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THE BARRIERS AND CHALLENGES FACED BY STUDENTS IN ONLINE EDUCATION DURING COVID-19 PANDEMIC IN PAKISTAN

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KEYWORDS

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ABSTRACT

The global wave of COVID-19-pandemic has adversely affected the education sector. All educational institutions in Pakistan have been closed and are moving towards online teaching. However, researchers are not clear about the barriers and challenges that will be faced in implementing online system? This study has examined barriers and challenges faced in Online Education during COVID-19-Pandemic in Pakistan. Using a cross sectional research design, data were collected via online questionnaire from sample of 708 from the public sector university of Pakistan. The data were analyzed through descriptive & inferential statistics. Results revealed that students faced barriers and challenges like problems with the technology, lack of the training, low motivation, resources constraints and low computer literacy. Such findings are in the concurrence with the previous literature. This study strongly recommends that government should take proactive steps in overcoming barrier and challenges as faced by students. Government should give funds to the universities for updating their technologies required for online education.

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INTRODUCTION

The world has been hit by the notorious COVID-19 pandemic, which has disrupted almost every sector of the economy (Fernando, 2020). The Education sector has no exemption, where the conventional education system is no longer working and the educational institutions around the world are looking for alternative online education (Myers, 2020). This is because of the entire educational institutions around the world have been closed due to lockdowns and the students cannot meet their teachers in person. (Tam & El-Azar, 2020). World Bank is proactively working with the ministries of education of the more than dozen countries around the world, in order to provide financial support for the development of online or e-education. Such efforts are made

in order to ensure that each and every student around the world could get benefit from the e-education (World Bank, 2020). However, it should be kept in mind that the e-education system is dependent on technology and this technology dependency has made it difficult to use and also inaccessible (Ractham & Chen, 2019). Like the rest of world, the educational institutions in the Pakistan have been closed due to COVID-19 pandemic. Higher Education Commission (HEC) of Pakistan is working to design an alternative online education system, which can reach each student's home (Ain, 2020). In this regard, HEC has made achievements like, e.g., formulation of the Online Readiness Policy Guidance Note and Policy Guidelines for Universities on COVID-19.

Despite these achievements, the universities are facing different barriers and challenges. The teachers and students both are not well trained for the online teaching, moreover, they do not have enough technologies, e.g., the internet, mobile androids, or laptops to utilize for the online teaching. Moreover, both the students and teachers are not stimulated to learn online and the technical or analytical subjects and laboratory work cannot be taught on online easily (Ali, 2020). Apart from this, past literature documents barriers and challenges of online education, which include administrative issues and social issues (Kebritchi, Lipschuetz & Santiague, 2017); lack of training & skills (Sun & Chen, 2016); concerns about the quality of education (Kentnor, 2015); unable to meet costs (Deming, Goldin, Katz & Yuchtman, 2015) and technical issues like no having internet, mobile androids, or laptops (Kaliisa & Picard, 2017). However, a question arises whether the educational institutions in Pakistan are facing similar barriers and challenges in during this global wave of COVID-19-pandemic in prevailing situations, where all educational institutions have been closed and they are pushed toward online delivery of relevant courses? In this connection, in order to find the answers, this study will work on the following research objectives:

1. To know the barriers faced by the students in higher educational institutions in the online education system.
2. To know the challenges faced by the students in higher educational institutions in the online education system.

The findings of this study will be significant at individual, institutional and policy levels. At the individual level, both students and teachers can get awareness about the barriers and challenges that are faced during implementing online education system in universities. At the institutional level, administrative staff can understand the barriers and challenges of online education and they can work on providing a more conducive working environment to students and teachers. At policy level, ministers in education ministry can get useful insights from findings of this study for formulation of policies and procedures for online education in this global wave of COVID-19-pandemic.

LITERATURE REVIEW

Online education is a kind of educational instruction in which medium for instructions is mostly electronic (internet) and student get the education at home (Kentnor, 2015). The definition of online teaching has been evolving with the passage of time. From a simple one, e.g., McIsaac, Gunawardena and Jonassen, (1996) defined online education as "no more than a hodgepodge of ideas and practices taken from traditional classroom settings and imposed on learners who just happen to be separated physically from an instructor", to more modern definition, which states that online education is a systematic process in which computer and internet technologies

are created and proliferated so that ideas and knowledge can be propagated to people around world without physical barriers (Sun & Chen, 2016). Online education has become more popular in advance countries (Allen & Seaman, 2014). The availability of the internet and online courses plasticity have enabled it as a vital part of imparting higher education (Luyt, 2013). In Pakistan, problems of non-accessibility to internet and non-availability of electronic gadgets is generally faced.

This situation has got more worsen after the advent of this global wave of COVID-19-pandemic, where the educational institution around the Pakistan have been closed and they are pushed to adopt the distance learning online education system. However, this task is not easy, and the all education institutions are facing diverse barriers and challenges while implementing the online education system. In the past, several empirical researches have been carried out to investigate barriers and challenges of the online education system. Some studies have identified emerging problems that put effects on online education quality like unavailability of technology, no proper communication, the lack of time management, online pedagogical issues, and issues in online student's evaluation (Mendes, Bastos, Amante, Aires & Cardoso, 2019; Blau, Shamir & Avdiel, 2020). Other studies have identified barriers like e.g., administrative issues and social issues (Kebritchi et al., 2017); lack of training and skills (Sun & Chen, 2016); concerns about quality of education (Kentnor, 2015); unable to meet the costs (Deming et al., 2015) and technical issues where the students have no internet facilities, mobile androids and laptops (Kaliisa & Picard, 2017).

There are different theories on the barriers and challenges of online education. For example, the E-Learning Theory has certain principals, like pre-training principle, redundancy principle and Expertise effect (Haythornth & Andrews, 2011), which are related to the barriers like, lack of training, technical problems and skill shortage faced by students in online education. Similarly, the information boundary theory states that every person has boundary for sharing information with balancing a need for disclosure with the need for privacy (Petronio, 1991). Considering this theory, it can be understood why some students are conscious about their privacy matters. Finally, conservation of resources (Hobfoll & Freedy, 2017) states that human maintain their existing resources and try to find new resources, since there is always scarcity of resources. This theory can explain how students and university administration can collectively face challenges of financial and resource shortage in implementing the online education system. Based on the findings of previous studies and theories on the problems of the online education, the research framework has been offered in the data analysis section showing the clear position on each issue relating to problems faced by students in online education system during COVID-19-Pandemic in Pakistan:

RESEARCH METHODOLOGY

This section provides the research design comprising the methods and procedures and tools and techniques necessary for conducting study, with the aim to achieve the objectives of study more systematically.

Research Design & Strategy

A cross sectional case study research design was adopted since, a single university was taken as special case, with positivist approach by collecting data quantitively. The researchers prefer this

design due to time and cost effectiveness as suggested by various scholars (Cooper & Schindler, 2016).

Population & Sample

Since this study was conducted on the public sector university located in the southern Khyber Pakhtunkhwa, Pakistan, therefore, population of this study included all 1764 students at said university. However, it was neither economically suitable nor logistically feasible to collect data from the whole population; therefore, a sample was drawn from total population in a two-stage sampling process. In the first stage, the population was divided into strata based on academic departments and gender, as clear from Table 1. In next stage, a simple of 708 students was taken through simple random sampling technique by taking sample randomly from each stratum. The simple random sampling technique is good for an already known population, as it gives freedom to researcher in choosing number of sampling units since each unit has equal chance of being selected (Martínez et al., 2016). A simple size of 708 was taken, which is 40% of total population. Such sample size is true representation of total population characteristics (Cooper & Schindler, 2008).

Table 1 Population and Sample of Study

	Gender wise distribution of Respondents			
Academic Departments	Male (N)	Male (n)	Female (N)	Female (n)
English	160	64	200	80
Physics	96	39	72	29
Chemistry	23	9.2	15	06
Communication & Media Studies	104	42	25	10
Management Sciences	115	46	15	06
Zoology	05	02	30	12
Botany	06	02	28	11
Computer Science & Bio Informatics	172	69	96	39
Education & Research	15	06	02	02
Geology	230	92	00	00
Library and Information Science	170	68	185	74
TOTAL	1096	439	668	269

Note: N= Population; n= Sample

Data Collection

The data were collected over online self-administered questionnaire. The online questionnaire is more conveniently accessible, cost and time effective (Sue & Ritter, 2012). This questionnaire was designed by adopting scales from following sources relating to barriers and challenges to education:

1. Administrative Issues: It was measured by 04 items of the questionnaire developed by Muilenburg and Berge (2005) on the Problems of Online Education;
2. Social and Privacy Issues: It was measured by 04 items of questionnaire developed by Alshehri and Lally (2019) on disadvantages of social media tools for learning.
3. Lack of Training and Skills: It was measured by 04 items of questionnaire developed by Muilenburg and Berge (2005) on the problems of online education;

4. Lack of Finances: It was measured by 04 items of the student financial wellness survey report developed by Klepfer et al. (2018).
5. Technical problems: It was measured by 02 items of the questionnaire developed by Muilenburg and Berge (2005) on the problems of online education; and 03 items of the questionnaire developed by Yang & Cornelius (2004) on the students' perceptions about online education;
6. Poor Institutional Support: This dimension was measured by 04 items of the Checklist developed by Fetzner (2003) on Institutional Support for Teaching;
7. Lack of family support: It was measured by 02 items of the questionnaire developed by Muilenburg & Berge (2005) on the Problems of Online Education; and 02 items of questionnaire developed by Musingafi et al (2015);
8. Challenges in laboratory work: It was measured by 04 items of questionnaire developed by Rowe et al. (2018) on the Efficacy of Online Laboratory.

The response related to barriers and challenges were scaled on the five-points Likert scaling procedure. The questionnaire was created online in the Google Forms and then its link was given to teachers, who were teaching their respective courses in selected 13 departments of university. The online questionnaire was distributed among simple of 708 students and responses were recorded.

Data Analysis

1. Missing data analysis was conducted through the little's test for missing data completely at random;
2. The Cronbach's alpha coefficients were calculated to determine the reliability of the data;
3. Principal Components Analysis with varimax rotation was run to determine the factors structure and construct validity of the data;
4. Descriptive Statistics, like the mean, percentage and frequency tables have been used to report results of the demographic profile and the problems faced by students in online education;
5. Structural Equation Modelling with the maximum likelihood estimation technique (Hair et al., 2010) was run to analyze relationship between barriers and challenges. In the first step the model fit was determined through fit indices, e.g., Chi Square, Normed Chi-square, and Normed Fit Index. After acceptable model fit was achieved then in second step the linkages between barrier, challenges and demographic characteristics were determined.

RESULTS OF STUDY

This is the main section where the research has been presented obtained through the statistical procedures by analyzing the primary data collected from the respondents. The results of this study have been presented in the sequence that is necessary to present the findings in systematic manner:

Missing Data Analysis

Before doing the final data analysis, the missing data analysis were carried out in SPSS-20. The results showed that out of 708 distributed questionnaires, only 525 questionnaires were filled by the students. The 525 questionnaires were further analyzed for knowing missing data by running the Little's Test for Missing Data Completely at Random (Little, 1988). The results

showed that 75 questionnaires had missing data that exceeded the missing data range of 10%. These cases were deleted since questionnaires having more than 10% missing data should be deleted (Hair et al., 2010). In this way the sample size of the current study dropped from 525 to 450.

Reliability & Validity Analysis

Table 2 shows Cronbach's alpha coefficients for seven variables of study. The Cronbach's alpha coefficients are within acceptable range, thus proving internal consistency and reliability of the data.

Table 2 Reliability Statistics

S.No.	Variables	Cronbach's alphas
1	Administrative Issues	0.61
2	Social and Privacy Issues	0.66
3	Lack of Training and Skills	0.70
4	Lack of Finances	0.62
5	Technical problems	0.72
6	Poor Institutional Support	0.53
7	Lack of family support	0.63
8	Challenges in laboratory work	0.56

In next step, the construct validity was determined by running Principal Component Analysis with the Varimax Rotation (Kaiser, 1974). Result of the Principal Component Analysis showed that the factor loading for all variables were within acceptable range. Moreover, communalities, KMOs and cumulative variances are in acceptable range, providing enough proof of construct validity.

Table 3 Construct Validity statistics

Variables	Factor-Loadings	Total Communalities	KMO Values	Cumulative Variances
Administrative Issues	0.71 to 0.80	0.54 to 0.63	0.54	31.94
Social and Privacy Issues	0.80 to 0.86	0.68 to 0.75	0.70	54.16
Lack of Training and Skills	0.53 to 0.86	0.55 to 0.79	0.52	38.85
Lack of Finances	0.71 to 0.92	0.51 to 0.85	0.72	73.41
Technical problems	0.65 to 0.82	0.51 to 0.68	0.80	56.19
Poor Institutional Support	0.60 to 0.87	0.50 to 0.61	0.65	49.93
Lack of family support	0.56 to 0.78	0.51 to 0.62	0.67	48.52
Challenges in laboratory	0.65 to 0.90	0.50 to 0.90	0.54	52.40

Barriers & Challenges in Online Education

The results regarding prevalence of barriers and challenges in online education shows that the student had experienced different kind of barriers and challenges, as clear from Table 04. The students faced problems like, Privacy Issues (438 out of 450 either fully or moderately agreed that they had privacy issues); the lack of the training and Skills (433 out of 450 either fully or moderately agreed that they had lack of training and computer skill shortage); Lack of Finances

(358 out of 450 either fully or moderately agreed that they had lack of the finances to afford the online education expenses); Lack of Family Support (444 out of 450 either fully or moderately agreed that they had lack of family support in pursing the online education); Challenges in Laboratory Work (367 out of the 450 either disagreed or strongly disagreed that their online laboratory work is simple) meaning that they faced problems in the online laboratory work. Surprisingly, the student did not face any problems related to administrative or institutional support.

Table 4 Data on Prevalence of Barriers & Challenges in Online Education

	Cumulative Number of Respondents with Responses				
Dimensions	**SA**	**A**	**MA**	**DA**	**SDA**
Administrative Issues	00	00	90	325	35
Social and Privacy Issues	165	142	131	14	00
Lack of Training and Skills	00	348	85	17	00
Lack of Finances	162	119	77	34	58
Technical Problems	142	139	104	32	32
Poor Institutional Support	134	146	67	59	45
Lack of Family Support	147	201	96	06	00
Challenges in Laboratory Work	00	28	55	183	184

Note: SA= Strongly Agree; A= Agree; MA= Moderately Agree; DA= Disagree; SDA= Strongly Disagree

Barrier & Challenges in Online Education (Association)

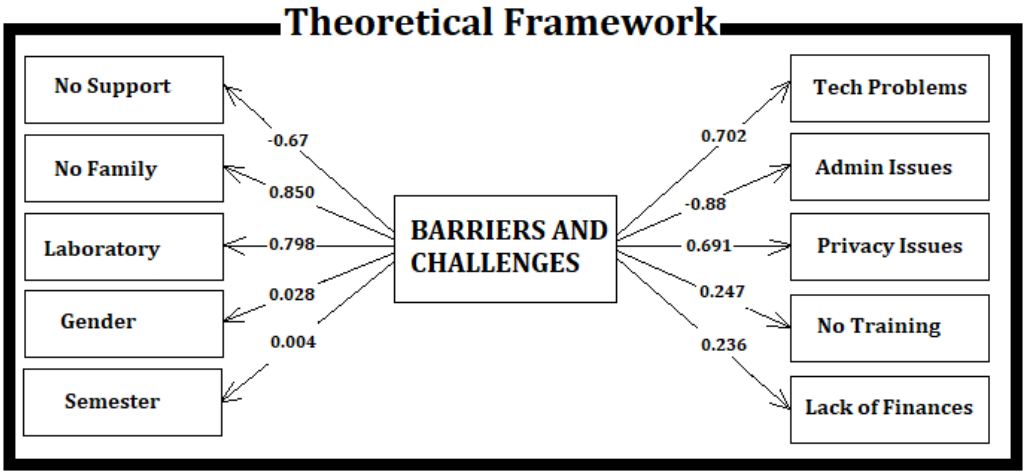
After determining the prevalence of barriers and challenges in online education, in this section, the association between barriers and challenges will be examined. This association was analyzed through structural equation modelling with maximum likelihood estimation technique (Hair et al., 2010). Initially a hypothesized model was built by splitting barriers and challenges in two latent variables in such a way that each of latent variable had five factors. This model did not yield good fit. Thus, another model was built in which all of the ten factors were modelled into one latent variable. In this way model fit improved as clear from Table 5. This model was finally accepted.

Table 5 Association between Barriers and Challenges

Models	**X^2**	**df**	**X^2/df**	**RMSEA**	**RMR**	**CFI**	**GFI**
Hypothesized Model-01	140	34	4.11	0.084	0.013	0.933	0.941
Hypothesized Model-02	117	32	3.65	0.077	0.012	0.948	0.954

The Figure 02 shows structural equation model with standardized regression (beta coefficient) weights. It is clear from standardized beta weights that majority of the barriers and challenges are positively associated with each other, expect two barriers, i.e., Administrative Issues (β= -0.88, p=0.000) and Lack Institutional Support (β= -0.67, p=0.000) were found negatively associated with rest of barriers. It was because that the students did not face any administrative issues or lack of institutional support. This is also clear from the descriptive findings in the previous section. The gender (β= 0.028, p=0.000) and semester (β= 0.04, p=0.000) are also positive associated because, these barriers and challenges are faced across both genders and all semesters.

Figure 2 Structural Model for Association Between Barriers and Challenges



DISCUSSIONS

This study broadly aimed at knowing the challenges faced by the student in the online education, while the universities are implementing the online education system. The results of this study showed that students faced barriers and challenges like, social and privacy challenges; lack of training and skill problems; financial problems; technical problems; challenge of lack of family support in online education and challenges in laboratory work. The findings of this study are in an agreement with the previous studies on the barriers and challenges that are faced by students in online education. The review of existing literature points out technical problems related to online education, these problems include plagiarism issues, late submission of online task, and inadequate finances to support online devices, no or weak internet, no mobile or laptops and no Wi-Fi (Elango et al., 2008; Kibuku et al., 2020). Other problems include lack of administrative support, poor family support and lack of students' training (Muilenburg & Berge, 2005). Past literature documented that students faces financial issues in the online education (Klepfer et al., 2018).

Apart from western researchers, there are some Pakistani researchers, who have conducted research in past on the barrier and challenges of the online education, e.g., Qureshi (2012) conducted a study on challenges of implementing the e-learning inside the Pakistani universities and found that there are different challenges to e-learning in Pakistani universities, including, technical difficulties, lack of access to computers, English language problems, low computer literacy, and privacy issues. Similarly, in another study led by Hussain (2017) found the various challenges faced by the students in online learning system of Pakistan, including lack of access to online information, networking problems, financial issues, technical issues in handling computers, and lack of support from the institutions. Both of the above studies stressed that the online education is a need of the day and Government of Pakistan should take serious steps to improve the online education system in Pakistan. The above discussed results provide sufficient insights about the nature of the problems that are faced in implementing any online system of education.

It further tells that while implementing online education in past, the universities faced different problems, so it is very likely that at the present time, the universities will face problems while implementing online education due to COVID-19 pandemic. Therefore, the universities need to make a broad mechanism that can enable the universities to deal with the all kind of barrier or challenge that are expected to be faced by the universities in implementing the online education system. It requires a broad range of efforts both at induvial level (from students & teachers' side) and at institutional level (from university management side) for dealing barriers and challenges. Moreover, ministry of education and higher education commission of Pakistan need to devise policies for the online education, and they need to give special funds to universities for obtaining the required technology and other resources. In this regard, the policy related achievement of higher education commission, e.g., online readiness policy guidance note and policy guidelines for universities on COVID-19 and the efforts of ministry of federal education and professional training, e.g., Pakistan national education response and resilience plan for Covid-19, are really appreciating, however, it is the time now to successfully implement the prerequisite policies and procedures.

CONCLUSION

Due to the contemporary technological advancement in almost every sector of economy, the education sector needs to upgrade itself by adjusting itself to the need of modern society. One of such adaptions would be formulation and implementation of the mechanism for the online education. Pakistan being a developing country has an educational setup mostly consisted of the manually traditional type of education, and the modern online education system is in its infancy stage in Pakistan, therefore, government of Pakistan should pay special attention to upgradation of traditional type of education into modern online education system, especially in the current wave of COVID-19 pandemic, the adaptation of traditional education system into online modern one is the dire need of situation. In this regard government should do first the need assessment of the education sector for its requirements of online system then in next stage it should provide the required technologies to institutions so that they can get equipped with latest technology to start online education. The teachers and students both should be given special training to get learn the online education system. So, online education system can be successfully developed in Pakistan.

Apart from this the universities of Pakistan should prepare themselves for the online education system by following the HEC Online Readiness Policy Guidance Note and Policy Guidelines for Universities on COVID-19. The teaches should do practice for learning the online education techniques and they should get themselves prepared for the forth coming era of online education in Pakistan. Finally, there are certain recommendations for the future researchers. The current study was cross sectional study, therefore, in future a longitudinal study should be conducted. The data in this study was collected from one university, in future, data should be collected from more universities. This study was on university students, in future, a study should be conducted on schools and colleges. This study has utilized descriptive statistics, in future, inferential based statistical analysis can be conducted for predicting the problems and prospects of online education system of Pakistan. In prevailing situation, such inferential analysis will be helpful in drawing any causative inference regarding the contributor nature of the some of the barriers or challenges.

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