Educational triumphs in the face of crisis: The university of Jordan's e-learning satisfaction: Evidence from the pandemic time

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CHRONICLE	ABSTRACT
	The onset of the COVID-19 pandemic has wrought a profound transformation in the higher education landscape, compelling universities worldwide to pivot towards E-learning as the primary mode of instruction. This study, which was performed on a sample of 330 undergraduate students at The University of Jordan, undertook an in-depth exploration of student satisfaction with E-learning at The University of Jordan during this unprecedented shift, examining it through four demographic variables: gender, residence, faculty type, and academic year. The researchers employed rigorous statistical analyses, including calculations of mean and standard deviation, as well as one-way ANOVA tests, to thoroughly examine the data. The findings indicate a strong overall satisfaction level among students regarding E-learning, with discernible variations between items. There is a noteworthy correlation observed between students' academic faculty and their academic year in relation to their satisfaction level, with a p-value below 0.05, indicating statistical significance. This underscores the nuanced influence of these demographic factors in shaping students' perceptions and contentment levels as they navigate the evolving landscape of higher education during this extraordinary period. While the gender and the residence have no effect on the satisfaction level.

1. Introduction

The global impact of the COVID-19 pandemic extends to various sectors, notably higher education, particularly in the realm of teaching and learning. The International Association of Universities (IAU) reports that the pandemic has resulted in educational disruptions for over 1.5 billion students worldwide, impacting both school and university programs (IAU, 2020). To ensure uninterrupted learning during this crisis, nations have had to pivot to e-learning as a measure to mitigate the spread of the coronavirus in traditional classrooms, thereby safeguarding lives. Indeed, the transition to online teaching was a learning curve for university faculty members, many of whom had limited prior experience or guidance in optimal online teaching practices (Armstrong-Mensah et al., 2020). However, they demonstrated a readiness to adapt and improve the quality of learning outcomes through online instruction (Shahzad et al., 2021). Although online teaching has proven to be a valuable resource in higher education, the sudden and unplanned shift to this mode of instruction has raised valid concerns about the quality of learning, students' academic performance, and their overall satisfaction (Hassan et al., 2021). This unprecedented shift prompted educators to rethink their teaching strategies and consider innovative ways to engage students effectively in the virtual classroom, ultimately striving to ensure a high standard of education despite the challenges posed by the abrupt transition to this learning. This pandemic has posed an unparalleled challenge to the education sector, demanding a swift shift from conventional in-person teaching to a more proficient and sophisticated adoption of E-learning. This transition extends beyond just conducting classes, encompassing assessment methods and the implementation of comprehensive teacher support

systems (Linh and Trang, 2020). Numerous studies emphasize the crucial role of student satisfaction in influencing the outcomes of online education initiatives (Gopal et al., 2021). High levels of satisfaction with online learning are intrinsically tied to increased student motivation and overall learning efficiency (Sokolovskaya, 2020). This highlights the profound influence of student contentment on the overall success or failure of online educational endeavors, emphasizing the importance of ensuring a positive and engaging virtual learning experience.

2. Research Objectives

The principal objective of this study is to address two fundamental research questions:
1. What is the level of satisfaction among students at The University of Jordan regarding E-learning during the COVID-19 pandemic?
2. Is the level of satisfaction among the students of The University of Jordan differ based on various independent variables, including gender, residence, faculty, and academic year?

To answer these questions, we conducted a survey involving 330 undergraduate students at The University of Jordan. This survey was designed to encompass a range of questions at gauging students' satisfaction levels with E-learning during the pandemic.

3. Literature Review

As an integral component of the broader COVID-19 research landscape, numerous studies from around the world have been conducted to investigate the shifting attitudes of students towards online learning. These inquiries delve into the various factors that shape students' perceptions and influence their willingness to persist with online learning systems. The wealth of research in this domain reflects the urgent need to understand the profound impact of the pandemic on education and underscores the importance of adapting and enhancing online learning experiences to meet the evolving needs and preferences of students in this digital age. Aucejo et al. (2020) offer a comprehensive analysis of the repercussions of COVID-19 on higher education. Their study provides quantitative evidence, revealing the adverse impact of the pandemic on students' academic outcomes and their expectations. This evidence underscores the challenges faced by higher education institutions, which were largely unprepared to seamlessly transition from traditional in-person learning to online education. These challenges stemmed from various factors, including the unavailability of necessary infrastructure and a shortage of suitable academic resources and projects, thus underscoring the urgency of addressing these issues in the face of sudden and drastic educational shifts. Research in this domain, as indicated by Keržič et al. (2021), has illuminated the pivotal connection between the quality of E-learning and student performance, with a particularly strong influence exerted by student satisfaction with the E-learning experience. Conversely, other studies (e.g., Baltà-Salvador et al., 2021), have highlighted a significant proportion of students expressing dissatisfaction with the quality of their online education, believing it to have a detrimental impact on their academic performance. Interestingly, certain research findings have underscored the substantial relationship between student satisfaction and academic achievement within the context of E-learning (Younas et al., 2022). In light of these insights, some researchers have proposed innovative solutions to enhance student satisfaction, such as the incorporation of group discussions during online classes (Mariyudi et al., 2021). These suggestions aim to address the multifaceted challenges of E-learning and create more engaging and effective learning environments for students.

4. Methods and Procedures

4.1 The Study Sample

The study conducted its research with a sample size of 330 undergraduate students from The University of Jordan during the summer academic year of 2021/2022. The survey employed in the study was structured into two primary categories or groups. The first group focused on gathering sample demographics, and the details of these demographics can be found in Table 1. The second group of questions aimed to assess students' levels of satisfaction with E-learning during the COVID-19 pandemic. To gauge these levels, a 5-point Likert scale was employed, with responses ranging from "Strongly Agree" (assigned a weight of 5) to "Strongly Disagree" (assigned a weight of 1), with "Agree," "Neutral," and "Disagree" falling in between with weights of 4, 3, and 2, respectively. These 16 items were adapted from previous publications (Hwang & Kim, 2022; Al-Shorman, & Bawaneh, 2018), with some necessary adjustments made to suit the context of the study. The data gathered from the survey underwent analysis using SPSS version 21, a statistical software tool commonly used for data analysis and interpretation. The study included 265 female students with percentage 80% and 65 male students with percentage 20%. According to the place of living, 84% live in Urban while the percentage of Rural people reached 16%. The sample contains students from all the Four Academic years: 50% are First Year Students, 28% are in the second year, 12% are in the third year, and 9% of the fourth year. The study encompassed all faculty types, with 33% of students hailing from medical faculties, 35% from humanities faculties, and 32% from scientific faculties. All the details for the Demographics are listed in the following table Table1.

Table 1
Sample Demographics

Variable	Characteristics	Frequency	Percent
Gender	Female	265	80%
	Male	65	20%
	Total	330	100%
Residence	Urban (City)	276	84%
	Rural	54	16%
	Total	330	100%
Faculty	Medical	109	33%
	Scientific	106	32%
	Humanities	115	35%
	Total	330	100%
Academic Year	First Year	166	50%
	Second Year	94	28%
	Third Year	40	12%
	Fourth Year	30	9%
	Total	330	100%

4.2   Reliability

The reliability analysis assessed the internal validity and item consistency through the calculation of Cronbach's alpha coefficient (Moolla & Bisschoff, 2012). The researchers calculated the Cronbach Alpha reached 0.924 for the items of the satisfaction level, where this result is acceptable for scientific research purposes (Gay & Airasian, 2003; Al-Kellani & Al-Shraifeen, 2011; Bawaneh et al., 2012).

4.3 Statistical Equation

The satisfaction level classification was determined using the following equation (Al-Rashidi, 2018; Bawaneh, 2020).

$$\frac{(Maximum\ Scale\ Limit\ -\ Minimum\ Scale\ Limit)}{number\ of\ required\ categories} = \frac{(5-1)}{3} = 1.33$$

The Satisfaction levels were classified as follows:
- Weak (W): Between 1 and 2.33.
- Medium (M): Between 2.34 and 3.67.
- Strong (S): Between 3.68 and 5.

Table 2
Mean, standard Deviation, and Category of satisfaction level item

Number	Item	Mean	Standard Deviation	Category
s1	E-learning improves IT skills	3.92	0.868	S
s2	E-learning save my time and effort	3.73	0.940	S
s3	E-learning helps me develop self-learning	3.69	0.907	S
s4	E-learning helps me to understand the main concepts of the courses	3.71	0.833	S
s5	E-learning helps me to ensure long life learning	3.69	0.913	S
s6	E-learning is the optimal choice for learning during a period of lockdown.	4.06	0.845	S
s7	E-learning helps to do assignments easier and faster	3.84	0.821	S
s8	E-learning provides me a better contact with the teacher	3.77	0.958	S
s9	E-learning is convenient and flexible	4.03	0.861	S
s10	E-learning provide instant results and feedback	3.68	0.945	S
s11	E-learning take into account the risk of exchange of user name and password by students to complete the assignments and the quizzes	3.57	0.966	M
s12	E-learning take into account the risk of damage of electronic devices	3.53	0.958	M
s13	E-learning has a strong students' commitment	3.55	0.932	M
s14	E-learning increases academic achievements	3.69	0.856	S
s15	Internet Speed is reliable and enough at home	3.18	0.958	M
s16	E-learning platform (Moodle) is easy to use	4.05	0.865	S
	(Overall)	3.73		S

5. Results

In response to the first research question, "What is the level of The University of Jordan students' satisfaction with E-learning during the COVID-19 pandemic?", the researchers conducted an in-depth analysis, calculating both the mean and standard deviation of the items designed for this purpose, as presented in Table 2. The overall mean satisfaction score of students about E-learning was approximately 3.73. This score reflects a strong level of satisfaction among students toward E-learning during

the pandemic. Notably, the highest mean score, at 4.06, corresponded to the item stating that " E-learning is the optimal choice for learning during a period of lockdown." This suggests that students were not only aware of the epidemiological situation but also appreciated the advantages of E-learning during this challenging period. Following closely was the item indicating that "E-learning platform is easy to use", with a mean score of 4.05. Conversely, items number 15 and 12 received lower mean scores, indicating lower levels of satisfaction. Item 15 addressed concerns related to Internet speed at home not being reliable and sufficient, while item 12 highlighted the risk of electronic device damage, preventing students from attending classes and completing assignments. These lower mean scores underscore the practical challenges and limitations students faced in the context of E-learning, particularly regarding internet connectivity and access to electronic devices. To address the second research question, which explores whether the level of satisfaction among students at The University of Jordan differs based on various independent variables such as gender, residence, faculty, and academic year, the researchers conducted a comprehensive analysis. The results, as presented in Table 3, display the mean and standard deviation scores reflecting the satisfaction levels of students within each of these independent variables. Upon closer examination, the researchers identified significant differences in the mean satisfaction levels among students based on these independent variables. To explore these differences in more detail, they employed one-way ANOVA tests, and the outcomes are summarized in Table 4. A predefined level of significance, or alpha, set at 0.05, was used as the threshold to evaluate the statistical significance of these differences. The results, as depicted in Table 4, reveal that both gender and residence did not exert a statistically significant influence on students' satisfaction levels (sig>0.05). However, in contrast, both faculty and academic year were found to have a significant impact on students' satisfaction levels (sig<0.05). To delve deeper into these variations, post hoc tests were subsequently conducted, and their outcomes are presented in Table 5 and Table 6. These additional analyses were aimed at uncovering specific differences between groups of students with respect to their satisfaction levels.

Table 3
Mean and Standard Deviation of Students' Satisfaction with E-learning at the University of Jordan

Variable	Characteristics	Mean	SD
Gender	Female	3.71	0.583
	Male	3.82	0.738
Residence	City	3.82	0.604
	Rural	3.71	0.619
Faculty	Humanities	3.66	0.638
	Medical	3.82	0.57
	Scientific	3.65	0.663
Academic Year	First Year	3.6	0.645
	Second Year	3.72	0.573
	Third Year	3.95	0.499
	Fourth Year	4.18	0.434

Table 4
One- way ANOVA: Gender, Residence, Faculty, and Academic Year

		Sum of Squares	df	Mean Square	F	Sig.
Gender	Between Groups	0.591	1	0.591	1.558	0.213
	Within Groups	124.526	328	0.38		
	Total	125.118	329			
Residence	Between Groups	0.52	1	0.52	1.368	0.243
	Within Groups	124.598	328	0.38		
	Total	125.118	329			
Faculty	Between Groups	2.76	2	1.38	3.688	0.026
	Within Groups	122.357	327	0.374		
	Total	125.118	329			
Academic Year	Between Groups	10.684	3	3.561	10.145	0
	Within Groups	114.434	326	0.351		
	Total	125.118	329			

Table 5
Post Hoc Test: Faculty

(I) Faculty	(J) Faculty	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Humanities	Medical	-.17966*	.08177	.029	-.3405	-.0188
	Scientific	.02772	.08236	.737	-.1343	.1898
Medical	Humanities	.17966*	.08177	.029	.0188	.3405
	Scientific	.20738*	.08344	.013	.0432	.3715
Scientific	Humanities	-.02772	.08236	.737	-.1898	.1343
	Medical	-.20738*	.08344	.013	-.3715	-.0432

*. The mean difference is significant at the 0.05 level.

Table 6
Post Hoc Test: Academic Year

Dependent Variable	(I) Academic Year	(J) Academic Year	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Satisfaction level	First Year	Second Year	-0.11455	0.07648	0.135	-0.265	0.0359
		Third Year	-.35115*	0.10436	0.001	-0.5564	-0.1459
		Fourth Year	-.57354*	0.11754	0	-0.8048	-0.3423
	Second Year	First Year	0.11455	0.07648	0.135	-0.0359	0.265
		Third Year	-.23660*	0.11185	0.035	-0.4566	-0.0166
		Fourth Year	-.45900*	0.12424	0	-0.7034	-0.2146
	Third Year	First Year	.35115*	0.10436	0.001	0.1459	0.5564
		Second Year	.23660*	0.11185	0.035	0.0166	0.4566
		Fourth Year	-0.2224	0.1431	0.121	-0.5039	0.0591
	Fourth Year	First Year	.57354*	0.11754	0	0.3423	0.8048
		Second Year	.45900*	0.12424	0	0.2146	0.7034
		Third Year	0.2224	0.1431	0.121	-0.0591	0.5039

*. The mean difference is significant at the 0.05 level.

Post Hoc Tests presented in both Table 5 and Table 6 reveal statistically significant differences. In Table 5, these differences favor the medical and scientific faculties, while in Table 6, they favor the third and fourth academic years.

6. Discussion

The COVID-19 pandemic presented an unprecedented challenge to educational institutions, instructors, and students, fundamentally reshaping the educational landscape for an extended period. As evidenced by the previous findings in Table 2, students at The University of Jordan demonstrated a robust satisfaction level with E-learning during the pandemic. This high level of satisfaction can be attributed to various factors, some of which were pre-existing while others were implemented in response to the pandemic. One key contributing factor is the University's robust E-learning infrastructure, supported by a dedicated IT technical support department. Throughout the pandemic, this department played a pivotal role by providing immediate assistance and facilitating online workshops and training for both instructors and students. Additionally, it's important to acknowledge the adaptability of instructors and students who, although possessing prior knowledge of E-learning, faced the added challenge of fully transitioning to online platforms. This shift demanded their quick acquisition of new tools and skills, and they rose to the occasion with admirable responsibility and resilience. The results in Table 5 reveal a noteworthy disparity in the satisfaction levels across different faculties, with a clear preference for the medical and scientific faculties. This discrepancy can be attributed to the distinct nature of courses offered by these faculties, which typically demand a higher degree of commitment and self-discipline from students, the use of multimedia resources, such as videos, and a greater emphasis on computer-based learning and internet research, are often integral to the pedagogical approach in medical and scientific fields. This could explain the heightened satisfaction among students in these faculties, as they may have found the E-learning environment more aligned with the demands of their coursework. Conversely, humanities faculties may rely on different teaching and learning methods that may not fully harness the potential of E-learning platforms. In essence, the satisfaction discrepancy between faculties underscores the nuanced relationship between course content and E-learning effectiveness, highlighting the need for tailored approaches to meet the diverse needs of students across various academic disciplines. As indicated in Table 6, the data reveals a noteworthy trend where students in their third and fourth academic years exhibit higher levels of satisfaction compared to their counterparts in the first and second years. This pattern is quite reasonable and can be attributed to the fact that first and second-year students are relatively new to the Moodle platform and the array of online tools provided by the university. The learning curve associated with these online resources and platforms may present a challenge for newer students. Over time, as students' progress through their academic journey, they tend to become more familiar and adept at utilizing these digital tools, resulting in a greater level of comfort and satisfaction. It is worth noting that the availability of resources and tools is equitable across all students, irrespective of their gender and residence. Consequently, this study did not uncover any significant differences in satisfaction levels based on these demographic factors. This underscores the university's commitment to providing a level playing field for all students in their E-learning experiences. After the pandemic, the University of Jordan took several steps to improve the quality of education and incorporate online education by benefiting from the experience of e-learning during the pandemic, as some of courses were converted to fully online learning, some courses were converted to blended learning. Still, online platforms, for example MS Teams, Moodle are in use to communicate between instructors and students.

7. Conclusion

The COVID-19 pandemic has undeniably left an indelible mark on our daily lives. As people were confined to their homes during this unprecedented crisis, E-learning emerged as the sole avenue for continuing education. Understanding the satisfaction levels of E-learners with E-learning technologies became paramount. The findings of the present study underscore a notable trend among students at The University of Jordan, where a strong sense of satisfaction with E-learning was evident during the pandemic. This revelation underscores the resilience and adaptability of both students and institutions in navigating the challenges imposed by the crisis. The pandemic has brought to light the critical role of E-learning as a robust and reliable

option, particularly in times of emergency. Educational institutions worldwide have gleaned valuable experience from the COVID-19 pandemic, prompting them to fortify their E-learning infrastructure to better handle similar situations in the future. In this regard, the pandemic has served as a catalyst for positive change, ushering in a new era of preparedness and adaptability in the realm of education.

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