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RESEARCH PAPER

Academic Performance of the Students in Higher Education in Pakistan: The Role of Information and Communication Technology

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ABSTRACT

The importance of Information and Communication Technology (ICT) in academia is to increase opportunities and expand access to quality education by facilitating the learning of the students. The use of ICT is also equally important to create a conducive environment and develop creative thinking among the students. The main objective of the study is to examine the nexus of ICT and academic performance among students in higher education. A quantitative research design was used, and a cross-sectional research method was employed. Data were collected from students, through a questionnaire, of BS program from one of the public sector universities using a convenient sampling design. Data were analyzed by using SPSS. The results of linear regression revealed that ICT is a predictor of the academic performance of students by enhancing their skills, knowledge, CGPA, and communication skills and by engaging their potential to create a more conducive learning environment. The study recommended that ICT should only be used for positive academic purpose through monitoring mechanism.

KEYWORDS Higher Education, ICT, Learning, Students, Technology

Introduction

The academic performance of students has been the subject of debate by scholars, researchers, and academicians throughout the world (Shoaib, Usmani, & Ali, 2022; Ullah, Shoaib, Ali, & Ullah, 2022). Many studies have been conducted on the issue across developed and developing countries (Shoaib, Mustafa, & Hussain, 2022; Shoaib, Tariq, Shahzadi, & Ali, 2022). These studies focused on the educational performance of the students from school to university level (Shoaib, Anwar, & Mustafa, 2022; Shoaib, Anwar, & Rasool, 2022). For the last few decades, education of the children in school has undergone a rapid change due to modern means of technology (Mariam, Anwar, & Shoaib, 2022; Shoaib, Ali, Anwar, & Abdullah, 2022). This change has dramatically affected educational institutions subsequently by promoting educational standards in education (Anwar, Shoaib, & Mustafa, 2022; Kakar, Yousaf, & Shoaib, 2022). These institutions are the product of reformation initiated by the respective governments (Ali, Shoaib, & Abdullah, 2022; Ullah & Shoaib, 2021). After evaluating the traditional teaching methods while researching to reform the education of children at schools (Shoaib & Ullah, 2021a, 2021b). It was followed by debates with educationists and scholars on how effective educational policies are framed and adopted by the developed countries to reform their school education (Shoaib, Iqbal, & Tahira, 2021; Shoaib, Rasool, & Anwar, 2021). However, after a careful analysis reform at schools was enforced in line with modern technology to integrate the educational system at the school level (Shoaib, Fatima, & Jamil, 2021). It was a certain procedure followed by the developed nations

while reforming their schools and introducing children to new horizons of education (Shoaib, Ali, & Akbar, 2021). These reforms further provided students with a coordinated environment for their studies, and they started performing at the school level (Shoaib, Ali, Anwar, Rasool, et al., 2021; Shoaib, Ali, Anwar, & Shaukat, 2021).

It is important to mention here that educational reforms were adopted by addressing gender parity at schools (Shoaib, Abdullah, & Ali, 2021; Shoaib, Ahmad, Ali, & Abdullah, 2021). Thus, boys and girls both enjoyed equal opportunities to get an education in schools (Anwar, Shoaib, & Zahra, 2021; Mariam, Anwar, Shoaib, & Rasool, 2021; Shoaib, 2021). Besides, equal and free education initiatives helped the children to get admission in school (Ahmad, Ahmad, Shoaib, & Shaukat, 2021; Ahmad, Shoaib, & Shaukat, 2021; Shoaib, Abdullah, & Ali, 2020). Consequently, a large number of students were able to access college education after completing their school (Ahmad, Ahmad, & Shoaib, 2016; Shoaib, Latif, & Usmani, 2013; Shoaib & Ullah, 2019). This change has further enabled students to perform well in education not only at school but also at the college level. It is noteworthy here that boys and girls have been promoted in such a way that previously boys were performing in education while girls were far behind (Sim, Gan, Tang, & Sarma, 2023; Xie, Saeed, Akhter, & Kumar, 2023). Due to the reformation of the education system, gendered education was countered and was replaced by a gender-neutral educational environment that further supported both girls and boys to perform (Sadykov, Kokibasova, Minayeva, Ospanova, & Kasymova, 2023). Although many other factors of socioeconomic and cultural values affected the educational performance of the students, technology has made it easier and accessible to everyone (Maphosa & Maphosa, 2023). Research shows that the academic performance of the children was primarily attached to many socioeconomic and cultural factors that hindered the children from continuing their education (Kulal, Dinesh, & Rahiman, 2023). However, the essence of technology and reformation made it easier for children to perform in their studies (Chen, 2023). Since the gender reversal changes in developed nations, girls' education also rose to boys and after a couple of decades started outperforming boys in many subjects where girls were previously lagging behind boys (Byrne, Tulloch, Sohail, & Diazgranados Ferráns, 2023; Wang, Li, Malik, & Anwar, 2022). It is noted that school education is important to focus on because it provides the basis for an educated society. Research shows that the academic performance of girls and boys also differed due to the techno-based reformation of the societies of developed countries (Rehmani et al., 2022; Ullah & Ali, 2022). As mentioned above and reiterated here reforms in education paved the way for the equal education of children in school.

Literature Review

In developing countries, the academic performance of girls and boys in school has not been focus of the researchers, scholars, and academicians (Chander, Dhar, & Bhatt, 2022; Hossain, Xi, Nurunnabi, & Anwar, 2022). Due to the sociocultural environment of most developing countries, education was merely the focus of the boys while girls were always discouraged from getting an education. Research shows that patriarchy is one of the major reasons for the inequalities in education (Maulana et al., 2021). Men operate the society and they consider boys for education and employment while girls are supposed to be best for homemaking and child-rearing (Sangster, Stoner, & Flood, 2020). This phenomenon prevailed over centuries in the majority of the developing countries. Although there have been reforms to revisit the educational system due to the deep-rooted patriarchal system of society girls were not given the status in education they deserve. It is noted that girls took a long to be part of the educational system (Azor, Asogwa, Ogwu, & Apeh, 2020). Besides, patriarchy, the

sociocultural environment always placed girls/women at the subversion and inferior to men while boys were appreciated for education-oriented tasks. Research shows that girls' education was not encouraged in most of the African countries (Shoaib, 2021). Similarly, Shoaib (2021) revealed that Muslim countries were also resistant to the girl's education. Moreover, the socioeconomic aspect is also important to note down here that due to the limited resources, education was not for all but for the few who afford it. Research also shows that in most developing countries, education is associated with the economic conditions of the people (Shoaib, 2021). Thus, a few were able to reach school. However, in many Muslim countries, there has been a trend of religious education. This paradoxical position of nations in general and Muslim nations, in particular, took their children out of school. When these nations that were previously colonies realized that education is a basic right of the children, and one cannot progress without education. Similarly, they also realized that technology is equally important to foster the learning environment for the children. By the same token, they also came to know that gendered society is also one of the hurdles to education for all.

Research shows that developing countries always initiate a change in the wake of contact with developed nations (Jules, 2008; Wilkinson, 2002). As long as the reformation in education is concerned, it is inspired by the developed nations where reformation was initiated to bring change in the educational system to provide equal opportunities to girls and boys in schools. By looking at the educational reforms, use of technology, and environment in schools of developed nations, developing countries either came up with research or adopted the educational structure to develop their educational standards. They also borrowed technology from these nations to equip their school system. It is also noteworthy here that due to scarcity of resources majority of the developing countries were not able to spend such a huge amount on education in terms of reformation and revisiting of the structure, but they tried at least to step into the shoes of the developed nations by making many good additions to their system. As stated earlier they were not in a position to adopt the whole system but rather to make some major changes to the school education to bring systematic change due to many issues they faced but eventually, they were successful to revise their system and make necessary changes that further accelerated their education in school. For example, since the gender reversal change, several girls enormously increased in schools and even today girls' proportion is much higher than boys in schools followed by colleges and universities (Dagher & BouJaoude, 2011; Tikly, 2011). This increased proportion provided an opportunity for girls to learn and compete with men. Presently, the number of girls has increased to men in primary and secondary education. By the same token, girls competed with boys and even outnumbered them in many of the subjects. This shows that technology has vividly affected school education across the globe. It has far-reaching effects in developing nations where school education is equipped with technology to enable the students to perform better for their educational purposes and hence nation.

Research has also been conducted on the nexus of technology and the academic performance of the students (Shoaib, Usmani, & Abdullah, 2023; Ullah, Ullah, & Shoaib, 2023). However, higher education including colleges and universities has been largely ignored by the researchers (Shoaib, Naseer, & Naseer, 2023; Shoaib, Rasool, Anwar, & Ali, 2023). Although studies are conducted on the issue however, their studies do not cover the nexus of technology and the academic performance of students at the tertiary level of education (Shoaib, 2023b, 2023c; Shoaib, Mustafa, & Hussain, 2023). Very few studies revealed the implications of the social reproduction theory of Bourdieu while discussing the cultural capital by addressing rural-urban bifurcation by producing different results in terms of the educational performance of the students (Shoaib, 2023a).

Similarly, students coming from rural areas are more interested in getting an education than urban boys (Shoaib, 2023a, 2024a, 2024b). A common phenomenon of educational performance is discussed while gender parity is missing and less likely correlated with technology. However, by looking at the educational system of the contemporary world, technology is a greater source of progressing education the world over. It is pertinent to mention here that public universities of Pakistan were deficient in the use of technology a few years back, but the pandemic COVID-19 was a source of adopting technology. In this era. The Higher Education Commission (HEC) Pakistan collaborated with every public university to shift their educational activities online. This recent change has fostered the use of technology for educational purposes. Many studies have been conducted on academic performance, but the effective use of technology has not received the due attention of the researchers. Like Pakistan, research on academic performance is rarely found despite many students enrolled in different universities and colleges. It means that this area has been ignored in higher education in Pakistan. By looking at the gravity of the problem and scarcity of literature review, this study is conducted in higher education in Pakistan to know the nexus of technology and academic performance.

Materials and Methods

This study aims to know the nexus of ICT and the academic performance of students in public sector universities of Pakistan. A quantitative research design is used while a cross-sectional research method is employed. The population of the study was students of a public sector university. Among the public sector universities, one university was selected. There are five faculties of the university among which faculty of social sciences and humanities was selected for the study. There are 6 to 9 departments. Total number of students were 1370. By using the Taro Yamane formula, we determined a sample size of 309. We collected data by using a questionnaire while using a nonprobability convenient sampling technique. The tool of data collection was pretested, and the reliability of Cronbach was determined as 0.86 and above. The collected data was entered and analyzed by use of SPSS. Univariate (frequency distribution) and bivariate analysis, linear regression, were used on the data. The results are tabulated.

Results and Discussions

Table 1
Demographic Information of the Respondents

Referents	Residence		
	Frequency	**Percent**	**Valid Percent**
Rural	149	48.2	48.2
Urban	160	51.8	51.8
Total	309	100.0	100.0
		Age	
18-24	298	96.4	96.4
25-31	11	3.5	3.5
Total	309	100.0	100.0
		Education	
BS	309	100	100
Total	309	100.0	100.0
		Department	
Sociology	59	19.0	19.0
Education	103	33.0	33
English	95	31.0	31.0
Islamic studies	52	17.0	17.0
Total	309	100.0	100.0

The above table shows the demographic characteristics of the respondents. In this study, 48.2 percent with having rural background participated while 51.8 percent belonged to the urban area. The age bracket of the respondent ranged from 18 to 31 years, as 96.4 percent were of age 18-24 years while 3.5 percent were in the age bracket of 25 to 31 years. It is important to mention here that all the students were from the BS program of the faculty of social sciences and humanities. The strength of the students was distributed department-wise as 19 percent from the Department of Sociology, 33 percent from Education, 31 percent from English, and 17 percent from the Institute of Islamic Studies. This shows that all the respondents who participated in this study were from the BS program.

Hypothesis Testing: The following hypothesis was tested, and the results were interpreted for the readers. ICT is a predictor of reading habits, CGPA, expressions, skills, language, cognition, information, assignment, audiovisuals, knowledge, research, and communication skills.

Table 2
Predictors of ICT of Students in Higher Education

Model Predictors	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.791	.168	.234	4.723	.000
Reading habits	.092	.046	.113	2.007	.001
CGPA score	-.010	.048	.432	-.211	.000
Express ideas and feelings	-.012	.043	.215	-.280	.002
Writing, speaking Skills	-.005	.046	.306	-.112	.005
Use of Language	-.039	.033	.262	-1.162	.000
Affect cognition	.408	.055	.458	7.474	.000
Online information	.049	.054	.031	.913	.000
Assignments	-.015	.055	.067	-.280	.004
Academic interests	-.036	.021	.063	-1.714	.002
Audio Visuals	-.037	.045	.095	-.810	.003
Improve knowledge	-.039	.050	.067	-.793	.001
Research	-.024	.055	.075	-.447	.001
Communication skills	.015	.059	.014	.245	.000

The above table shows that the use of ICT has affected the learning habits of the students. Similar findings are given by Abdullah and Kauser (2022). They found that excessive use of ICT affected the reading habits of students. They further stated that students keep searching the material for their reading purposes. Results revealed a significant effect of ICT on the CGPA score of the students. This also shows that ICT has helped students in achieving higher GPAs. It means that ICT use in education has been helpful for the students. Research also found that ICT tools during online education helped students increase their CGPAs (L. Ali & Dmour, 2021; Balcı & Çalışkan, 2022). However, it is noted that although students make excessive use of ICT they are unable to express their ideas and feelings as per the expectations. ICT has been a source of enhancing the skills of students in searching and verifying information. Many scholars including Demirbilek (2015) found that the ICT skills of students were not improved thus, ICT has no positive effect on the language learning of the students. While many others argued that students have improved their skills by using ICT. Similar findings are given by Hamid, Waycott, Kurnia, and Chang (2015). They argued that ICT has been effective for students to improve their language skills. Consequently, ICT use has badly affected the learning of the students (Wickramanayake, 2022). Moreover, ICT use has made online learning easier for students. It is also argued that online education benefited the students as they got some exceptional treatment during the pandemic (Iivari, Sharma,

& Ventä-Olkkonen, 2020). The results further revealed that the use of ICT has a significant effect on the student's assignments and academic interests as they are not only using the documents but also taking help from audiovisuals. However, it is also argued that ICT has not been utilized effectively by students in preparing their assignments (Tess, 2013). By the same token, results unveiled that the use of ICT improves their learning when students use it for research purposes. In addition. ICT has significantly improved the communication skills of the students. Alexander (2014) substantiated that ICT is an effective tool utilized by students for research purposes and communications and, thus, it impacts their learning skills. Based on the results, it is argued that the use of ICT use has improved the academic performance of students.

Conclusion

The importance of ICT in academia is to increase opportunities and expand access to quality education by facilitating the learning of the students. The use of ICT is also equally important to create a conducive environment and develop creative thinking among the students. In this way, students learn material for their academic goals. It helps them increase their potential by learning new methods of learning, presenting, and magnifying their skills. We found that ICT has a significant effect on the academic performance of students by affecting their reading, writing, and listening skills, improving their knowledge, learning languages, and improving their communication skills. In this way, the CGPA score of the students increased. Therefore, we argue that the use of ICT is important for the academic performance of students in higher education. In this regard, we substantiate the measures of the Higher Education Commission (HEC) of Pakistan for the inclusion of ICT in the syllabus at the undergrad level. Furthermore, we suggest including at least two courses in ICT in the general category to make students familiar and engage students with the use of ICT in their academic journey.

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