Factors influencing the e-learning effectiveness and its reflection on learning quality: The role of hospitality students' perception

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ABSTRACT

This study examines the effect of five factors namely; administrative support, course design, instructor characteristics, learner characteristics, and technical support on the effectiveness of E-learning among students enrolled in hospitality management programs. In addition, investigates the relationship between the effectiveness of E-learning and its quality taking into consideration the role of students' perception. 250 responses gathered from undergraduate students enrolled in the University of Sadat City in Egypt were analyzed using PLS-SEM. Contrary to the expectations of the study model, the results showed an insignificant relationship between instructor characteristics and E-learning effectiveness. On the other hand, the results showed a positive relationship between the other four factors and E-learning effectiveness. Moreover, E-learning effectiveness showed a positive relationship with students' perceptions of E-learning, in addition, students' perceptions of E-learning showed a positive relationship with the quality of E-learning. The research provides a theoretical contribution to bridging the gap in studies related to E-learning in hospitality higher education. Practically, the research provides hospitality higher education institutions with recommendations to understand the barriers to E-learning. Limitations and potential directions for future research were also presented.

Keywords: E-learning, Hospitality Management Student Perceptions, E-learning Quality.

Introduction

Education is one of the key fundamental factors that contribute to a country's development and growth (Titie et al., 2018). Education is a system that helps to build a relationship between institutions and various countries. The outcome of the education system is the critical factor that determines the quality of education. It must be evaluated from the students' perspective because they are the end users of the product. The quality of education comprises the visible (course materials) and invisible (delivery to the students) elements, that need to be ensured to equip the students to face the competitive world (Elumalai et al., 2020).

The higher education systems opted for e-learning to replace face-to-face classroom teaching because the relationship between students' motivation and e-learning was reported (Harandi, 2015). Also, the platform of e-learning is more suitable for university students as it facilitates student engagement (Elumalai et al., 2020). The academic environment uses e-learning to transfer the educational goals, functions, and materials of a traditional university to an online environment. The important fact is that the transformation of the form of teaching does not result in the loss or reduction of the scope of the covered material (Olszewska, 2020).

The emphasis on using contemporary technology to help to teach and the educational process is the concept's defining characteristic throughout all of its formulations (Aparicio et al., 2016). E-learning could boost self-assurance, ease tension, and deepen concern and empathy (López-Catálan et al., 2018). However, because the sessions may be planned with visual aids and interesting learning, the instructors find the e-learning platform to be extremely dynamic. (Tomas et al., 2019). E-learning platforms are practical resources for online classrooms in higher

education (Chivu et al., 2018). The installation and operation of e-learning applications should be easy to use (Kimathi and Zhang, 2019).

Many scholars concur that hospitality education has been principally impacted due to the challenges posed by global norms of learning (Rapanta et al., 2020). *First*, many hospitality students are unable to fully acquire the practical skills needed to enhance their classroom learning (Kaushal and Srivastava, 2020). *Second*, hospitality students are currently unable to take up the opportunity of industry placements and internships as these have been suspended in many institutions and countries. Additionally, physical interaction between students and instructors has been reduced as a result of practical exams being postponed or canceled, particularly for final-year hospitality students. *Third*, because of the urgent need to convert to online forms, teaching staff members have to plan and present lessons from home while navigating the practical and technological difficulties of the virtual format (Hodges et al., 2020).

Hospitality students who preferred traditional teaching methods strongly preferred the presence of the instructor, while students who preferred videoconferencing indicated that the ability of the instructor to explain the subject matter was more important to them than the presence of the instructor (Song, 2010). However, there is a dearth of essential technology for online instruction, including fast computers and Internet access. Additionally, e-learning still suffers from students' resistance to adapting from traditional classrooms to computer-led training in virtual classrooms (Titie et al., 2018).

Therefore, the current study considers five factors namely, *administrative support* (Aung and Khaing, 2016), *technical support* (Queiros and de Villiers, 2016), *course design*, *instructor characteristics*, and *learner characteristics* (Makokha and Mutisya, 2016) which may affect the e-learning effectiveness. In addition, it aims to determine how E-learning effectiveness relates to students' perception of E-learning, and how students' perception of E-learning relates to the quality of E-learning.

THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

The development of modern technologies is related to the development of methods and channels of education (Hoq, 2020). E-learning platform as one of these modern technologies enables flexibility in teaching and learning (Bolar et al., 2022). E-learning may have different meanings, it involves "learning that is mediated by the Internet" which differs from traditional face-to-face which takes place in a classroom setting (Rapanta et al., 2020). E-learning is considered a new solution to bridge the inequality gap in education in many developing countries (Iqbal and Ahmad, 2010) such as massive online open courses, web-based training, virtual learning, net-based learning, or cyberlearning (Agyeiwaah et al., 2022).

E-learning implies that both the instructor and students converge in a virtual classroom environment to participate in educational activities from different places and at different times through an internet connection. Many scholars indicated the benefits of e-learning as being flexible and student-centered as classroom discussions are passing through which allows students enough time to think before responding to questions (Gomezeljand ˇCivre, 2012). In a traditional classroom setting, instructors and students speak to one another directly (Martínez-Argüelles and Batalla-Busquet, 2016). However, to meet learning objectives, e-learning offers a variety of possibilities, including multimedia for teaching to provide learning outcomes (Sarabadani et al., 2017). The quality of learning is also improved through peer student engagement in the online learning environment (Goh et al., 2017). E-learning is designed with specific academic content

attributes and students are oriented to know what to expect in the online classroom (Gopal et al., 2021).

Moreover, an innovative e-learning system in higher education must have strong administrative support (Meyer and Barefield, 2010). The policies of higher education institutions, the motivation of professors, and the atmosphere in which students study will all be managed by administrators. They have a strong influence on the overall development of the institutions (Yang, 2010). Since technology adoption in higher education is inevitable in online courses, a cohesive backing structure with a collaborative environment is very much needed in universities and schools (Bolden et al., 2015). Also, administrators can be involved vigorously in the preparation and management of the online program to ensure the quality of e-learning (Strike, 2018). Accordingly, the following hypothesis is formulated:

Hypothesis 1: Administrative support has a positive impact on E-learning effectiveness.

The assignments, tests, and projects for an online course might take many different forms. According to Akyüzand Samsa (2009), this characteristic helps students' analytical, critical thinking, and problem-solving abilities. Effective e-learning is executed in large part due to the creation of appropriate course material (Little and Knihova, 2014). Effective course content in e-learning would include a student emphasis on being more engaged in studying (Ashwin and McVitty, 2015). The course design of an e-learning environment in higher education is in the form of a learner-centered approach rather than an instructor-centered approach (Elumalai et al., 2020).

According to Adeyinka and Mutula (2010), students evaluate course design depending on how well the content of the e-learning system satisfies their demands. This is considered a crucial factor that influences how students see online courses. Jaggars and Xu (2016) argued that course design involved several characteristics, such as well-organized content, a range of opportunities for interpersonal connection options, and productive use of technology. After conducting a comparison study between course design and interaction in terms of satisfaction, Miyazoe and Chiyodaku (2010) noticed that students in the online class indicated that information was their priority. In contrast, students who were studying in a regular class said that student-instructor connection was their top priority. Rubin and Fernandes (2013) noted that course design and course structure could affect the learning process and learning outcomes, especially in online courses or online teaching processes. Also, Eom and Ashill (2016) emphasized that course design and structure are closely associated with learner satisfaction and perceived learning outcomes particularly when the course content is divided into logical and understandable sections that are engaging and stimulate the learner's desire to learn.

The use of multimedia tools in the course design encourages student interest in learning and facilitates concept understanding (Khamparia and Pandey, 2017). Regarding duration, area, and self-education (Ahmad et al., 2018). Due to time limits, the course design for traditional learning can only include a minimal amount of multimedia information. Additionally, effective course design for online learning promotes cooperation, and students experience enjoyment while learning (Liao et al., 2019). The course content should be designed according to the students' competence and apprehension levels (Ricart et al., 2020). A well-structured and appealing e-learning course design with visual information facilitates students learning through online classes (Oh et al., 2020). Accordingly, the following hypothesis is formulated:

Hypothesis 2: Course design has a positive impact on E-learning effectiveness.

In contrast to the conventional lecture style, Harasim (2000) emphasized that instructors should adopt an online instruction-teaching paradigm and actively participate in e-moderating. Salmon (2002) summarized three crucial functions namely contextualizing, monitoring and meta-communication. The first two functions are intended to make up for the lack of physical cues present in traditional classroom settings, while meta functions are intended to address communication issues that are typically handled in classrooms by body language and to summarize the state of a discussion to provide the sense of accomplishment and direction. Also, Liaw et al. (2007) found that instructors displayed highly favorable attitudes toward e-learning environments as a useful teaching-associated tool and that their intention to use e-learning was influenced by perceived usefulness and self-efficacy.

Students value instructor participation and instructor involvement. Selim (2007) suggested e-learning depends on instructors' interactive style, attitude, and behavior toward technology. Selim found that instructors' attitude toward interactive learning was the most critical success factor over other factors such as control of technology, teaching style, students' computer competency, interactive collaboration, course contents, design, access, infrastructure, and support. In addition, successful e-learning in higher education depends on empowering instructors to create, shape, and incorporate various concepts and methods into the creation of online course materials (Kebritchi et al., 2017). According to Ellis and Goodyear (2010), the instructor should provide the students with pertinent feedback on their use of time. Observing instructor performance to check proficiency is essential to have a significant impact on students' sense of the success of the course (Boyd, 2008) and to improve the quality of e-learning (Alrefaie et al., 2020). Accordingly, the following hypothesis is formulated:

Hypothesis 3: The instructor's characteristic has a positive impact on E-learning effectiveness.

Swan et al. (2000) reported whether demographics had a different impact on the level of perception of quality or satisfaction with online learning. They suggested that female or older students are better suited to Web-based learning than male or younger students in terms of satisfaction. Others argued the opposite (Karuppan, 2001). Others reported no different impacts of sex and age on satisfaction (Hong, 2002). Other researchers reported that female students were more sensitive in dealing with instructors in online learning (Chen et al., 2006); more positive and more satisfied with an online course, but desired higher interaction (Young and Norgard, 2006). Castánand Martínez (2006) showed that age, motivation, and area of knowledge had a positive influence on perceived e-service quality. On the other hand, the experience of previous university education, the experience in online education, and the cost of fees were found to be negatively correlated with perceived e-service quality. Willging and Johnson (2004) were specifically interested in the reasons students chose to drop out of online courses. They found that gender, race, residency, and previous employment status mainly predicted online students' retention. In addition, the university's capacity to handle such a development in terms of technology and personnel training is also of utmost importance. However, Almaiah and Alismaiel (2019) indicated that the involvement of students and their willingness to use this type of solution determines the effectiveness of e-learning. Accordingly, the following hypothesis is formulated:

Hypothesis 4: A learner characteristic has a positive impact on E-learning effectiveness.

The learning process consists of a dialogue between instructor and student, operating at the level of academic knowledge. Fabianic (2002) analyzed nineteen criteria especially used by students to judge the quality of an E-learning website. These criteria comprised presentation, navigability,

reliability, external recognition, responsiveness, speed, customer care, access, content relevancy, content richness, content currency, site aesthetics, personalization, authority, assurance and help, special services, tailored communication, and trust. Büyüközkan et al. (2007) developed seven criteria; right and understandable content, complete content, personalization, security, navigation, interactivity, and user interface. The online course may not result in learning outcomes if students come across a poor design website. According to Reisetter et al. (2007) students in online courses recognized the website's design, as well as access to and feedback from the instructor, for helping them successfully comprehend the course materials. Other researchers indicated that the use of multiple technologies in different contexts was crucial for the effectiveness of online learning. The educational system has changed from the conventional framework to the contemporary manner of instruction due to internet technology and mobile applications. The self-efficiency of the instructors in terms of technology, and content developments reflect on the student's attitude toward the instructors. As a result of technological innovation, learning options have changed the face of education. Technology in education benefits not only the students but also the instructors who teach the subjects, improving the learning environment. Educational technology helps students in distance learning and enables the instructors to access the students at any time across boundaries (Elumalai et al., 2020). Accordingly, the following hypothesis is formulated:

Hypothesis 5: Technical support has a positive impact on e-learning effectiveness.

There are specific abilities and attitudes needed in e-learning by including students' perceptions of themselves (Bernard et al., 2000) rather than only looking at students' perceptions of technology, tasks, and their ability with technology. Porras-Hernadez (2000) also emphasized the significance of taking into account students' capacity for academic success in general, while Hammond (2000) found that two learner factors—cognitive aspects (e.g. previous experience in mediated education and computer skills) and affective variables—determine learning effectiveness (e.g. self-efficacy, expectations, perceptions of instructors, feelings of anxiety and success). It is the learner's perception of the knowledge they have acquired through online learning. The quality of the material delivery, course design, evaluation, and insights gained from this perceived learning experience is evaluated by the instructors to further enhance the learning experience. According to Alavi et al. (2002), a student may experience e-learning as a shift in perception levels due to their learning experience, which is also one of the key criteria for assessing a course (Wright et al., 2006).

The learner determines e-learning effectiveness through; prior experience with technology, country of origin and native tongue, education skills, self-discipline, perceptions of the self, and self-regulatory processes (Sigala, 2004). Finally, student perceptions of the overall usability of the course are likely associated with student satisfaction and learning outcomes (Eom et al., 2006). Also, Students' attitudes are linked to the perceived teaching method of the professors in the virtual classroom (Nguyen and Huynh, 2020). Accordingly, the following hypothesis is formulated:

Hypothesis 6: E-learning effectiveness has a positive impact on students' perceptions of E-learning.

Bernard et al. (2000) argued that online learning should be evaluated on its three dimensions namely commitment, coordination, and communication by measuring variables such as group cohesion and productivity, use of resources, and level of communication. Moreover, because Online Learning requires learners to be active participants in their learning, other learner

variables should also be considered. However, prior research examining the effectiveness/quality of learning often included students' grades, surveys of attitudes, and observational data (Porras-Hernadez, 2000).

What is taught in online courses is delivered through instructor-delivered content, internet-driven content, and assigned learning and assessment activities (Peltier et al., 2007). Content quality referred to the quality of the output, such as timeliness, scope, relevance, ease to understand, appropriate format, reliability of output information, clearness, completeness, and accuracy of the information generated by an information system (Roca et al., 2006). Also, content quality had the greatest effect on users' satisfaction among the three qualities such as information quality, system quality, and service quality (Song, 2010). Klobas and McGill (2010) defined information quality as the "suitability of the information" for the user's purpose, and the information quality was measured in terms of accuracy, reliability, timeline, relevancy, understandability, completeness, and format of e-learning systems and services. Suanpang and Petocz (2006) focused on methods that influenced learning effectiveness. Their results indicated that e-learning in interactive mode was the best one. Moreover, it could replace traditional teaching. Henry (2008) studied factors that influenced effectiveness. The two main factors were internal factors (students' experience and motivation or satisfaction) and external factors (environment, instructors, technology, course flexibility, or design and models). In addition, De-Marcos et al. (2016) examined the effectiveness and suitability of e-learning models. They declared that the most effective educational platform was e-learning. Accordingly, the following hypothesis is formulated:

Hypothesis 7: Students' perception of e-learning has a positive impact on E-Learning quality.

The conceptual framework and hypotheses are presented below (see figure 1).

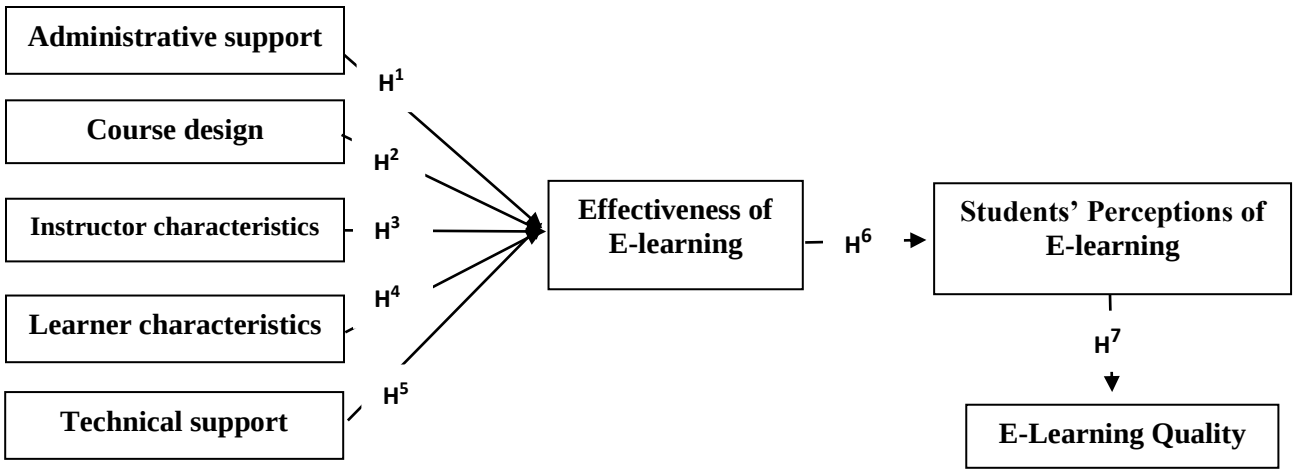


Figure 1: Conceptual framework and hypotheses

Materials and Methods

Sample

This study is quantitative as well as descriptive in nature. Data were collected from second, third, and fourth-year undergraduate students studying in the hospitality management program at the University of Sadat City in Egypt. The first year in most faculties of tourism and hotels in Egypt is the general year; students are going to specialize from the second year. Data were collected from 250 students. The respondents of the survey are students who are actively using e-learning platforms.

Data collection

To achieve a maximum correct response, the questionnaire was administered in a controlled environment during the formal online class time. This captive group survey approach is expeditious and less problematic than in less controlled situations (Ticehurst and Veal, 1999). The survey was conducted in November during the 2020-2021' academic year. As students were selected to participate in this study on their desire and the questionnaire was administered in a controlled environment, the response rate was 100%. The questionnaire consisted of two sections. The first section collects personal information about students' "gender and year of study". The second section of the questionnaire gauges the perception and attitude of students regarding the effectiveness of e-learning, the quality of e-learning, and factors affecting e-learning.

Survey instrument development

To assess students' perception of E-Learning, a 14-items scale derived from Khan et al. (2020) was employed. For example, "*Studying through e-learning mode provides the flexibility to the study at the time convenient to the learner*", "*I believe e-learning platforms are user friendly", and "I intend to use e-learning to assist my learning*". In addition, a 21-item scale derived from Olszewska (2020) was used to assess E-learning effectiveness, For example, "*Distance learning helped me get organized*", "*I can organize the time for effective learning*", and "*I know how to learn from home*". Furthermore, a 6-item scale derived from Elumalai et al. (2020) was adopted to assess the quality of E-Learning. For example, "*E-learning raises the level of students' attainment and makes it enjoyable*" and "*E-learning provides two-way communication and cooperation among students*". Lastly, to assess factors affecting E-Learning "administrative support, course design, instructor characteristics, learner characteristics, and technical support", a 15-items scale derived from Aung and Khaing (2016); Makokha and Mutisya, (2016); Queiros and de Villiers (2016) was employed. For example, "*The faculty provides online portals to access the textbooks and reference materials*", "*The course design is suitable for the e-learning*", and "*The e-learning platform is user-friendly to install and operate*". All scale items were originally prepared in English and then translated into Arabic using the back-translation method.

Data analysis

On a five-point Likert scale, participants answered all items. SmartPLS was used for data analysis. PLS-SEM was applied. According to Birkinshaw et al. (1995), "PLS is most appropriate when sample sizes are small when assumptions of multivariate normality and

interval scaled data cannot be made, and when the researcher is primarily concerned with the prediction of the dependent variable" (pp. 646–647), PLS-SEM was used for these reasons. A p-value of.05 or less was regarded as significant.

RESULTS

Respondents profile

Table (1): Showed the demographic characteristics of participant students. The table indicated that the majority of 208 (84.9%) participant students were males and 37 (15.1%) participant students were females. The table also showed that students were distributed over the three years of study 85 (34.7%), 115 (46.9%), and 45 (18.4%) for the second year, third year, and fourth year, respectively.

Table (1): Respondents' profile

Characteristics items(n=245)	No.	%
Level of Study		
Second Year	85	34.7
Third Year	115	46.9
Fourth Year	45	18.4
Gender		
Female	37	15.10
Male	208	84.9

Analysis and model testing

PLS-SEM was used to assess the proposed model of the study. Composite reliability (CR) and Cronbach's α were used to examine the internal consistency reliability for this study. The results in Table (2) show that the items have CR above 0.80 α, which is acceptable. In addition, the discriminant validity and convergent validity (AVE) were tested for each construct. The results were above 0.50, demonstrating that they are average and that there are no discriminant validity issues. Therefore, structural model estimation was employed to investigate hypotheses.

Table 2: Results of Measurements Model –Convergent Validity

Constructs	items	loading	Cronbach Alpha	Composite Reliability	(AVE)
Administrative Support	*A.S. 1*	0.880	0.876	0.924	0.802
	A.S. 2	0.915			
	A.S. 3	0.890			
Course Design	*C.D.1*	0.905	0.891	0.932	0.822
	C.D. 2	0.926			
	C.D. 3	0.888			
Instructor Characteristics	*I.C.1*	0.894	0.892	0.933	0.823
	I.C. 2	0.897			
	I.C. 3	0.930			
Learner Characteristics	*L.C.1*	0.913	0.906	0.941	0.842

	L.C. 2	0.922			
	L.C. 3	0.918			
Technical Support	*T.S.1*	0.917	0.902	0.939	0.836
	T.S.2	0.896			
	T.S.3	0.930			
Quality of e-learning	*Q.1*	0.854	0.935	0.948	0.753
	Q. 2	0.887			
	Q. 3	0.870			
	Q. 4	0.872			
	Q. 5	0.852			
	Q. 6	0.872			
Perception of e-learning	*P .1*	0.796	0.967	0.970	0.700
	P .10	0.869			
	P .11	0.834			
	P .12	0.881			
	P .13	0.877			
	P .14	0.876			
	P .2	0.762			
	P .3	0.806			
	P .4	0.784			
	P .5	0.834			
	P .6	0.840			
	P .7	0.845			
	P .8	0.857			
	P.9	0.839			
Effectiveness of e-learning	*E.1*	0.771	0.967	0.970	0.607
	E.10	0.816			
	E.11	0.817			
	E.12	0.819			
	E.13	0.856			
	E.14	0.754			
	E.15	0.774			
	E.16	0.761			
	E.17	0.830			
	E.18	0.795			
	E.19	0.822			
	E.2	0.828			
	E.20	0.656			
	E.21	0.715			
	E.3	0.770			
	E.4	0.816			
	E.5	0.801			
	E.6	0.730			
	E.7	0.640			
	E.8	0.765			
	E.9	0.787			

According to the table (3), the elements in the matrix diagonals (values in bold), representing the square roots of the AVEs, are greater in all cases than the off-diagonal elements (these values are

the correlation between the respective constructs) in their corresponding row and column, thus the discriminant validity of scales is achieved. Convergent validity was also tested by extracting the factor and cross-loadings of all indicator items to their respective latent constructs. All items load more strongly on their constructs in the model.

Table 3: Discriminant Validity - Latent Variable Correlations

	1	2	3	4	5	6	7	8
1. Administrative Support	**0.895**							
2. Course Design	0.792	**0.906**						
3. Effectiveness of E-learning	0.720	0.776	**0.779**					
4. Instructor Characteristics	0.753	0.852	0.736	**0.907**				
5. Learner Characteristics	0.740	0.839	0.790	0.874	**0.918**			
6. Quality of e-learning	0.734	0.872	0.783	0.885	0.899	**0.868**		
7. Students' Perceptions of E-learning	0.661	0.735	0.816	0.691	0.724	0.749	**0.836**	
8. Technical Support	0.778	0.831	0.769	0.872	0.854	0.866	0.749	**0.914**
The values in the boldface are the square root of AVE								

In addition, the Predictive Relevance (Q^2) of the model was examined. a cv-red value of >0 shows that there is predictive relevance while a value of <0 indicates the model lacks predictive relevance.

Table 4: Construct Cross validated Redundancy (cv-red)

Endogenous Latent Variables	SSO	SSE	Q^2 (=1-SSE/SSO)
Effectiveness of E-learning	4620.000	2722.612	0.411
Quality of e-learning	1320.000	772.689	0.415
Students' Perceptions of E-learning	3080.000	1656.986	0.462

As we can see in Table (4), the values of Q^2 are greater than zero, which supports the claim that this study model has adequate ability to predict. Moreover, the Goodness of Fit of the Model (GoF) was assessed, where GoF with less than 0.1 means no fit, GoF between 0.1 and 0.25 means small fit, GoF between 0.25 to 0.36 means medium fit, and GoF with greater than 0.36 means large fit of the model.

Table 5: Goodness of Fit of the Model

Endogenous Latent Variables	R Square	AVE	GoF
Effectiveness of E-learning	0.690	**0.607**	0.639*0.687= 0.439 =0.663
Quality of e-learning	0.562	**0.753**	
Students' Perceptions of E-learning	0.665	**0.700**	

According to the data in table (5), the value of GoF is 0.663, which means that the GoF model of this study is large enough to be considered sufficient for global PLS model validity.

Structural Model Assessment

Results in Table (6) showed that there is a statistically significant path coefficient between effectiveness of E-learning with administrative support (β= 0.164, $p < 0.05$), course design (β=0.257, $p < 0.05$), learner characteristics (β= 0.383, $p < 0.05$), and with technical support (β= 0.208, $p < 0.05$). In addition, a statistically significant path coefficient between the effectiveness of E-learning and students' perceptions of E-learning (β= 0.816, $p < 0.05$), and between students' perceptions of E-learning and quality of e-learning (β= 0.749, $p < 0.05$). However, an insignificant path coefficient existed between instructor characteristics and the effectiveness of E-learning ($p > 0.05$) (see figure 2).

Table 6: Path coefficient of research hypotheses

H	Relationship	Std. Beta	Std. Error	T-Value	P - Values	Decision
H 1	Administrative Support -> E-learning Effectiveness	0.164	0.068	2.415	**0.016**	Supported
H 2	Course Design -> E-learning Effectiveness	0.257	0.096	2.672	**0.008**	Supported
H 3	Instructor Characteristics -> E-learning Effectiveness	-0.123	0.101	1.227	**0.220**	Rejected
H 4	Learner Characteristics -> E-learning Effectiveness	0.383	0.114	3.362	**0.001**	Supported
H 5	Technical Support -> E-learning Effectiveness	0.208	0.096	2.171	**0.030**	Supported
H 6	E-learning Effectiveness -> Students' Perceptions of E-learning	0.816	0.028	29.151	**0.000**	Supported
H 7	Students' Perceptions of E-learning -> E-learning Quality	0.749	0.036	20.801	**0.000**	Supported

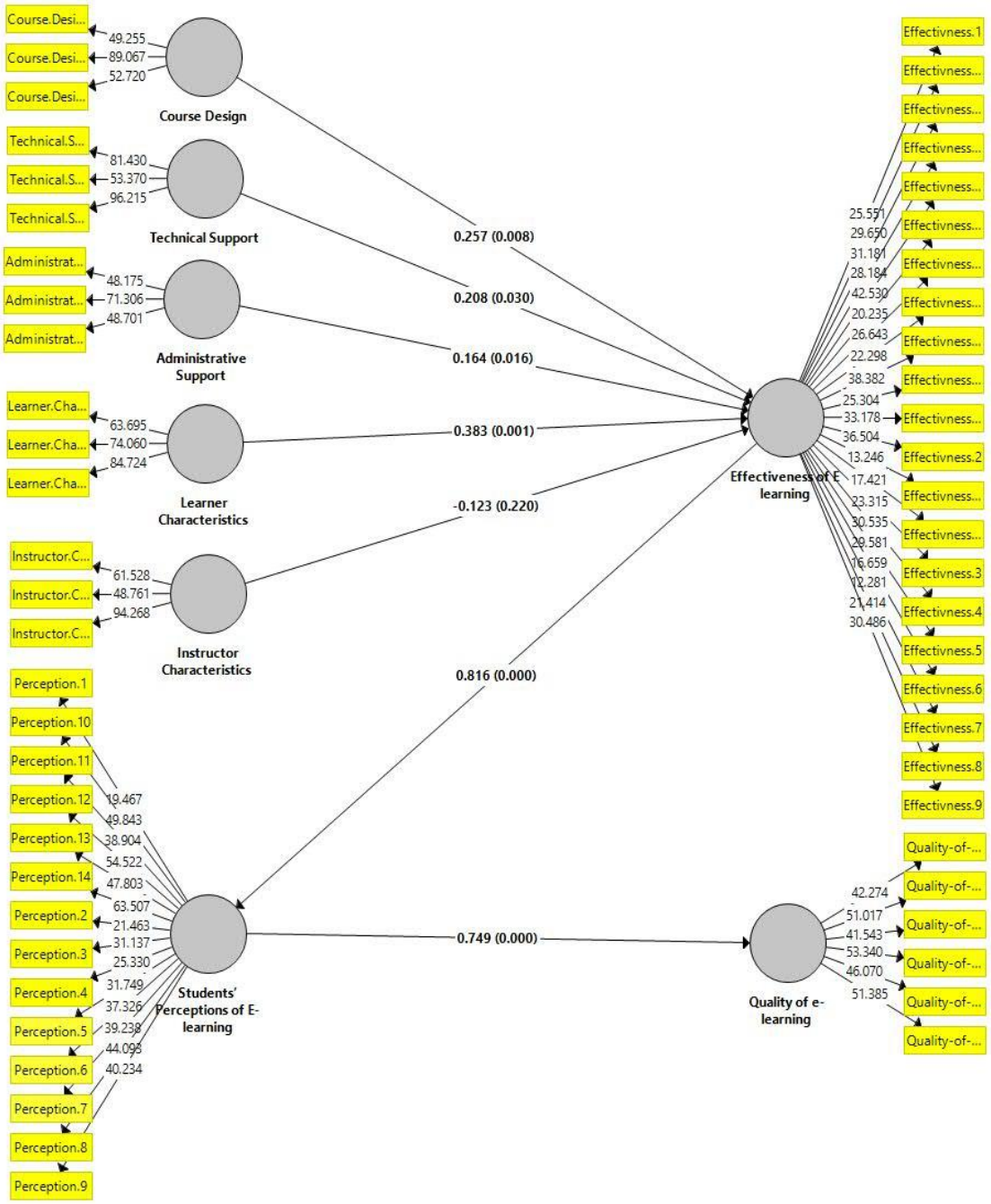
The coefficient of Determination (R^2) was also examined to illustrate the effect size of the endogenous latent variables (see table 7). The R-squared value of 0.10 as a minimum is an acceptable level.

Table 7: R^2 of the endogenous latent variables

Endogenous Latent Variables	R Square	Result
Effectiveness of E-learning	0.690	acceptable
Students' Perceptions of E-learning	0.562	acceptable
Quality of e-learning	0.665	acceptable

Data in table 7 showed that four factors "administrative support, course design, learner characteristics, and technical support" explain 69% of the change in the effectiveness of E-learning (R^2=0.690), which means that these four variables have a high acceptable effect size on the effectiveness of E-learning. Also, the effectiveness of E-learning explains 56.2% of the change in students' perceptions of E-learning (R^2=0.562). In addition, students' perceptions of E-

learning explain 66.5% of the change in the quality of e-learning (R^2=0.665) which means that



students' perceptions of E-learning have a highly acceptable effect size on the quality of e-learning.

Figure 2: Final results of the study

DISCUSSION

Education is considered the oil that lubricates the gears of development and growth, particularly in the digital age. Therefore, this study aimed to investigate how five factors namely; administrative support, course design, instructor characteristics, learner characteristics, and

technical support may influence the effectiveness of E-learning among students enrolled in hospitality management programs. In addition, the relationship between the effectiveness of E-learning and the quality of E-learning was also examined taking into consideration the role of students' perception. To empirically investigate these relationships, a conceptual model was created and tested (see Fig. 2).

The study findings revealed that administrative support showed a significant positive relationship with E-learning effectiveness. This result is in line with the research of Strike (2018) and Cheng et al. (2019) which recommended that administrative support is among the features of successful e-learning. Efficient use of technology in an online environment requires administrative support at all levels of the institution. An effective online education program must have strong administrative support as well. Administrative support includes assistance in the form of funding, guidance, oversight, and assistance in removing the obstacles that hinder a healthy and well-supported online education program.

Moreover, the study findings revealed that course design showed a significant positive relationship with E-learning effectiveness. This result is in line with the research of Kebritchi et al. (2017) and Alrefaie et al. (2020) that the efficiency of e-learning depends heavily on the role of the instructor. Attitude towards technology, control of technology, and teaching style are important instructor factors that can influence learning outcomes (Salmon, 2002). In particular, the facilitation and mediation skills and responsibilities of the instructors are extremely important because if these are not successfully implemented, major issues may occur.

The study findings also revealed that learner characteristics showed a significant positive relationship with E-learning effectiveness. This result is in line with the research of Castán & Martínez (2006) and Almaiah & Alismaiel (2019). Students' academic achievement is significantly influenced by learners' characteristics such as gender (Oxford Group, 2013). Also, the effectiveness of e-learning depends on learner attitudes toward it, which in turn influence behavioral intentions that often result in persistence in a learning environment. Furthermore, it is important to note that because E-learning makes extensive use of computers, learners' computer literacy, which varies from one to another, is critical in E-learning situations, and therefore such a factor is important in online classrooms (Abubakar & Adetimirin, 2015).

However, the study findings revealed that instructor characteristics showed an insignificant relationship with E-learning effectiveness. This result was not in line with the research of Liaw et al. (2007) and Selim (2007) who suggested that e-learning depends on instructors' interactive style, attitude, and behavior toward technology. This finding may be interpreted by Boyd (2008) who stated that students still perceived a lack of opportunities to interact with their instructors during E-learning, and hence, instructor characteristics may stand behind the wall of the online learning environment.

Moreover, the study findings revealed that technical support showed a significant positive relationship with E-learning effectiveness. This result is in line with the research of Song (2010), Coman et al. (2020), and Elumalai et al. (2020). According to Song (2010), technology support regarding e-learning is linked to the capability or quality of hardware and software available to the learning environment. E-learning quality is mostly related to the usability of websites. Also, it seems natural given that students in online learning as well as in traditional learning depend on instructional websites nowadays. Furthermore, the perceived utility and simplicity of use of the

tools supplied by E-learning platforms have an impact on users' intentions to utilize those platforms (Zare et al., 2016). Students usually view the e-learning platform as a helpful instrument for online teaching and learning when it comes to their attitudes regarding the use of the E-learning platform. Students would still choose to use alternative platforms as a result of the technical challenges that were caused by the servers of the universities that hosted it, not necessarily by the platform itself (Coman et al., 2020). Students also like services that enable long-distance video communication between several users and don't have as many technical issues.

Additionally, the study findings revealed that E-learning effectiveness showed a significant positive relationship with students' perceptions of E-learning. This result is in line with the research of Nguyen & Huynh (2020) and Almahasees et al. (2021). E-learning can be considered a flexible and effective learning resource, especially during a crisis. E-learning was seen by students as a calm and productive source of information. Students perceived E-learning as asynchronous access to instructional resources at any time of day, it allows students to have 24/7 access to internet information (Almahasees et al., 2021). E-learning also could encourage self-learning because the learner participates in the learning process by him/herself.

Lastly, the study results revealed that students' perceptions of E-learning showed a significant positive relationship with the quality of E-learning. This result is in line with the research of Almahasees et al. (2021). The value of E-learning is how much E-learning quality denotes its price. E-learning lowers the cost of education since students stay at home and do not have to pay for transportation or other fees. In addition, through E-learning students can learn new experiences such as time management and self-discipline, and this could add another value to the quality of the learning process.

Theoretical and practical implications

Several theoretical contributions are made in this paper. First, the current study responds to recommendations for more research on e-learning in hospitality education. The current study's theoretical model adds to expanding current knowledge in the hospitality education literature, particularly in e-learning. Second, the current article can aid in properly comprehending the boundary conditions of e-learning in the context of hospitality education. Second, this study also provides a comprehensive structural model combining factors affecting e-learning, the effectiveness of e-learning, students' perception, and the quality of e-learning within the context of hospitality education in one of the Middle Eastern nations, Egypt. Third, this study presents a theoretical framework based on Egyptian higher education hospitality students who have a distinct culture as a Middle Eastern country, which might contribute to the advancement of Egyptian and Middle Eastern-specific approaches for designing and delivering high-quality hospitality educational services. Furthermore, the study has some practical implications. First, higher education institutions need to understand the different factors which may influence the quality of e-learning and this will help in delivering educational services differentially; hence, there is a constant requirement to invest in E-learning in higher education. Second, higher education institutions should understand their strategic roles in the functioning of the hotel industry by providing high-quality hospitality education, because this sector is people driven.

Limitations and future research

The current study has some limitations that will need to be addressed in future research. First, the study investigated how administrative support, course design, instructor characteristics, learner characteristics, and technical support influence the effectiveness of E-learning while ignoring other factors such as course content, and social support in addition to motivational factors in terms of self-regulation, self-efficacy, learner autonomy, and time management. It will be interesting to explore how these factors could affect the effectiveness of e-learning in hospitality higher education. Second, the study was conducted in the context of Egyptian hospitality higher education; hence, the generalizability of the current work to other countries became a drawback. As a result, further comparative studies should be conducted. Third, due to social desirability bias, longitudinal research is needed to better understand the changing patterns of E-learning effectiveness, perception, and quality.

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العوامل المؤثرة في فعالية التعليم الإلكتروني وانعكاسه على جودة التعليم: دور إدراك طلاب إدارة الفنادق

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تبحث هذه الدراسة في تأثير خمسة عوامل هي؛ الدعم الإداري وتصميم المقرر وخصائص المحاضر وخصائص المتعلم والدعم الفني على فعالية التعليم الإلكتروني بين طلاب قسم إدارة الفنادق. بالإضافة إلى ذلك، تبحث الدراسة العلاقة بين فعالية التعليم الإلكتروني وجودته مع مراعاة دور إدراك الطلاب. تم تحليل عدد 250 استمارة استبيان تم جمعها من الطلاب الجامعيين المسجلين بقسم إدارة الفنادق في جامعة مدينة السادات في مصر باستخدام PLS–SEM. على عكس توقعات نموذج الدراسة، أظهرت النتائج علاقة غير معنوية بين خصائص المحاضر وفعالية التعليم الإلكتروني. من ناحية أخرى، أظهرت النتائج وجود علاقة إيجابية بين العوامل الأربعة الأخرى وفعالية التعليم الإلكتروني. علاوة على ذلك، أظهرت فعالية التعليم الإلكتروني علاقة إيجابية مع إدراك الطلاب للتعليم الإلكتروني، بالإضافة إلى أن إدراك الطلاب للتعليم الإلكتروني أظهر علاقة إيجابية مع جودة التعليم الإلكتروني. يقدم البحث مساهمة نظرية في سد الفجوة في الدراسات المتعلقة بالتعليم الإلكتروني في التعليم العالي في مجال الضيافة. أما من الجانب العملي، يوفر البحث لمؤسسات التعليم العالي في مجال الضيافة توصيات لفهم عوائق التعليم الإلكتروني. وأخيراً، تم عرض القيود والتوجيهات المحتملة للأبحاث المستقبلية.

الكلمات المفتاحية: التعليم الإلكتروني، إدراك طلاب إدارة الضيافة، جودة التعليم الإلكتروني.