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# The Impact of COVID-19 Pandemic on Student's E-Learning Experience in Jordan

Anas Ratib Alsoud <sup>1,\*</sup> and Ahmad Ali Harasis <sup>2</sup>

<sup>1</sup> Department of Electronic Business and Commerce, Al-Ahliyya Amman University, Amman 19328, Jordan

<sup>2</sup> Department of Business Administration, Middle East University, Amman 11831, Jordan; aharasis@meu.edu.jo

\* Correspondence: a.alsoud@ammanu.edu.jo

**Abstract:** Since the beginning of the COVID-19 pandemic Universities around the world are taking rapid actions to ensure students learning continuity and secure the well-being of their students. This study aims at exploring the student's e-learning experience in Jordanian Universities as well as e-learning readiness during the pandemic. While each university is unique, we hope our assessment can provide some insights into how well the student's e-learning experience was during the pandemic. A structural online questionnaire was distributed, followed by descriptive analysis. Students from remote and disadvantaged areas primarily faced enormous challenges such as technological accessibility, poor internet connectivity, and harsh study environments. This study also highlights the role of electronic commerce in transforming distance learning. Further investments and contingency plans are needed to develop a resilient education system that supports electronic and distance learning throughout Jordan.

**Keywords:** COVID-19; e-learning experience; e-learning readiness; Jordan; university students



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## 1. Introduction

In December 2019, the outbreak of the new coronavirus in Wuhan, China, escalated dramatically into a global health emergency [1]. As a result, it has become an international concern of a public health emergency on January 2020 according to the World Health Organization (WHO), the new disease has been called COVID-19, on 11 February 2020 [1]. COVID-19 has been declared on 11 March 2020, as a global pandemic [2]. One main objective that has been launched by most governments around the world, is to control this highly infectious virus by imposing general lockdowns, social distancing procedures, converting traditional education to distance education, and other procedures [3]. According to [4], there are 2,372,736 learners affected in Jordan by the closing of the educational institutions, of which 320,896 university students, undergraduates, and postgraduates.

Jordanian Health officials announced the country's first coronavirus case on Monday, 2 March 2020, the Jordanian national was in Italy a few days before he returned to Jordan [5]. Jordan is suffering from the dramatic growth in daily-confirmed COVID-19 cases. As of 12 February 2021, Jordan has reported 343,564 cumulative positive cases, 324,711 total recovered cases, with daily positivity cases of 6.44% and 4433 death cases [6]. As a result, governments around the world are taking rapid actions to secure the well-being of their citizens and local communities from this pandemic, and Jordan is no exception. One of these rapid actions is imposing lockdowns and closing the universities' campuses, which has had an unprecedented impact on educational systems and the teaching and learning processes. On Monday, 16 March 2020, Jordan's Ministry of Higher Education and Scientific Research has instructed all universities to suspend the teaching on campus and move to distance learning through synchronous online learning platforms. Accordingly, online teaching became a new routine, but it poses serious challenges. Since not all learners, given social inequalities in many nations, have access to this mode of education [4].

The use of Information and Communications Technology (ICT) can offer the ideal solutions to solve the challenges of traditional approaches such as e-learning, distance education, and virtual universities [7]. We are going to witness a digital revolution for the higher education system that will be imposed by the consequences of the COVID-19 outbreak through teleconferencing, online lectures, online examination, and communications in virtual environments [8]. For example, before the COVID-19 pandemic, the Jordanian government did not have adequate policies to support the Jordanian universities to incorporate elements of modern educational technologies such as those used in distance learning into their courses. Distance learning has two main approaches that existed traditionally, namely: (1) synchronous and (2) asynchronous. The first approach is where learners learn together in live settings such as classes, allowing greater participation at the expense of scheduling and technical challenges, and a sense of community. The second one, asynchronous learning, on the other hand, enables students to study and discuss content on their own in forums such as emails or message boards, allowing time for material synthesis at the expense of group interaction [9,10]. Online learning through electronic learning (e-learning) is a type of learning used for distance learning, British and American universities have been using e-learning since the mid-1960s [11].

E-learning is a teaching and learning method that enables teachers to use internet media, intranets, or other computer network media to provide teaching materials to their students [12]. E-learning is a digital transformation of the traditional education system and content into a digital one. This paper aims to identify the student's learning experience, learning methods as well as the main challenges related to learning at the time of the lockdown caused by the coronavirus outbreak.

## 2. The Role of Electronic Commerce in Transforming Distance Learning

Distance learning has benefited society by giving professionals an opportunity to continue their education on a flexible, part-time, and distant basis. Furthermore, with the rapid development and implementation of advanced information technology (IT) such as digital libraries and electronic publishing, distance education will experience significant changes in organizational structure and design, as well as in the way educators taught classes, assign grades, and certify degrees [13]. Electronic commerce (e-commerce) as an IT form is not only a modern technical means for improving the efficiency of the traditional distance learning business model; it has also resulted in the transformation of current processes and organizational frameworks, resulting in transforming the learning environments into innovative and more effective learning environments.

According to Lang and Zhao [13], there are two important areas of e-commerce that shape a basis for distance learning; namely, digital libraries and electronic publishing. Electronic publishing created new business models, such as subscription or pay-per-use retrieval of online books and other information sources, offering easy and affordable access to up-to-date information on relevant subjects and specialized fields [14]. Digital libraries became the epicenter of organized electronic books, and they are now easily accessible through the Internet [15]. As a result, specialized service providers, referred to as virtual universities by Hamalainen et al. [16], who operate in the Internet-based e-commerce market, will be able to provide just-in-time and on-demand delivery of personalized educational products in digital form.

## 3. The Impact of COVID-19 Pandemic on Education

It is important to understand the impact of distance learning on the effects of education and the social consequences of maintaining this type of education. Many researchers have extensively studied the impact of distance learning on education and have found that distance education has a number of benefits such as ensuring the continuity of education [17,18], ensuring a lifelong learning [19,20], and reducing the high costs associated with traditional education [21]. Limitations such as teaching methods, scheduling, and time have existed since the teacher and the learner were located in different places [22,23].

The impact was not limited on the educational system, it has also affected the student's learning experience when it comes to accessing research and study materials; for example, students' ability to access textbooks and resources they need to review can be hampered by a lack of copyright limitations and exceptions. Hebebcı et al. [24] conducted a study in Turkey to find out what teachers and students thought about the COVID-19 pandemic's distance education applications. According to the study, students in distance learning mode have difficulty doing group projects due to a lack of on-campus socialization, as stated by 42.9 percent of those surveyed.

Sadeghi [25] have comprehensively explained the advantages and disadvantages of distant learning; he argued that the distance learning has the benefits of study from anywhere at any time, saving significant amount of money, no commuting, flexibility to choose the course of learning, and saving time. However, it does have some cons such as the high chances of distraction, the use of complicated technology, no social interaction, the difficulty staying in contact with instructors, and that the job markets do not accept online degrees.

#### 4. Research Methodology

Due to the pandemic situation, our study used online-based surveys on students studying in Jordanian universities across the twelve governorates of Jordan. The use of this kind of survey in research is becoming more popular. Surveyors prefer it because they enable rapid survey development and administration, smooth and quick data collection and data analysis, usually low cost, and fewer errors than telephone or mailed questionnaires due to manual data entry [26]. Online-based surveys can also expand access to audiences that are historically considered unreachable, who form virtual cohorts on the internet and share specific preferences [27]. Furthermore, the speed in collecting data is above all important in crisis situations. This study has relied on collecting the required data by conducting an online-based survey study between 3 January to 13 January 2021 to collect the needed information. A "Google forms" questionnaire link was sent to students' through social media channels, student groups and forums, and e-mail. Approximately 600 questionnaires were sent out of which 463 were returned and provided complete information for this study. Faculty members of universities helped in sharing and encouraging the students to answer the questionnaire.

To understand the distribution of study participants, descriptive statistics were carried out. Since descriptive statistics are used when there are large amounts of data needs to be organized, interpreted, and summarized [28]. Simple percentage distribution was estimated to define the characteristics of the participants, their location, their knowledge, and awareness of COVID-19, the learning mode and learning environment during the lockdown, attendance, and accessibility of online classes, the used platforms, the economic impact on education, and the main study challenges. We have used the Statistical Package for Social Science (SPSS Version: 25) for data analysis.

#### 5. Research Results

As mentioned earlier, this study has been conducted on the students of Jordanian Universities; Table 1 shows the profile of the students who participated in this study. Out of 463 participants, more than three-quarters were aged between 18 and 21 years old, usually undergraduate students. There were (20.7%) of the participants aged above 21 years. As for the gender, male students were more than female students with a percentage of (59%) and (41%) respectively. Over one-third of the participants (42.3%) were living in rural areas where usually have poor infrastructure and services. Two-thirds of the students are studying in public universities and the rest in private universities. In terms of the level of study, there were (78.8%) of the participants as undergraduate students and the rest (21.2%) were postgraduate students.

**Table 1.** Study participants demographic features and characteristics.

Features and Characteristics		Number of Students (out of 463)	Percentage (%)
Student Age	18–21 years old	367	79.3
	21 years and Above	96	20.7
Gender	Male	273	59.0
	Female	190	41.0
Residential Area	Rural Areas	196	42.3
	Urban Areas	267	57.7
University Type	Public University	301	65.0
	Private University	162	35.0
Level of study	Undergraduate	365	78.8
	Postgraduate	98	21.2

The study has covered the 12 governorates of Jordan distributed on the main three regions (see Table 2). It was noted that the highest proportion of participated students were located in the capital Amman (38.7%), followed by Irbid (15.6%), Zarqa (12.8%), Balqaa (8.6%), and Karak (5%). The central region has almost two-thirds of the total number of universities in Jordan. The central region, especially the capital Amman is considered an educational hub for private universities. The central region has 17 private universities out of 24 private universities in Jordan, the north region has 6 private universities, and the south region has only 1. This justifies the high number of students located in the central region followed by the north region of Jordan.

**Table 2.** Students and university distribution.

Region	Governorate	Number of Students (out of 463)	Percentage (%)	Region Percentage	Number of Universities (Percentage)
Central	Amman	179	38.7	62%	21 (61.7%)
	Zarqa	59	12.8		
	Balqaa	40	08.6		
	Madaba	9	01.9		
	Irbid	72	15.6		
North	Mafraq	14	03.0	25%	9 (26.5%)
	Ajloun	19	04.1		
	Jerash	11	02.3		
	Maan	10	02.2		
South	Karak	23	05.0	13%	4 (11.8%)
	Tafila	21	04.5		
	Aqaba	6	01.3		

Table 3 shows the level of awareness about COVID-19 at the time of the global outbreak. Out of 463 participants, only 159 students (34.4%) heard about the COVID-19 outbreak before January 2020. Almost two-thirds knew after January 2020, this shows that students did not have sufficient awareness of COVID-19 and its consequences. When we asked the students whether they expected that learning will move online due to the virus outbreak that will impose lockdowns, more than three-quarters (81.2%) were not expecting that move. Which means they have not prepared for such a transfer. More than two-thirds of the students (69.3%) were getting COVID-19 information from social network sites. Only one-third of the students were prepared for the lockdown when the government imposed a total lockdown at the beginning of the pandemic.

**Table 3.** Awareness and preparedness for the lockdown.

Awareness and Preparedness		Number of Students (out of 463)	Percentage (%)
When you heard about COVID-19	Before January 2020	159	34.4
	January 2020	201	43.4
	After January 2020	103	22.2
Where did you get your information	Social network site	321	69.3
	TV/Radio	108	23.3
	Newspaper	34	07.4
Have you expected that learning will become online	Yes	87	18.8
	No	376	81.2
When the government imposed the lockdown, have you been prepared	Yes	162	34.9
	No	301	65.1

The student learning sources tend to be changed due to the pandemic, 278 students (60.1%) were only attending their online classes without studying the specified textbook (see Table 4). What is more shocking that only 198 students (42.8%) have attended more than 50% of the classes online, the rest have attended less than 50% or just sat for the exams. Almost half of the participated students have spent less time studying than the time spent studying before the pandemic; only 87 students (18.8%) have spent more time studying than the time spent during the normal situation. This might not be logical since people have more free time during the lockdown, as they cannot go out, but when we learn that only 154 of the participated students (33.3%) have a separate room for studying; it turns to be justifiable.

**Table 4.** Learning sources, attendance rate, study duration, and learning environment during the lockdown.

During the COVID-19 Lockdown		Number of Students (out of 463)	Percentage (%)
Learning sources	Studying the specified textbook and attending online classes	185	39.9
	Attending online classes only	278	60.1
	You have attended less than 30%	86	18.6
Attendance rate	You have attended between 30% to 50%	113	24.4
	You have attended more than 50%	198	42.8
	You just attended the exams	66	14.2
Study duration	Less than normal situation	231	49.9
	Almost like a normal situation	145	31.3
	More than a normal situation	87	18.8
You have a separate room for study	Yes	154	33.3
	No	309	66.7

Results have shown that the frequency of online courses is acceptable and should be managed by the students, over half of the surveyed students (54.8%) were having online classes three to five days a week, and 112 students (24.2%) were having classes in less than three days a week. While only 97 (21%) of the students were having daily online classes (see Table 5). In terms of the device used for attending the classes, almost half of the surveyed students (46.9%) have used their mobile devices to attend the classes, followed by (26.1%) have used a laptop, and (21.4%) have used a tablet, and only (5.6%) have used a desktop computer. Only 86 students (18.6%) have attended online classes before the COVID-19 pandemic, this shows that the majority of the students (81.4%) have no experience of online classes since they have never attended online classes before the pandemic.

**Table 5.** Online classes attendance frequency, used device, and familiarity.

Online Classes		Number of Students (out of 463)	Percentage (%)
Online classes frequency	Below 3 days per week	112	24.2
	3 to 5 days per week	254	54.8
	Daily basis	97	21.0
Attendance using a	Mobile	217	46.9
	Laptop	121	26.1
	Desktop Computer	26	05.6
	Tablet	99	21.4
Attended online classes before the COVID-19 pandemic	Yes	86	18.6
	No	377	81.4

The study had a question regarding the applications used for distance learning during the pandemic (see Table 6). The results showed that the two most common applications used by the students were Microsoft Teams (49%) and Zoom (41.5%), followed by mobile-conversation (5.2%), Youtube (2.2%), Google Meet (1.5%), and other applications (0.6%). During this lockdown time, the learners also followed several platforms for getting study materials from the instructors. This indicates that students were more likely to learn by studying the shared study materials rather than attending the online lectures, the results in Table 4 may explain the reason. In terms of the used platforms for materials sharing, results showed that 137 students (29.74%) used Microsoft Teams for getting the study materials, followed by the learning management systems (LMS) used in the universities (22.7%), WhatsApp groups (18.2%), Zoom (15.8%), University Website/e-mail (11.3%), Youtube (1.8%), and other (0.5%).

**Table 6.** Used platforms for learning and material sharing.

Used Platforms		Number of Students (out of 463)	Percentage (%)
Platforms of online classes	Mobile-conversation (for audio materials) (e.g., WhatsApp)	24	05.2
	Microsoft Teams	227	49.0
	Zoom app	192	41.5
	Google meet	7	01.5
	Youtube	10	02.2
	Other	3	00.6
Platforms of Materials sharing	WhatsApp group	84	18.2
	Microsoft Teams	137	29.7
	Zoom app	73	15.8
	Learning Management Systems (LMS)	105	22.7
	University Website/E-mail	54	11.3
	Youtube video upload	8	01.8
	Other	2	00.5

When asked about whether the COVID-19 pandemic would negatively affect the economic condition of your family (see Table 7), 326 of the surveyed students (70.4%) answered yes. Furthermore, 341 of the surveyed students (73.7%) think that the low income of their family will affect their education. These are good reasons for the increase of anxieties feeling rates amongst university students as a result of the COVID-19 outbreak.

**Table 7.** COVID-19 economic impact on education.

COVID-19 Economic Impact		Number of Students (out of 463)	Percentage (%)
Do you think that COVID 19 pandemic will negatively affect the economic condition of your family?	Yes	326	70.4
	No	137	29.6
Do you think that the low income of your family would affect your education?	Yes	341	73.7
	No	122	26.3

During the lockdown, students were suffering from several challenges, mainly the feel of anxieties, not having a device to attend the online classes, not having a separate room to study at home, and Internet connectivity issues (see Table 8). The most frequent challenge was Internet connectivity issues (33.5%), followed by the feel of anxieties (25.9%), do not have a separate room to study at home (22.5%), and do not have a device to attend online classes (18.1%). It is expected that students living in rural and remote areas might suffer from poor Internet connectivity. However, having issues in the ability to have a device and a separate room for studying may indicate the poor economic conditions the students have.

**Table 8.** Main challenges faced during the lockdown.

Main Challenges Faced during the Lockdown	Number of Students (out of 463)	Percentage (%)
Feelings of anxiety	120	25.9
Do not have a device to attend online classes	84	18.1
Do not have a separate room to study at home	104	22.5
Internet connectivity issues	155	33.5

The anxiety level of Malaysian university students has been examined during the coronavirus pandemic [29]. In the sample, (20.4%) experienced a minimal to moderate level of anxiety, (6.6%) experienced a marked to severe level of anxiety, and (2.8%) experienced the most extreme level of anxiety. Several factors were significantly associated with the level of anxiety such as gender, age, academic specialization, and living condition. A vital disruptor was the psychological effect, causing anxiety and confusion. Loneliness appears to have a detrimental effect on education performance and, thus, on psychological pain and suffering, which would intensify in these circumstances. Anxiety has drawn less attention, being a subcategory of psychological symptoms, but it is as common and possibly as crippling as depression [30]. Therefore, it is important to assist students, it is important to train and protect faculty members, and finally, it is important to support universities and their educational system.

## 6. Discussion and Recommendations

This study examined the impact of the COVID-19 pandemic on students’ e-learning experience in Jordanian universities. The surveyed students were representing all regions of Jordan; all of them have been part of the new mode of study, distance learning, due to the pandemic. The influence of poorly resourced institutions and economically marginalized learners has impaired the organizational response or the capacity of students to participate in a successful online learning experience [31]. Top universities all over the world are taking positive steps forward to support an online learning environment and help their students transition to remote learning as a result of COVID-19 and campus closure. In Jordan, the Prime Minister of Jordan has announced Defence Order No. 7 on 15 April 2020, during a press conference at the National Centre for Security and Crisis Management, which deals with organizing distance learning for schools, universities, and vocational training. The Ministry of Higher Education and Scientific Research has assured that all the activities of university students via electronic education will be ‘fully considered’ as being within the accredited hours of universities. They also mentioned that the distribution of marks within

the current electronic education system has been standardized among all universities to ensure fairness [32]. The Prime Minister noted that before the COVID-19 crisis, the majority of the higher education institutions in developed countries provided a combination of 20 percent classrooms and 80 percent distance learning, while in Jordan, this figure stood at only 25 percent. PM argued that COVID-19, he said, presents an opportunity for Jordan to increase the percentage of distance learning [32].

There is a study conducted on students of Harvard School of Dental Medicine, which due to the COVID-19 outbreak decided to move to distance learning via a synchronous live lecture format [33]. The participated students reported that their learning has worsened when they moved to e-learning, (44%) of the students participated in the study responded that their learning has 'somewhat worsened' and (26%) of them answered 'significantly worsened'. The same group of students reported that since the beginning of virtual lectures, stress increased, and student attendance stayed the same as before; however, the student retention and engagement decreased. According to Semenikhina et al. [34], online lectures have some deficiencies in communication and interaction but also have several benefits such as a student could play offline with the ability to seek/pause/backward or even replay the lecture again as much as they need. Moreover, there is a possibility to have subtitles, speed up or slow down the recordings if the instructor speaks too slow or too fast. The results of this study showed the lack of students' motivation to attend online classes in synchronous time. This does not necessarily mean that they will never watch the classes later. Jordanian universities should think about revolute their distance education system and think about modern and interactive asynchronous ways for improving the process of teaching and learning.

During the COVID-19 pandemic, e-learning as a distance learning strategy enabled universities to use a variety of online learning platforms that allowed faculty members to build competencies in the ability to use media, virtual collaboration, and to provide students with experience and convenience to access teaching materials, answer questions, and doing other academic activities. Therefore, universities have explored or tested the effectiveness of new ways of teaching that can be supportive to the teaching and learning process post-COVID-19. However, the results of our study showed that students were not prepared or even aware of the impact of the COVID-19 pandemic on education, which will turn their education online. The majority of students have never attended online classes before the pandemic. This indicates the lack of technology use in the teaching and learning process, which is the university's responsibility. Universities should invest more in the technology that supports their teaching and learning process. Our research also showed that many students face immense e-learning barriers and a large proportion of students have not been able to attend online classes. For example, the poor economic conditions and learning environments, as well as poor Internet connectivity, have challenged students from rural and remote areas. The study showed several difficulties and challenges that students have faced during the pandemic, mainly the feel of anxieties, not having a device to attend the online classes, not having a separate room to study at home, and Internet connectivity issues. Universities have social responsibility roles (USR) aimed at bridging the educational and social challenges of their surrounding societies through four main dimensions, namely: management, research, teaching, and extension [35]. This is why it is the university that has to drive the change to improve the community readiness for such mode of learning. Accordingly, we recommend Jordanian universities truly adopt e-learning to give their students a chance to be familiar with the online learning environments.

In this study, it was clear that the majority of the Jordanian universities have relied on web conferencing tools to continue the education process; it is time for them to explore their LMS potential. LMS enables universities to keep all data in a single location, and students can use compatible devices to access them anytime, anywhere. This reduces administrative problems related to the maintenance of learning materials in various places. It is time to revolute our educational systems through adopting an online learning environment. Jordan's higher education system should have a unified emergency plan for the universities,

this plan should clearly state educational continuity plan to continue the learning process as soon as any emergency or pandemic occurs. The study showed that students from rural and remote areas faced enormous challenges such as technological accessibility, poor internet connectivity, and harsh study environments. Universities should invest in the technological infrastructure and facilities that can support e-learning which can facilitate the e-learning process during any future emergencies. Furthermore, Jordan's government should have a tailored plan to create an adequate online environment among disadvantaged students from remote areas.

The primary goal of this study was to fill a gap in the literature about students' experiences with distance learning after being forced to move due to the unprecedented pandemic. We have done so by directly questioning and reporting on the students' experience while learning online, with special attention to the learning sources, attendance rate, study duration, and learning environment during the lockdown. The study has also tested the online classes attendance frequency, used devices, and familiarity. Furthermore, the study has explored the most used platforms for learning and material sharing, and COVID-19 economic impact on education from the students' perspective. The study ended by exploring the main challenges faced during the lockdown. A second important implication of our study derives from our findings on the lack of readiness of the ICT technologies used in the Jordanian universities in general, universities should make a better use of their ICT technologies and revolute their educational system by modernizing their teaching and learning techniques.

## 7. Conclusions

The lockdown of COVID-19 has caused major disruptions to academic activities. This research explored the learning experience of students from Jordanian universities during the COVID-19 pandemic. While a significant proportion of students use digital learning tools, many of them face immense online learning challenges such as Internet connectivity issues, dedicated space for studying, personal device for attending the online classes, and the feel of anxieties. The vast majority of the surveyed students have never attended online courses before the pandemic. Shockingly, almost half of the surveyed students have spent less time studying than the time spent studying before the pandemic. E-commerce could transform the distance learning environments into innovative and more effective learning environments. Therefore, the government of Jordan, policymakers, and universities should invest to develop a resilient education system that supports electronic and distance learning for the future of Jordan's educational system. This study is limited since no perspective of universities or faculty members was taken into consideration. Moreover, large number of respondents, distribution speed, and wide scope do not guarantee external validity nor representativeness or generalization of the study results.

However, the novelty of this study is in the context of the study where we explore student's e-learning experience in such times. Future research should include the faculty members to explore their teaching experience during the pandemic to come up with a set of useful recommendations that would improve the distance teaching experience.

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