E-Learning Service Quality During COVID-19 Pandemic from Postgraduate Students' Perspective in Jordan

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Abstract—The study aimed to define E-Learning Service Quality from Postgraduate Students Perspective in Jordan during COVID-19 pandemic. To achieve the study purpose, the researcher used the descriptive methodology survey. The study instrument was built and it contained three domains and was applied on the study sample which consisted of (214) from Postgraduate Students (male &female). The study results indicated that the E-Learning Service Quality from Postgraduate Students Perspective in Jordan obtained an overall mean of (3.43) with a medium degree. However, on the secondary areas the level of student ranked first with mean of (3.68) which was high; in the second rank came the field of Student Environment with mean of (3.29) which was medium. In the last rank came the domain of educational course with an arithmetic mean of (3.27) which was medium. The results of the study indicated that there are no differences between the means of the E-Learning Service Quality from Postgraduate Students Perspective in Jordan referred to (Gender) for the student and educational course, but there are difference for educational environment refer to males. Also, the study indicated that there are no differences between the means of the E-Learning Service Quality from Postgraduate Students Perspective in Jordan refer to specialization. In the light of the study results, a number of recommendations were proposed.

Keywords—E-Learning, Quality, student, educational environment, COVID-19, course

1 Introduction

The world has been living a great scientific and technological revolution that has had an impact on various aspects of life. Education called upon to seek new educational methods and models to meet many challenges at the global level such as increasing demand for education especially during the COVID-19 pandemic, a shortage of educational institutions, and knowledge and the need to take advantage of the technical developments in the field of education [1, 2]. In addition, to show the model of e-learning helps the learner to learn in the right place and time through interactive content depends

on multimedia (texts – voice – image – movement), and presents through electronic means such as computer and the Internet and others. Thus, e-learning is a new type of education, imposed by the scientific and technological changes that the world is witnessing to this day, and no longer are traditional methods able to keep pace, so the need to adopt another kind of education is eLearning [3, 4].

1.1 Study objectives and questions

The study aimed to identify the E-Learning service quality from postgraduate students' perspective in Jordan. To achieve this goal, the study attempted to answer the following questions:

RQ1: What is the degree of E-Learning service quality from postgraduate students' perspective?

RQ2: Are there any statistically significant differences ($\alpha = 0.05$) for E-Learning service quality from postgraduate students referred to the variables of (Gender and Specialization)?

1.2 Definitions of the study

E-learning: An educational field based on modern technology in the world of communications and information in the education, through the use of the Internet, computer, and programs prepared by specialists in the field of education [5] E-learning is defined operationally: A method of teaching through the delivery of theoretical materials to students using modern means of communication, especially the Internet.

Quality: A set of features and characteristics of services that is able to meet specific needs [6, 7]. *E-learning Quality*: A set of procedures through which e-learning designed to ensure that the final educational output meets or exceeds the required technical requirements [8–11].

E-learning Quality is defined operationally: The characteristics of the service for e-learning and meet the needs of graduate students, measured by the questionnaire prepared for it.

1.3 Limitation of the study

This study was limited to Postgraduate Students (male & female), who are studying in public universities in Jordan during the second semester in the year (2019/2020).

2 Theoretical literature and previous study

This section is divided into two parts; the first discusses the theoretical literature Quality in e-learning, while the second section discusses the previous studies on the same topic.

2.1 Theoretical literature

Quality is of great importance to organizations regardless of their type of activity. Quality management is not easy. Most types of education are of high quality, where the individual has a distinctive ability and thus affects the state's position on the world map. E-learning as one of the most important innovations and hopes to help achieve quality in the educational process, and thus became a key feature of many modern educational institutions. E-learning is not a randomized education with formal education in schools or universities; it is a well-planned and well-designed system. It is an education with inputs, processes, outputs and nurture, not education based on individual judgment of individuals or companies based on the design of educational programs and sites. We can rely on unilaterally designed education; the success of e-learning depends on the good design of its elements and its interconnectedness to achieve its goal [12–14].

2.2 E-Learning objectives

Many studies have agreed that e-learning achieves a set of goals, the most important of which are:

1. Provide a learning environment rich in learning resources.
2. Encourage communication between elements of the educational system.
3. Optimal use of multimedia technology, including written texts and sound effects.
4. E-learning is one of the most important methods of modern education.

2.3 Quality of e-learning

Deming defined quality, as multidimensional to produce a product and/or deliver a service that meets the customer's expectations to ensure customer satisfaction [15, 16]. Crosby's definition of quality is conformance to requirements [17]. Another definition of TQM: an integrated approach to achieving and sustaining high quality output, focusing on the maintenance and continuous improvement of processes and defect prevention at all levels and in all functions of the organization, in order to meet or exceed customer expectations [18]. Quality in e-learning requires a number of characteristics, the most important of which are:

1. Use of information and communication technologies, research helps the learner to acquire the knowledge and methodological techniques that enable him to be able to produce and create [19].
2. Provide educational material, the teacher, and all the software used in learning and education.
3. Evaluate the educational programs used in the e-learning system in the light of cultural and social developments and draw feedback to introduce reforms or development first.
4. Development of inputs represented by the performance of faculty members and acceptance of students because of the impact on the quality of outputs.
5. Review the administrative and technical system in the electronic learning system on a continuous basis and rid them of obstacles [20].

2.4 Factors affecting the quality of e-learning

1. There are a number of factors affecting the quality of e-learning, the most important of which are: Factors related to teaching methods, including the student's ability and interaction with the courses, lack of synchronization and participation between students and teachers affects education, and participation between students and teachers in the classrooms gives a parallel connection.
2. E-Learning programs and plans factors, including Software, privacy and confidentiality in the system, ease of use by students, and mobility between programs.
3. Student factors, including: Commitment, simulation, application, feedback, education culture, and the content of the times [21]. Before anyone called it eLearning, in late 1997, learning guru Elliott Masie said, "Online learning is the use of network technology to design, deliver, select, administer, and extend learning". In 1999, Cisco told us, "ELearning is Internet-enabled learning. Components can include content delivery in multiple formats, management of the learning experience, and a networked community of learners, content developers and experts".

2.5 Previous studies

In this section, the researcher presents some Arab and foreign of the previous studies related to the E-Learning Quality, ranked from oldest to newest, as follow:

Study of [22] aimed to identify the reality of e-learning at An-Najah National University and its role in achieving interaction between learners from the point of view of the students and the members of the College of Graduate Studies for the programs of the Faculty of Education. The study society consists of 9 faculty members and 428 students at the College of Graduate Studies In the programs of the College of Education, to achieve the objectives of the study, the researcher used the analytical descriptive method using a number of quantitative and qualitative tools: Questionnaire, distributed to students of the Graduate School. In addition, interview, faculty members were interviewed at the College of Graduate Studies in the programs of the Faculty of Education at An-Najah University, and the documents issued by the e-learning center were analyzed. The results showed that the total score of the fields of e-learning reality at An-Najah National University from the point of view of students of higher education and faculty members in the programs of the Faculty of Education has reached a high level, as confirmed by the analysis of the documents issued by the Learning Center. Study of [23] aimed to identify the prevailing obstacles to the application of e-learning in the Palestinian universities from the student perspective in the light of some variables. To achieve this, the researcher used the descriptive analytical approach by constructing a questionnaire which consists of (48) items, and with a sample of (281) students representing (10%) from humanities and applied colleges from the Islamic University and Ummah University. The study showed: The relative weight of the item: first, students who are busy at sites not related to e-learning reached 84.34%. Second, the large size of the university curriculum makes a university professor tends to traditional education with 83.6%. Third, some teachers believe that e-learning eliminates their role in the process of teaching with 80.64%. Fourth, the small number of devices

in proportion to the number of students is 80.6%. Finally, there is lack of cooperation between universities in the exchange of experiences for the development of e-learning with 79.30%. 2. There were statistically significant differences at of the obstacles to the application of e-learning in the Palestinian universities and in favor of open education over traditional. 3. No statistically significant differences at the level of significance between the mean of the study of e-learning in Palestinian universities using traditional or open in favor of open education, while there were no significant differences by the variables:(Gender, college, and specialization). In [24], study the general satisfaction of the students in the Internet in full or in part (in-built), especially those who receive learning through the learning management system (LMS) using the Moodle system. An electronic questionnaire was sent to all the students who study the materials built in a US university, as well as all the members of the teaching staff who worked on distance teaching or integrated teaching. The results of the study showed that the satisfaction of students with 89% with online learning using MODEL and the ease with which students could complete their tasks and use the learning management system. Study of [25], which aims to evaluate the status of e-learning in Korean universities, which are (201) universities. Of which 27 are public universities, 163 are private universities and 11 are local educational universities. The study found that 85 percent of Korean universities use the e-learning service, while 67 percent actually use the service in the classroom. The study found that two-thirds of all universities offer teaching or lectures to learners on e-learning. Study of [26] identifies the reality of e-learning in Tishreen University from the point of view of the number of faculty members and students. The first two questionnaire were prepared for the teaching staff, distributed on a sample of the faculty members of Tishreen University (113) The second one was distributed to a random sample of students of the fourth year in Tishreen University (774). The study found the following results: The percentage of interest of both faculty members and students in e-learning is small, and one of the most important obstacles is the lack of rooms dedicated to e-learning. Study of [27] Study of Student Attitudes Towards E-Learning: A Case Study in India This study was designed to examine the attitudes of students at Punjab University in India towards e-learning. The data were collected through a sample survey of (400) The results showed that 76% of the students had clear positive attitudes towards e-learning, while 24% showed negative attitudes toward e-learning, 82% of students thought of the benefits of e-learning, and 57% Learn them.

2.6 Position of this study among previous studies

The researcher utilized from reviewing previous studies in many areas: item used and statistical analysis. This study considered the first that discusses at the public of Universities in Jordan. The study also featured by a developed tool, which was an inclusive tool with significant essential dimensions.

3 Methodology and procedures

This study adopted the descriptive survey approach as fit to make such study.

3.1 Study population

The study population consists of all Postgraduate Students in (10) public Jordanian universities. They are (534) males and (467) females. This statistic was obtained from the website of the Ministry of Higher Education.

3.2 Study sample

The study sample was purposely selected from the population, as tow universities from three regions (north, central and South); University of Jordan and Al-Balqa Applied University from Central, Yarmouk university and Jordan University of Science and Technology from North, and Mutah University and Al Hussein Bin Talal University from South. A sample is randomly selected from Postgraduate students that consisted (92) males and (122) females.

3.3 Study instrument

In order to achieve the objectives of the study, the instrument was developed by reference to theoretical literature and previous studies. Initially, the questionnaire consisted of (28) paragraphs that were modified and categorized into three domains: students, educational environment, and educational course. Table 1 below shows the study instruments domains:

Table 1. Study instruments domains

No.	Domain	Number of Paragraphs
1	Student	10
2	Educational environment	7
3	Educational course	11
Over all areas		28

Each paragraph was given a graded weight according to the five-point Likert scale. The scales were ordered regressively as follows: Very high (5), High (4), Medium (3), Low (2), and very low (1).

The following scale was adopted for analyzing the results:

- From 1 to 2.33 Low
- From 2.34 to 3.67 Medium
- From 3.68 to 5 High

The scale is calculated by using the following equation:
The upper limit of the scale (5) – The minimum scale (1) (3) 5–1/3 = 1.33.

3.4 Instrument validity and reliability

The questionnaire was presented in its initial form, consisting of (28) paragraphs to 5 arbitrators from the academic hold PhD degree in specialties of educational administration and the assets of education from University of Jordan, Princess Sumaya University for Technology. The arbitrators have validated a number of paragraphs; they proposed to change some paragraphs that have already been modified. The researcher took all the observations, and amended those proposed by arbitrators, until the study instrument came out in the final form. In order to verify the Reliability Coefficient (Cronbach's Alpha) was found for domains of questionnaire. Table 2 shows the values of the Cronbach alpha rates for instrumental consistency of paragraphs with their respective domains as a whole, and indicates that the instrument has a high degree of stability.

Table 2. Values of cronbach alpha for domains of instrument

No.	Domains	Cronbach Alpha Coefficient
1	Student	0.843
2	Educational Environment	0.862
3	Educational Course	0.887
Overall		0.915

4 Result

To realize the goals of study, the Statistical Package for Social Sciences (SPSS) was used to analyze the data and obtain the results. In this section, the researcher presents the study results in a according with its questions at follows:

4.1 Results related to question one: What is the degree of E-Learning service quality from postgraduate students' perspective?

To answer this question, the mean and the standard deviation were exerted. Table 3 shows the results.

Table 3. Means and standard deviations for each domains of study in a descending order

Rank	No.	Domain	Mean	S. D.	Degree
1	1	Student	3.68	.627	High
2	3	Student Environment	3.29	.784	Medium
3	2	Educational course	3.27	.784	Medium
Total mean			**3.43**	**.573**	**Medium**

Tables 4, 5, and 6 show the mean, the standard deviation, and the degree for each of the study paragraph (student, educational environment, and educational course) are as follows:

Table 4. The means and the standard deviations for in the domain of student in a descending order

Rank	No.	Paragraphs	Mean	S. D.	Degree
1	2	I have the right knowledge of how to use some Internet services.	4.24	.867	High
2	10	Mobile devices and tablets applications are essential for e-learning.	4.02	1.00	High
3	8	E-learning increases the effectiveness of self-learning among students.	3.97	.852	High
4	3	E-library resources are very helpful to me.	3.88	1,113	High
5	9	E-learning allows the student to evaluate himself continuously through regular tests.	3.75	.922	High
6	7	E-learning leads to the activity of the student and his effectiveness in learning the scientific material.	3.58	.981	Medium
7	1	E-Learning education is better than traditional education.	3.50	.985	Medium
8	4	E-learning takes into account individual differences among students.	3.42	.981	Medium
9	5	I have enough time to participate in the course study.	3.23	1.186	Medium
10	6	The Instructor has sufficient skills to use communication and information technologies.	3.21	.972	Medium
Total Mean			**3.68**	**.627**	**High**

Table 4 shows that the mean varied from (3.21 – 4.24); the student came in a high degree with mean of (3.68). The paragraph (I have the right knowledge of how to use some Internet services) came in the highest rank with the mean of (4.27) and with a high degree; whereas the paragraph (The Instructor has sufficient skills to use communication and information technologies) came in the lowest rank with mean of (3.21) and with a low degree.

Table 5. The means and the standard deviations for in the domain of educational environment descending order

Rank	No.	Paragraphs	Mean	S. D.	Degree
1	14	Ease of accessibility to the online course for all learners.	3.61	.998	Medium
2	15	Internet access is available.	3.48	1.049	Medium
3	13	The university has universal e-library	3.36	1.050	Medium
4	11	Classrooms have the necessary equipment for teaching courses.	2.19	1,109	Medium
5	17	Various computer accessories (printers, scanners ...).	3.17	1.041	Medium
6	16	There are computers with high quality specifications.	3.16	1.100	Medium
7	12	The university has training rooms that meet the needs of e-learning training.	2.91	1.069	Medium
Total Mean			**3.29**	**.784**	**Medium**

Table 5 shows that the mean varied from (2.91 – 3.61); the Educational Environment came in a Medium degree with mean of (3.29). The paragraph (Ease of accessibility to the online course for all learners.) came in the highest rank with mean of (3.61) and with a high degree; whereas the paragraph (The university has training rooms that meet the needs of e-learning training) came in the lowest rank with mean of (2.91) and with a low degree.

Table 6. The means and the standard deviations for in the domain of educational course in a descending order

Rank	No.	Paragraphs	Mean	S. D.	Degree
1	25	The student must learn foreign languages in order to receive the scientific material.	3.82	1.011	High
2	26	E-learning enables the repetition of lessons, which helps the student to attend and re-watch the lesson at any time.	3.61	1,062	Medium
3	19	The required assignments are posted on the e-learning website.	3.53	1.102	Medium
4	20	The e-course is designed in a way that can be developed continuously.	3.35	1.047	Medium
5	28	There are qualified faculty members who are able to deliver the information in an understandable way	3.29	1.037	Medium
6	27	The learning content provides a level of interaction between the instructor and the student.	3.28	1.044	Medium
7	24	The content is designed to increase student motivation to learn.	3.24	1.026	Medium
8	18	The electronic course is available continuously.	3.21	1.007	Medium
9	21	A guidebook on how to use the websites is available.	3.06	1.180	Medium
10	23	The way electronic content viewed and organized is perceived.	2.98	.981	Medium
11	22	Students can view previous courses.	2.88	1.211	Medium
Total Mean			**3.27**	**.784**	**Medium**

Table 6 shows that the mean varied from (2.88 – 3.82); the Educational Course came in a medium degree with mean of (3.27). The paragraph (The student must learn foreign languages in order to receive the scientific material) came in the highest mean of (3.82) and with a high degree; whereas the paragraph (Students can view previous courses.) came in the last rank with the lowest mean of (2.88) and with a low degree.

4.2 Results related to the second question: Are there any statistically significant differences (α = 0.05) for E-Learning service quality from postgraduate students referred to the variables of (Gender, Specialization)?

To answer this question the mean, the standard deviation and the "T" test for the independence samples were extracted from the perspective of the postgraduate students

for E-Learning service quality which be referred to (Gender, Specialization); Table 7 shows the results.

Table 7. Mean, standard deviation and T test for the independence samples from the perspective of the postgraduate students for E-Learning service quality which be referred to (Gender)

Domain	G.	No.	M.	S. D.	"T" Value	F. D.	S. S.
Student	M	92	3.73	.664	.639	105	.524
	F	122	3.65	.601			
Educational Environment	M	92	3.45	.812	2.171	105	.032
	F	122	3,13	.739			
Educational Course	M	92	3.45	.718	1,898	105	.060
	F	122	3.18	.726			
Total Mean	**M**	**92**	**3.55**	**.577**	**1.984**	**105**	**.054**
	F	**122**	**3.33**	**.556**			

Table 7 shows that the T value, for the postgraduate students' perspective for E-Learning service quality, referred to Gender variable, has reached the total degree of the scale (1.984) and this value is not statistically insignificance at the level of (0.05). The "T" value for the Student reached (.639); this indicated that there are no differences for E-Learning service quality from postgraduate students' perspective. T value, referred to Educational Environment, was (2.171); this indicated that there are differences for E-Learning service quality from postgraduate students' perspective refer to males; for Educational Course (1.898); this indicated that there are no differences for E-Learning service quality from postgraduate students' perspective.

Table 8. Mean, standard deviation and "T" test for the independence samples from the postgraduate students' perspective for E-Learning service quality which referred to (Specialization)

Domain	G.	No.	M.	S. D.	"T" Value	F. D.	S. S.
Student	M	92	3.61	.626	–1.488	105	.140
	F	122	3.80	.620			
Educational Environment	M	92	3.34	.732	1.221	105	.225
	F	122	3.15	.854			
Educational Course	M	92	3.36	.642	1.103	105	.273
	F	122	3.20	.855			
Total Mean	**M**	**92**	**3.44**	**.538**	**.390**	**105**	**.698**
	F	**122**	**2.40**	**.630**			

Table 8 shows that the T value, from the postgraduate students' perspective for E-Learning service quality referred to specialization, has reached the total degree of the scale (.390) and this value is not statistically insignificant at the level of (0.05). The T value for the Student reached (–1.488); this indicated that there are no differences for E-Learning service quality from postgraduate students' perspective. The T value for the

Educational Environment was (1.221); this indicated that there are no differences for E-Learning service quality from postgraduate students' perspective; for Educational Course (1.898); this indicated that there are no differences for E-Learning service quality from postgraduate students' perspective.

4.3 Analysis

The first question (What is the level of E-Learning service quality from postgraduate students' perspective?) was answered by using means and standard deviations. The average of general domains for e-Learning service quality from postgraduate students' perspective was (3.43) with medium mean. The Student domain scored (3.68) as the highest mean. However, the Educational course scored lowest mean as (3.27). According to mean and standard deviation and the degree shown in Table 3, student has the minimum qualifications required to use the e-learning service, which is good. However, student environment and educational course have medium degrees; this indicated that there are some shortcomings because universities are not well prepared for this type of education. The Second Question (Are there any statistically significant deferments ($\alpha = 0.05$) for E-Learning service quality from postgraduate students referred to the variables of (Gender and Specialization)?) results indicated that there are no differences with statistical significance of the study sample answers which referred to (Gender) for the student and educational course. However, there are differences for educational environment refer to males. Researcher refer that the composition of a male's mind is different from a female's mind, since men think in part while women think in general.

5 Conclusion

In this study, the researcher measured the quality of the e-learning service provided by the universities from the point of view of postgraduate students. The knowledge of the areas of deficiencies in the service provided will help the universities in improving the services significantly, especially that the consumer for this service is the student. This study identified the main domains of evaluation of this service, namely the student, the educational environment and the educational course. Through these domains, the researcher found that there were not any significant differences in e-learning service quality according to gender in student and educational course. However, it was founded the there is significant difference according to males in educational environment domain. This difference is due to the difference in the mentality of both genders. Female can work and think more than one thing at a time so they do not care about the surrounding environment because of their thinking on several things. However, males can work on only one thing, so the surrounding to provide him with the psychological comfort to do the duties.

The researcher found that the degree of E-Learning service quality from postgraduate students' perspective for student domain is high which is good. However, the degree according to the educational environment and the educational course are medium which means that the universities should improve the quality in these fields.

Upon the previous results, researcher provides the following recommendations:

- Ensure the availability of basic requirements such as computers and peripherals and make of periodic maintenance.
- Increase the speed of access to the Internet and cover the university with a private network.
- Make introductory meetings on how to use this service and how to benefit from it as much as possible.
- Provide online quizzes, which is a useful opportunity for student directed.
- Check student's self-motivation and commitment to learn online before registration

Monitoring students' performance and satisfaction with this system have become an important focus for all universities in the educational industry. Failure to recognize the student satisfaction will affect the performance of students in receiving the information well and thus affect the reputation of the university; because when the student graduate and head to the market, if the employer does not find the qualifications will not accept him. As long as the employer sees that the employee does not have the basic qualifications, he will have a vision of the university's outputs and thus the university will affect indirectly. Through the global scientific revolution, the researcher emphasize that universities must take quick actions to improve the level of this type of education.

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