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Impacts of Information and Communication Technologies on Student's Academic Performance: Case Study University of Balochistan Quetta

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Abstract

This study examines the effects of information and communication technology (ICT) on students learning at the University of Balochistan (UOB). For this purpose, this study aims to examine the relationship between ICT students and students with academic achievements, while examining access to ICT facilities, accessibility and ICT tools and resources at UOB. In addition, this study examines the impact of gender modifier, GPA, and undergraduate majors in the relationship between ICT and academic performance. The study used a quantitative research approach with a sample size of 250 students. Data was collected on the effects of ICTs on universities and the relative effects of UOB students from different departments. This study is motivated by a growing concern observed in a recent report that UOB students experience learning difficulties due to limited access and use of ICT resources. The study was conducted in a cross-sectional design; Data collection was carried out in August 2020 using questionnaire techniques and interviews from a sample of 250 respondents from out of population 2,700 students. This study used the SOMER'S D test and descriptive analysis method to determine whether student learning and achievement had an effect on ICT. Therefore, it is proposed to pay attention to the ICT resources that affect the usability of students at UOB. On this basis, researchers emphasize that UOB University needs to invest more in computers and related technologies. Access to ICT tools should not be limited to laboratories and libraries, but should be expanded through the establishment of ICT resource centers. ICT training needs to be upgraded from the Microsoft Office suite to an earlier level.

Keywords: ICT information and communication technology, academic performance, students of UOB

1.1 Introduction

Information and communication technology (ICT) has become a significant foundation of modernization and development of efficiency for numerous areas across the globe. In the

department of education, mostly the technique of ICT has converted into serious section of the teaching-learning procedure for undergraduate students inside and outside the classroom. Decision makers and all stakeholders related to the education planning, decision-making in this sector have invested much more capital to accept ICT in the education structure from since the 21st century.

Maximum numbers of universities which have completely accepted the ICT scheme have documented massive progression in the use of ICT for the development of research, teaching methods, learning methods and approaches. However, it is not perfect the impact of ICT acceptance to the impact on the academic performance and of university students. ICT acceptance in this study is implicit as a regular change over to computerization of the educational process. The justification of learning hypothetical presentation in the setting of ICT acceptance is to extent an important association which subsists between the two casual variables of this study.

In Asian settings, for instance, In India, most ICTs instruction is wasted because it is additionally specialized and in congruent with nearby settings (Ezer, 2006). It is additionally progressively perceived that to guarantee the fruitful finish of e-Learning ventures, designers must have specialized abilities, just as delicate aptitudes of relational correspondence and comprehension of human inspiration issues (Jewels and Ford, 2006)

Learning through ICT typically has two dimensions, firstly, there is self-learning by learners and second is to give learners necessary instructional guidelines. For the second type of learning, different technologies are used to support the learning of numerous undergraduate learners, e.g. print media, audio, computer and video media.

New technologies for ICT (digital) learning to have made it easy for universities to provide a proper and productive learning environment for numerous of their students. Information technologies are now sources of learning in higher education. These technologies extensively facilitated the virtual delivery of educational programs. The barrier of physical distance in distance learning is now ended through Information and Communication Technology (ICT) use because information source is shifting from the teacher and printed textbooks to digital tools.

Thus, in Pakistan scenario, Balochistan offers a rich ground and opens up a gap in the existing literature which is experiencing acceptable and awful challenges in the reception and utilization of ICTs for instructive purposes. Furthermore, the community, socio-political, anthropological and powered restraints are forestalling the appropriation of this creative innovation in nations being developed as a rule and in Balochistan specifically; moreover, educators, understudies and designers see it distinctively as a result of the diverse logical settings that assume a significant job in the achievement or disappointment of the utilization of ICT in electronic educating and learning. E-learning has begun to rise in many creating nations where it can possibly help fulfill an expanding need for training and address the developing decay of prepared instructors (UNESCO, 2006). The use of ICTs in creating nations has gradually progressed as of late with improved accessibility of Internet associations, neighborhood, and IT support (Mayer, and Minges, 2011). Nonetheless, different difficulties despite everything win. In those nations, the dynamic, participating understudy, who is required for intelligent learning is uncommon, and the conventional strategies are generally utilized in instructing and learning (Anderssonand Grönlund, 2009). What's more, creating

nations frequently cannot execute progressed instructive practices without anyone else (Andersson and Grönlund, 2009).

1.2 Objectives of the study:

1. To assess the relationship b/w ICT adaption and undergraduate students performance of the university of Balochistan.
2. To measure the relationship between the satisfaction level of ICT users and the indicators (observations on ICT systems, instructive technologies and progress).

1.3 Research Questions:

1. Does there exist a significant relationship between computer usage and the academic performance of UOB students?
2. What are the perceptions/ satisfaction level of the students about the usage of ICTs and its impacts on their academic achievements?

2.1 Literature Review:

There has been a great deal of research on ICTs and its impact on the teaching-learning process. The explicit association between ICTs usage and students' academic achievement has been witnesses as the center of existing literature during the last two decades. The availability of a high degree of e-resources through the internet advances of technology in the area of ICT and continued flexibility in the nucleus of intrudes, corporations and organizations has extended the acquisition of knowledge and information at the global level (Khokhar & Javaid, 2016).

ICT in educational settings advocates the expansion of ICT mostly for teaching-learning situation. In distinction the ICT in university comprises the implementation of different fragments of ICT in the instructional process (Okoro & Ekpo, 2016).

For the past two decades, most of the emerging studies have an emphasis on debating for the favorable outcomes produced by ICT usage on students' academic achievements. Hence, Goodhew (2009) showed that the teachers should guide the fast learner students to become self-dependent coupled with efficient learners on the productive utilization of information and communication technology to make teaching-learning more effective. In the same line, Yong and Zhicheng (2009) presented a more policy-oriented document, and provide policy implications that educators using ICT could give a chain of systematic information, in the following horizons: accessibility and localization of online information; validation and evaluation of the information and interpretation(Sajid & Hasan, 2013).

However, other existing literature establishes that there is no significant evidence of appears on the part of the role of ICT in higher education settings (Angrist&lavy, 2002; Banerjee, Cole, Duflo, & Linden, 2004). For example, Leuven, Lindahl, Oosterbeek, and Webbink (2004) found no significant impact of ICT on students' academic achievements.

Methodology of Research.

3.1. Research Design:

The research was carried out descriptively and quantitatively using the philosophy of positivism, with positivism relying on experimentation and empirical evidence to capture the

unity of reality and objectivity.

3.2 Data Collection Tools:

Data collection was carried out through primary sources, such as information gathered from undergraduate students by UOB students using their self-structured questionnaire. The questionnaire consists of various types of statements that discussed and answer the survey indicators for each variable. It consisted of, ordinal, nominal, and scale statements as variable parameters to achieve the main objectives of the study. The questionnaire development consisted of closed and open questions / statements.

A data collection scheme was developed and researchers personally visited all selected disciplines, faculties, departments, institutes and training centers of the University of Balochistan for data collection.

3.3 Data Analysis Tools:

The collected data was analyzed for using descriptive and inferential statistics. Quantitative data was carried out in the form of descriptive statistics using mean, tables, graphs, diagrams, charts, percentages, ratios and proportions. To establish relationships between microcredit programs and students, statistical techniques such as the Somer's D test, academic efficiency in access to ICT resources.In relation to the respondents opinion. Data analysis used statistical software on SPSS 23.

Student perceptions		**Overall grades**			
ICT resources should be executed in the academic Institution(s).	**D or lower**	**C**	**B**	**A or Above**	***Total***
Strongly Disagree	32.4%	35.1%	16.4%	16.1%	100 %
Disagree	28.6%	42. 9%	28.5%	0.0%	100 %
Undecided	28.9%	15.3%	22.2%	33.6%	100 %
Agree	19.6%	21.0%	27.8%	31.6%	100 %
Strongly Agree	24.4%	13.3%	28.4%	33.9%	100 %

Results and Discussions

4.1 Introduction

In this chapter discusses the presentation of the data of this research. In this chapter the study discusses the measurements inferential analysis, SOMER'S D test was used to measure the perception for students regarding access to ICT resources, this follows by measuring the impact of ICT on students.

4.2: Grades in the Recently Completed University Academic Semester
Exploring their perceptions about ICT in educational settings

Opinion 1: ICT resources should be executed in the academic Institution(s).

			Value	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.576	.000
		ICT resources should be executed in the academic Institution(s) Dependent	.474	.000
		Grades Dependent	.678	.000

The results in Table 1 using bi-variate analysis showed a significant positive impact of "ICT resources should be executed in the academic Institution(s)." on students' performance. A significantly high proportions of students (33.9%) who were strongly agreed in the favor of this statement secured A Grades; 31.6 % of the respondents who agreed and 33.6 % who disagree about this opinion received A grades. This suggests that students who were in the favor of "ICT resources should be executed in the academic Institution(s)" which positively effect on the students learning tends to secure higher grades.

The results of Somer,s D indicated that grades dependent value is .678 , which suggests that "ICT resources should be executed in the academic Institution(s)" is positively associated with increased grades. Furthermore, the association between ordinal dependent variable grades and ordinal independent variable "ICT resources should be executed in the academic Institution(s) is statistically significant at (i.e, p <0.0.5).

Opinion 2: The use of the latest ICT technology in universities is more effective for students.

			Value	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.493	.000
		The use of the latest ICT technology in universities is more effective for students. Dependent	.474	.000
		Grades Dependent	.579	.000

Student perceptions		**Overall grades**			
The use of the latest ICT technology in universities is more effective for students.	**D or lower**	**C**	**B**	**A or Above**	***Total***
Strongly Disagree	37.1%	31.4%	17.2%	14.3%	100 %

Disagree	22.1%	55.6%	11.1%	11.2%	100 %
Undecided	35.0%	32.5%	20.0%	12.5%	100 %
Agree	19.5%	22.0%	25.5%	33.0%	100 %
Strongly Agree	18.6%	18.9%	27.6%	34.9%	100 %

The results in Table 2 using bi-variate analysis shows a positive impact of "The use of the latest ICT technology in universities is more effective for students." on students' performance. The students (34.9%) who were strongly agreed in the favor of this opinion secured A Grades; 33.0 % of the respondents who agreed and 11.2 % who disagree about this opinion received A grades and 14.3 are strongly disagree. . This statement suggests that students who were in the favor of The use of the latest ICT technology in universities is more effective for students are tends to secure higher grades. The results also shows that the Somer,s D indicated that grades dependent value is .579 , which suggests that The use of the latest ICT technology in universities is more effective for students is positively associated with increased grades. Furthermore, the association between ordinal dependent variable grades and ordinal independent variable "The use of the latest ICT technology in universities is more effective for students is statistically significant at (i.e, p <0.0.5).

Opnion3 : **ICT helps students acquire productive knowledge related to their subjects Studies.**

Student perceptions	**Overall grades**				
ICT helps students acquire productive knowledge related to their subjects Studies.	**D or lower**	**C**	**B**	**A or Above**	***Total***
Strongly Disagree	32.4%	35.3%	17.6%	14.7%	100 %
Disagree	51.5%	30.1%	10.7%	7.7%	100 %
Undecided	26.8%	36.6%	22.0%	14.6%	100 %
Agree	16.3%	21.4%	29.3%	33.0%	100 %
Strongly Agree	9.5%	10.9%	35.1%	44.5%	100 %

			Value	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	. 613	.000

	ICT helps students acquire productive knowledge related to their subjects Studies .Dependent	.681	.000
	Grades Dependent	.657	.000

The above results in Table 3 using bi-variate analysis shows a significant positive impact of "ICT helps students acquire productive knowledge related to their subjects Studies." on students' performance. A significantly high proportions of students (44.5%) who were strongly agreed in the favor of this statement secured A Grades; 33.0 % of the respondents who agreed and 7.7 % who disagree about this opinion received A grades. While 14.7 of the students who are strongly disagree with this statement received A grades.. This opinion suggests that students who were in the favor of ICT helps students acquire productive knowledge related to their subjects Studies are tends to secure higher grades.
The above results of Somer,s D also indicated that grades dependent value is . 657 which suggests that ICT helps students acquire productive knowledge related to their subjects Studies is more effective to achieve high performance of students is positively associated with increased grades. Furthermore, the association between ordinal dependent variable grades and ordinal independent variable "ICT helps to produce the productive knowledge to students related to their studies is statistically significant at (i.e, p <0.0.5).

Opnion4: Due to ICT students delivers more positive and effective learning outcomes.

Student perceptions	**Overall grades**				
Due to ICT students delivers more positive and effective learning outcomes.	**D or lower**	**C**	**B**	**A or Above**	***Total***
Strongly Disagree	34.3%	35.3%	15.7%	14.7%	100 %
Disagree	41.7%	33.5%	17.1%	7.7%	100 %
Undecided	26.8%	46.6%	12.0%	14.6%	100 %
Agree	16.3%	18.4%	26.3%	39.0%	100 %
Strongly Agree	15.5%	20.1%	29.9%	34.5%	100 %

			Value	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.566	.000

	Due to ICT students delivers more positive and effective learning outcomes. Dependent	.698	.000
	Grades Dependent	.737	.000

The results in Table 4 using bi-variate analysis showed a significant positive impact of "Due to ICT students delivers more positive and effective learning outcomes" on students' performance. A significantly high proportions of students 34.5% who were strongly agreed in the favor of this statement secured A Grades;39 % of the respondents who agreed and 7.7 % who disagree about this opinion received A grades. , follows by about 14.7 % who strongly disagreed secured A grades . This suggests that students who were in the favor of Due to ICT students delivers more positive and effective learning outcomes secure higher grades.
The results of Somer,s D indicated that grades dependent value is .737 , which suggests that Due to ICT students delivers more positive and effective learning outcomes is positively associated with increased grades. Furthermore, the association between ordinal dependent variable grades and ordinal independent variable "Due to ICT students delivers more positive and effective learning outcomes is statistically significant at (i.e, p <0.0.5).

Opnion5. The Use of ICT creates interest and motivation among students.

Student perceptions	**Overall grades**				
The Use of ICT creates interest and motivation among students.	**D or lower**	**C**	**B**	**A or Above**	***Total***
Strongly Disagree	43.3%	32.4%	13.8%	10.7%	100 %
Disagree	39.5%	35.1%	20.7%	4.7%	100 %
Undecided	26.8%	36.6%	22.0%	14.6%	100 %
Agree	8.3%	10.4%	38.3%	43.0%	100 %
Strongly Agree	6.5%	8.1%	23.9%	61.5%	100 %

			Value	Approximate Significance
Ordinal by Ordinal	Somers' d	Symmetric	.637	.000
		The use of ICT creates interest and motivation among students Dependent	.647	.000
		Grades Dependent	.797	.000

The results in Table 5 using bi-variate analysis showed a significant avery positive impact of "The use of ICT creates interest and motivation among students" on students' performance. A significantly high proportions of students (61.1%) who were strongly agreed in the favor of this statement secured A Grades; 43.0 % of the respondents who agreed and 4.7 % who disagree about this opinion received A grades. And 10.7% who strongly disagree about this opinion received A grades. This statement suggests that students who were in the favor of The use of ICT creates interest and motivation among students tends to secure higher grades. The results of Somer,s D indicated that grades dependent value is .797 , which suggests that Use of ICT creates interest and motivation among students is more effective in during lectures is
positively associated with increased grades. Furthermore, the association between ordinal dependent variable grades and ordinal independent variable "The use of ICT creates interest and motivation among students is statistically significant at (i.e, p <0.0.5).

5.1. Conclusion

The impact of ICT on academic performance and student learning as the main factor is the main conclusion of this study. Using ICT tools for their studies increases students' CGPA. The use of ICT tools has a direct impact on students' social lives. Research shows that the use of ICT tools is directly proportional to academic performance and inversely proportional to student learning skills. Based on the research results, it can be concluded that most of the respondents have ample access to ICT tools, i.e Laptops, home computers, and university computers, but printing and scanning facilities are less accessible at home, but these facilities can be used by universities.

• University ICT training for students is mostly limited to Ms. Office, but not the ability of skills, which results in the transfer of ICT skills to use ICTs for both education and training to others Requirements. The main objective of this study is to examine the impact of ICT on student academic performance. Data collection was carried out using a questionnaire. Key hypotheses were examined and related literature reviewed. The results showed that ICT has a significant effect on student performance. The research also shows that ICT can be used to predict the academic component of students.

5.2. Recommendation

The results are based on this report, the following recommendations for improving ICT students learning and training can be considered.

• Universities need to invest more funds in computers and other related technologies not only to address accessibility issues, but also to increase the availability of facilities, particularly computers and ICT resources, in classrooms and computer laboratories. More infrastructures must be installed for more practice and use: printers, projectors, computers, multimedia devices.

• Universities need to keep up web network and interconnected more PCs to the internet. University will then liberalize the institution's internet connection and email address by setting up an ICT resource centers with access to all applications, student packages, and all versions of the technology. In general, it takes time for university to maintain 1: 1 proportion of learners' ICT access to services and learners can attempt to purchase what they can

support or visit business ICT organizations, for example, internet cafes to get it to access ICT facilities.

• ICT skills training should not be limited to Ms. Office. According to the recommendations of the UNESCO School Curriculum policy (2000, a), universities should continue to integrate other curricula and packages. Of course, a basic level of ICT skills must be reached, yet, a coordinated way to deal with ICT and training must be utilized. The point ought to be to coordinate ICT firmly into the instructing and understudy learning cycle with the goal that it is no longer observed as an independent component and trademark. This increase can increase the use of modern technology in the instructing and understudy learning process.

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