in the Algerian context. Conventional classroom instruction or preparing does not continuously fulfill all wants of the modern world of deep-rooted learning. e-Learning is attempted anyplace, from classrooms to homes and workplaces via the internet and devices like PCs, Laptops, Mobiles, iPads, providing a flexible way, and personalized features for more effectiveness and efficiency. A leader like Cisco Systems uses e-learning, and e-training by a sophisticated platform, and programs like Packet tracer, today it is the choice of many organizations in the world especially in crises. This paper tries to study e-learning in the Algerian Universities, by measuring e-learning systems success (ELSS) with an e-questionnaire that took the lion's share because of the quarantine conditions, first and secondly, to experiment with this type of technology.*

Keywords: e-learning, Coronavirus pandemic, e-learning systems success (ELSS), Learning.

JEL Classification: M15 – I23 – O33

ملخص: تم استخدام التعلم الإلكتروني كحل سحري لاستكمال البرامج التعليمية، خاصة في الجامعات الجزائرية، وفي وقت الأزمات مثل جائحة فيروس كورونا الذي شل مؤخرًا جميع المؤسسات دون استثناء. بما أن استخدام هذه التكنولوجيا هو شيء جديد في بلدنا، كما هو الحال مع ظهور كوفيد-19، فقد اعتقدنا أنه من الأنسب دراسة هذه الظاهرة الجديدة في عالم التدريس في السياق الجزائري. لا يلبي التعليم أو التدريب التقليدي في الفصول الدراسية دائمًا جميع احتياجات العالم الجديد للتعلم مدى الحياة. يتم إجراء التعلم الإلكتروني في أي مكان، من الفصول الدراسية إلى المنازل والمكاتب عبر الإنترنت والأجهزة مثل أجهزة الكمبيوتر الشخصية وأجهزة الكمبيوتر المحمولة والهواتف المحمولة وأجهزة الآيباد، مما يوفر طريقة مرنة وميزات مخصصة لمزيد من الفعالية والكفاءة. تستخدم شركة رائدة مثل أنظمة سيسكو التعلم الإلكتروني والتدريب الإلكتروني من خلال منصة متطورة وبرامج مثل باكايت تراسير (Packet tracer)، وهي اليوم خيار العديد من المنظمات في العالم خاصة في الأزمات. تحاول هذه الورقة دراسة التعلم الإلكتروني في الجامعات الجزائرية، من خلال قياس نجاح أنظمة التعلم الإلكتروني (ELSS) باستخدام استبيان إلكتروني يستحوذ على نصيب الأسد بسبب ظروف الحجر الصحي أولاً وثانياً، لتجربة هذا النوع من التكنولوجيا.

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الكلمات المفتاحية: التعلم الإلكتروني، جائحة فيروس كورونا، نجاح نظام التعلم الإلكتروني، التعلم.

تصنيف جيل: O33 – I23 – M15

Introduction

No one can doubt or question the importance of education in societies, especially in the age of knowledge in which we live, so the educational message should not stop even in the most difficult circumstances, even in wars. The epidemic of 2019 novel coronavirus (now called SARS-CoV-2. causing the disease Covid-19) has expanded from Wuhan throughout China and is being exported to a growing number of countries, some of which have seen onward transmission (Yi Zhang, Jiu yang, Hui Li, & Bin Cao, 2020). The appearance of this unprecedented pandemic has changed many things in societies even in organizations, especially the way of working and the types of communication, of course, in order to avoid infection and in response to the governmental procedures laid down later. However, life must continue in one way or another, especially in sensitive areas such as education, health, and administration. Literally, the other way is the use of «Digitalization» or "Digitization» which reveals the world in new varieties and forms. This control to reveal not as it changed human outreach and activities, but to changes our conceptions; approximately who we are, around our employments, and around human skylines for sense-making (Fors, 2010). e-learning is considered as a form of digitization and perhaps nowadays it is a magic elixir for the problem of completing academic and university programs in a particular, in this hard and crazy world we live. Unexpectedly, the study is taking advantage of Covid-19 to study e-learning in Algerian universities. There is no confusion that digitization favoring work at home, and it has also been accompanied by the emergence of new modes of cooperation by opening up new possibilities for instant interactions and permanent contacts, including with a collective (Brasseur & Biaz, 2018). On the other hand, Web 2.0 often so-called *social media*, support relations, and it is a shift that surely led to new ways of collaborating in online education. For a while, we saw initial efforts include the adoption in educational settings of emerging media such as virtual worlds, blogs, wikis, and video sharing, and synchronous software that supports audio and video (Hrastinski,2008a), like the software “Zoom” which is promoted by its provider as “The leader in modern enterprise video communications, with an easy, reliable cloud platform for video and audio conferencing, chat, and webinars across mobile, desktop, and room systems”, later time used in broad by numerous professors for learning purpose. We can never forget traditional learning, but the traditional context of learning is experiencing a radical change like Y.S. Wang et al. (2007) said, for that reason in most situations e-learning serves as a complementary mechanism to lifelong or remote learning (Zhang & Nunamaker, 2003). Innovation in Instruction is seen as an apparatus for accomplishing guidelines objectives (Adedokun-Shittu& Shittu, 2011). It’s clear that e-learning innovation has changed the strategies by which teaches instruct and by which understudies learn. For illustration, innovation permits teachers and understudies to share course materials in numerous ways, such as slideshows and recordings. It too permits teaches to conduct live online classes and cultivate student-to-student and instructor-to-student communication by means of chat and message gatherings (Vululleh, 2018). Integrating the new global technologies with educational practices calls for redesigning education and redefining students. It is presently conceivable to propose a vision of a consistent continuum of

learning, promptly accessible for all citizens when and where they require it (McAllister & McAllister, 1996; Zhang & Nunamaker, 2003). Schools and enterprises are contributing significant sums of time and cash in creating online choices to conventional sorts of instruction and preparing frameworks (Y. S. Wang, H. W. Wang, & Shee, 2007). Within the interim, numerous companies have received e-learning arrangements for their corporate preparation, such as Dell Learning, Cisco e-Learning, and HP Virtual Classroom (Zhang & Nunamaker, 2003). The presentation of data innovation in instruction is seen as one of the imperatives, implies of assembly the need's understudies, colleges and society as an entire Fry (2001). Proposes that colleges must grasp modern innovative progressions, which are competent of changing instruction and commerce in arrange to outlive in a worldwide higher-education showcase (Alshaher, 2013). e-Learning alludes to any sort of learning circumstance when guidelines substance is conveyed electronically through the Web when and where individuals require it (Zhang & Nunamaker, 2003), and it is a special type of IS (Y. S. Wang, H. W. Wang, & Shee, 2007). The future e-learning will be featured with broadband and more reliable networks and high-quality multimedia learning materials (Zhang & Nunamaker, 2003), with the utilize of the web that offers flexible modes of learning for a variety of students (Carswell, 1997). But the story does not end here, because for e-learning applications to be used effectively, we should have ways to measure the success and/or effectiveness of the system. While a number of researches has been conducted on (Information System) IS success models like Kim (1989), who constructed a relational model to provide a coherent structure to the concept of user satisfaction, a concept that has been applied frequently as a surrogate for IS success, or DeLone and McLean (1992) by using another relational model that interrelates six variable categories on the basis of research of Mason (Rai, Lang, & Welker, 2002). But why are we talking about IS success? simply because e-learning is a special type of IS (Y. S. Wang, H. W. Wang, & Shee, 2007). Undoubtedly, the implementation of e-learning systems in higher education has enabled a dramatic change in instructing and learning practice. The success of e-learning selection over an organization depends on a few variables (Al-adwan & Smedley, 2012), In any case, the success of e-learning frameworks cannot be assessed employing a single intermediary build (e.g., client fulfillment) or a single-item scale (e.g., generally success). The degree of e-learning frameworks success must consolidate distinctive angles of the e-learning information success (ELSS) construct in the event that it is to be a valuable demonstrative instrument (Y. S. Wang, H. W. Wang, & Shee, 2007). The question about the success of e-learning come about an expansive volume of considering surveying which affects e-learning programs on different measures such as the learning environment (L.-C.C. Wang & Bagaka's, 2002), teaching practices (Granger et al., 2002; Savenye, Olina, & Niemczyk, 2001), learning benchmarks (Phipps & Merisotis, 2000), learning styles (Roger, 2002), learning outcomes (McClelland, 2001; Motiwalla & Tello, 2000; Teh, 2001). The purpose is to study measuring e-learning systems success (ELSS) in the University, to consolidate our experience and understanding, like say Carswell (1997) when he has talked about teaching via the internet.

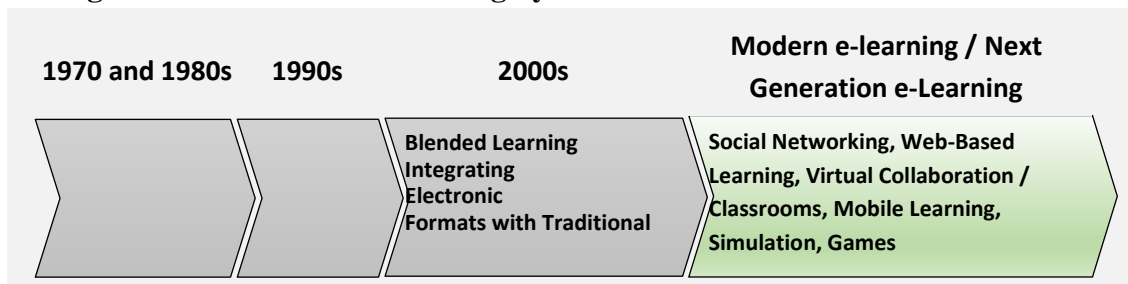
2. The main text

2.1. Theoretical foundations

In the late eighties and the nineties of the last century the first form of electronic education-Computer-Based Training (CBT) was born. This is considered the cornerstone of

today's e-learning (Hubackova, 2014). There's no settled and single-minded idea of e-learning. A brief definition of the term is given by Baresova: "e-learning is a teaching process using information and communication technologies." (Hubackova, 2015), moreover is characterized as instruction conveyed on a computerized gadget that's aiming to bolster learning. In e-learning, the conveyance equipment can run from desktop or personal computers (PCs) to tablets or smartphones, but the objective of the guidelines is to back person learning or organizational performance objectives (Clark & Mayer, 2016, p. 7). Maybe the most used definition belongs to Rosenberg which says that "e-learning is the use of Internet technologies to create and deliver a rich learning environment that includes a broad array of instruction and information resources and solutions, the goal of which is to enhance individual and organizational performance." (Rosenberg, 2006, p. 72). Distance learning or education, online learning, blended learning, and flexible learning are often connected or even equated to e-learning (Alshaher, 2013). The Advancement of e-learning shows the change of e-learning that has taken since it's starting a few 40-plus a long time ago (Alshaher, 2013), and it is the first generation of e-learning systems (CBT) through Virtual Learning Environments and MLEs (Managed Learning Environments) (Zilli, Damiani, Ceravolo, Corallo, & Elia, 2009, p. 122). The evolution of the web to Web 2.0 has influenced today's e-learning design. As a result, e-learning can take on a much more intelligently and socially oriented arrange that's implanted within the setting of the learner's work. We call this next-generation e-learning (Alshaher, 2013).

Figure 1: Evolution of e-learning System



Source: (Alshaher, 2013. p. 1949)

2.1.1 Types of e-learning

- **Synchronous e-learning**

This type of e-learning requires learners and instructors to communicate online at the same time from different places. For this reason, this sort of e-learning needs advanced gear and great organized connections. commonly upheld by media such as video conferencing and chat, has the potential to back e-learners within the advancement of learning communities, learners and instructors encounter synchronous e-learning as more social and maintain a strategic distance from disappointment by inquiring and replying to questions in real-time (Hrastinski, 2008). More often than not a one-on-one talk program, without a component of recording discourse. Permits for on-the-fly dialog or comments. Can utilize a multi-user component but does not give a changeless CHAT room for afterward utilize (Khan, 2006, p. 45).

- **Asynchronous of e-learning**

In this organize the teachers and learner do not meet amid substance conveyance and there's no presence, not one or the other physical nor virtual; nearness is therefore classified as “No” or not available. With this organize, the teachers prerecord the content (content delivery) and the learner gets to content (content access) at a afterward time (i.e., substance delivery and substance access happen independently so there may be a time delay between substance delivery and access) (Negash, Whitman, Woszczynski, Hoganson, & Mattord, 2008, p. 4), it is an intuitively learning community that's not constrained by time, put or the imperatives of a classroom (Mayadas, 1997). This approach combines self-study with asynchronous intuition to advance learning, and it can be utilized to encourage learning in traditional on-campus or standard instruction, separate education, and continuing instruction (Shahabadi & Uplane, 2015). The computerized communication in Asynchronous e-learning is IP based; gotten to through computer program; Viewpoint Express, Eudora, or Netscape; Webmail is gotten to by means of Web Browser program; not put away on a neighborhood computer (Khan, 2006, p. 45).

2.1.2. Assessing the Success of e-learning

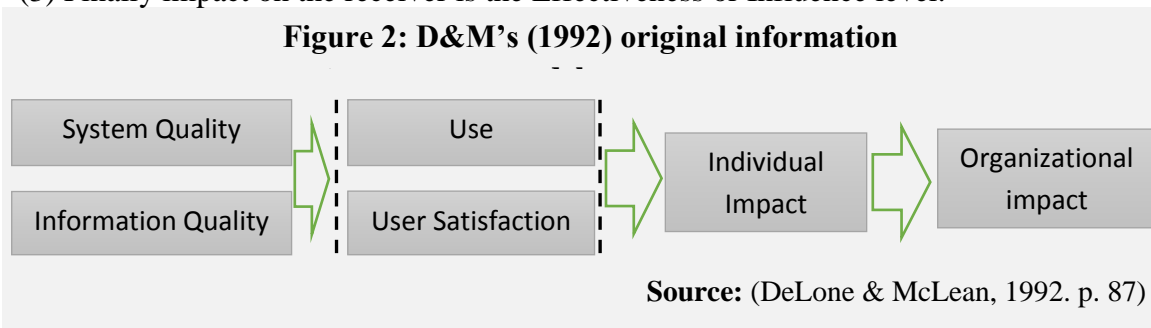
The assessment of the “success” of information systems is a critical perspective of the information systems field in both investigation and practice (DeLone & McLean, 2016). The question about what constitutes success in e-learning? produced numerous studies, we are going to see the critical ones in this section, which are the two models of DeLone and McLean and the Seddon Model. We got to keep in mind that e-learning enters beneath the umbrella of the Information System (IS). Hence, the instruments utilized to evaluate the first are the same for the moment, because we talk here about the same nature of things.

- **The DeLone and McLean Model (1992)**

The Delone and McLean (D&M) (1992) IS success model is one of the foremost broadly cited (Seddon, 1997; Seddon, Staples, Patnayakuni, & Bowtell, 1999; McGill, Hobbs, & Klobas, 2006; Rai, Lang, & Welker, 2002; Y.-S. Wang & Y.-S. Liao, 2008; Lee & Chung, 2009; Manchanda & Mukherjee, 2014; Sirsat & Sirsat, 2016). D&M Model taxonomy based the work of Shannon and Weaver (1949), and Richard Mason’s modification of the mathematical theory of communication which is based on three levels of information (Gable, Sedra, & Chan, 2003; Sirsat & Sirsat, 2016):

- (1) Accuracy and efficiency of the system formed that is Technical Level.
- (2) An ability to transfer the intended message that is Semantic Level.
- (3) Finally impact on the receiver is the Effectiveness or Influence level.

Figure 2: D&M’s (1992) original information



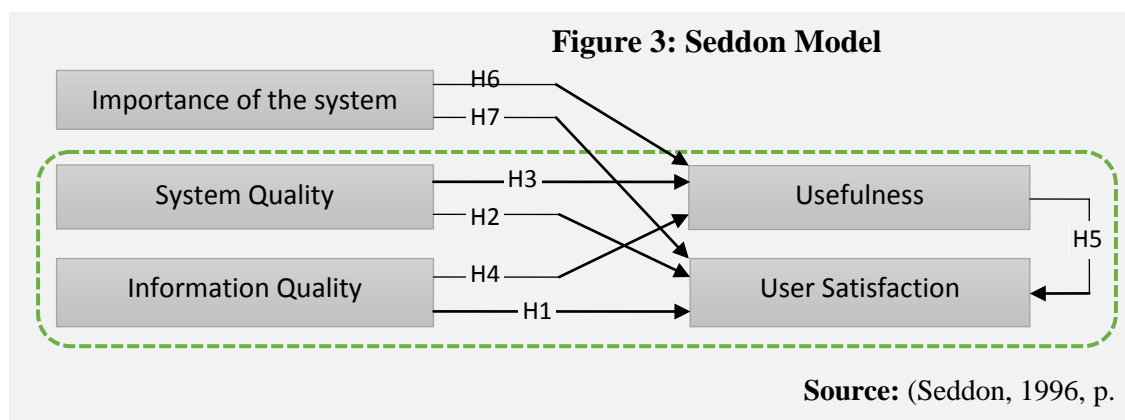
Source: (DeLone & McLean, 1992. p. 87)

The model makes two vital contributions to the understanding of IS success. To begin with, it gives a plot for categorizing the huge number of IS success measures that have been utilized in the literature. Second, it recommends a model of temporal and causal interdependencies between the categories (McGill, Hobbs, & Klobas, 2006). From past literature on information systems success, D&M identified six dimensions of success factors: System Quality, Information Quality, Use, User Satisfaction, Individual Impact, and Organizational Impact. These were joined into their original overall success mode (Holsapple & Lee-Post, 2006) (*see Figure 2*).

An I/S success model, consisting of six interdependent constructs, implies that a measurement instrument of "overall success," based on items arbitrarily selected from the six I/S success categories, is likely to be problematic. Researchers should systematically combine individual measures from the I/S success categories to form a comprehensive estimation instrument (DeLone & McLean, 1992). However, the two researchers DeLone and his friend, acknowledge that the model should be the subject to development when they said "This success model clearly needs further development and validation before it could serve as a basis for the selection of appropriate I/S measures. In the meantime, it suggests that careful attention must be given to the development of I/S success instalments." (DeLone & McLean, 1992).

- **The Seddon Model (1999)**

Anon after the distribution of the D&M success model, researchers started proposing adjustments to this model. One of them was Seddon who presented his own developed model by using structural equation modeling (*see Figure 3*), after he gave a kind of indirect criticism about the D&M's model of IS success, but the truth he appreciated their contribution, when he acknowledged that "D&M's paper is an important contribution to the literature on IS success measurement since it was the primary study that attempted to force a few arrange on IS researchers' choices of success measures" (Seddon, Staples, Patnayakuni, & Bowtell, 1999). After the publication of the D&M Model in 1992. a number of IS researchers started proposing alterations to the model, for instance, Seddon (1997) proposed several changes to the D&M Model.



- **Hypotheses in Figure 3**

H1: Increases in *Information Quality* will cause increases in *User Satisfaction*

H2: Increases in *System Quality* will cause increases in *User Satisfaction*

- H3:** Increases in *System Quality* will cause increases in *Usefulness*
- H4:** Increases in *Information Quality* will cause increases in *Usefulness*
- H5:** Increases in *Usefulness* will cause increases in *User Satisfaction*
- H6:** Increases in *System Importance* will cause increases in *Usefulness*
- H7:** Increases in *System Importance* will cause increases in *User Satisfaction*

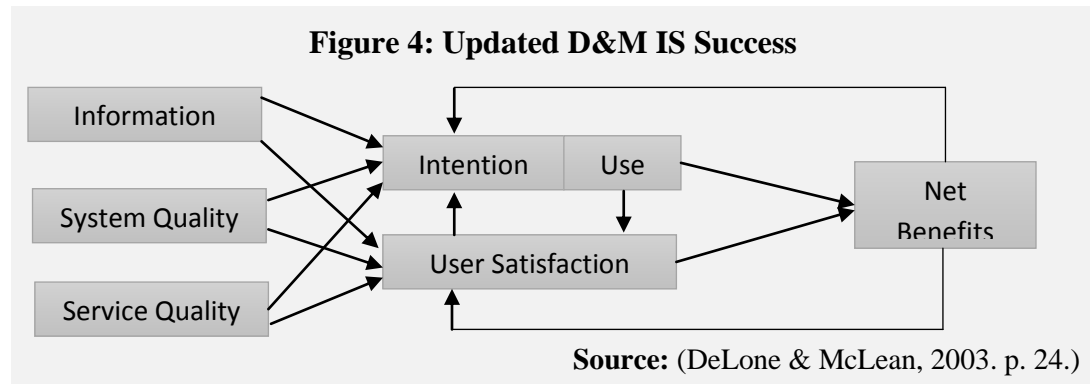
D&M returned in 2003, and gave us an updated model of their first one of 1992. The updated one is shown in Figure 3. The new Model describes the individual success variables: “System Quality,” “Information Quality,” “Service Quality,” “Use,” “User Satisfaction,” and “Net Impacts.” They are defined as (DeLone & McLean, 2016):

- **System Quality** — the alluring characteristics of an information system. For example, for example, ease of utilizing, system adaptability, system reliability, and ease of learning, as well as system highlights of instinct, modernity, adaptability, and reaction times.
- **Information Quality** — the alluring characteristics of the framework yields; i.e., administration reports and Web pages. For illustration, pertinence, understandability, precision, conciseness, completeness, understandability, money, timeliness, and convenience.
- **Updated D&M IS Success Model (2003)**

Recognizing the need for overhauling their model, D&M, in follow-up work, conducted observational thinks about what had been accomplished amid a long time since 1992 and redrafted the first model appropriately (DeLone & McLean, 2003).

This updated IS success model incorporates service quality as a compound in the equation. Another overhaul to the model highlighted the individual and organizational Impacts.

- **Service Quality** — the measurement of service quality has been a profitable concept that ought to be analyzed, related fundamentally with customer satisfaction (Kursunluoglu Yarimoglu, 2015; Watson, Pitt, & Kavan, 1998). The quality of the support that system users receive from the information systems organization and IT bolster personnel.
- **Use** — the degree and way in which workers and clients utilize the capabilities of an information system. For illustration, some of use, recurrence of use, nature of use, fittingness of use, the degree of use, and reason of use (DeLone & McLean, 2003).
- **User Satisfaction** — users’ level of satisfaction with reports, Web sites, and support services (DeLone & McLean, 2003).
- **Net Impacts (Benefits)** — the extent to which information systems are contributing (or not contributing) to the success of people, bunches, organizations, businesses, and countries. For case, moved forward decision-making moved forward efficiency, expanded deals, fetched decreases, moved forward benefits, showcase effectiveness, shopper welfare, creation of employment, and financial improvement. The updated D&M IS Success Model includes arrows to demonstrate proposed associations among success dimensions in a process sense, but does not show positive or negative signs for those associations in a causal sense (DeLone & McLean, 2003).



2.2. Methodology

2.2.1. Items & Scale

The IS Success is the base for e-learning success because they have the same nature and tools. Since the apparition of the D&M model IS success, many researchers have tested, criticized, modified, and suggested improvements to the first model of 1992 even though DeLone and McLean themselves in 2003. The present research took the updated model of D&L on one hand, and the research paper of Yi-Shun Wang and his colleagues on the other hand as a base of our questionnaire, which is composed of six dimensions, System Quality (include seven items), Information Quality (six items), Service Quality (Five items), System Use (three items), User Satisfaction (three items), and Net Benefits (ten items). In total 34 items (as shown in the Table of statistical values), rather than 36 items of the original one of Y.S. Wang who included two additional items like a conclusion of the perception of the questionee, if the e-learning performance system is good, and, if e-learning system is good, as a whole question for each one; These two questions were omitted because they do not belong to the six dimensions mentioned earlier. Y.C. Wang and his colleagues examined the factor structure of ELSS with six dimensions and the 34 items, and they stated that: "...a chi-square value of 5834.91 and a significance level of .000 was obtained using Bartlett's sphericity test, which proposes that the intercorrelation framework contains adequate common fluctuation to form factor analysis worthwhile...An iterative sequence of factor analysis was executed. Fortunately, none of the items were deleted in this phase" (Y. S. Wang, H. W. Wang, & Shee, 2007). The questionnaire was customized to fit e-learning in the Algerian Universities context and it was diffused in two languages (Arabic & English) for maximum comprehension of questions posed. The e-questionnaire was the innovative way in the quarantine period, due to the Coronavirus pandemic propagation. social media especially *Facebook* where students are organized in groups and pages according to their specialties or faculties, was and still a convenient area to diffuse the e-questionnaire owing to the massive use by Algerian people vis-à-vis *Twitter* or another similar web 2.0. But this does not mean not resorting to the questionnaire on paper which is still the preference of other categories of people or students who prefer the traditional way. Although the questionnaire was tested precedingly by foreign researchers in antecedent researches, but the recurrence to a period of pre-test about the validity of questionnaire in the Algerian context was something that should be done, with a bunch of professors of university and English language, fear of the possibility of mistranslation.

The Likert-type scale, ranging from “strongly disagree” to “strongly agree” with five degrees was used to mark the desired answer of respondents. The beginning of the questionnaire contained some demographic side like gender, educational level, and faculty. The age was ignored because the majority of students are from 19 to 25 years old, according to the interview with the department of statistics of the university and, also this was approved by observation.

2.2.2. Sample and procedure

The sample studied was the student of the *University of Mustapha STAMBOULI* of Mascara, which contains seven faculties (Exact Scis., Nature & Life Scis., Technology Scis., Human & social Scis., Literature & Languages Scis., Economics, Commercial & Management Scis., Law & Political Scis.), All these faculties have implemented e-learning in the study process.

A sample of 113 students who have used e-learning belonging to different faculties. Four questionnaires were excluded because the answers did not exceed half, others were accepted because the missing information was minimal (eight questionnaires missed one question, and four missed two). The accepted questionnaires were 109. Female students represented 63.3%, which is a high percentage compared to male students, with 36.7% of the sample.

2.2.3. Reliability

Reliability is the test of internal consistency of the items, calculated with Cronbach’s alpha which is the most commonly used when we have multiple Likert questions in a survey. Calculated with SPSS ver. 24, we can see Cronbach’s alpha is 0.971, that indicates a very high level of internal consistency for our scale of 34 items, more distinctly to the minimum standard of 0.80 recommended for basic research. The reliability for each dimension separately is System Quality = 0.910; Information Quality = 0.856; Service Quality = 0.876; System Use = 0.642; User Satisfaction = 0.843; and Net Benefits = 0.933 (*see Table 1*).

2.2.4. Content Validity Index (CVI)

The CVI is used frequently by scale developers to provide evidence of content validity (Polit & Beck, 2006), and it is a vital instrument to ensure the overall validity of an assessment (Yusoff, 2019). The focus is on determining whether the items sampled for inclusion on the tool adequately represent the domain of content addressed by the instrument and the relevance of the content domain to the proposed interpretation of scores obtained when the measure is employed (Waltz, Strickland, & Lenz, 2010, p. 165). There are two forms of CVI, which are CVI for the item (I-CVI) and CVI for scale (S-CVI). Two ways for calculating S-CVI, in which the average of the I-CVI scores for all items on the scale (S-CVI/Ave) and the proportion of items on the scale that achieve a relevance scale of 3 or 4 by all experts (S-CVI/UA) (Yusoff, 2019). The content validity of the questionnaire was evaluated using an item and scale content validity index (I-CVI and SCVI). The experts’ panel was asked to score the clarity, simplicity, and relevance of each question using a four-point Likert scale (ranging from not relevant/unclear to completely relevant/clear). To calculate the I-CVI for each item, the proportion of experts who gave a rating of either 3 or 4 to the total number of experts was computed (Torkian, Shahesmaeili, Malek Mohammadi, & Khosravi, 2020). The table of

statistics below (*Table 1*) shows all the needed measurements, and therefore all items' I-CVI of Clarity, Simplicity and Relevance under 0.78 need revision or refinement. Items need revision in term of Clarity are (1;2;4;5;9;16;17;18;19;20;22;30;34), Simplicity (1;5;9;15;17;18;22;29;30;34) and Relevance (1;5;8;15;16;17;18;22;29;30;34). The S-CVI is 0.690 (*see Table 1*), and this value is low if we consider the opinion of researchers like Davis, Grant, Polit& Beck, all have indicated that an S-CVI of 0.80 or higher is acceptable (Polit & Beck, 2006). On the other hand, the S-CVI/Ave of Clarity, Simplicity, and Relevance are 0.753. 0.782 and 0.735 simultaneously. Our Experts were not simple people, but they are graduated professors working in education for many years (three Ph.D. professors in the University, one Ph.D. ex-professor, one a professor of English language in Ministry of National Education). The conclusion is that some items need refinement, revision and maybe delete to cope with the Algerian context, or the questionnaire need another assessment with professionals skilled in both IT's and Education, because the evidence shows that same questionnaire noticed a high value of I-CVI and S-CVI in multiple studies, and that confirms the high validity of the instrument. We should admit the limitation of the study in this stage, because there is a fear that our Experts have answered the questionnaire rather than giving a real assessment for the items of the instrument chosen. The Mean of Service Quality and User Satisfaction is under the average (3). We conclude that students are not satisfy when they use e-learning. The corrected item-total correlation for all items was in an acceptable range, except item 10 of Information Quality took the value of 0.506, and items 19 & 20 of User Satisfaction, took the value of 0.547 & 0.544 respectively (*see table 1*). The corrected item-total correlation for all items was in an acceptable range, except item 10 of Information Quality took the value of 0.506, and items 19 & 20 of User Satisfaction, took the value of 0.547 & 0.544 respectively (*See table 1*).

Table (1): Statistical values

Items	CVR	I-CVI Clarity	I-CVI Simplicity	I-CVI Relevance	Corrected Item-Total Correlation	Mean	Std. Deviation	Variance	Alpha Cronbach
System Quality					0.721	3.009	1.212	1.473	0.910
1 The e-learning system provides high availability.	1	0.4	0.6	0.4	0.730	3.180	1.292	1.670	0.970
2 The e-learning system is easy to use.	1	0.6	0.8	1	0.691	3.020	1.168	1.364	0.970
3 The e-learning system is user-friendly.	0.6	1	1	0.8	0.654	2.850	1.190	1.417	0.971
4 The e-learning system provides interactive features between users and system.	1	0.6	0.8	0.8	0.701	3.030	1.213	1.471	0.970
5 The e-learning system provides a personal or customized display of the information.	0.6	0.4	0.4	0.6	0.727	3.070	1.103	1.217	0.970
6 The e-learning system has attractive features to appeal to the users.	1	0.8	1	1	0.788	2.850	1.275	1.626	0.970
7 The e-learning system provides high-speed information access.	1	0.8	0.8	0.8	0.759	3.060	1.244	1.548	0.970
Information Quality					0.675	3.152	1.205	1.458	0.856
8 The e-learning system provides information that is exactly what you need.	0.6	1	0.8	0.6	0.766	3.010	1.273	1.620	0.970
9 The e-learning system provides information you need at the right time.	1	0.6	0.6	0.8	0.712	3.260	1.231	1.516	0.970
10 The e-learning system provides information that is relevant to your study.	0.6	1	1	0.8	0.506	3.660	1.073	1.152	0.971
11 The e-learning system provides sufficient information.	0.6	0.8	0.8	1	0.763	2.890	1.292	1.670	0.970
12 The e-learning system provides information that is easy to understand.	1	0.8	1	0.8	0.683	2.810	1.222	1.493	0.971
13 The e-learning system provides up-to-date information.	1	0.8	1	1	0.621	3.280	1.138	1.294	0.971
Service Quality					0.692	2.804	1.205	1.457	0.876
14 The e-learning system provides a proper level of on-line assistance and explanation.	1	0.8	0.8	0.8	0.666	2.870	1.320	1.743	0.971
15 The e-learning system developers interact extensively with users during the development of the e-learning system.	0.6	0.8	0.6	0.6	0.723	2.830	1.177	1.386	0.970
16 The IS department staff provides high availability for consultation.	0.2	0.6	0.8	0.6	0.711	2.690	1.220	1.489	0.970
17 The IS department responds in a cooperative manner to your suggestion for future enhancements of e-learning system.	0.6	0.4	0.4	0.4	0.676	2.860	1.150	1.323	0.971

18	The IS department provides satisfactory support to users using the e-learning system.	0.6	0.6	0.8	0.683	2.770	1.160	1.345	0.971
System Use					0.597	3.200	1.142	1.314	0.642
19	The frequency of use with the e-learning system is high.	0.2	0.4	0.8	0.2	0.547	3.120	1.034	1.069
20	The e-learning system usage is voluntary.	0.2	0.6	0.8	0.8	0.544	3.510	1.131	1.280
21	I depend upon the e-learning system -	1	1	1	0.4	0.699	2.970	1.262	1.594
User Satisfaction					0.756	2.807	1.191	1.419	0.843
22	Most of the users bring a positive attitude of evaluation towards the e-learning system function.	0.333	0.6	0.6	0.6	0.743	2.740	1.150	1.322
23	You think that the perceived utility about the e-learning system is high.	0.333	0.8	0.8	1	0.730	2.870	1.171	1.372
24	You are satisfied with the e-learning system.	0.333	0.8	1	0.6	0.796	2.810	1.251	1.564
Net Benefits					0.702	3.122	1.242	1.549	0.933
25	The e-learning system helps you improve your study performance.	1	0.8	0.8	1	0.799	3.140	1.357	1.842
26	The e-learning system helps you think through problems.	1	0.8	0.8	0.8	0.753	2.940	1.249	1.561
27	The e-learning system helps the University enhance competitiveness or create strategic advantages.	1	1	0.8	0.8	0.764	2.920	1.292	1.669
28	The e-learning system helps the University enhance competitiveness or create strategic advantages.	0.6	0.8	0.8	1	0.730	2.940	1.169	1.367
29	The e-learning system enables the University to respond more quickly to change.	0.6	1	0.6	0.8	0.761	3.080	1.340	1.795
30	The e-learning system helps the University provide better services to students.	0.6	0.6	0.6	0.4	0.759	3.160	1.271	1.614
31	The e-learning system helps the organization save cost.	1	1	1	1	0.503	3.500	1.196	1.430
32	The e-learning system helps the University to speed up transactions or shorten the formation cycles	0.6	1	1	0.8	0.657	3.300	1.190	1.417
33	The e-learning system helps the university to be more beneficial.	1	0.8	0.8	0.6	0.711	3.060	1.134	1.287
34	The e-learning system helps the University to achieve its goal.	1	0.6	0.6	0.6	0.579	3.180	1.226	1.503
S -CVI/ Ave; Total Alpha Cronbach					0.690	0.753	0.782	0.735	0.971

Source: Prepared by the researcher based on SPSS

2.2.5. The Statistical Hypotheses

The model tested includes twelve (12) hypotheses. We had used the Null hypotheses to test the acceptance of the alternatives one's, they are:

H0.1: Increases in *Information Quality* will cause no effects on *System Use*

H0.2: Increases in *Information Quality* will cause no effects on *User Satisfaction*

H0.3: Increases in *System Quality* will cause no effects on *System Use*

H0.4: Increases in *System Quality* will cause no effects on *User Satisfaction*

H0.5: Increases in *Service Quality* will cause no effects on *System Use*

H0.6: Increases in *Service Quality* will cause no effects on *User Satisfaction*

H0.7: Increases in *System Use* will cause no effects on *User Satisfaction*.

H0.8: Increases in *System Use* will cause no effects on *Net Benefits*.

H0.9: Increases in *User Satisfaction* will cause no effects on *System Use*.

H0.10: Increases in *User Satisfaction* will cause no effects on *Net Benefits*.

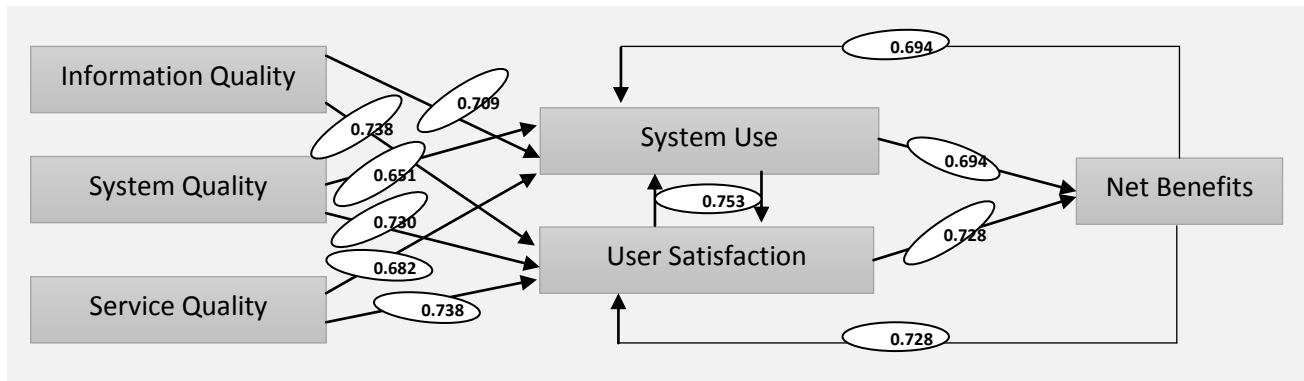
H0.11: Increases in *Net Benefits* will cause no effects on *System Use*.

H0.12: Increases in *Net Benefits* will cause no effects on *User Satisfaction*.

2.2.6. Path Analysis

Path analysis may be a form of multiple regression factual investigation that's utilized to assess causal models by looking at the connections between a dependent variable and two or more independent variables. DeLone and McLean's suggest a model of "temporal and causal" interdependencies between these categories (Seddon P. B., 1997). The *figure 5* with *Table 2* shows the causation between dimensions of ELSS (*Information Quality*, *System Quality*, *Service Quality*, *System Use*, *User Satisfaction*, and *Net Benefits*).

Figure 5: Path Analysis of ELSS



Source: Prepared by the researcher based on SPSS & (DeLone & McLean, 2003. p. 24.)

2.2.7. Correlation

Table (2): Correlations

		System Quality	Information Quality	Service Quality	System Use	User Satisfaction	Net Benefits
System Quality	Pearson Correlation	1	,832	,706	,651	,730	,687
	Sig. (2-tailed)		,000	,000	,000	,000	,000
	N	109	109	109	109	109	109
Information Quality	Pearson Correlation	,832**	1	,734	,709	,738	,686
	Sig. (2-tailed)	,000		,000	,000	,000	,000
	N	109	109	109	109	109	109
Service Quality	Pearson Correlation	,706**	,734**	1	,682	,738	,693
	Sig. (2-tailed)	,000	,000		,000	,000	,000
	N	109	109	109	109	109	109
System Use	Pearson Correlation	,651**	,709**	,682**	1	,753	,694
	Sig. (2-tailed)	,000	,000	,000		,000	,000
	N	109	109	109	109	109	109
User Satisfaction	Pearson Correlation	,730**	,738**	,738**	,753**	1	,728
	Sig. (2-tailed)	,000	,000	,000	,000		,000
	N	109	109	109	109	109	109
Net Benefits	Pearson Correlation	,687**	,686**	,693**	,694**	,728**	1
	Sig. (2-tailed)	,000	,000	,000	,000	,000	
	N	109	109	109	109	109	109

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

Source: Prepared by the researcher based on SPSS

2.2.8. Test of Hypotheses

- H0.1: p value = 0.709; r value = 0.000 < 0.5 » Rejected hypothesis; H1 Accepted.
- H0.2: p value = 0.738; r value = 0.000 < 0.5 » Rejected hypothesis; H2 Accepted.
- H0.3: p value = 0.651; r value = 0.000 < 0.5 » Rejected hypothesis; H3 Accepted.
- H0.4: p value = 0.730; r value = 0.000 < 0.5 » Rejected hypothesis; H4 Accepted.
- H0.5: p value = 0.682; r value = 0.000 < 0.5 » Rejected hypothesis; H5 Accepted.
- H0.6: p value = 0.738; r value = 0.000 < 0.5 » Rejected hypothesis; H6 Accepted.
- H0.7: p value = 0.753; r value = 0.000 < 0.5 » Rejected hypothesis; H7 Accepted.
- H0.8: p value = 0.694; r value = 0.000 < 0.5 » Rejected hypothesis; H8 Accepted.

- H0.9: p value = 0.753; r value = 0.000 < 0.5 » Rejected hypothesis; H9 Accepted.
- H0.10: p value = 0.728; r value = 0.000 < 0.5 » Rejected hypothesis; H10 Accepted.
- H0.11: p value = 0.694; r value = 0.000 < 0.5 » Rejected hypothesis; H11 Accepted.
- H0.12: p value = 0.728; r value = 0.000 < 0.5 » Rejected hypothesis; H12 Accepted.

3. Conclusion.

H0.1: Increases in *Information Quality* will cause increases in *System Use*

H0.2: Increases in *Information Quality* will cause increases in *User Satisfaction*

H0.3: Increases in *System Quality* will cause increases in *System Use*

H0.4: Increases in *System Quality* will cause increases in *User Satisfaction*

H0.5: Increases in *Service Quality* will cause increases in *System Use*

H0.6: Increases in *Service Quality* will cause increases in *User Satisfaction*

H0.7: Increases in *System Use* will cause increases in *User Satisfaction*.

H0.8: Increases in *System Use* will cause increases in *Net Benefits*.

H0.9: Increases in *User Satisfaction* will cause increases in *System Use*.

H0.10: Increases in *User Satisfaction* will cause increases in *Net Benefits*.

H0.11: Increases in *Net Benefits* will cause increases in *System Use*.

H0.12: Increases in *Net Benefits* will cause increases in *User Satisfaction*.

The model of e-learning System Success used is an acceptable instrument for studies, nevertheless it needs some revisions. There is a significant correlation and causation between dimensions. The study gives an insight into the use of e-learning in the Algerian Universities, with some indices about the dissatisfaction of students (Mean < 3 in Service Quality & System Use). Improvements should take place in the near future by professionals.

We are pushed to use e-learning as we do now in the era of Coronavirus pandemic. A stream of study is needed to develop, and validate the best instrument to measure e-learning System Success (ELSS) in the Algerian context, and suggest solutions. This study is a primary contribution.

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