Investigating the acceptance of distance learning amongst Omani students: a case study from Oman

Abstract

Purpose
In the COVID-19 pandemic, students were subjected to high pressure when they were forced to move to distance learning in a lockdown environment. Such a drastic move for communities living in groups with solid relationship ties comes at a price. This research aims to investigate the acceptance of distance learning by Omani HEI students during COVID-19 lockdown.

Design/methodology/approach
This is quantitative research based on an online survey designed to study participants' acceptance of distance learning during COVID-19 lockdown.

Findings
A sample of 757 Omani students was selected, of which 81.2% were female. About 60 per cent of the students' Age lies 15 to 20 years. The highest percentage (38.8%) of students belongs to the College of Arts and Humanities. Eighty per cent (80%) of the students reported a Moderate Level of IT skills, and also more than 80% of the students had never attended eLearning calls. Most of the students affirm the eLearning Acceptance (students' willingness to use eLearning tools for the tasks they are designed for), eLearning Usefulness (using eLearning would enhance students' performance), eLearning Ease of Use (the degree to which a student believes that using eLearning tools are free from effort), Learning from Home During COVID-19 and eLearning Effectiveness (Student's satisfaction and the benefits student will gain from learning via online platforms). Multiple Regression analysis confirms that more than 81% of the variation in the eLearning Acceptance was explained by eLearning Usefulness, eLearning Ease of Use, Learning from Home During COVID-19 and eLearning Effectiveness independent variables. Moreover, these independent predictors have a positive association with eLearning Acceptance.

Originality/value

This research intends to fill the gap in Omani higher education institutions' students' acceptance of distance learning during the COVID19 pandemic.

Keywords

COVID19, Oman, eLearning, distance learning, acceptance, students, Higher education, Learning & Teaching, culture, anxiety.

Introduction

The emergence of the coronavirus (COVID-19) in late 2019 and its associated impact on people and the high risk of the virus transmission mode forced the entire education sector to rethink how education is served. Many institutions in Oman opted to temporarily postpone the education delivery, while others opted to move to distance learning as a substitute.

In Oman, His Highness Sultan Haitham formed a supreme committee to steer the country during the COVID-19 pandemic (Shekaili, M. A. S., & Karim, A. M., 2020). The supreme committee in mid-March 2020 announced that there would be no face-to-face education, and all schools, colleges and higher education institutions will be closed for the foreseeable future.

Oman's culture derives from its Islamic and Arab origins, which adheres to and sanctifies as a guide to keep pace with all social life aspects. Citizens of Oman are accustomed to communicating with their relatives and neighbours on an almost daily basis, as the Islamic religion instructed them to do so due to its spiritual benefits such as strengthening the feeling of brotherhood, friendliness, love, and solidarity. This communication revolves around participation in visits with relatives and friends, participating in their social events, and gathering to express their belonging and loyalty to the group, which may require almost daily participation. This communication also contributes to building a solid interdependent community capable of advancement and prosperity. Even when performing religious rituals such as prayer; Islam directs prayers to draw close and consulate the ranks of the worshipers to perform the prayer side by side, as an indication of the unity of the Ummah and its religious commitment (Shekaili, M. A. S., & Karim, A. M., 2020, Peterson, J. E., 2004). All these cultural and religious customs and traditions urge constant communication between members of Omani society, which in turn represented an enormous challenge to the Omani government in dealing with the COVID-19 pandemic.

Oman's supreme committee implemented many measures to safeguard communities by ordering the closing down of the majority of busy and over-crowded areas where people are likely to socialize and implement social distance practice, where all public gathering is prohibited. All private gatherings were advised to be stopped, along with a set of precautions that includes a complete lockdown of some cities and the curfew during the evening hours for several weeks to limit the possible impact of the virus. Although this lockdown procedure has not been implemented before in Oman history, Omani society respected all the supreme committee decisions in the interest of the citizens and their well-being.

All these precautions affected the way Omani citizens used to interact and socialize. Social distancing affected the people psychologically in terms of their inability to share their happy occasions, condolences, and usual gathering with community members as they used to. With this sudden change in social norms of communication and the loneliness due to COVID-19 lockdown and quarantine measures, some community members suffered from mental health including depression and anxiety. In contrast, others increased their fear and tension with rumours and epidemic news posted on various social media platforms, which they are using to communicate with their loved ones (Sood, S., 2020).

The student from most educational levels suffered from psychological stress due to the sudden change in the learning delivery method from traditional to distance learning. Adopting the new Mohamed, A.H.H.M., Abdel Fattah, F.A.M., Bashir, M.I.A., Alhajri, M., Khanan, A. and Abbas, Z. (2021), "Investigating the acceptance of distance learning amongst Omani students: a case study from Oman", *Global Knowledge, Memory and Communication*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/GKMC-02-2021-0021

circumstances has affected the student's lifestyle where their usual routine has been disrupted due to the change in the learning delivery and communication methods; nonetheless, the time they must spend in the online platform also formed an additional layer of stress. This new situation gave the students the entire responsibility to assume and manage their learning commitments while being away from the university and being locked at home.

Such lockdown measures without any prior preparation are expected to affect how Omani citizens are socializing and interacting negatively. As of April 2021, the restrictions imposed by the supreme committee in Oman regarding HEI face-to-face education are still in place. This paper will primarily focus on assessing the students' acceptance of distance learning during the COVID-19 pandemic.

Literature review

Osman, M. E. (2020) study is one of the recent studies that explored the impact of COVID-19 on the HEI; he discussed the arrangements of responding to the sudden shift to the distance learning implemented by the Sultan Qaboos University (SQU) colleges. His case study majorly based on SQU College of Education (SQU/CoEd).
The author stated that SQU/CoEd deployed all available resources to support the delivery of education as remote teaching. The study discussed the difficulties associated with online teaching and provided some analytics. The study elaborated on the use of Emergency Remote Teaching (ERT) and argued that '*it will eventually change the learning landscape*'. The study concluded by offering some recommendations for delivering education during pandemics, such as:

- HEI should in advance cater to the students' technical needs based on their technical profiles.
- A technological solution to deliver a live lecture as a replacement for face-to-face teaching should be facilitated.
- Online assessment mechanisms will need to be devised to incorporate varieties of valid online assessment methods.
- Faculty should be trained to better use the technology to deliver the education via online platforms and support students remotely.
- Students need to be creatively motivated, and '*self-regulation skills*' needs to be impeded into the curriculum to be learnt and practised by the students.

Mohamed A. O. et al. (2020) studied the employment of the ERT as an alternative delivery method that compensates for the absence of face-to-face lecturing. Their evaluation was based on data collected from students and instructors. They employed the CIPP model (Context of evaluation, Input of plans and resources, Process of activities and components, Product outcomes), which was first introduced by Daniel in the 1960s (Stufflebeam, 2000). They claimed that the CIPP model would better help assess the effectiveness of their ERT model that consists of Online lectures, Recorded lectures from local and other repositories, Voice over PowerPoint slides and the use of social media platforms.

They acknowledged that there was not enough time to prepare educators, students, and the curriculum for the sudden transition into the distance learning mode influenced by the outbreak of COVID-19. They argued that for students to be able to learn effectively in a remote location, they

should possess several learning characteristics such as independent learning, effective communication, and courage to seek guidance when needed.

They concluded with several recommendations, such as the Online contents should be aligned to the course learning outcomes and the accessibility of learning and teaching materials remotely. However, they acknowledged that students who live far from the telecommunication networks would struggle to access the learning services. Furthermore, they stated that the ERT is not suitable for laboratory-based courses.

Adnan and Anwar (2020) examined the Pakistani higher education students' attitudes towards compulsory digital and distance learning university courses during COVID-19. The data were collected via a structured questionnaire by adopting thirty-eight items measured by a five-point Likert scale. The questionnaire was online distributed, targeting undergraduate and postgraduate students across Pakistani higher education institutions.

They argued that most Pakistani higher educational institutions are well qualified and prepared for the sudden transformation from traditional learning to the eLearning delivery that COVID-19 forced9. However, this transformation is restricted by several challenges, such as high internet service costs, Technology resilience and effectiveness. The status 'underdeveloped' telecommunication network in Pakistan negatively impacted the delivery of online courses, as students who live far from the network and those who live in congest zones faced difficulties accessing the online courses. Furthermore, students were not trained on using Learning Management systems (LMS) forum facilities to discuss group work and communicate with their peers. Their study concluded that HEI should seek to leverage the learning content and developing the educational curriculum for educators and students.

Mohamed AHHM et al. (2011) assessed electronic health acceptance using a modified Technology Acceptance Model (TAM) developed by Davis & Venkatesh (Davis & Venkatish, 2000 & 2012) by incorporating eHealth factors into their model (e-HTAM). e-HTAM examined how the TAM constructs apply to the use of eHealth services by incorporating technological factors and socio-cultural factors and how those factors could influence the individual's intention of use. e-HTAM verified the direct relationship between technological, socio-cultural constructs and intention to use e-Health services. e-HTAM also suggested that the Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Intention to Use (I2U) are key to understand the intention to use eHealth application, providing that they meet the cultural fabrics of the users.

Research context
Many physiatrists advocated that the lockdown that the states' have exercised to control the spread of the virus will have stress-related severe symptoms that are likely to impact people's mental state and overall well-being.

According to Ozamiz-Etxebarria et al. (2020), Symptoms associated with outbreaks and lockdowns are known, such as depression, stress and anxiety. The damaging impact of those symptoms is well documented. Arab societies, and in particular Omani societies, needs to be surveyed to understand the implications of the lockdown that was implemented in mid-March 2020

(Shekaili, M. A. S., & Karim, A. M., 2020). Omani students are not used to lockdown, especially higher education students, after moving from secondary schools to university settings, where they exercise more freedom as a result of being independent and living away from their families.

This research will investigate and assess the impact of the COVID-19 lockdown on the Omani undergraduate students' acceptance of distance learning via LMS.

Research Framework

The framework (figure 7) adopted by this research intended to study the impact of the COVID-19 lockdown effect on students' perception and actual use of the eLearning platform to continue their education during the pandemic lockdown.

Research hypotheses
H1: eLearning Perceived Ease of Use (PEoU) is negatively affected by COVID-19 lockdown

H2: eLearning Perceived Usefulness (ePU) is negatively affected by COVID-19 lockdown

H3: Actual eLearning Engagement (AeE) is positively affected by eLearning perceived Ease of use

H4: Actual eLearning Engagement (AeE) is positively affected by eLearning perceived usefulness

H5: Students favour face-to-face learning over distance learning (learning aspect only)

Study objectives

Obj1: investigating the acceptance of distance learning amongst higher education students in Oman during COVID-19 lockdown **(H1, H2, H4).**

Obj2: Investigating the impact of COVID19 lockdown on Omani students' distance education engagement capacity **(H3, H4).**

Obj3: Investigate PEoU and ePU impact on Omani students' actual eLearning engagement during COVID-19 lockdown **(H3, H4).**

Obj4: Assessing the acceptance of on-campus vs distance learning during the pandemic lockdown in Oman **(H3, H4, H5).**

Obj5: Assessing the impact of Perceived usefulness and ease of use of eLearning on students' actual eLearning engagement **(H3, H4).**

Research design

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Quantitative research collected data from Higher Education Institutions (HEI) in Oman via an online instrument (appendices: list 1) that was designed to serve the research objectives. The questionnaire was sent to the entire university students via a google form—757 out of 4300 registered students committed to the online survey. The survey was based on 5 points scale (Likert scale) of 1 being Strongly Disagreed (SD) and 5 being Strongly agreed (SA). The scale-based questions were mapped to the research objectives as listed in table 8.

Data analysis & Findings

SPSS software ™ was used to analyze descriptive statistics and multiple response analysis; MS Excel application™ was used to make data visualization whereas Minitab application™ was used to carry Regression analysis (studying the relationship strength between variables under investigation).

In our sample, the majority (81.2%) of the students were female, of which 66.34 per cent belongs to the age category 15-20. On the other hand, the highest percentage (36.88) were above 30 years old (figure 1). This high percentage of young students who lives in an era that is driven by technologies sheds lights on the smooth transition from traditional to technology-based education forced by the COVID-19 pandemic.

Most of the participants (81.75%, figure 2) stated that they do not have any eLearning experience before the COVD-19 pandemic. Data indicated that 60 per cent (figure 3) of participants who possess moderate IT skills never experienced distance learning. Figure 4 is based on a comparative analysis of Students IT kills and their colleges. It is observed that almost every college has taught the same level of IT skills to their students. The College of Applied Science has the highest percentage (28.57%) of students who have a high level of IT skills, while the College of Engineering has the highest percentage (76.36%) of students who have a moderate level of IT skills.

The above statistics could be one of the key drivers that explained the acceptance of students to swiftly move to distance learning, which suggest that IT skills could play a big role in technology acceptance, specifically, if the student will gain benefits from it.

Multiple Response Analysis

Table 1 contains the percentage on Likert scale responses, average rank and standard deviation of the students on all 5 factors. The table reveals that the vast majority (90%) of the students acknowledged the Effectiveness of eLearning as confirmed by the statistics (M= 4.21, SD=0.909). Similarly, students have recorded similar responses on eLearning Usefulness, eLearning Ease of Use factors and eLearning Acceptance. More than 20 per cent of the students were not in favour of learning from home during COVID-19; on the other hand, more than half of the students happy to carry their studies from home; also, about 18 per cent of the students are confused. The mean of this factor is 3.61, which lies between the category Neutral and Agree with 1.366 variations. This could be understood as that student accepted that it is not a choice for them not to accept or decline to learn remotely via online platforms, albeit they do not necessarily have to like it. This is

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quite normal as human tends to deal with abnormalities when they have no other means to avoid them.

Furthermore, for comparison purpose, the normality of the five factors was tested and found that all four factors did not meet the assumption, it is, therefore nonparametric tests were applied. Independent-Samples Mann-Whitney U Test was used to compare the differences amongst the underlying factors.

The results in Table 2 show that only the p-value of hypothesis 1 is less than 0.05, indicating a statistically significant difference found in the opinion of Male and Female Students for Learning from home during COVID-19 lockdown. Furthermore, there was no difference found in the remaining four factors "eLearning usefulness", "eLearning effectiveness", eLearning ease of use and eLearning acceptance with regards to the Gender role. This suggests that the role of gender is not a discriminator anymore and that there is no difference amongst the students in employing technologies to achieve their intended targets.

Table 3 reveals that the p-value of hypotheses 1, 2 and 5 are less than 0.05, indicating a statistically significant difference found in age categories of students for Learning from home during COVID-19 lockdown, eLearning effectiveness and eLearning acceptance. Nonetheless, in the pair-wise comparison for Learning from home during COVID-19 lockdown, the difference was found in the opinion of students Age categories "15-20 and > 30" and "21-30 and > 30", but there was no difference found in the categories "15-20 and 21-30". Similarly, in the pair-wise comparison for eLearning effectiveness, the difference was only found in the age categories "15-20 and 21-30". Furthermore, the same results found for the eLearning acceptance factor that the only difference occurred in the age categories "15-20 and 21-30. On the other hand, there was no difference found in the remaining two factors, "eLearning usefulness", and "eLearning ease of use". These statistics are in line with the current understanding that teenagers are better at using technologies than older ones, which could explain the acceptance of students to move to online platforms swiftly.

Table 4 depict that the p-value of hypothesis 1 is less than 0.05, which shows that three was a statistically significant difference found in IT Skills categories of students for eLearning effectiveness. This suggests that universities should invest in building students' IT capacity during the foundation year, as this specific skill proved to be significant when it comes to technology adoption and will help students to better appreciate the effectiveness of the eLearning technologies and the role they can play in improving student's subject knowledge skills.

Furthermore, in the pair-wise comparison for eLearning effectiveness, the difference was found in the opinion of students who have "Low and Moderate" and "Low and High" level of IT skills. Still, there was no difference found in the categories "Moderate and High". Also, that all five factors show a similar pattern for different colleges.

Regression Analysis

Multiple Linear Regression Model was developed using eLearning acceptance (F4) as the dependent variable and eLearning effectiveness (F1), eLearning usefulness (F2), Learning from home during COVID19 lockdown (F3) and eLearning ease of use (F5) as independent variables.

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After deleting outliers based on the dependent variable eLearning acceptance, the normality achieved.

Regression Equation

$$F4 = -1.071 + 1.0685*F1 + 0.4519*F2 + 0.324*F3 + 0.8925*F5$$

Table 5 contains the model summary that shows that the adjusted R square is 0.81.3, which means that the four independent variables eLearning Effectiveness, eLearning Usefulness, eLearning Ease of Use, Learning from Home During COVID-19 and eLearning Acceptance do explain more than 81% of variation on the students' eLearning acceptance. In other words, we can claim that the eLearning acceptance is significantly impacted by the way the eLearning operations that are associated with the four independent variables are designed (F-test= 815.70, p-value=0.000) as illustrated in table 6. Those four predictors do have significant role on the students' acceptance of eLearning, as well as being good predictors for eLearning acceptance, albeit the eLearning ease of use has the smallest alpha value as shown in table 5. It is worth mentioning that the VIF values for each independent variable are less than two depicting no sign of multicollinearity among the independent variables.

Out of the four independent variables, the eLearning effectiveness proves to have more power in understanding the students' eLearning acceptance, as shown in table 7 and figure 5. The data rendered in the table consist of the beta coefficient, standard error of the coefficients, t-test values of the coefficients, significance value of the coefficients and collinearity diagnostic statistics of the VIF (Variance Inflation Factor) of the coefficients. The values of all four coefficients, eLearning effectiveness (F1), eLearning usefulness (F2), Learning from home during COVID19 lockdown (F3) and eLearning ease of use (F5), are positive, and the p-value is less than 0.01. Therefore, we can claim that there is a statistically highly significant and positive association between the eLearning acceptance and the underlying independent variables. The eLearning effectiveness, in particular, has a beta value of 1.0685; this suggests that if eLearning is designed in a very effective way that students' feels that they are benefiting from it, they are very likely to accept learning through eLearning mediums. The reaming coefficients can be interpreted similarly.

Different Residual Plots for Dependent Variable (eLearning Acceptance) are presented in figure figure 6. The Normal probability plot and histogram of the standardized residuals show that eLearning Acceptance approximately follows the normal distribution. Furthermore, the scatter plot of fitted values, and standardized residual also has scattered behaviour within limits, and there is no outlier detected. Moreover, the scatter plot of the observed order of the eLearning Acceptance and standardized residual do not show any autocorrelation patterns.

Discussion
The COVID-19 pandemic brought sudden transformation in the teaching, learning and research activities worldwide. To overcome this unexpected situation and keep academic activities on track, educational institutions moved to virtual learning platforms. The majority of the surveyed students have not experienced 100 per cent digitized distance learning before the COVID-19 pandemic. This study was aimed to investigate the eLearning acceptance among Omani students during the period of COVID-19.

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The collected data yielded that learning during pandemics' lockdown using eLearning platforms (remote learning) is widely accepted by students, as they indicated that the eLearning helped them to increase their subject knowledge, as the mean (M) was 4.27. The standard deviation (SD) was 0.771 and further increased their overall learning skills (M=4.14, SD= 1.025) and social competencies (M=4.22, SD=0.822). The social competencies they referred to could be further confirmed by the fact that they use the social media platforms for their learning and teaching discussions, which further strengthened their cyber-social interaction and presence.

The use of live video conferencing tools such as Microsoft Teams™ and Zoom™ positively accepted by students, as they stated that they were good at face-to-face learning (M=4.06, SD=0.826) in increasing their subject's knowledge, albeit they believe that face-to-face is better than distance learning when it comes to their skills development (M=3.98. SD=1.269).

The students' overall perception is leaning towards positive acceptance and appreciation of learning remotely, as they feel that it is more convenient (M=4.56, SD=0.817), more accessible (M=4.33, SD=0.934), and they have enjoyed learning remotely during the COVID-19 pandemic (M=4.43, SD=0.907). This is further supported by their engagement and submission of their assignments remotely via the eLearning platforms (M=4.51, SD=0.503).

Some might perceive that learning remotely might positively affect students learning capacity, as it is less demanding in terms of travelling, being away from your family, and all other stress-associated issues; however, the statistics indicated that students do not necessarily believe that learning from home during pandemic's lockdown will positively affect their learning capacity (M=2.78, SD=1.247).

The data collected for this research yielded that the students (regardless of their college) acknowledged and appreciated learning remotely via eLearning platforms and are in line with similar research such as Mohamed A. O. et al. (2020).

The Age and IT Skills factors were statistically insignificant in explaining the students' remote eLearning acceptance. This could be linked to the fact that the majority of students are from the same age categories 'young' who live in an era that is dominated by technologies. Like Age and IT skills factors, the gender role and effect seem to be fading off, while the subject knowledge domain delivered by the different college has no significance in explaining the eLearning acceptance.

eLearning risk assessment and recommendations

As COVID-19 still posing a threat, and it's unlikely that it will fade away soon, the new norm for higher education institutions will likely depend on distance learning for the majority of their business. This should be perceived as a financial opportunity by recruiting more home and international students. Such business delivery methods come with many challenges and risks that must be carefully managed and planned for. Universities must ensure that risks and threats associated with distance Learning are acknowledged, and protective measures are in place to contain and nullify the impact of the threats where possible. Relevant and updated policies that govern the eLearning processes should be devised and should be taken as a reference point to the following risks:

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- **Technical Infrastructure risks:** such as availability, efficiency and resilience, should be catered for in a proactive mechanism. A Symantec dual servers' environment that is resilient and employs a rigid network operating system and an active and asynchronous backup system should also be in place to ensure the effective delivery of the learning and teaching remotely.
- **Copyright risks:** universities should ensure that a Digital Right management system is in place to protect the copyrights and licenses agreement and eliminate the risk of being prosecuted. And that all materials that are not developed by the university should be properly referenced, and permission is granted from the publisher or copyright owner before they are used.
- **Content Quality risks:** traditional learning and teaching materials should be redesigned to suit online delivery. Extensive eLearning workshops should be designed and delivered by experts to ensure that academics eLearning capacity is currently in a way that helps them to better manage classes online and produce effective, efficient, engaging, and flexible contents. Furthermore, course descriptors should be updated to reflect the 'new norm' of delivery.
- **Market risks:** online contents produced must be of high quality and match current global trends in the subject's domain. Nevertheless, student's and academic's well-being need to be protected while teaching and learning online.
- **Privacy and confidentiality Risks:** universities must ensure that measures are in place to eliminate/mediate threats associated with privacy, confidentiality and integrity violations, and cyber-attacks. HEI should employ proxy servers, secure socket layers and authentication protocols to deal with privacy and confidentiality issues.
- **Assessment integrity risk:** Assessing students online comes with associated risks, such as cheating and Internet availability. Furthermore, Online invigilation is a very resource-intensive, creative online assessment method such as Problem-Based Assessment (PBA), Case-Based Assessment, Project-Based Assessment, Randomized Quizzes should all be considered to maintain the integrity of the online assessment.

It is worth mentioning that the lead author of this paper is the eLearning director and a faculty who teaches in an Omani university, so does three coauthors of this paper. From our observation where we work, we are integral to the transformation process and significantly contributed to the materialization of the process. We have witnessed the swift move from traditional to distance learning that happened in a matter of days. The students' performance over the past year (since the beginning of the COVID-19 pandemic) has improved. The percentage of students under probation also decreased, which suggests an improvement in the students overall academic progress while learning remotely. From an anthropological viewpoint, the acceptance of students in Oman to the sudden shift is in line with Hofstede cultural dimension theory, where he suggested that people from higher power distance culture do what their superiors legislated and asked them to do, especially when it is in their favour (Hofstede, 2011 & 1982).

Conclusion and future directions
The sudden closure of the HEI globally due to the COVID-19 pandemic, albeit undesirable, presents an enormous opportunity for cultural transformation in the education systems. As more "tech-savvy" generations enrol in higher education, HEI needs to rethink how education is served. Curricula need to be redesigned to better suit the 'new norm'. Educators will have to put more efforts and employ technologies to deliver the education better remotely.

Teenagers are more technologically savvy than others. 90% of this research participants are between 15 to 30 years old (table 9), which in turns could justify Omani's HEI students' swift

response to the sudden shift to distance learning despite the associated abnormalities and dramatic changes in their societal patterns. The government and local authorities are working together to ensure that the education services continue via eLearning platforms.

The use of alternative assessment methods to maintain the integrity of the online assessment should be investigated to further understand the impact of COVID-19 on HEI and their students. The usefulness of employing Advanced Adaptive Learning Technologies and machine learning should also be examined to study their contributions and significance. The fact that the majority of Omani HEI students are female is also worth investigating.

The compensation of the absence of face-to-face teaching by employing video conferencing tools, online class management, along online assessment integrity remains critical issues to ensure that learning and teaching are delivered in a fair and useful way.

The statistics presented in this research and the expected long-term presence of COVID-19 confirms that the current 'new norm' will be eLearning for HEI course delivery. eLearning uses so many available learning technologies. However, it is not the technology that makes the learning successful. The curriculums and how it is delivered and assessed needs to be redesigned to be flexible, engaging, effective while being measurable. From a business perspective, universities will need to think of risks associated with eLearning delivery to ensure that they capitalize on the opportunity COVID-19 provided.
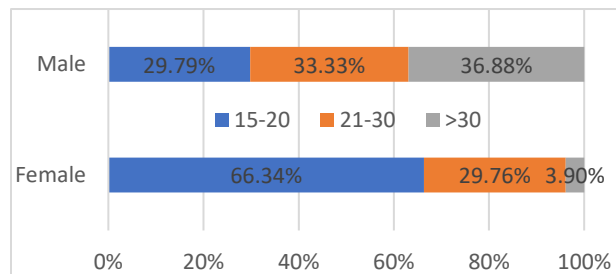
Figures
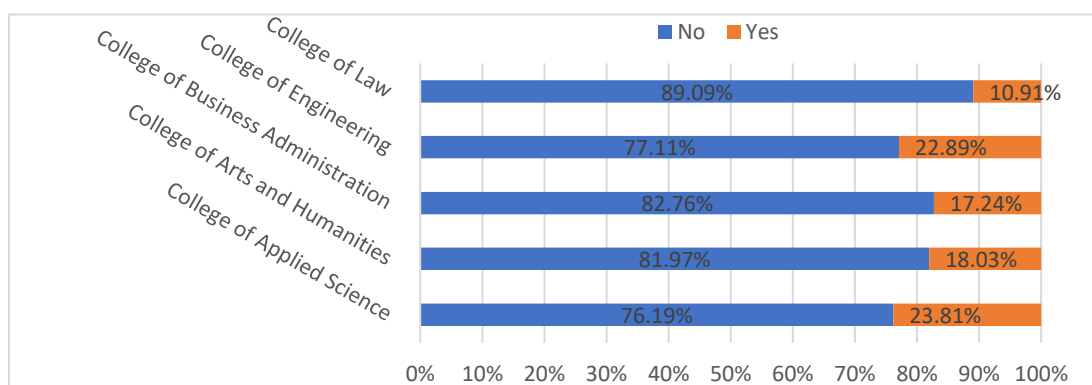

Figure 1: Percentage of the Students by Age and Gender

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Figure 2: Percentage of the Students by eLearning experience before pandemic and College
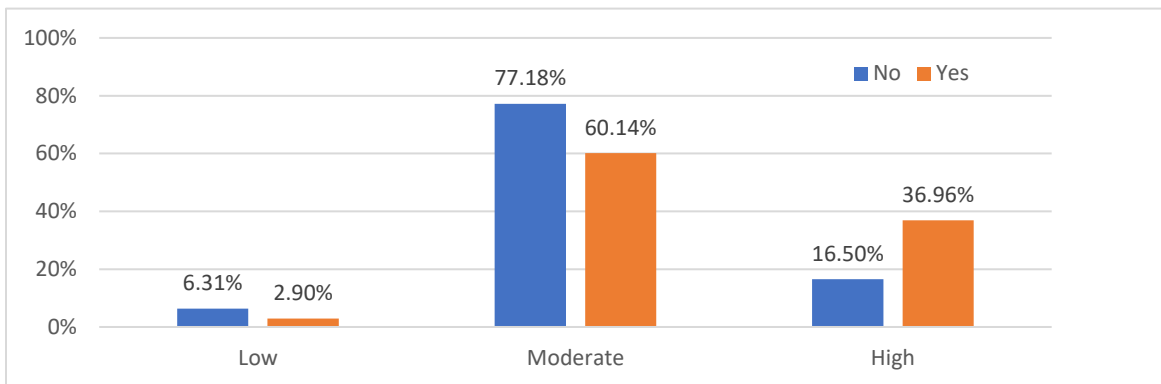
Figure 3: Percentage of the Students by eLearning experience before the pandemic and IT Skills
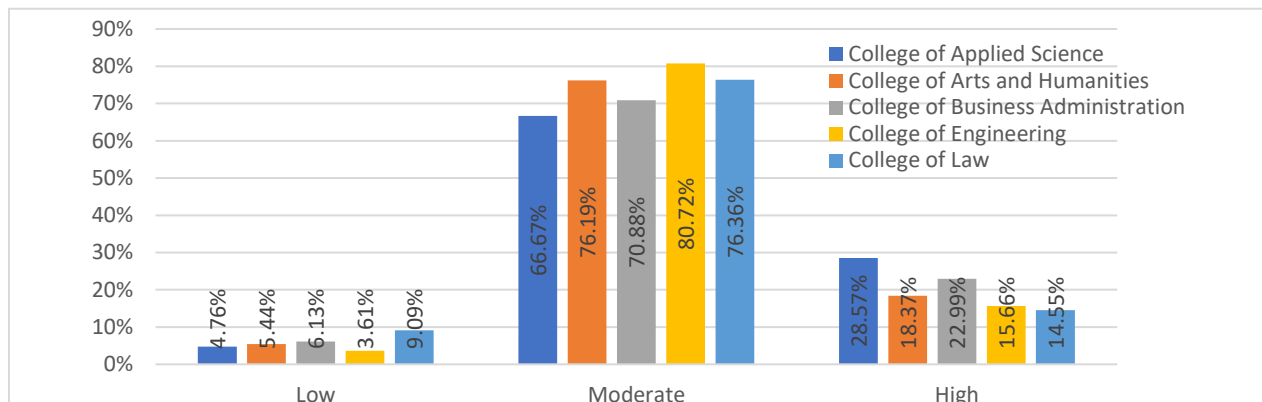
Figure 4: Percentage of the Students by IT Skills and College

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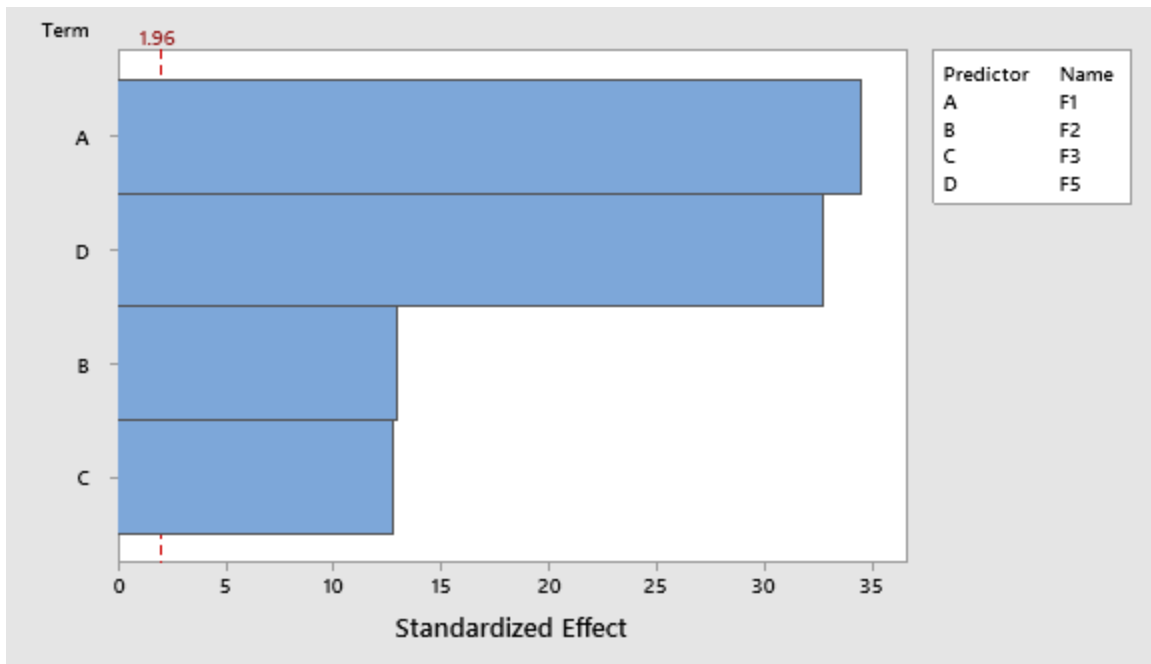
Figure 5: Pareto Chart of Standardized Effects at α = 0.05

Figure 6: Different Residual Plot for Dependent Variable (eLearning Acceptance)

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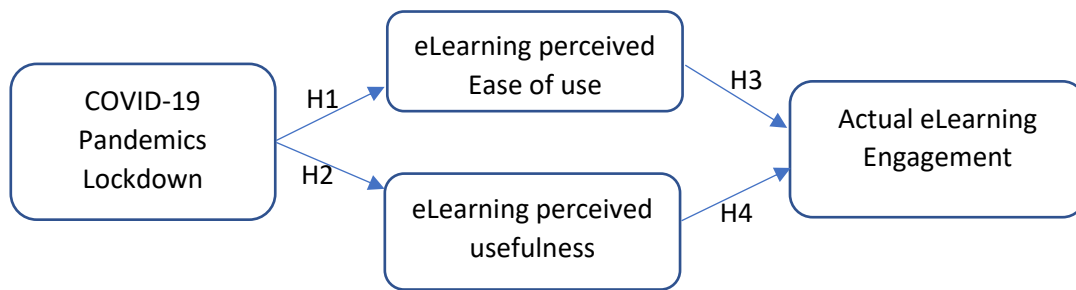
Figure 7: The research framework

Appendices

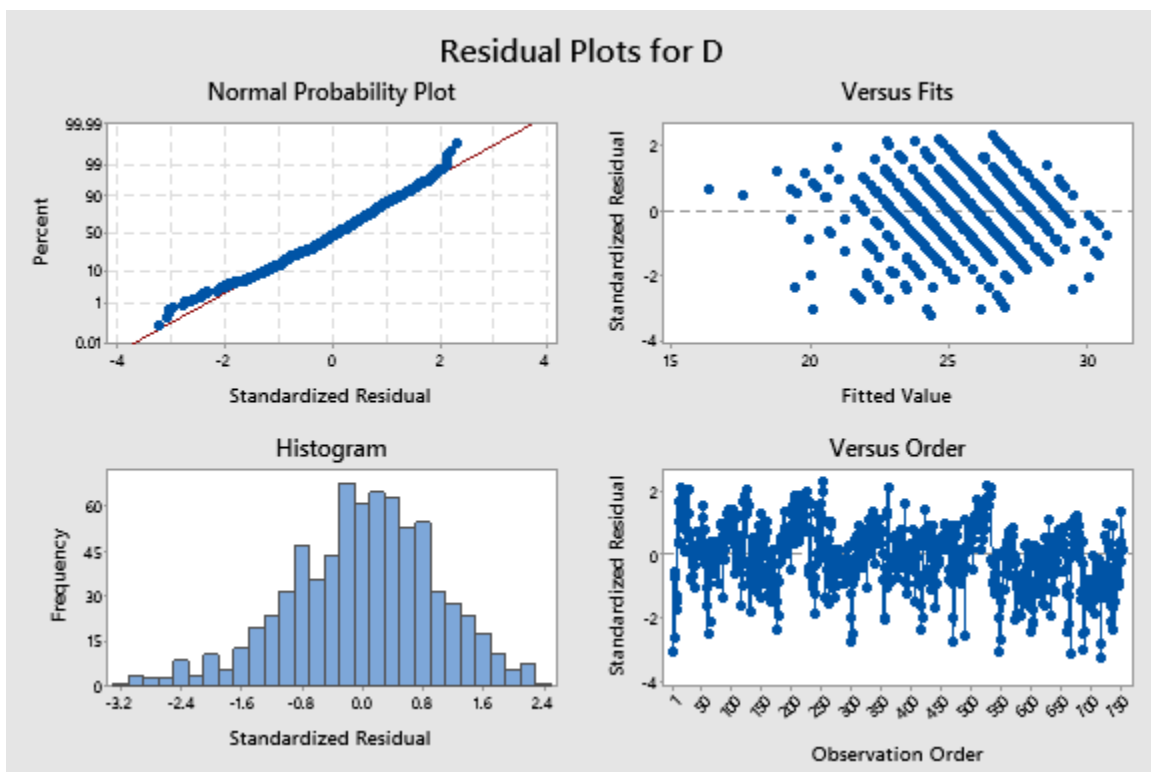### Table 1: Overall Percentages, Mean and Standard Deviation of Factors

Factors	SD%	DA%	N%	A%	SA%	Mean	S.D
eLearning Effectiveness	3.7	2.2	4.3	49.2	40.6	4.21	0.909
eLearning Usefulness	0.8	4.0	11.6	47.9	35.8	4.14	0.828
Learning from Home During COVID-19	10.8	12.7	17.7	22.5	36.3	3.61	1.366
eLearning Ease of Use	1.3	2.2	3.5	34.6	58.5	4.47	0.779
eLearning Acceptance	2.6	2.6	5.3	38.5	51.0	4.33	0.894

Table 2: Hypothesis Test Summary across Gender

Null Hypotheses	Test Value	Sig	Decision
1. The distribution of Learning from home during COVID19 lockdown is the same across Gender	-4.382	0.00	Reject the Null hypothesis.
2. The distribution of eLearning usefulness is the same across Gender	-0.511	0.609	Accept the Null Hypothesis.
3. The distribution of eLearning effectiveness is the Same Gender	-1.537	0.124	Accept the Null Hypothesis
4. The distribution of eLearning ease of use is the same across Gender	-0.120	0.904	Accept the Null Hypothesis
5. The distribution of eLearning acceptance is the same across Gender	-1.062	0.288	Accept the Null Hypothesis

Test: Independent-Samples Mann-Whitney U Test

Table 3: Hypothesis Test Summary for categories of Age

Null Hypotheses	Test Value	Sig	Decision
1. The distribution of eLearning effectiveness is the same across categories of Age.	12.83	0.002	Reject the null hypothesis.

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Null Hypotheses	Test Value	Sig	Decision
2. The distribution of Learning from home during COVID19 lockdown is the same across categories of Age.	11.007	0.004	Reject the null hypothesis.
3. The distribution of eLearning ease of use is the same across categories of Age.	0.095	0.954	Accept the Null Hypothesis
4. The distribution of eLearning usefulness is the same across categories of Age.	3.455	0.178	Accept the Null Hypothesis
5. The distribution of eLearning acceptance is the same across categories of Age.	8.214	0.016	Reject the null hypothesis.

Test: Independent-Samples Kruskal-Wallis Test

Table 4: Hypothesis Test Summary across categories of IT Skills

Null Hypotheses	Test Value	Sig	Decision
1. The distribution of eLearning effectiveness is the same categories of IT Skills	11.802	0.03	Reject the Null hypothesis.
3. The distribution of eLearning usefulness is the same across categories of IT Skills	3.524	0.172	Accept the Null Hypothesis.
3. The distribution of Learning from home during COVID19 lockdown is the same across categories of IT Skills	4.101	0.129	Accept the Null Hypothesis
4. The distribution of eLearning ease of use is the same across categories of IT Skills	2.175	0.337	Accept the Null Hypothesis
5. The distribution of eLearning acceptance is the same across categories IT Skills	1.972	0.373	Accept the Null Hypothesis

Test: Independent-Samples Kruskal-Wallis Test

Table 5: Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
1.03591	81.41%	81.31%	81.11%

Table 6: Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	4	3501.4	875.34	815.70	0.000
Error	745	799.5	1.07		
Total	749	4300.8			

Table 7: Coefficients

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	-1.071	0.503	-2.13	0.033	
eLearning Effectiveness (F1)	1.0685	0.0309	34.53	0.000	1.08
eLearning Usefulness (F2)	0.4519	0.0348	12.97	0.000	1.06
Learning from home during COVID19 lockdown (F3)	0.3241	0.0254	12.78	0.000	1.09

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eLearning ease of use (F5)	0.8925	0.0273	32.73	0.000	1.07

Table 8: Mapping the scale-based questions to the research objectives

6. What are the advantages of eLearning? Pick all that you consider true.	obj3
7. What are the disadvantages of eLearning? Pick all that you consider true.	obj3
8. eLearning helped me increase my knowledge of the subject matter	obj3
9. eLearning helped me to increase my learning skills	obj3
10. eLearning helped me increasing my social competencies.	obj3
11. eLearning supported by live video lectures is good as face-to-face learning in terms of increasing knowledge	obj4
12. Lockdown negatively affected my learning capacity	obj1, obj3
13. Face-to-face learning is better than distance learning in terms of the development of my skills	obj4
14. I fully engage with any eLearning activity that is assigned by my teacher	obj2, obj3, obj5
15. It is convenient to study from home	obj4
16. It is easy and handy to access my learning resources from home	obj3
17. I enjoyed eLearning classes during the pandemic	obj1

Table 9: Age statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-20	450	59.4	59.4	59.4
	21-30	231	30.5	30.5	90.0
	>30	76	10.0	10.0	100.0
	Total	757	100.0	100.0	

List 1: survey questionnaire

Ⅰ Basic demographics

1.Age

15-20

21-30

> 30

2.What is your gender?

Male　　　　　　　Female

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3.Which college you are studying at?

College of Business Administration

College of Law

College of Engineering

College of Applied Science

College of Arts and Humanities

4.How would you describe your IT skills?

High   Moderate   Low

5.Have you ever participated in any type of eLearning before the pandemic?

Yes   No

II Advantages and Disadvantages of eLearning

6. What are the advantages of eLearning? **Pick all that you** consider true.

Access to online materials

Learning at your own pace

Ability to stay at home

Classes interactivity

Ability to record a

meeting

Comfortable

Surrounding

7. What are the disadvantages of eLearning? **Pick all that you** consider true.

Reduced Interaction with the teacher

Technical problems

Lack of interactions with patients

Poor learning conditions at home

Lack of self-discipline

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Social isolation

III the following section seeks to understand and your views on eLearning in terms of your ability to achieve learning objectives, develop your academic and social skills and competencies.

Using a five-point scale where (1-Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree, 5-Strongly Agree) rate the followings:

8. eLearning helped me increase my knowledge of the subject matter
9. eLearning helped me to increase my learning skills
10. eLearning helped me increasing my social competencies.
11. eLearning supported by live video lectures is good as face-to-face learning in terms of increasing knowledge
12. Lockdown negatively affected my learning capacity
13. Face-to-face learning is better than distance learning in terms of the development of my skills
14. I fully engage with any eLearning activity that is assigned by my teacher
15. It is convenient to study from home
16. It is easy and handy to access my learning resources from home
17. I enjoyed eLearning classes during the pandemic

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