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May 2021

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Humbhi, Shahzadi and tareen, shabbir, "Measuring the Impact of ICT on Students' Academic Performances: Evidence from Higher Educational Institutions of the Remote Areas of Pakistan" (2021). *Library Philosophy and Practice (e-journal)*. 5476. <https://digitalcommons.unl.edu/libphilprac/5476>

Measuring the Impact of ICT on Students' Academic Performances: Evidence from Higher Educational Institutions of the Remote Areas of Pakistan

Abstract

The main purpose of this paper is to investigate students' perceptions and attitudes towards the usage of ICT and its challenges in the higher educational institutions of Balochistan. A convenient sampling method was used to select 420 students from the top 6 higher educational institutions of Balochistan. Moreover, a Lickert-based closed-ended questionnaire was used for data collection purposes. The collected data were analyzed in SPSS Software. The results showed that 150 (39.5%) respondents were using ICT for academic events and 142 (37.4%) respondents were using ICT for their assignment completion. Furthermore, the study also highlighted some major challenges preventing students from using ICT are such as, 139 (36.6%) electricity failures, 150 (39.5%) leakage of privacy, and 120 (31.6%) lack of training and 178 (46.8%) the poor internet connectivity. The study also suggests steps that if taken would ensure better use of ICT and, in the long run, would establish a stable and productive relationship between ICT and student academic performance.

Keywords- Information and communication technology, higher educational institutions, students, usage, challenges, academic performances, Balochistan.

Introduction

There is a widespread belief that information and communication technologies (ICTs) can play a major role in transforming and modernizing our everyday lives, as well as educational structures and learning methods. In the education sector over the past few years, ICT has been significantly rising teaching and learning process. Therefore, the future learning environment is impossible and difficult without ICT usage (Fernández-Gutiérrez *et al.*, 2020; Comi *et al.*, 2017; Falck *et al.*, 2018; Khan *et al.*, 2011; Pelgrum & Law, 2003; Afari-Kumah and Tanye, 2009). The impact of ICT on educational outcomes highlights how it can enhance student outcomes by increasing access to knowledge and a broader variety of learning opportunities (Basri *et al.*, 2018; Spiezia, 2010; White, 2010). ICT can improve students' learning attitudes and interactions while also increasing their flexibility and autonomy of learning new things (Alderete *et al.*, 2017; Watson, 2001; De Witte & Rogge, 2014).

Furthermore, ICT can be used to improve teaching materials and make lessons more comprehensive, appealing, and interactive. As a result, the use of ICT will boost teachers'

teaching patterns and students' educational outcomes while also lowering long-term educational costs too (Casal, 2007; Comi *et al.*, 2017; De Witte & Rogge, 2014).

Generally, ICT has opened multiple doors of learning in an educational environment. The usage of ICT in higher educational institutions helps students to avail their required information in a short time from anywhere (Oliver, 2002). In an academic environment through ICT, students can have easy access to electronic information i.e. electronic books/journals, databases, search engines, and web 2.0 (Meerza and Beauchamp, 2017; Wilson *et al.*, 2014; Harvey, 2012; Okojie, 2010). ICT helps students to innovate, enrich, accelerate and extend their skills to strengthen and change their learning pattern (Davis *et al.*, 2009; Yusuf, 2005; Davis *et al.*, 2011; Chan, 2002; Tearle, 2004; Al-Ansari, 2006).

Whereas the advancement in technology eased human life, several obstacles caused like lack of resources, opportunities, poor electric supply, and lack of training, poor internet connectivity that are preventing the students from using ICT for their academic development (Rababah, 2020; Rexwhite and Onyenania, 2007; Myhill, 2002; Ghazi *et al.*, 2013).

Problem Statement

ICT has transformed the nature of education and the roles of students and teachers in an academic environment. It has changed the students' perspective towards reading, writing, and collecting information (Mbah, 2010). Therefore, the developed and underdeveloped countries of the world are paying more attention to the integration of ICT into their curriculum (Olakulehin, 2007). The higher educational institutions in Pakistan are also paying attention to the adoption and usage of ICT for facilitating their students and faculty and moderating their educational system. In this regard, several studies have been conducted on the adoption and usage of ICT tools by the students of the higher educational institutions of Pakistan (Shaikh & Khoja, 2011; Iqbal, and Ahmed, 2010; Shaikh, 2009; Hameed, 2006; Amjad, 2006; Khan and Shah, 2004). Whereas, very few studies were conducted to explore that how modern technologies are being used at the higher educational institutions of Balochistan. This province is the largest province of the country and the most deprived area too. Therefore, the facilities to the students are not available in the higher educational institutions of this province as compare to the rest of the three provinces of the country. So the level and the aptitude of using ICT tools among the students of the higher educational institutions of Balochistan are also differing (Tareen & Jabeen, 2019). Hence, there is a research gap that compelled the researcher to conduct this study to

investigate the level of the usage of ICT tools by the students of the higher educational institutions of Balochistan for enhancing their academic performances and also shed light on the obstacles the students face while using modern technologies.

Objectives of the study

1. To assess the ICT tools availability in the higher educational institutions of Balochistan.
2. To analyze the usage of ICT tools for learning perspective of students of the higher educational institutions of Balochistan.
3. To identify the obstacles that is preventing students from using ICT in the higher educational institutions of Balochistan.

Review of the literature

Modern technologies such as computers and Telecommunication have been the most remarkable and transformative of the technologies emerging over the past 30 years. Therefore, numerous literature has been reported on the evaluation of the level of the adoption and usage of ICT tools by the students for enhancing their academic performance. Oye *et al.* (2014) expressed that the usage of ICT has brought improvement in human knowledge. The authors further argued that the adoption of ICT in educational institutions has built an information bridge between the students and teachers. Furthermore, Hennessy *et al.* (2005) stated that ICT opens multiple doors for teachers and students to use technology for their academic activities. Moreover, Wang and Woo (2007) reported that the term ICT was not new for educational institutions it is as old as television and radio. But the emergence of new technologies like WWW has attracted the students and teachers to adopt ICT for teaching and learning purposes.

Additionally, Brown & Czerniewicz (2017) explored the variations between the male and female students' access and usage of ICT for learning purposes (Basri *et al.*, 2018). In another study, Slechtova (2015) investigated the behavior of the students of different disciplines towards the usage of ICT. The findings of the study pointed that the majority of the respondents were willing to use ICT for their academic purposes. Furthermore, Conole *et al.* (2008) studied the experiences of the students for using ICT tools. Data were collected from the students of four different disciplines of the institution. Findings of the study showed that the students had good facilities for having access to modern technology for their learning purposes (Jaiswal, 2020). In another study Thinyane (2010) analyzed 1st-year students' access to ICT tools for their academic purposes. A survey method was employed for data collection purposes from 290 students of two

different South African Universities. The results of the study exposed that majority of the respondents had been using the technology for fulfilling their academic requirements (Bartelet *et al.*, 2016).

Moreover, Wilson *et al.* (2014) examined the level of the usage of ICT by students of the Winneba University. The results of the collected data portrayed the competency of the respondents in using ICT ads for their learning and academic development purposes. In a study, Yeşilbağ *et al.* (2020) investigated how educational video games affect students' academic performance and attitudes toward the course in tenth grade. During the 2019–2020 academic years, 60 tenth-grade students from an Anatolian high school participated in the study. With a pre-and post-test experiment as well as a control group. Whereas the experimental group outperformed the control group on an academic achievement test. The findings show that video games can be used as an ICT method in education to improve students' academic performance in English learning.

Khare *et al.* (2007) conducted a study to determine the extent of the use of ICT by Ph.D. scholars at Sagar University, Madhya Pradesh, India. A structured questionnaire was distributed among the 96 respondents. The findings of the collected data portrayed that 34% of respondents were rarely using and 66% of respondents were frequently using ICT tools for their research purpose. Besides, Cristia *et al.* (2017) used an experiment in Peruvian rural schools to test a program that offered laptop computers to children for use at school and home. They used a test based on traditional national examinations, as well as multiple cognitive tests, to determine the program's outcomes. However, they discovered that the software had no major impact on math and language test scores. On the other hand, they discovered that the software had a positive impact on measures of cognitive abilities. These researchers discovered that the software increased computer use at home and school (Craig *et al.*, 2013).

Meanwhile, Hennessey (2010) pointed the challenges the students were facing while using ICT tools for their educational purposes. Whereas, these challenges such as power supply failure, non-availability of proper infrastructure, non-availability of training of using ICT tools, negative attitudes of the students towards the usage of ICT in the institutions, and poor internet connectivity are preventing students from using ICT tools in their institutions.

ICT research publications in Pakistan

The adoption and usage of ICT have significantly transformed the academic environment. The students are availing ICT facilities for acquiring knowledge, communication, entertainment, and research. Moreover, in a relevant study, Suhail and Bargees (2006) analyzed the level of the usage of the internet by the students of Government College University, Lahore. Data were collected from 200 students. The findings of the collected data highlighted that most of the students in the university were using the internet for their academic purposes. In another study, Bashir *et al.* (2016) examined the impact of the usage of the internet on the academic performances of the undergraduate and post-graduate students of the University of Punjab, Pakistan. The findings of the study portrayed a positive impact of the usage of the internet on the academic performances of the students. Moreover, the study highlighted that most of the respondents were using the internet for assignments and for conducting academic researches.

Moreover, Mahmood (2009) investigated the attitude of the medical students of Punjab towards using ICT tools. The results of the study elaborated the differences based on discipline, qualification, and gender. Comparing to male students were using ICT tools more frequently for socialization, academic discussions, and completion of assignments than female students. Additionally, Tunio *et al.* (2014) analyzed the consequences of the usage of ICT on the present age generation of the developed communities. The non-public colleges of Hyderabad, Pakistan, were chosen for conducting this study. Moreover, for the primary step, the coaching programs were launched for the students of the selected schools. The students were then examined on the premise of given training. The results indicated that with the right management of ICT tools, the students might exhibit a lot of tendencies about the notice and application of ICT tools.

While Ghazi *et al.* (2013) conducted a study on the barriers to the effective use of ICT in distance education. The data were collected from 200 students and 50 teachers. The results of the study recommended policy framework, adoption of ICT at all institutions, capacity building training for faculty, revision of curricula, electricity break down, provision of quality internet connectivity, and updating the existing infrastructure.

Methodology

The methodology for the present study was adopted in line with the method urged by Mohamed (2012) who recommended survey methodology and questionnaire as data collection instruments. Therefore, this study used the survey methodology to investigate the students' perceptions, attitudes towards the usage of ICT tools and its obstacles within the higher educational

institutions of Balochistan. The population for this study was taken from six higher educational institutions of Balochistan. For the completion of this study, a convenient sampling technique was adopted and the data were collected through the questionnaire, which was primarily supported by a five-point Likert scale of one to five points (strongly disagreeing, disagreeing, neutral, agree, and strongly agreed). A total of 420 copies of the questionnaire were distributed to respondents of the chosen universities in their lecture rooms and library with the permission and help of their lecturers and librarians. The data were collected within an amount of 9 weeks. In all, a total of 380 copies was completed properly and returned by the respondents. The collected data were analyzed using SPSS, including frequency, percentage, median, and mode, which were presented in table form.

Limitation of study

While conducting the study the researchers encountered certain challenges. Due to limited funds, the study was restricted to particular higher educational institutions of Balochistan province. Another highlighted issue was that the higher educational institutions were very far away from each other. Therefore, it was very difficult for the researcher to access the respondents. One more limitation was poor electricity supply and internet access, as Balochistan is the most deprived area of the country. Power supply and internet access-related issues created hurdles for the researcher while collecting the data.

Data Analysis and Results

Demographics

Table1. Gender distribution

<i>Gander</i>	<i>Frequency</i>	<i>%</i>
<i>Male</i>	219	58%
<i>Female</i>	161	42.4%
Total	380	100.00

The frequencies regarding the respondents on a gender basis shown in Table 1. It shows that there is a total of 380 respondents, from which 161 (42.4%) are female and 219 (58%) are male.

Table 2. Qualification distribution

Qualification	Frequency	%
Ph.D	1	3%
M-Phil	51	13.4%
Master	126	33.2%
BS	202	51%
Total	380	100.00

The frequencies regarding the qualifications of the students show in Table 2. It shows that 202 (51%) respondents are in BS, 126 (33.2%) are in masters, 51 (13.4) are in M-Phil and 1 (.3%) is enrolled in Ph.D.

Table 3. Access to computer

Access to computer	Respondents	Percentage
Personal computer	90	24%
Computers in the library	240	63%
Access to computer in the computer lab	50	13%
Total	380	100.00

Table 3. Show that the respondents were asked to point out the place where they use the computer for searching information. The responses were (a) personal PC (b) computer within the library and (c) access to a computer within the digital lab. 90 (24%) have their personal computers, 240 (63%) use computers within the library, and 50 (13%) need access to computers within the digital lab.

Table4. Access to internet

Access to internet	Respondents	Percentage
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The computer laboratory	120	31.57%
Lecture halls	30	7.89%
Central library	180	47.36%
Departmental library	50	13.15%
Student hostel	0	0%
Common rooms	0	0%
Cafeteria	0	0%
Total	380	100.00

Table 4. Identifies the place where the respondents are having access to the internet. The respondents were asked to point out the internet access point in their institutions. The responses were (a) digital-labs (b) lecture halls (c) main library (d) libraries in departments (e) students' hostel (f) students' common room and (g) cafeteria. 120 (32%) have access to the internet in digital labs. Moreover, 30 (8%) have access to the internet within the lecture halls. 180 (47%) have access to the internet within the main library, and 50 (13%) have access to the internet in their departmental libraries.

Table 5. Purpose for using ICT tools

	Strongly Disagree		Disagree		Neutral		Agree		strongly agree		Median	Mode
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%		
For searching academic events	19	5.0	35	9.0	112	29.5	150	39.5	64	16.8	4	4
For compellation of Assignments	32	8.4	66	17.4	73	19.2	142	37.4	67	17.6	4	4
To remain updated about trending events	41	10.8	63	16.6	98	25.8	112	29.5	66	17.4	4	4

Curriculum and contents	41	10.8	63	16.6	98	25.8	112	29.5	66	17.4	3	4
Communication exchange	17	4.5	41	10.8	101	26.6	166	43.7	55	14.5	4	4
Reading Material	25	6.6	39	10.3	55	14.5	162	42.6	99	26.1	4	4
Interaction with classmates and instructors	21	5.5	43	11.3	96	25.3	170	44.7	50	13.2	4	4
Flexible learning schedule	24	6.3	74	19.5	76	20.0	148	38.9	56	14.7	4	5
Feedback from the instructor	18	4.7	39	10.3	107	28.2	104	27.4	112	29.5	4	4
Individual learning environment	21	5.5	33	8.7	79	20.8	154	40.5	86	22.6	4	4
Downloading research articles	29	7.6	58	15.3	96	25.3	126	33.2	70	18.4	4	4
Reading email	39	10.3	86	22.6	95	25.0	87	22.9	72	18.9	3	4
To occupy free time in institute	49	12.9	61	16.1	95	25.0	102	26.8	73	19.2	3	4
For Games	31	8.2	50	13.2	55	14.5	151	39.7	93	24.5	4	4

Table 5. Show the purpose of using ICT tools by the students of the higher educational institutions of Balochistan. The frequencies regarding the respondents searching academic events show that the 19 (5.0%) respondents strongly disagree, 35 (9.2%) respondents disagree, 112 (29.5%) respondents are neutral, 150 (39.5%) respondents agree and 64 (16.8%) respondents strongly agree that they are using ICT tools for searching academic events. The frequencies regarding the respondents' compellation of assignments show that the 32 (8.4%) respondents strongly disagree, 66 (17.4%) respondents disagree, 73 (19.2%) respondents are neutral, 142 (37.4%) respondents agree and 67 (17.6%) respondents strongly agree that they are using ICT tools for completing their assignments. The frequencies regarding the respondents remain updated about trending events shows that 44 (11.6%) respondents strongly disagree, 57 (15.0%) respondents disagree, 60 (15.8%) respondents are neutral, 133 (35.0%) respondents agree and 84 (22.1%) respondents strongly agree that they are using ICT tools to be aware of current trends. The frequencies regarding the respondents' curriculum and contents show that 41 (10.8%) respondents strongly disagree, 63 (16.6%) respondents disagree, 98 (25.8%) respondents are neutral, 112 (29.5%) respondents agree and 66 (17.4%) respondents strongly agree that they use ICT tools to know about their curriculum and its contents. The frequencies regarding the

respondents' communication exchange show that 17 (4.5%) respondents strongly disagree, 41 (10.8%) respondents disagree, 101 (26.6%) respondents are neutral, 166 (43.7%) respondents agree and 55 (14.5%) respondents strongly agree that they are using ICT tools for communication exchange. The frequencies regarding the respondents' reading material show that 25 (6.6%) respondents strongly disagree, 39 (10.3%) respondents disagree, 55 (14.5%) respondents are neutral, 162 (42.6%) respondents agree and 99 (26.1%) respondents strongly agree that they are using ICT tools for reading purpose. The frequencies regarding the respondents' interaction with classmates and instructors show that 21 (5.5%) respondents strongly disagree, 43 (11.3%) respondents disagree, 96 (25.3%) respondents are neutral, 170(44.7%) respondents agree and 50 (13.2%) respondents strongly agree that they can easily interact with their classmates and instructors with the help of ICT tools. The frequencies regarding the respondents' flexible learning schedule show that 24 (6.3%) respondents strongly disagree, 74 (19.5%) respondents disagree, 76 (20.0%) respondents are neutral, 148 (38.9%) respondents agree and 56 (14.7%) respondents strongly agree. The frequencies regarding the respondents' feedback from the instructor show that 18 (28.2%) respondents strongly disagree, 39 (10.3%) respondents disagree, 107 (28.2) respondents are neutral, 104 (27.4%) respondents agree and 112 (29.5%) respondents strongly agree that they are using ICT tools to get feedback from their instructors about their research work. The frequencies regarding the respondents' learning environment show that 21 (5.5%) respondents strongly disagree, 33 (8.7%) respondents disagree, 79 (20.8%) respondents are neutral, 154 (40.5%) respondents agree, and 86 (22.6%) respondents strongly agree. The frequencies regarding the respondents' downloading research articles show that 29 (7.6%) respondents strongly disagree, 58 (15.3%) respondents disagree, 96 (25.3%) respondents are neutral, 126 (33.2%) respondents agree and 70 (18.4%) respondents strongly agree. The frequencies regarding the respondents' reading email show that 39 (10.3%) respondents strongly disagree, 86 (22.6%) respondents disagree, 95 (25.0%) respondents are neutral, 87 (22.9%) respondents agree and 72 (18.9%) respondents strongly agree. The frequencies regarding the respondents' occupying free time in the institute show that 49 (12.9%) respondents strongly disagree, 61 (16.1%) respondents disagree, 95 (25.0%) respondents are neutral, 102 (26.8%) respondents agree and 73 (19.2%) respondents strongly agree. The frequencies regarding the respondents about games show that 31 (8.2%) respondents strongly disagree, 50 (13.2%) respondents disagree, 55 (14.5%) respondents are neutral, 151 (39.7%)

respondents agree and 93 (24.5%) respondents strongly agree that they are using ICT tools for playing games.

The median and mode of the purpose of using ICT are also reported in Table.5. The median for all the purposes was found to be 4 (agree) except for curriculum and contents, reading emails, and occupying free time in an institution which was 3 (Neutral). The results indicate that the center of the data i.e. median lies at 4 which means students agree that they are using ICT for searching academic events, compellation of assignments, to remain updated about trending events, communication exchange, reading material, interaction with classmates and instructors, flexible learning schedule, feedback from the instructor, individual learning environment, downloading research articles and for games. Whereas, a mode for all the purposes was found to be 4 (agree) excluding flexible learning in this case the mode was 5 (Strongly agree), which indicates that most of the students respond to agree to each purpose for using ICT.

Table 6. Problems face by the students

	strongly disagree		Disagree		Neutral		Agree		strongly agree		Median	Mode
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%		
Electricity failure	24	6.3	66	17.4	95	25.0	139	36.6	56	14.7	4	4
Leakage of user's privacy	16	4.2	64	16.8	69	18.2	150	39.5	81	21.3	4	4
Lack of training on access to digital databases	29	7.6	56	14.7	110	28.9	120	31.6	65	17.1	3	4
Poor internet connectivity	21	5.5	38	10.0	70	18.4	178	46.8	73	19.2	4	4
Receiving unwanted messages	8	2.1	29	7.6	106	27.9	158	41.6	79	20.8	4	4
Some sites do not allow transfer of information	10	2.6	29	7.6	110	28.9	114	30.0	115	30.3	4	4
Discourages face to face communication	12	3.2	62	16.3	64	16.8	173	45.5	68	17.9	4	5
Physical problems	30	7.9	69	18.2	56	14.7	136	35.8	88	23.2	4	4

Table 6. show 24 (6.3%) respondents strongly disagree, 66 (17.4%) respondents disagree, 95 (25.0%) respondents are neutral, 139 (36.6%) respondents agree and 56 (14.7%) respondent are

strongly agree that electricity failure is a major problem for them while using ICT tools. 16 (4.2%) respondents strongly disagree, 64 (16.8%) respondents disagree, 69 (18.2%) respondents are neutral, 150 (39.5%) respondents agree and 81 (21.3%) respondents strongly agree that privacy leakage is a major problem. 29 (7.6%) respondents strongly disagree, 56 (14.7%) respondents disagree, 110 (28.9%) respondents are neutral, 120 (31.6%) respondents agree and 65 (17.1%) respondents strongly agree that students are not prospering guiding how to use databases. 21 (5.5%) respondents strongly disagree, 38 (10%) respondents disagree, 70 (18.4%) respondents are neutral, 178 (46.8%) respondents agree and 73 (19.2%) respondents strongly agree that poor internet is a major problem for them. 8 (2.1%) respondents strongly disagree, 29 (7.6%) respondents disagree, 106 (27.9%) respondents are neutral, 158 (41.6%) respondents agree and 79 (20.8%) respondents strongly agree that while they use ICT and social media tools they receive unwanted messages. 10 (2.6%) respondents strongly disagree, 29 (7.6%) respondents disagree, 110 (28.9%) respondents are neutral, 114 (30.0%) respondents agree and 115 (30.3%) respondents strongly agree that some sites restrict them and not allow them to download the reading material. 12 (3.2%) respondents strongly disagree, 62 (16.3%) respondents disagree, 64 (16.8%) respondents are neutral, 173 (45.5%) respondents agree and 68 (17.9%) respondents strongly agree that the usage of ICT tools discouraged face to face communication. 30 (6.9%) respondents strongly disagree, 69 (18.2%) respondents disagree, 56 (14.7%) respondents are neutral, 136 (38.8%) respondents agree and 88 (23.2%) respondents strongly agree that prolongs the use of ICT tools make them physically tired. The median and mode of the problems faced by the respondents are also reported in Table.6.

Discussion

ICT provides an opportunity for versatile and serial learning and shifts the pattern of learning from teacher-focused to student-focused. ICT has brought reforms in classrooms, libraries, academic activates of students and teachers, and in the way of thinking of community (Youssef & Dahmani, 2008). The results in Table 3 showed that the facility of ICT is being provided in the libraries of the higher educational institutions of Balochistan. Therefore, students in these institutions are free to use the available ICT tools and access their required information. Moreover, the students and the faculty in the higher educational institutions use the ICT tools for their academic activities (Esselaar *et al.*, 2006).

The results in Table 4 highlighted that all the higher educational institutions of the province have provided the facility of the internet in the main libraries and d-labs for facilitating students and the teachers. All over the world, higher educational institutions have realized the necessity of modern technologies. Therefore, a huge amount of budgets is being invested for the adoption of ICT tools for the academic development of teachers and students (Bashir *et al.*, 2016).

Moreover, results in Table 5 portrayed the positive attitude of the students for using ICT tools for their academic purposes in the higher educational institutions of Balochistan. Generally, in an academic environment, the teachers and students adopt and use ICT tools for functioning in an information society, bridging the information divide and solving the information problems (Gupta *et al.*, 2008; Wickramanayake & Muhammad Jika, 2018). Therefore, the results of this study also highlighted that 70% of the students in higher educational institutions were using ICT tools for their academic purposes. In an academic environment, the increasing interest of the faculty and the students in using modern technologies is not surprising. All over the world ICT tools are being used for modernizing education and setting the strategies for achieving academic targets (Ishaq *et al.*, 2020; Hamade, 2013; Dawson *et al.*, 2010; Neier and Zaye, 2015; Stanciu *et al.*, 2012; Stainbank and Gurr, 2016; Hussain, 2012; Lau, 2002).

The results in Table 6 pointed to the obstacles such as electricity break down, free access to databases and multiple links, physical issues due to continues use of computers faced by the students while using ICT tools in the higher educational institutions of Balochistan. In a relevant study, Pelgrum (2001) expressed that the lack of computers and ICT professionals within the higher educational institutions is the major problem that is preventing students from using ICT all over the world. Whereas, in the developing countries poor internet connectivity, privacy problems, lack of ICT skills among students and teachers, lack of resources, and the lack of time are the main problems that are preventing the proper adoption and usage of ICT tools in the higher educational intuitions (Sumitha, 2011; Fasaie and Adegbilero-Iwari, 2016; Singh and Gill, 2015; Brill & Galloway, 2007).

Conclusions and recommendations

The current study investigates students' perceptions, attitudes towards the usage of ICT tools and highlights the obstacles that students face while using ICT tools within the higher educational institutions of Balochistan. The results point out that students are using ICT tools for their

academic purposes with the limited resources. The students of the higher educational institutions of Balochistan are cognizant of exploitation ICT tools and acquire advantages of it to reinforce their learning capabilities. However, the varied obstacles i.e. electricity failure, lack of training, restriction on accessing some databases, low speed of internet, and leakage of user privacy are creating barriers for students in their academic activities. Based on this study, the investigator suggests that higher educational institutions should arrange workshops training for students to train them how to use ICT tools for their academic activities and should counter the electricity and internet connectivity issue. Moreover, government and higher education commission (HEC) of Pakistan should take positive steps to counter these challenges and to provide the suitable facility of electricity and ICT within the higher educational institutions of the largest province of the country.

Implementation of the Study

This paper provides a comprehensive overview of the current status of ICT usage in the higher educational institutions of Balochistan. The findings of the study will be useful for the higher education commission (HEC) for bringing improvement in technology-related facilities in the higher educational institutions of the country. The finding will be helpful for faculty and students to understand the importance and significance of ICT in teaching and learning activities.

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