Investigation of Social Barriers to the Use of ICT at University Level

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Abstract

This research explores the social barrier associated with utilizing Information and Communication Technology (ICT) at the university level. The objectives of this study encompass assessing students' awareness of these barriers, analyzing the relationship between social barriers and ICT use, and investigating the social barriers faced by university-level students when using ICT. The nature of the study was a mixed-method design. The study was limited to the public sector university of Islamabad's capital territory, the International Islamic University of Islamabad (IIUI), and the National University of Modern Language (NUML). The targeted population of the study was all undergraduate and post-graduate students, both male and female, of the public university of Islamabad. The study sample was 238 students. A quota sampling technique was employed to select students from two public universities in Islamabad as the study's sample. The researcher developed a self-developed, closed-ended questionnaire and an interview protocol for students. The questionnaire and interview were finalized after conducting a pilot test. The questionnaire was designed on a five-point Likert scale. The Cronbach Alpha reliability was 0.849. The data was collected and analyzed using Chi-square, Pearson correlation, and linear regression through SPSS. According to the study's silent conclusion, students had a positive attitude toward the difficulties while interacting with ICT for academic purposes. They highly rely on technology usage in education and continually participate in improving their digital skills. Most students agreed that barriers like lack of access to technology and financial constraints affect their academic performance. The study recommended that the institution create an effective learning environment where all students

have equal access to ICT usage, digital devices, internet connectivity, and training sessions to improve their digital literacy.
Keywords: Social barriers, Use of ICT

Introduction

The placement of Information and Communication Technology (ICT) in higher learning institutions has emerged as a critical area of concern regarding improving the teaching and learning process, which presents an array of chances to improve educational performance. According to Laurillard (2012), ICT was found to support interactive learning, where students could interact with multimedia resources and other students and the tutor. This results in a more active and exciting learning process. ICT was evidently seen to play a major part in delivering learning experiences. However, the integration process was not without challenges. According to Merriam-Webster, A barrier is any obstruction or hindrance that limits movement, access, or advancement. Barriers might be physical, psychological, social, economic, or legal, and they affect people or groups in different ways. There were numerous social factors that could hinder the utilization of ICT in the classroom. Social factors are considered as extrinsic in nature.

Social barriers pertain to the challenges originating from social illustrations, such as norms, culture, and interpersonal interactions that hinder the use of ICT. Social barriers include all the social factors that inhibit or reduce the adoption of ICT by various groups (Lai & Hong, 2015). These barriers may include socioeconomic status, gender roles, language, social prejudice, and organizational structures that deny or hamper technology use. They could take the form of resistance to change, lack of support from peers and faculty, and poor structures. This could be due to a preference for traditional instructional practices or doubt concerning the efficacy of ICT. Institutional reluctance and a lack of peer support were significant social hurdles to using ICT in higher education (Kirkwood & Price, 2013). Social barriers might be institutional and may be due to various factors, including unavailable technologies, computer literacy and culture, and perceived acceptability of the use of technologies in the social setting of an organization or society. Social barriers stem from the distribution of resources and opportunities to use ICT in education (Smith, 2020).

Social barriers such as lack of digital literacy were one of the factors that could greatly limit the application of ICT in education. A lack of digital literacy skills may reduce the ability of students and educators to fully employ the technologies for education, which may result in ineffective use of ICT tools and reliance on traditional techniques. Digital literacy was considered an essential requirement in the contemporary educational environment, and it lack was considered a critical obstacle to the utilization

of ICT (Hague & Payton, 2010). Restricted access poses a significant challenge to the use of ICT in education. Some students may be unable to afford personal computers or internet connectivity in their homes or schools in rural or underfunded areas. Technology is one of the key factors that need to be considered for implementing ICT in education since its availability could hinder education delivery (Livingstone, 2012). Cultural and societal attitudes about technology might impact how ICT is accepted and used in education. In some cultures, predictable teaching techniques may be preferred, whereas digital learning may be viewed doubtfully. In certain societies, there may be a sense that face-to-face training is preferable to online learning, causing reluctance to use digital technologies. Addressing cultural barriers is essential for successfully implementing ICT in educational settings (Kumar & Kar, 2020).

ICT was widely used in higher education, significantly impacting teaching, learning, and institutional effectiveness (Li & Irani, 2019). International research on social obstacles gave helpful insights into the many issues and requirements that educational institutions confront worldwide. This research promotes international collaboration, allowing countries to learn from one another's experiences and build more successful ICT integration plans. Educational institutions may develop more inclusive and creative learning environments worldwide by exchanging best practices and effective interventions (UNESCO, 2019). Social barriers impede the successful use of information and communication technology (ICT) in higher education at the national level. These constraints could substantially influence ICT adoption and integration in educational settings, influencing education quality and digital literacy among students and instructors.

Statement of the Problem

The widespread use of Information and Communication Technologies (ICTs) has brought many benefits, including increased access to information, improved communication, and enhanced productivity. However, using these technologies also poses specific challenges, particularly in the social barriers the students face. This paper aims to investigate the social barriers to the use of ICT at the university level. Moreover, it also determined the effect of demographic factors on students at this particular age, qualification, gender, region, and social status to achieve social barriers in the use of ICT.

Objectives of the Study

Specifically, the study seeks:

1. To analyze the relationship between social barriers and the use of ICT.
2. To investigate the social barriers to using ICT by students at the university level

Research Questions

1. Was there any relationship between social barriers and ICT in higher education?
2. What social barriers did university students face when using ICT?

Hypothesis

H1: There was no significant relationship between social barriers and the use of ICT.

Literature Review

This chapter gave the most applicable research and theories related to barriers to the use of ICT. It could be said that this literature review provides essential information on the use of ICT in education and what type of social barriers students face during the claim of ICT in schooling. This review gave a detailed picture of the uses of information communication technology in university education, its importance, application, and all the circumstances in which students face social barriers in using ICT in their learning process. The use of ICT has become the most common need of our society and community, and it facilitates the people with new inventions of technology. Most students face social barriers and challenges in using ICT, such as digital literacy. Many cases show that the lack of resources was the main hindrance to the use of ICT in education for the new media generation.

Use of ICT

The use of ICT in teaching and learning at the higher education level found that although most instructors recognized the importance of using ICT, there were still several barriers to its practical use, including limited access to technology and lack of technical support. Students who used ICT for learning had higher grades and were more engaged in the learning process than those who did not use ICT. Organizations participate in providing students with access to technology and training to improve their use of ICT for learning (Ali et al., 2019).

Lack of training and support and limited access to technology were the main barriers to effective ICT use among teachers and students in Pakistan. Institutions should invest in providing teachers with training and support and improving ICT infrastructure to increase their use of ICT in teaching (Ahmed & Farooq, 2020).

Barriers to the use of ICT

The primary social barriers that hindered the practice of ICT in higher education in Pakistan were the lack of institutional support, inadequate infrastructure, insufficient technical support, insufficient funding, and lack of training and development opportunities. The authors recommended that universities provide institutional support, develop adequate infrastructure, offer technical support, allocate sufficient funding, and develop training and development programs to overcome these social barriers. Additionally, the authors recommended that universities encourage collaboration and

knowledge-sharing among faculty members to promote the use of ICT in higher education (Shahzad & Qureshi, 2017).

A study conducted with Jordanian EFL in-service teachers delved into the impediments they encountered when attempting to incorporate ICT into their instructional methods; the addition of ICT in EFL training between these teachers was limited due to a range of fences. These obstacles encompassed time constraints, inadequate training, lack of support, limited resources, confidence issues, computer hardware and software deficiencies, and competence (Melhem et al., 2012).

A study was undertaken to investigate the correlation between undergraduate students' attitudes toward the Technology Acceptance Model, specifically in the context of online learning. The primary findings of this study indicated that at the undergraduate level, there was a considerable association between students' interest in computers, their opinion of the utility of computers for students, and the convenience of utilizing online learning. Slow and limited internet connectivity and students' weak comprehension of online learning frequently contribute to students' unfavorable perceptions of online learning. (Ullah et al., 2017).

Social Barriers to the Use of ICT

Lack of access to technology as a Social Barrier

One of the most prominent social barriers to using ICT in higher education was the **l**ack of access to technology, particularly in developing countries. Access to technology was a significant barrier for students in Pakistan (Alam, 2016). Similarly, students in India faced numerous challenges related to access to technology, such as inadequate infrastructure, lack of funding, and limited availability of resources. These barriers can result in restricted or no exposure to technology, leading to low levels of ICT use among students (Chinnammai & Ravichandran, 2012).

Digital Literacy as a Social Barrier

Another social barrier was the lack of digital literacy among students. Digital literacy encompasses proficiency in effectively and efficiently utilizing digital technologies. Students who lack digital literacy skills may struggle to use ICT in their academic pursuits, which could hinder their educational progress (Souza, 2016; Hashim & Kulluski, 2018). For instance, students in India lacked digital literacy skills, affecting their ability to conduct research and complete online assignments (Souza, 2016). Similarly, students in Malaysia struggled to use digital tools effectively, which hindered their ability to participate in online learning activities (Hashim & Kulluski, 2018).

Cultural and Social attitudes as a social barrier

Social barriers were the cultural and social attitudes towards ICT. Some cultures may view technology's usage as a threat to conventional learning techniques, which could create resistance to using ICT in higher education (Alam, 2016; Karim, 2013).

Students in Bangladesh had a negative perception of online learning because they believed it was a threat to traditional classroom-based learning (Karim, 2013). Similarly, students in Pakistan were resistant to using ICT in higher education due to cultural and social attitudes towards Technology (Alam, 2016).

Conclusion

After a detailed overview of the literature, I determined that different researchers had different points of view regarding the social barriers to students' use of ICT in their education. Several student face barriers and challenges in using ICT during their academic task. Social barriers were the main hindrance to using ICT fluently. Digital illiteracy, cultural and social attitudes, lack of resources, and ICT access were the main social barriers to adopting an e-learning environment in education. By removing barriers to ICT use, universities could promote more significant equity and access to education for all learners.

Materials and Method

This chapter covered the research method and procedure we employed to examine the research problem. This chapter discussed the research design, population, sample and sampling techniques, instrumentation, pilot testing, delimitation, data collection, and data analysis. The study's primary goal was to investigate the social barriers to using ICT in higher education. For this investigation, the following protocol was used;

Research Design

This study was mixed-method research and was descriptive in nature. Data was acquired utilizing a survey, a questionnaire, and an interview process. Research design refers to a researcher's overall plan, structure, and strategy to systematically investigate and address a specific research problem or question (Rezigalla, 2020). Using this strategy, the researcher could observe and measure the variables in this study.

Population

The study population involved undergraduate and post-graduate program students of the universities. Due to a lack of resources and time, it wasn't easy to consider the whole public university of Islamabad and its population. The International Islamic University of Islamabad and the National University of Modern Languages of Islamabad students were considered as the population of this study.

Sample and Sampling Technique

There were a lot of sampling techniques in research for data collection. Still, we used the quota sampling technique (non-probability sampling) in this research because it was an easy method by which we made accessibility include people who characterize a population. The study sample was 238 students, of which 100 males and 118 females were selected for the questionnaire survey, and 20 (6 male,14 female) students were chosen for the interview protocol.

Research Instruments

The researcher developed a self-developed close-ended questionnaire and one structured interview procedure. The researcher developed the questionnaire using a five-point Likert scale (Strongly Agree, Agree, Neutral, disagree, and strongly disagree) based on the literature review and objectives and under the supervisor's guidance. One close-ended questionnaire for students contained questions related to the social barriers to using ICT, and a structured interview practice for students was used.

Reliability of Instrument

To evaluate the questionnaire's validity and reliability, the researcher conducted a pilot study on it. The error of some items was omitted after the opinion of an expert. The reliability of the self-developed questionnaire was patterned by the Cronbach Alpha Method using the statistical software SPSS. A total of 238 respondents were chosen.

Table 1.1 Cronbach Alpha Reliability of Questionnaire

Cronbach's Alpha	No of Items
0.849	15

Results and Discussion

This chapter provides a detailed analysis and interpretation of data collected using SPSS software. The study employed various statistical methods, including chi-square, regression, and correlation analyses. Correlation analysis explored the relationships between social barriers and ICT use. In contrast, regression analysis examined the impact of these barriers on ICT use among higher education students and identified differences between dependent and independent variables. Data was collected from students at two universities in Islamabad, and responses were ranked on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree), with a percentage indicating the highest level of agreement.

Chi-Square Analysis

Table I.2: Investigation of Social Barriers (Digital Literacy, Lack of Access to Technology, and Cultural and Social Attitude towards use of ICT) in use of ICT using the Chi-square test

Sr. No	Variables	N	Df	P	Cal X2 value	CritX2Value	Decision
1.	DL=ICT	218	72	.000	1124.185a	316.573	Rejected
2.	LAT=ICT	218	72	.000	1362.500a	491.199	Rejected
3.	CAS=ICT	218	54	.000	670.177a	265.965	Rejected

The statistical analysis in the table shows chi-square test results for evaluating the relationship between social barriers and the use of ICT. For

each social barrier, Digital Literacy, Lack of Access to Technology, and Cultural and Social Attitudes, the calculated chi-square values were higher than the critical chi-square values. Specifically, the values were 1124.185 for Digital Literacy, 1362.500 for Lack of Access to Technology, and 670.177 for Cultural and Social Attitudes, compared to critical values of 316.573, 491.199, and 265.965, respectively. All results had a significant value of 0.000, leading to rejecting the null hypothesis. This indicates a significant relationship between each social barrier and the effective use of ICT, showing meaningful associations and influences on ICT usage.

Regression Analysis

Table I.3: Regression Model Summary "Social Barriers"

Change Statistics									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.823[a]	.677	.675	3.046	.677	451.905	1	216	.000

The analysis shows a strong positive linear relationship between social barriers and the use of ICT at the university level, with a correlation coefficient (R) of 0.823. The R-squared value of 0.677 indicates that social barriers could explain 67.7% of the variance in ICT use. The model's statistical significance was confirmed by an F value of 451.905 with degrees of freedom (df1 = 1, df2 = 216) and a significant F Change value of 0.000. This suggests that social barriers significantly impact the effective use of ICT at the university level.

Table I.4: ANOVA results

Anova					
Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1 Regression	4193.509	1	4193.509	451.905	.000[b]
Residual	2004.399	216	9.280		
Total	6197.908	217			

The ANOVA results show that the p-value of 0.00 indicates the regression model was highly significant for explaining ICT use variance. With an F-statistic of 451.905 and a mean square for regression of 4193.509, the model effectively captures the impact of social barriers on ICT usage, accounting for a large percentage of the variance.

Table I.5: Coefficients Results for Social Barriers

Coefficients					
Unstandardized Coefficients			**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**T**	**Sig.**
1 (Constant)	-22.863	2.111		-10.828	.000
Social Barriers	.891	.042	.823	21.258	.000

The regression analysis revealed that the constant was -22.863 (p = 0.000), indicating a significant baseline impact. The unstandardized coefficient for social barriers was 0.891 (p = 0.000), suggesting that for each unit increase in social barriers, ICT use decreases by 0.891 units. The standardized coefficient Beta was 0.823, reflecting a robust positive relationship between social barriers and ICT use. The high t-value of 21.258 confirms the statistical significance of this relationship.

Correlation Results

Table I.6: The data in the table present the correlation between social barriers and the use of ICT in higher education

Sr.no	Statement	Pearson Correlation	Significant (2 tailed)
1	**Social barriers and use of ICT**	0.823**	0.000

The table shows significant correlations at the 0.01 level between the variables. Social barriers and ICT use have a strong positive correlation (0.823), indicating that higher social barriers were linked to greater ICT use. Overall, social barriers significantly impact ICT use among university students.

Qualitative data analysis

Thematic Analysis

Table 1.7 Organization utilizing technology to enhance Digital Literacy

Sr. No	Responses	Frequency	Percentage%
1	Online learning platforms	8	40%
2	Digital training program	6	30%
3	Virtual reality Technology	3	15%
4	Interactive workshops or training sessions	3	15%

An organization utilizing technology to enhance digital literacy skills

Most students stated that their organization would implement an online learning platform, empowering them to learn independently and explore topics relevant to their academics. It would also help them continuously improve their skills in a targeted and efficient manner. Most students said that implementing comprehensive digital training programs, such as online courses and tutorials tailored to individual skills and learning preferences, prepares students for success in the digital age. Many students said that access to VR (Virtual Reality Technology) offers an interactive and engaging digital environment and hands-on learning experiences and raises creativity, problem-solving, and adaptability, which are essential skills. Few say that Interactive workshops or training sessions would allow for hands-on learning experiences and foster a culture of continuous improvement within the organization.

A student organization implants a platform of online learning because it would be helpful to explore relevant information and improve students' education at their step. Online learning platforms provide the framework for continuously nourishing student's skills. Digital programs such as online courses prepare students for the future. Virtual Reality makes the learning environment more interactive, creative, and helpful in problem-solving. The hands-on workshop was more demanding for the students because it encouraged and allowed learning through practice.

Table 1.8: Identify barriers to accessing technology and their impact on academic success

Sr. No	Responses	Frequency	Percentage%
1	Financial Constraints	9	45%
2	Lack of Access to devices	5	25%
3	Internet Connectivity	4	20%
4	Lack of Adequate training	2	10%

Identify barriers to accessing technology and their impact on academic success

Most students explained that financial barriers were the main hindrance to their ability to afford technology-based education. It causes a lack of access to technology and impacts their academic success. Most students said that lack of access to the devices could hinder the ability to engage in digital learning experiences fully. Many students face a lack of access to reliable internet connectivity, which causes them to be unable to access online

learning. Few students said inadequate training led to a lack of necessary skills and knowledge and caused digital literacy barriers that hindered them from performing well academically.

A student's financial limitations were the main reason why it was not possible to afford technology-based education. Buying necessary digital devices at a high cost and with low income was not conceivable. Reliable internet connectivity makes it difficult to join online sessions. The lack of adequate training in digital tools makes using technology effectively and efficiently for academic purposes harder.

Findings and Discussions

The findings show a strong positive attitude towards digital literacy and technology use among students. Most students (61.5%) were comfortable using digital devices for academic activities, and a significant number (77.5%) regularly use digital tools like email, social media, and online research databases in higher education. While 57.8% of students disagree that lacking digital skills holds them back, 78.9% actively seek resources to improve their digital literacy, reflecting a desire for continuous learning.

Web search engines were highly favored for academic activities, with 79.8% finding them effective. Access to personal digital devices and institutional resources was widespread, with 61.9% of students having access to essential tools personally and institutionally; however, over 63.3% struggle with the affordability of internet data, which is a challenge for academic tasks. Despite this, missing deadlines or academic difficulties due to lack of access to technology is uncommon.

The study also indicates institutional solid support for diversity, as 61.9% of students felt their university provides adequate services for diverse backgrounds. Additionally, 61.5% didn't feel discouraged in their academic pursuits due to personal characteristics like gender or race. Most students (77.5%) were neutral about cultural background influencing their technological attitudes, and 78.9% rejected the idea that their cultural background limits participation in technology. Finally, 79.4% trust their institution's data governance and privacy practices. These findings highlight the broad acceptance of technology in academics, support for digital literacy, and trust in institutional ethics regarding data use.

Summary

The study aimed to explore social barriers to using Information Communication Technology (ICT) in higher education. It focused on how ICT enhances learning and identified challenges such as digital literacy and cultural attitudes. The objectives included assessing the extent of ICT use, examining social barriers, and providing insights for educators and policymakers to promote effective ICT integration.

The research targeted university students in Islamabad, with a sample of 238, including 106 male and 132 female students from two public universities.

Data were collected using a validated questionnaire and interviews and analyzed through statistical methods, including percentages, frequencies, Pearson correlation, and linear regression. The study highlighted the impact of barriers on ICT use and offered recommendations based on the findings.

Conclusion

The study found that while university students widely use and accept ICT, they face significant social barriers that affect their academic activities. Students demonstrate high utilization of various ICT tools, showing confidence in enhancing academic performance. They actively seek to improve their digital skills but encounter financial constraints and inadequate training. Despite positive attitudes towards ICT and minimal cultural or social barriers, economic issues remain major challenges. Students use proactive strategies to overcome these barriers and desire online learning platforms for self-paced skill improvement.

Recommendations

The study recommends universities address financial barriers by providing subsidies for internet and digital devices and creating effective ICT learning environments. Comprehensive digital literacy programs and improved ICT infrastructure were essential. Faculty training and peer collaboration should be encouraged to enhance ICT integration in education. The study also suggests future research to explore deeper aspects of ICT barriers, longitudinal impacts, and comparative studies across different regions and educational levels.

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