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

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Abstract

This research explores the psychological 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 psychological barriers and ICT use, and investigating the psychological 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. A self-developed, closed-ended questionnaire and an interview protocol for students was developed. 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 0.758. The researcher collected and analyzed the data 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. Most students agreed that barriers like fear of failure and resistance to technology affect their academic performance. The study recommended that the institution create an effective learning environment where all students have equal access to ICT usage and training sessions to improve their motivation and confidence. Institutions should spread awareness about psychological barriers and arrange counseling sessions for students.

Keywords: Psychological barriers, Use of ICT

Introduction

The placement of Information and Communication Technology (ICT) in higher learning institutions has emerged as a vital 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 supports interactive learning, where students can interact with multimedia resources, other students, and the tutor, resulting in a more active and exciting learning process. ICT was evidently seen to play a significant 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. Numerous social and psychological factors could hinder the utilization of ICT in the classroom. Social factors are considered extrinsic, and psychological barriers seem to be intrinsic.

Psychological barriers are internal mental and emotional elements that limit people's motivation or capacity to connect with and use information and communication technology (ICT) owing to perceived complexity or a lack of trust in their technical skills. Psychological factors were internal in nature and, therefore, may include the individual's psychological status towards the use of ICT. These barriers may include perceived resistance to change, fear of technology, Anxiety, or lack of self-efficacy. Such barriers could significantly influence the implementation and utilization of ICT in higher learning institutions.

According to Bandura (1997), perceived self-efficacy influences an individual's motivation and capability to address a challenge or opportunity. Self-efficacy refers to an individual's belief in their ability to conduct the actions required to achieve specified performance outcomes. Individuals who are unsure about their technical skills may avoid using ICT. Low self-efficacy might result in a reluctance to use technology, less experimentation with digital tools, and overall lower ICT adoption. Self-efficacy was critical in adopting and effectively using technology (Compeau & Higgins, 1995). Fear of technology could be a significant obstacle to the adoption of ICT in educational settings (Meuter et al., 2003). Resistance to change was a crucial psychological hurdle in academic environments. Educators and administrators were frequently hesitant to accept new technology owing to familiarity with conventional techniques, fear of the unknown, or a perceived increase in effort. Despite their emphasis on innovation, higher education institutions typically faced substantial opposition to change owing to ingrained cultural and structural norms (Rosenberg, 2023).

ICT was widely used in higher education, significantly impacting teaching, learning, and institutional effectiveness (Li & Irani, 2019). International

research on psychological obstacles gave valuable 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. Academic institutions may develop more inclusive and creative learning environments worldwide by exchanging best practices and effective interventions (UNESCO, 2019). Psychological hurdles 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 certain challenges, particularly regarding the psychological barriers students face. This paper investigates the psychological barriers to using 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 psychological barriers to the use of ICT.

Objectives of the Study

Specifically, the study seeks:

1. To analyze the relationship between psychological barriers and the use of ICT.
2. To investigate the psychological barriers faced by university students while using ICT

Research Questions

1.Was there any relationship between psychological barriers and ICT in higher education?

2. What psychological barriers did university students face when using ICT?

Hypothesis

H1: There was a significant relationship between psychological 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. This literature review provides essential information on the use of ICT in education and what type of psychological barriers students face when using ICT in schooling. This review gave a detailed picture of the uses of information communication technology in the university education of students, its importance, application, and all the circumstances that cause students to face psychological barriers in using ICT in their learning process. ICT has become the most common need of our

society and community, and it facilitates the people with new inventions of technology. Most students faced psychological barriers and challenges in using ICT, such as resistance to change and fear of failure. Many cases show that a lack of resources and confidence was the main hindrance to the new media generation's use of ICT in education.

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

Barriers to the use of ICT

Psychological barriers, including lack of self-efficacy, lack of motivation, and fear of technology, significantly affected the use of ICT and hindered the practice of ICT in higher education in Pakistan. 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 barriers. They also recommended that universities establish programs to improve faculty members' motivation for self-efficacy and reduce their fear of technology. Additionally, the authors suggested that universities should 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' unfavourable perceptions of online learning. (Ullah et al., 2017).

Psychological Barriers to the Use Of ICT

Psychological barriers such as Anxiety, fear, lack of confidence, and resistance to change were significant factors affecting the use of ICT in education. Faculty members reported higher levels of Anxiety and resistance to change compared to students.

Anxiety as Psychological Barriers

One of the most prominent psychological barriers to using ICT in higher education was Anxiety**.** Anxiety is a psychological state characterized by apprehension, uncertainty, and fear. Students who experience Anxiety may feel overwhelmed by the complexity of ICT or have negative perceptions of their ability to use technology (Hsu, Ching, & Grabowski, 2014; Peng, Lin, & Tsai, 2011). It was found that students in Taiwan experienced Anxiety when using ICT, which affected their motivation and engagement in online learning activities (Peng et al., 2011). Similarly, students in the United States experienced Anxiety when using complex ICT tools, which affected their ability to use technology effectively (Hsu et al., 2014).

Self-efficacy as a Psychological Barrier

Self-efficacy is the belief in one's ability to perform a particular task successfully. Students who lack self-efficacy in using ICT may be less likely to use technology in their academic pursuits. For instance, students in India lacked confidence in their ability to use ICT, which affected their engagement with technology (Chinnammai & Ravichandran, 2012).

Students in the United States had low self-efficacy in using ICT, which affected their ability to use technology effectively (Hsu et al., 2014). Overall, the psychological barriers to using ICT in higher education were complex and multifaceted. Addressing these barriers would require a multi-pronged approach that includes providing access to technology, technical support and training, and addressing cultural and psychological attitudes towards technology. By doing so, universities could enhance the effective use of ICT in supporting student learning and success. (Hsu et al.,2014).

Resistance to change as a Psychological Barrier

The study examines the psychological barriers to ICT integration in Chinese higher education and their effects on faculty members' ICT use. The study employed a survey design and distributed questionnaires to 385 faculty members from six Chinese universities. The results showed that psychological barriers such as Anxiety, lack of confidence, and resistance to change were significant factors that hindered ICT integration. The study recommended that universities provide training and support to faculty members to overcome psychological barriers and promote ICT integration

(Huang & Liu, 2019). Lack of confidence, fear of technology, and low motivation significantly impeded the adoption of ICT in teaching. The study recommended that universities offer training and support to faculty members to help them overcome these psychological barriers and enhance the effective use of ICT in education (Khan & Abbasi, 2015).

Conclusion

After a detailed overview of the literature, I determined that different researchers had different points of view regarding the psychological barriers to students' use of ICT in their education. Several student face barriers and challenges in using ICT during their academic task. Psychological barriers were the main hindrance to using ICT fluently. Technophobia, Anxiety, and self-efficacy were the main psychological barriers because students feel fear while using ICT and the biggest hurdle in the adoption of 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 analysis. The study's primary goal was to investigate the psychological 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. 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 from the universities. Due to a lack of resources and time, it was challenging to consider the whole public university of Islamabad and its population. The International Islamic University of Islamabad National University of Modern Languages of Islamabad students were regarded 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

A self-developed close-ended questionnaire and one structured interview procedure were developed. The researcher developed the questionnaire using a five-point Likert scale (Strongly Agree, Agree, Neutral, disagree, and strongly disagree) based on a literature review and objectives and under the guidance of a supervisor. The one close-ended questionnaire for students was a token containing questions about the psychological barriers to using ICT and structured interview practice for students.

Reliability of Instrument

To evaluate the questionnaire's validity and reliability, the researcher conducted a pilot study on it. The researcher omitted an error in some items after the opinion of an expert by the researcher. 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
0.758	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 psychological 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 Psychological Barriers (Fear of using Technology, Self-Efficacy, and Resistance to change in technology) in the use of ICT using the Chi-square test

Sr. No	Variables	N	Df	P	Cal X2 value	Crit X2 Value	Decision
1.	EU(ICT)=FUT	218	72	.000	1323.571a	485.705	Rejected
2.	EU(ICT)=SF	218	72	.000	1320.301a	479.075	Rejected
3.	EU(ICT)=RCT	218	81	.000	1437.678a	508.154	Rejected

The table indicates that the calculated chi-square values for psychological barriers were significantly higher than the critical chi-square values. Specifically, the values were 1323.571 for Fear of Using Technology, 1320.301 for Self-Efficacy, and 1437.678 for Resistance to Change in Technology,

compared to critical values of 485.705, 479.075, and 508.154. With a significant p-value of 0.000, the null hypothesis was rejected. This strongly suggests that psychological barriers had a statistically significant impact on the use of ICT in higher education.

Regression Analysis

Table I.3: Regression Model Summary "Psychological 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	.893a	.797	.797	2.411	.797	850.558	1	216	.000

The regression model shows a strong positive correlation between psychological barriers and ICT use, with an R-value of 0.893. The R square value of 0.797 indicates that psychological barriers could explain 79.7% of the variance in ICT use. The F value of 850.558 (p = 0.000) confirms the model's statistical significance, highlighting that psychological barriers significantly impact ICT usage at the university level.

Table I.4: ANOVA results for Psychological Barriers

Anova					
Model	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1 egression	4942.704	1	4942.704	850.558	.000[b]
Residual	1255.205	216	5.811		
Total	6197.908	217			

The ANOVA results show a p-value of 0.00, indicating that the regression model was highly significant in predicting ICT use. The regression sum of squares was 4942.704, compared to the residual sum of squares of 1255.205, demonstrating that psychological barriers account for a substantial portion of the total variance in ICT usage (total sum of squares = 6197.908). With a mean square for the regression of 4942.704 and a mean square for the residual of 5.811, the model confirms that psychological barriers significantly impact ICT use among university students.

Table I.5: Coefficients Results for Psychological Barriers

Coefficients					
Unstandardized Coefficients			**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**T**	**Sig.**
1 (Constant)	46.990	.879		53.472	.000
Psychological Barriers	-.650	.022	-.893	-29.164	.000

The regression model results indicate a significant impact of psychological barriers on ICT use. The constant was 46.990 with a standard error of 0.879, statistically significant with a t-value of 53.472 and p-value of 0.000. The unstandardized coefficient for psychological barriers was -0.650 (standard error 0.022), showing that each unit increase in psychological barriers results in a decrease of 0.650 units in ICT use. The standardized Beta coefficient of -0.893 and high t-value of -29.164 confirm a strong, statistically significant negative relationship between psychological barriers and ICT usage.

Correlation Results

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

Sr.no	Statement	Pearson Correlation	Significant (2 tailed)
1	**Phycological barriers and use of ICT**	-0.893**	0.000

The table shows significant correlations at the 0.01 level between the variables. Psychological barriers and ICT use had a strong negative correlation (-0.893), meaning higher psychological barriers were associated with lower ICT use. Overall, psychological barriers significantly impact ICT use among university students.

Qualitative data analysis

Thematic Analysis

Table 1.7: Steps taken to eliminate the fear of using technology tools

Sr. No	Responses	Frequency	Percentage%
1	Training session and tutorials	9	45%
2	Seek help and guidance	5	25%
3	Trial and Error	3	15%
4	Develop motivation	3	15%

Steps were taken to eliminate the fear of using technology tools.

Most students stated that the primary step they took to eliminate fear was training sessions and tutorials because continuous learning brings improvement. Most students said that guidance and help from peers, teachers, tutorials, and experts overcome the fear of using technology. Many students claim that trial and error are essential to the learning process. Making mistakes overcomes their fear and builds confidence, and they consider mistakes an opportunity for learning and improvement. Few

students said that taking motivation boosts student confidence in using technology, improves the learning process, and eliminates the fear of using technology tools.

Being a scholar, attending training sessions and tutorials was the principal and necessary step in eliminating the fear of collaborating with new technology tools for educational purposes. Supervision from peers, friends, teachers, and experts supported using ICT tools confidentially. Making mistakes was an opportunity for continuous learning and improvement. Staying motivated and confident reduces fear and Anxiety about using technology and improves experiences.

Findings and Discussions

The study investigated the psychological barriers affecting students' use of Information Communication Technology (ICT) in higher education. Findings indicate a high usage of digital tools like online libraries, Google Classroom, and Learning Management Systems (LMS), with students generally showing high usage of ICT tools and comfort and proficiency in using these tools. Most students reported that digital resources and tools significantly enhance their academic performance and that institutional support was crucial for overcoming barriers related to technology fear and self-confidence in digital literacy.

Despite the positive outlook, financial constraints and internet connectivity remain significant barriers. Resistance toward adopting new technology was generally seen as a major hindrance, but fear of using new technologies, including Anxiety and discomfort, was noted as a significant psychological barrier. The study highlights that improving self-efficacy, addressing fear, motivating people to accept changes and technological advancement, and creating supportive learning environments could address these challenges. Resistance to technological change also impacts adoption, emphasizing the role of teachers in encouraging the use of new tools.

Summary

The study aimed to explore psychological barriers to using Information Communication Technology (ICT) in higher education. It focused on how ICT enhances learning and identified challenges such as resistance to change, fear of technology, and self-efficacy. The objectives included examining psychological barriers to the use of ICT and the relationship between the psychological obstacles with ICT and providing insights for educators and policymakers to promote effective ICT integration.

The research targeted university students in Islamabad, with a sample of 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 university students who widely use and accept ICT face significant psychological 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 to eliminate their fear of utilizing modern technology. Despite positive attitudes towards ICT, resistance to new technology, lack of confidence, and fear of interacting with new technology remain significant challenges. Students use proactive strategies to overcome these barriers and desire online learning platforms for self-paced skill improvement.

Recommendations

The study recommended that universities address barriers by providing subsidies for internet and digital devices and create effective ICT learning environments that boost students' confidence and give motivation. Comprehensive digital literacy programs and improved ICT infrastructure were essential. Psychological support and counseling should be offered to address fears and anxieties related to new technology. 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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