PRINT: ISSN 0975-1122 ONLINE: ISSN 2456-6322

Int J Edu Sci, 33(1-3): 31-43 (2021)

DOI: 10.31901/24566322.2021/33.1-3.1170

Measuring the Impact of Online Education on Academic Performance Amid COVID-19 with the Moderating Effect of Instructor

Syed Muhammad Fahim[1,*], Syed Baqir Imam Zaidi[2], Asma Rehman[3], Syed Talha Hussain[4], Umer Anjum Khan[5] and Ali Asim Hasan[6]

Institute of Business Management, Karachi, Pakistan

E-mail: [1]<muhamamd.fahim@iobm.edu.pk>, [2]<Baqirimam2009@yahoo.com>, [3]<asma.rehman@iobm.edu.pk>,[4]<tlhussain24@gmail.com>, [5]<Umer.khan341@yahoo.com>, [6]<aliasimhasan@gmail.com>

KEYWORDS Instructor. Online Learning. Purposive Sampling. PLS-SEM. Technology

ABSTRACT The COVID-19 pandemic imposed a new order, another pace for humanity. More than ever, in pandemic times, education is called upon to be unique and to reinvent itself by seeking other possibilities through digital technologies in virtual learning environments. Therefore, it is essential to know the critical factors that affect academic performance during online education. This paper aims to present the effects of student characteristics, time management, and course load on online education. The main aim is to check the impact of online education on academic performance with the mediating effect of burnout and the moderating effect technology and instructor. The data was collected from 313 students of Karachi, Lahore, Islamabad, and Peshawar's reputable business schools, namely, IoBM, IBA, SZABIST, LUMS, IQRA University, and Institute of Management Sciences, and the data was analysed using PLS-SEM and SPSS. The result suggested that time management, course load, and student characteristics significantly impact online education. The result also indicates that burnout does not mediate the relationship between online education and academic performance. This study also investigated the role of technology and instructors as moderators between online education and academic performance. The result shows that the instructor's role moderates the relationship, but technology has no impact on moderating this relationship.

INTRODUCTION

Due to the COVID-19 coronavirus pandemic, approximately 290 million children and young people worldwide use the online medium of education. Virtual education uses the internet and information and communication technologies (ICT) to provide students with teaching tools, such as chats, blogs, videoconferences, or shared documents, that streamline the course to make it more intuitive and comfortable to follow (Basilaia and Kvavadze 2020). Technology has played a vital role in online distance learning, and many higher education institutions have offered web-based learning (Bozkurt 2019). The role of the instructor is also essential as a facilitator during online learning. Course load is also crucial in distance learning and the biggest reason for student burnout. Time management is critical to handle student burnout because it enhances students' grades and enhances performance (Hill et al. 2018). Student characteristics are essential in an online course to achieve their desired goals and objectives (Kahu and Nelson 2018). Hence, this research focuses on all the above-discussed factors that affect a student's academic performance during an online course.

*Address for correspondence

Objectives of the Study

The objectives of this research are as follows:

1. To determine the impact of student characteristics, time management, and course load on students' academic performance during online education.
2. To investigate the mediating role of burnout and online education between and student characteristics, time management, and course load on academic performance.
3. To determine the moderating role of instructor and technology on students' academic performance during online education.

Research Phenomenon

Students' characteristics play a vital role in their academic performance, significantly impacting an online learning environment, and are treat-

ed as an independent variable (Yukselturk and Yildirim 2008) in this study. Students prefer online classes, as it offers convenience in managing time (Cuthrell and Lyon 2007) and efficient academic outcomes, which concludes to regard time management as an independent variable. Excessive course load tends to spawn neurological tension, affecting academic learning, and is considered an independent variable. It has been eminent by the studies that the online studying medium is impactful on the academic performances of students and is dependent upon the effective teaching and course structure, and therefore, it is acknowledged as a dependent variable (Driscoll et al. 2012). Burnout has been chosen as a mediator, as it induces a connection between the mentioned independent variables and learners' performance (Tsigilis et al. 2011). Instructor and technology have been elected as moderators, as academic success relies on the instructor's role (Driscoll et al. 2012), and technological advancement eases the learning methods (Jackson et al. 2010).

Problem Statement

According to Mheidly et al. (2020), academic burnout has been considered a dependent variable, while Borokhovski et al. (2016) considered it an independent variable. In this research, it is regarded as a mediator. Hardaker and Sabki (2018) prompted the instructor as an independent variable that directly impacts academic performance, whereas it has opted as a moderator in this study. According to Masud and Boccelli (2016), a convenient sampling methodology was adopted in which data is moulded as per the studies' requirement, and a purposive sampling technique was adopted for data evaluation. In this type, qualifying questions were added to the questionnaire to understand better and evaluate constructs accurately. Online education is productive in developed counties due to the lack of advancement in Pakistan. In many institutions, administrative activities are performed manually (Basilaia and Kvavadze 2020). The number of students in Pakistan facing Internet issues and connectivity problems was not discussed in this study.

Research Questions

RQ1: To what extent do student characteristics, time management, and course load affect students' academic performance during online education?

RQ2: Does burnout mediate between students' academic performance and student characteristics, time management, and course load?

RQ3: Do instructor and technology moderate students' academic performance during online education?

Significance of the Study

Online education has played a vital role in filling the physical gap of education created, especially during this pandemic. It made the concept of distance learning possible and viable, keeping all the safety measures in check. It also provided flexible time schedules and cut down the avoidable travelling time. Online education also provides students with the chance to communicate across the country or even in different countries. Such a situation often leads to opportunities for collaboration with other individuals in implementing a project. The sample data collection is from students of top business schools of Karachi, Lahore, Islamabad, and Peshawar, which are IoBM, IBA, SZABIST, LUMS, IQRA University, and IMS, including graduate students and postgraduate students.

Literature Review

With the emergence of the COVID-19 pandemic, overnight teachers and students had to get used to and reinvent themselves in learning and teaching. It is a paradigm shift, which will lead teachers and students to believe that a digital platform is a handy tool for the teaching-learning process. Online learning has been changing the methodology of teaching and learning framework for a long while. In recent pandemic times, online learning has become a vital and well-known tool for higher education (Stowell and Bennett 2010).

According to Lyn and Muthuveloo (2019), online courses can be better at engaging students, boosting retention rates up to sixty percent in some instances, while video content is projected to account for eighty percent of all global web activity by 2019. It is little surprise that online learning is getting more popular. Online education has played a vital role in filling the physical gap of education created, especially during this pandemic. It made the concept of distance learning possible and viable, keeping all the safety

measures in check. It also provided flexible time schedules and cut down the avoidable travelling time (Caplan and Graham 2005). Online education also provides students with the chance to communicate across the country or even in different countries. Such a situation often leads to other opportunities in terms of collaboration with other individuals in the implementation of a project (Palvia et al. 2018)

Time Management

Many students prefer online classes to the face-to-face classes, as it is easy to manage time in online classes (Cuthrell and Lyon 2007). To get a chance of being innovative, students prefer online classes, as they are time convenient. Nevertheless, Yukselturk and Bulut's (2007) study has a few limitations, like time management had some undefined and unreliable criteria, which caused some unstable findings.

H_1: Time management has a significant relation to online education.

Student Characteristics

Learners' characteristics are essential, as they are directly related to learning outcomes (Yukselturk and Yildirim 2008). The study of student characteristics in an online environment is necessary, as it has brought a significant difference in the way of interaction. Variables like persistence, course quality, student success, and academic performance define student characteristics. Withal, other constructs that can affect learners' characteristics and satisfaction like the size of the class, course design, learning methods, etc., are preferred to examine their effect on the student's understanding and academic results. Also, the validation of this research among diverse students is required due to the limited sample size.

H_2: Student characteristics have a significant relation to online education.

Course Load

The surplus amount of workload or course load always generates enormous pressure on students. The course load is associated with the level of course difficulty, anxiety, and stress. The students experiencing the course load cannot learn and perform efficiently (Rietveld et al. 2013). Excess or unmanageable workload is a feeling of pressure or stress that may cause inefficient learning and a desire to give up on a course (Zepke et al. 2005). The research supports the hypothesis generated. However, the course structure was not appraised during the analysis depicting that the course structure may not be an essential factor in predicting the effect of course load on the resulting student satisfaction, burnout, and academic performance.

H_3: Course load has a significant relation to online education.

Online Education

In today's world, another emerging option for students' education is online education. The comprehensive nature of technology has generated a flow in demand for online teaching and online learning (Limperos et al. 2015). Through online education, millions of people will have access to valuable credentials. Online education aims to control learning and make learning easy and effective (Jackson et al. 2010). According to You and Kang (2014), it is found that online education is advantageous to students who are self-regulated learners. The intelligence level and abilities of students were not considered for this research.

H_4: Online education has a significant effect on academic performance.

Burnout

Burnout may be defined as a sense of emotional exhaustion that may occur to individuals involved in some kind of work (Hogan and McKnight 2007). Burnout occurs when an individual keeps making efforts, contribution, and participation, but work is challenging (Fradelos et al. 2014). According to Peng et al. (2013), when academic burnout increases, a student's morale and motivational level decreases, and ultimately, the academic performance also decreases. Burnout can cause absenteeism, low satisfaction, less morale, and less self-confidence among individuals (Tsigilis et al. 2011). Students may feel continuous stress from their parents' and teachers' demands and expectations for good grades, leading to burnout. Students facing such academic burnout are less attentive and less concentrated on their education, leading to poor academic performance.

H_5: Burnout has a significant effect on academic performance through the mediating role of burnout.

Technology

An instructive technology controls the online environment and simplifies the learning procedure (Jackson et al. 2010; Januszewski and Molenda 2007). Embedding technology in instructing and learning has been a complication for the institutes. It has been a challenge to utilise technology in instructional conveyance techniques effectively. However, studies propose that partaking in an online academic environment depicts an improved academic result through effective communication (Issac et al. 2019). The research suggests that around two-thirds of all students utilise cell phones for learning and believe that technology can be vital in accomplishing better academic outcomes and coaching them for a progressively technology-reliant era (Maseleno et al. 2018).

An online learning environment allows the students and instructors to communicate live while utilising many features, for example, A/V, text-talk, intuitive screens, etc. (Martin and Parker 2014). However, it must be used within a controlled environment, as it may cause students to be distracted or confounded in a virtual domain (Warden et al. 2013). Despite technology being stated as a critical factor in online education, there is limited evidence proving these two factors' convergence. Likewise, there is a minimal role of technology in developing student engagement (Shin et al. 2012; Schindler et al. 2017 Steils et al. 2015). This research also highlights specific barriers with technological incorporation, that is, faculty and student engagement with technology. It also addresses certain limitations, like the selection criteria of technology for teaching and learning methods.

H_6: Technology has a significant relation with academic performance.

Instructor

Some studies revealed that communication during online education is preeminent to develop a productive schooling environment and intimidating students to learn (Martin and Parker 2014). Effective communication with the instructor and peers is vital for academic performance, with their success depending on the instructor's environment (Driscoll et al. 2012; Cavanagh et al. 2016). Instructors ought to urge the students to participate during class. Being responsive and providing appropriate feedback to students is another significant part of the online semester and builds trust.

H_7: Instructor has a significant relation with academic performance.

Academic Performance

It is emphasised that a student's academic success depends on the appropriate pedagogy, significant interaction, and instruction instead of the format and the content, of course (Driscoll et al. 2012). The course structure is also a significant factor in enhancing students' academic performance (Bir 2019). Several research types suggest that the online environment produces better academic results than the traditional method (Broadbent 2017). The research neglects the effects of job-commitment measures and work-study life conflicts (Fig.1).

Theoretical Background

Social Cognitive Theory

The Social Cognitive Theory (Yang 2004) is related to student characteristics and online education, which plays a vital role in academic performance. Here social cognitive theory relates instead of being just shaped by environments or inner forces, people are self-developing, self-regulating, self-reflecting, and proactive.

Constructivism Theory

The constructivist approach (Nwankwo 2015) is justified by the current study because it involves and examines patterns to understand how students explain their experiences during online education. Online courses are done at the learner's pace, which will require discipline and time management ability to complete the class within time. Apart from the importance of time management, one might ultimately disturb the academic performance of an individual.

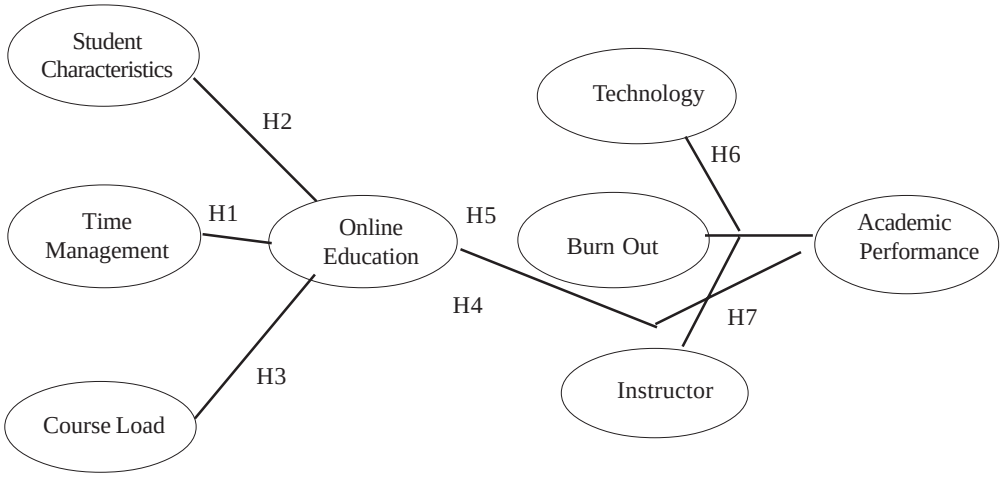

Fig. 1. Conceptual model
Note: The above model is built by researchers based on the literature review

Conservation of Resources (COR)

The Conservation of Resource (COR) (Halbesleben et al. 2014) theory best explains the relationship between course load and burnout. COR and burnout are examined by using resources that have impacted a learner's mood, with recent research outcomes that emotional exhaustion had the most robust relationship with depressive symptoms. There is a direct relation between course load and burnout that causes an individual's academic performance. Excessive workload (office and academics) may lead to burnout of individual characteristics and may negatively influence student academic performance.

Online Collaborative Theory (OCL)

According to the Online Collaborative Theory (Picciano 2017), the instructor has a unique and vital role in online learning rooms. In online learning, the instructor's role is shifted to that of a provider, entertainer or a facilitator where students take more responsibility for the learning process and generate discourse that conclusively transforms students' academic performance.

Transactional Distance Theory (TDT)

The Transactional Distance Theory (Gokool-Ramdoo 2008) focuses on creating such a distant environment where the students and instructors can interact with each other without any disturbance. It relates to innovative pedagogical methods that need a sound technological base and organising the resources.

METHODOLOGY

This research is based on positivism research philosophy, as it is a quantitative approach. Researchers tend to acquire a quantitative or positivistic research philosophy approach when examining the reality and facts, as it has to be free from personal biases (Higgs and Rowland 2005). The deductive approach methodology tests the validity of presumptions (or hypothesis/theories), whereby the inductive approach adds to the gain of new generalisations and theories (Azungah 2018).This research followed a causal research design, which, according to Walsh (1979), is related to non-experimental research. In this research design, the cause-and-effect relationships are identified by framing people's batches and slightly on an explanatory design that tends to explain the details. Following the causal model, this research takes student characteristics, time management, and course load during online education and studies its effect on academic performance as a dependent variable. The sampling design for this study is purposive sampling, also

known as judgment sampling. The rationale of purposive sampling is to collect data from students who have experienced online medium of education, which is the most widely used sample technique for optimum use of limited resources (Patton 2002). The sample selected is sufficient enough to gauge the response. According to Hair et al. (2014), the respondents for multivariate analysis 5-10 responses are sufficient for each item. It represents a non-random sampling technique that needs no hidden theories or a defined number of informants.

Measures

Scales of measurement for the study are all adopted and adapted. Four items for student characteristics are adopted and then adapted from the studies of Jansen (2016), Sokoloff (2015), and Jones (2016). Four items for time management are taken from Obijiaku (2019) and Simar et al. (2012). Four items for course load are adopted from Sansgiry and Sail (2015), García-Ros et al. (2018). Five items for online education are adapted from Luaran et al. (2016) and Abramenka (2015). Four items for burnout are taken from Bresó and Salanova (2007), García-Ros et al. (2018), and Kingdon et al. (2015) .Four items of technology are taken from Kintu (2017) and Adnan and Anwar (2020). Four items for the instructor are adopted from García-Ros et al. (2018), Abramenka (2015), and Bentz (2009). Finally, four academic performance items are from Kingdon et al. (2015) and Zamani and Pouratashi (2018).

Statistical Modelling

For this research, the PLS (SEM) technique is used. Using the PLS (SEM) is to check each item's contribution on a latent variable possible in SEM. This section discusses the descriptive statistics, structural equation modelling, and other measurement techniques used for the study. Since the study follows the non-normal distribution of data, therefore PLS-SEM is capable of handling non-normal data with the bootstrapping method

RESULTS AND DISCUSSION

The multivariate analysis applies statistical methods that analyse multiple variables simultaneously. Researchers can also study two distribution measures, that is, skewness and kurtosis, which examine the normality's data deviation. If the p-value of both the measures lies below 0.05, then the data is non-normal, which is why PLS-SEM is used for analysis having the ability to normalise the data. The outer loadings measure the reliability of indicators of all constructs having values 0.7 and above. The indicators with outer loadings less than 0.7 will be eliminated (Hair et al. 2012). Therefore indicators AP2, AP4, BO4, ST4, and TM1 were eliminated on this basis having outer loading below 0.7.

Reliability

Reliability defines the construct's consistency over numerous retests on data performed at different times (Fowler et al. 2018).

Composite Reliability

Table 1's composite reliability is tested based on whether its composite reliability comes out to be $\geq$0.7 (Fornell and Larcker 1981). The composite reliability formulates internal consistency and constructs reliability. Table 1 depicts that the composite reliability is >0.7 of all the constructs.

Table 1: Composite reliability

Academic performance	0.742
Burnout	0.847
Course load	0.873
Online education	0.905
Student characteristics	0.892
Time management	0.833

Note: This table shows the composite reliability of the constructs. All values should be 0.7 or less to be considered reliable.

Validity

Validity determines the accuracy and relevancy of the research model's constructs and indicators (Borsboom et al. 2004).

Convergent Validity

In Table 2, convergent validity formulates whether all the indicators converge and form the construct in its actual essence. All indicators should have AVE (Average Variance Extracted) to

be greater than or equal to 0.5 (Fornell and Larcker 1981). All indicators in this research have AVE values ≥0.5, as indicated in Table 2.

Table 2: Average Variance Extracted (AVE)

Average Variance Extracted (AVE)	
Academic performance	0.589
Burnout	0.649
Course load	0.633
Online education	0.657
Student characteristics	0.734
Time management	0.625

Note: This table indicates convergent validity values, which should be 0.5 or above.

Discriminant Validity

In Table 3, discriminant validity tests distinction quotient in between the constructs (Hair et al. 2014). HTMT ratio between constructs should be less than or equal to 0.85. In this research, all constructs are discriminant except time management and course load, time management, and student characteristic (see Table 3).

Structural Model Evaluation

The structural model defines the predictive relevancy of the internal model and linkages between proposed constructs. All proposed hypotheses are examined and verified based on the outcomes of this method. All hypotheses have a p-value <0.05 are accepted while others are rejected (Götz et al. 2009). Tables 4 and 5indicate all outcomes, and from these results, hypotheses H1, H2, H3, and H4 are accepted. The mediation and moderation relationship is calculated via path coefficient and specific indirect effects of bootstrapping, which shows that H5 and H6 are rejected and H7 and H8 are accepted. Table 6 represents the moderation effect of instructor and technology, and H9 is accepted, which indicates that there is a moderating effect of instructor between online education and academic performance, however technology does not moderate the relationship, and therefore H10 is rejected.

Descriptive Statistics

Descriptive statistics provide an overview of the data with measures like mean, mode, median, range, standard deviation, skewness, and kurtosis to analyse its necessary competencies (Singhal et al. 2014). The data has been analysed through SPSS, and three cross-tabulations have also been formed (see Tables 7, 8 and 9). Table 7 presents students' marital status and their preferred medium of learning. It is seen that both married and single students prefer the traditional

Table 3: Discriminant validity (HTMT ratios)

	Academic performance	*Burnout*	*Course load*	*Online education*	*Student characteristics*
Burnout	0.156				
Course load	0.18	0.36			
Online education	0.285	0.389	0.836		
Student characteristics	0.154	0.386	0.771	0.825	
Time management	0.303	0.386	0.882	0.833	0.857

Note: This table shows discrimination among constructs with vales 0.85 or less.

Table 4: Path coefficients

	Original sample (o)	*Standard error*	*T Statistics (|O/STDEV|)*	*P Values*	*Decision*
H1: Course Load -> Online Education	0.372	0.07	5.286	0.000	Supported
H2: Online Education -> Academic Performance	0.142	0.065	2.205	0.014	Supported
H3: Student Characteristics -> Online Education	0.35	0.059	5.904	0.000	Supported
H4: Time Management -> Online Education	0.175	0.061	2.87	0.002	Supported

Note: This table shows the direct relationship between the constructs and indicates the supported constructs with P-values less than 0.05 and non-supported constructs.

Table 5: Specific indirect effect

	Original sample (o)	*Standard error*	*T Statistics (|O/STDEV|)*	*P Values*	*Decision*
H5: Online Education -> Burnout_ >Academic Performance	0.005	0.026	0.199	0.842	Not supported
H6: Student Characteristics -> Online Education-> Burnout-> Academic Performance	0.058	0.032	0.189	0.675	Not supported
H7: Time Management -> Online Education-> Burnout-> Academic Performance	-0.046	0.028	0.197	0.779	Not supported
H8: Course load -> Online Education->Burnout-> Academic Performance	0.055	0.030	0.189	0.001	Supported

*Note:*This table shows the direct relationship between the constructs and indicates the supported constructs with P-values less than 0.05 and non-supported constructs.

Table 6: Moderation effect

	Original sample (o)	*Standard error*	*T Statistics (|O/STDEV|)*	*P Values*	*Decision*
H5: Online Education -> Burnout_	0.005	0.026	0.199	0.842	Not supported
H9: Instructor*Online education -> Academic Performance	0.161	0.09	1.784	0.037	Supported
H10: Technology*Online Education -> Academic Performance	-0.046	0.073	0.63	0.265	Not supported

Note: This table shows the direct relationship between the constructs and indicates the supported constructs with P-values less than 0.05 and non-supported constructs.

way of learning, and afterward, a hybrid mode of learning, and a completely online medium is less preferred. The demographic profile presented in Table 8 shows mode of online education, program in which students are enrolled, and type of students. The table shows that 174 students are part-time students. Out of 174 part-time students, 124 are enrolled in the bachelor's program and 50 in the master's program. These students are taking all three online education forms, that is, traditional face-to-face, hybrid, and web-based learning. The number of students experiencing hybrid mode of education in the master's program is more than any other medium. Full-time students enrolled in the bachelor's program are 36, and the majority use a hybrid mode of learning, while the number of students enrolled in the master's program is 103 and they are also using a hybrid learning system. Table 9 represents the descriptive statistics of data, for sample sizes greater than 300, the absolute values of skewness and kurtosis without considering z-values, absolute skew value larger than 2 or an absolute kurtosis (proper) larger than 7 may be used as reference values for determining substantial non-normality. According to Table 9 statistics the data is normal

Table 7: Cross-tabulation of marital status and preferred learning method

	Preference			
	Traditional learning (all face to face classes)	*Hybrid learning (some online courses)*	*Web learning (all online courses)*	*Total*
Marital Status				
Single	112	102	43	257
Married	19	20	17	56
Total	131	122	60	313

Note: This table shows the cross-tabulation of marital status and preferred learning method of the data set.

Table 8: Cross-tabulation of program, preference, and student type

	Preference			
	Traditional learning (all face to face classes)	*Hybrid learning (some online courses)*	*Web learning (all online courses)*	*Total*
Part-time Student				
Program Bachelor's Program	69	43	12	124
Master's Program	12	25	13	50
Total	81	68	25	174
Full-time Student				
Program Bachelor's Program	14	17	5	36
Master's Program	36	37	30	103
Total	50	54	35	139
Total				
Program Bachelor's Program	83	60	17	160
Master's Program	48	62	43	153
Total	131	122	60	313

Note: This table shows the program's cross-tabulation, preference, and student type of data set.

because its statistics and kurtosis value are within the range of normality (Kim 2013).

The criteria for the support or non-support of hypotheses are p-value less than 0.05 and t-statistics is 1.645 or higher, as all the hypotheses are directional. The result of direct relationships H_1, H_2, H_3, and H_4 are significant at five percent and are retained. According to Yokoyama (2019), online education has a positive impact on academic performance. Effective online teaching may also require students' characteristics explicitly, time management, and personal learning skills. These characteristics are critical to distance and online education (Eisenberg and Dowsett 1990; Ehrman 1990; Bambar et al. 2009).

In this study burnout and online education are introduced as serial mediators. All variables' p values are more than 0.05, showing that burnout and online education do not have a mediating effect between variables except in the course load. Course load impacts online education, and then online education leads to burnout among students, decreasing academic performance.

According to current research in recent times, burnout is inconclusive (McCann and Holt 2009). The practitioner-based literature identifies burnout as a unique phenomenon (Cross and Pollk 2018). Several possible reasons for burnout amongst online classes have emerged from literature, which are workload issues, course load, and issues related to the isolation of online teaching, including the inherent distance in asynchronous discussion forums and the lack of daily in-person interactions with peers, and health-related stress due to COVID-19 (Hogan and McKnight 2007; McCann and Holt 2009; Sasangohar et al. 2020).

The results of moderation see (Table 6) conclude that the instructor does moderate the relationship between online education and academic performance. However, the moderating effect of technology is statistically insignificant. According to Jaggars and Xu (2016), student-instructor relationships is very important because it plays a vital role in making the course exciting and makes students motivated and engaged in online learning. The importance of an engaged instructor in online learning is in line with Holmberg's (1995) theory that instructors must create a personal relationship with students to motivate them to succeed and open doors for more intitutive learning during an online course.

CONCLUSION

This study concentrated on identifying the impact of online education and academic performance individually and through an OE, BO, and AP indirect path. Mediator proposed was burnout (BO). Results showed that OE in coordination with BO does not significantly affect academic performance, and therefore, the BO's moderation in this path is insignificant. It was also evident that better instructor support during online education improves learning, and thus academic performance is improved. Theories applied in the research were Social Cognitive Theory,

Table 9: Descriptive statistics

	Explanation											
	N statistic	*Range statistic*	*Minimum statistic*	*Maximum statistic*	*Sum statistic*	*Mean statistic*	*Std. error*	*Std. deviation*	*Variance statistic*	*Skewness statistic*	*Std. error*	*Kurtosis statistic*	*Std. error*
Gender	313	1	1	2	447	1.43	0.028	0.496	0.246	0.292	0.138	-1.927	0.275
Age	313	3	1	4	562	1.80	0.042	0.736	0.541	0.683	0.138	0.226	0.275
Program you are enrolled in	313	1	1	2	466	1.49	0.028	0.501	0.251	0.045	0.138	-2.011	0.275
Student type	313	1	1	2	452	1.44	0.028	0.498	0.248	0.226	0.138	-1.961	0.275
Preference	313	2	1	3	555	1.77	0.042	0.749	0.561	0.397	0.138	-1.126	0.275
Software	313	5	1	6	639	2.14	0.072	1.247	1.555	1.097	0.141	0.979	0.281
Valid N (listwise)	313												

Note: This table shows the Descriptive Statistics of the demographic data.

Constructivism Theory, Transactional Distance Theory, Conservation of Resource, and Online Collaborative Theory. These theories impacted the study by providing basis/sub-constructs for several critical constructs of the proposed multi-order model, and outcomes of analysis depend invariably on these theories' constructs.

Theoretically, this study contributes to the existing literature in online education and academic performance. The research contributes to the literature by studying the topics of online education during COVID 19. Although similar research has been conducted to understand online education, none of the research has been conducted on this topic with serial mediation effect and technology and instructor's moderating effect. Therefore this research theoretically contributes to studying different moderating and mediating variables. Empirically, this research is done for the first time in Pakistan and concerning students of business school. PLS-SEM is used to analyse the results. Above all, this study will have the practical implication on academia-industry because dynamics of academia has now changed from conventional to online education and this research will contribute to academia practitioners in understanding the significance of online education and how it impacts academic performance of the students.

RECOMMENDATIONS FOR FUTURE RESEARCH

This research would give a better idea if the sample size is increased, as online education has been serving not only Karachi, but all over the world, and this research focused only on 313 respondents. Also, it exclusively focused on business schools, whereas engineering and other institutes also use online education. Other technological barriers may also be accounted for. The discriminant validity must also be focused on while developing the questionnaire. According to these responses, burnout does not mediate between online education and academic performance, resulting in a different outcome when studied in a diverse sample size. As it is a research with a broader scope, it has to be observed for a more extended time observing all the changes.

LIMITATIONS

As discussed above, this study has made significant theoretical and marketing contributions to literature and practitioners, but it does have some limitations to it. Firstly, this study was conducted in Pakistan and for business schools only, limiting the results to business schools, and hence influencing the generalizability of the results to other contexts. Secondly, the sample size was limited to 313 responses only and based on only 6 business universities in Pakistan. Thirdly, this research does not discuss the significant technological barriers like load shedding, power failures, and inconsistent internet, which could be investigated in future research because these impact online learning.

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Paper received for publication in December, 2020
Paper accepted for publication in January, 2021