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Availability and Problems Relating to the Accessibility of Information and Communication Technologies (ICT's) Among University Students

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Abstract

Information and Communication Technologies plays an important role in today's information societies and educational systems of nations. Information and Communication Technologies are of greatest significance for the future of education in Pakistan. The major purpose of the study was to explore the availability and problems relating to the accessibility of Information and Communication Technologies (ICT's) among university students. The study was descriptive type in nature. Major objectives of the study were to find out the availability of Information and Communication Technologies for university students and to investigate the problems faced by university students in accessing Information and Communication Technologies. Stratified random sample of 294 students of two leading public sector universities located at Islamabad were selected. Data were collected from departments of social sciences. Likert-scale questionnaire was developed by researcher and for the function of validity and reliability questionnaire was subjected to a pilot run. Data were transferred to SPSS 19.0 for statistical analysis including percentage and mean analysis. The major findings of the study revealed students agreement upon the fact that Information and Communication Technologies are not available for them at university. Results showed that majority of students were having problem in accessing Information and Communication Technologies because of load-shading of electricity, unavailability of projectors, lectures in the form of CD's and DVDs, slow internet and difficulty in accessing

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websites at university. It is recommended that computers, laptops, printers, multimedia, lectures in electronic form and scanners may be provided to university students sufficiently and trained technical staff should be available at university to resolve issues related with Information and Communication Technology equipment for students.

Keywords*:* Availability, Problems, ICT, University Student

Introduction

Where technology make teaching learning process effective on the other hand it make education crucial, developing countries are under pressure to afford educational opportunities for all. ICT restore interest to education it take students to the exciting journey through the use of audio, video technology, movies, computer etc. it provide sound and movement to the static material. Education at tertiary level is going through maelstrom of change which is nerve-racking for those people who are working in this condition. It is very significant to keep in mind that information and communication technology is taking place in this context, Information system to educational course as tool is very important in learning and teaching. Information system has been developed to control the activities in teaching and learning and make the learning more meaningful and more effective. Technology plays extremely a significant part in the field of education. Technologies has different indicators and levels that involve different methods of collecting information that have impact of ICT on educators such as National level, Local level and Institutional level. Teachers, administrators and managers all need to be adequate equipped to maximize the integration of ICT in education system (Somekh, 2007).

In Pakistan mostly leaders and administration of colleges and universities are less concerned regarding the utilization of information and communication technology in educational institution due to no training facilities, low budget and unavailability of resources. The focus of the present study will be on ICT use and issues students are facing regarding Information and Communication Technologies in universities. There is a widespread ignorance about the use, applications and advantages of Information and Communication Technologies on the part of teachers, leader of institution and educational authorities responsible for bringing improvement in the functioning of educational system. Most of the teachers and students have fear in using Information and Communication Technologies and they want to stick to the traditional method of teaching and learning because of lack of training, understanding and ignorance. A mere literacy related to Information and Communication Technologies is not sufficient for enabling students to make use of these technologies in a fruitful way. The major purpose of the study was to get hold of information about the availability and problems relating to the accessibility of Information and Communication Technologies among university

students. The study aimed to provide guideline and information to the educators, teachers, educationists, administrations and researchers.

Significance of the Study

The study is important from theoretical perspective and contributes to the current knowledge. The present study will be beneficial for teachers to understand the need of using Information and Communication Technologies in their teaching, lesson planning, and acquisition of related material and techniques. The study is beneficial for educational counselors working at universities by knowing the importance and need of ICTs in student's life and can help them to interact with their clients including teachers, students and parents for providing educational, vocational and personal guidance. The study will try to catch the attention of educational administrators and planners towards the existing condition of Information and Communication Technologies at tertiary level and emerging trends of Information and Communication Technology and its existing functioning which will guide them in taking decisions at various stages. The study may be of concern to teachers, students and stakeholders that will advantage from the improvement in educational institutions. National Educational policy maker may utilize the findings of the study for future educational policies.

Literature Review

University education is recognized as higher education which is non-compulsory level education which includes under graduate and post graduate level. University education is very important for the development of country both as a significant industry and a source of trained educated personnel for country. Communication begins when one person, animal or machine transmits or sends a message to a new person, animal or machine. Communication technology is the technology that makes it possible for people to communicate, receive, store, process and understood information more efficiently and more effectively (Haynie, 1998). Information and communication technologies included both hardware elements and software elements. The UNESCO use the word ICTs to describe: The tools and the process to access, retrieve, store, organize, manipulate, produce, present and swap over information by electronic and other means. These include hardware, software and telecommunications in the forms of scanners, digital cameras, personal

computers, phones, faxes, modems, CD and DVD players and recorders, digitized video, radio, database and multimedia programmes (UNESCO Bangkok, 2003).

Ramzan and Singh (2009) in their study found that 91.3% of academic libraries in Pakistan are having internet and emailing facilities. Mainly there are three keys to effectual incorporation of information and communication technology in learning institutes. First key is to promote and train the faculty in using technologies in teaching learning process, second key is to apply technologies to assist on the whole student productivity and to help them in their individual learning and third key is to map activities to get done with the technologies (Venkataiah, 2001).

In many developed countries the landscape of university education has changed dramatically. Many countries established and expanded their educational institutions that are clear alternatives to traditional universities. A student of university is presented with many challenges including issues of freedom, rights and duties, career choices, lack of facilities, globalization and social cultural pressures. A student position is to be motivated regarding their education, if they are really concerned about their learning it is their work to think because when thinking process starts it will able them to discover some previous experience or knowledge to relate to new learning. When doing so they should mentally get ready themselves to learn more about this new idea. Learners should be act like active participants in the learning process by creating and maintaining a supportive and motivational learning environment where all students can learn mutually. As mankind starts its journey into the new millennium we observe two major forces shaping up the future of humankind which are Globalization and Information Communication Technologies. We exist in a blaze of huge change a more and more global society determined by the exponential development of new knowledge and knitted together by quickly evolving Information and Communication Technologies. Our world nowadays is undergoing a very quick and thoughtful social transformation, driven by powerful Information and Communication Technology that have stimulated a drastically new system for creating prosperity that depends upon educated citizens and their ideas (Weber & Duderstadt, 2008).

The implementation of Information and Communication Technologies in education system lends itself to advance student-centered learning settings but with the world moving quickly towards the digital media and information tools, the role of ICT in education settings is becoming more and more important and this importance will go on to raise and expand in 21st century. Information and Communication

Technologies have become a key tool in acquiring, processing and scheming knowledge. It has turn out to be a very central instrument for investing developing of a nation in 21st century the ground-breaking effects of ICT on all sectors of the world has not spared educational sector. Information and communication technology has been promoted as a massive hope of modern education, the enormous liberator and the general currency of the knowledge age all over the world. Education sector is in front of a huge challenge of preparing and training students and teachers for upcoming knowledge base civilization at a time when the greater part of teachers are not skilled and trained to utilize ICT and a number of institutes are not prepared to integrate the new ICTs. The utilization of technologies in education sector is a tough, complex and expensive undertaking including a mass of issues like lack of infrastructure, problems in curricula changes, lack of teachers training, not enough and untrained technical support and so on. Information and communication technologies are growing quickly and once recognized national educational policies on information and communication technologies have to be regularly updated if they are to react adequately to the challenge of successfully exploiting these constant changes to the technologies (Mishra, 2005).

Tinio (2002) notes that information and communication technology are dominant apparatus for educational sector's revolution and reforms. If used properly diverse information and communication technologies can assist in increasing access to education, reinforce the importance of education to the workplace and lift educational excellence by creating an active procedure related to real life. Information and communication technology contributed to efficient learning all the way through increasing contact, promoting competence, improving the brilliance of knowledge and uplifting management system.

Pakistan has either urbanized in the procedure of rising distinct information and communication technologies for education policies. A main feature is the significance of technologies equally as a subject and as instructional aide. Pakistan formulates its National Information and Communication Technology Strategy for Education (NICT) all through a review procedure in 2004-05. The policy distinguish the need and importance of information and communication technologies for creating contact, amplification of teacher education, improving worth of learning and civilizing student attainment. The NICT in Pakistan has emphasized the value of information and communication technologies in education with some of the linked provisions being to:

- Begin a plan for providing low-cost computers and internet connectivity to universities, colleges and schools throughout public/ private sector initiatives.
- Network all public and private universities, engineering and medical colleges and institutions of higher education for enhanced worth of education.
- Systematize electronic libraries to make quicker, sure economical and equitable access to world- wide information of different subject matters.
- Maintain educational services to automate their registration, examinations, accounting and other actions.
- Support educational services to take up computer-assisted education and other information and communication technology apparatus to aid in the teaching process.
- Create different virtual classroom education programmes by means of online system, Internet and video facilities to present distance learning to a huge number of individuals all over the country.
- Begin a national educational Intranet to allow distribution of electronic libraries of teaching and research resources and faculty.

NICT envisages the requirement to make certain suitable planning, management, support, monitoring and appraisal of information and communication technology initiatives by organizing ongoing efforts and planning to make sure capacity building at the federal and provincial levels and creating an outer body which advices and guide the Ministry of Education on information and communication technologies for education. Particularly the NICT suggests establishing a Technical Implementation Unit (TIU) for ICTs for education which will expand the technical planning, monitoring and assessment capacity of policy makers, educators, planners and administrators at national, provincial, district and institutional levels. It will also link with teacher training institutes, oversee the achievement of NICT approach and hold up on the whole monitoring of education through the national EMIS (OECD, 2009).

Pew Internet (2003) surveyed 1000 experts asking them how much transform on a 10 point scale the internet will take to institutions. The results positioned education with a score of 7.98. The internet is obviously projected to make major changes to education. Internet gives both students and teachers access to huge educational resources including tutorials, online courses, researches, articles, journals, lesson plans and presentations and provides ability to work together with others

and answer questions that cannot be answered by own. Rajani and Chandio (2004) surveyed a sample taken from Pakistani teens, adults and senior citizens of miscellaneous professions like students, teachers, doctors, employed and unemployed both male and females of different fields. The ending results recommend that larger part of the users decided with the prospective of internet as useful resource and understand the attempt concerned in efficiently utilizing this valuable resource. The study also exposed that the students used the internet for instructive purposes. Rising countries such as Pakistan are at present lagging in terms of broadband adoption and diffusion compared to urbanized countries, the use and adoption of broadband is still in its infancy in Pakistan.

Kwacha (2007) illustrate that main obstacles related with the efficient completion of ICT are the lack of qualified information and communication technologies personnel, cost of equipment, managing attitudes, low funds and inconsistent electric power supply. Many universities acquired various types of ICT but these assets are not fully utilized for research and content development by teachers and students. Uribe and Marino (2006) surveyed 162 students at the School of Dentistry, University of Valparaiso to give details of their utilization of ICTs. All participants had access to a computer, and 96.4% used the internet. The majority of students had home internet connections (73.4%). The most frequently used internet sites on at least weekly basis were: e-mail (92.2%), and search engines (88.3%).

One of the major studies on student's use of online conversation boards was conducted by Fine gold and Cooke (2006). Discussion boards present an electronic forum that allow its participants to post a memorandum that others can read and to which others can react and enable communication along with members who can access the board at any time anywhere. Their case study reviewed the attitudes and experiences of 307 postgraduates and they analyzed over 3,123 messages. The study finds that presence of lecturers in online groups was vital for students, although the majority of communication on the discussion boards was student centered. Salako and Tiamiyu (2007) surveyed the exercise of search engines for investigate by postgraduate students of the University of Ibadan, Nigeria. Copies of 327 questionnaires were analyzed and it was establish that most of the responding postgraduate students were conscious of, and had become known with the internet previous to the start of their postgraduate courses.

Statement of the Problem

The present study aimed at exploring the availability and problems relating to the accessibility of Information and Communication Technologies (ICT's) among university students.

Research Questions

1. What types of Information and Communication Technologies are available at tertiary level for students?
2. What are the problems students are facing in accessing Information and Communication Technologies at tertiary level?

Research Objectives

1. To find out the availability of Information and Communication Technologies for university students.
2. To investigate the problems faced by university students in accessing Information and Communication Technologies.

Methodology

It is descriptive research. The detail of the method is as:

Population

Population size was comprised of 980 students studying in the department of social sciences at two public sector universities of Islamabad.

Table 1
Students Population Size

Students Population Size						
NUML			Islamic International			Total
IR	Education	Mass.Com	IR	Education	Mass.Com	
122	118	210	146	130	254	980

Table 1 describes the total student population size of the study. From the university of NUML student population size was 450, Department of International Relation consists of 122 students, Department of Education

consists of 118 students and Department of Mass Communication consists of 210 students. From the University of Islamic students population was 530, Department of International Relation consists of 146 students, Department of Education consists of 130 students, and Department of Mass Communication consists of 254 students.

Sample

Stratified random sample of 294 (30%) students of two public sector universities located at Islamabad were selected. Present study comprised of population of 980 students so that by keeping in view the guiding principles and suggestions provided by L.R. Gay researcher collected 30% of random sample from each stratum so the total sample size was 294. According to Gay if population size is 950 representative sample size may be of 274 (Gay, 2000).

Table 2
Students Sample Size

Students Sample Size						
NUML			Islamic International			Total
IR	Education	Mass.Com	IR	Education	Mass.Com	
37	35	63	44	39	76	294

Table 2 describes the total student sample size of the study. From the university of NUML student sample size was 135, Department of International Relation consists of 37 students, Department of Education consists of 35 students and Department of Mass Communication consists of 63 students. From the University of Islamic students population was 159, Department of International Relation consists of 44 students, Department of Education consists of 39 students, and Department of Mass Communication consists of 76 students.

Research Instrument

Keeping in sight the nature of present research study researcher developed research questionnaire by keeping in sight the standard process of instrument development. The linked literature has been reviewed by researcher broadly to develop instrument for the study. All the questions were close-ended. In the present study questionnaire was designed in Likert's-point response format, which ranged from:

Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly agree (5).

Pilot testing was carried out to settle on the reliability and validity of research tools. The scale was based on two sub scales having 25 items in total. Cronbach's alpha reliability of questionnaire was .87. For data collection the respondents were approached to the nature and needs of the research. The respondents were guaranteed of the privacy of the results and questionnaire was circulated through personal visits.

Procedure

The study was descriptive type in nature in which stratified sampling technique were used. Data were collected through personal visits by researcher to sampled universities of Islamabad. Approximately all the participants completed the questionnaires in the presence of researcher. Keeping in sight the nature and need of study the researcher used Likert scale questionnaire. Collected data were analyzed according to the objectives of the study in the company of SPSS 19.0 by applying subsequent statistical test: Percentage analysis and Mean.

Data Analysis

Collected data were analyzed and tabulated according to objective of the study. After completing data collection data were transferred to SPSS 19.0 for statistical analysis by applying statistical tests including Percentage and Mean analysis.

Results

Table 3
Percentages of University Students regarding Availability of ICT

Availability of ICT					
Statement	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree%
Broadband	21.7	18.6	12.9	41.0	5.8
Wifi	17.6	21.4	26.1	30.2	4.7
Intranet	14.6	23.7	22.0	34.9	4.7
Computers	18.6	33.9	25.8	19.7	2.0
Laptops	38.0	40.7	16.9	3.4	1.0
Printers	40.3	38.6	13.2	6.1	1.7
Lectures	31.2	43.7	18.0	6.8	.3
Multimedia	19.7	23.4	21.0	31.9	4.1
Scanners	23.1	26.4	20.0	27.8	2.7
Digital library	16.6	23.1	18.0	35.3	7.1
Trained staff	12.2	24.7	34.6	23.1	5.4
Photocopy machine	48.3	14.5	10.2	21	6
Blended classrooms	51.3	20.5	10.2	10	8
Video conference rooms	53.1	10.9	14.1	10.9	10.9

Table No 3 describes the opinion of students regarding availability of ICTs. Total numbers of respondents were 294. Statement 1 was that university has provided Broad Band internet to students, as shown in table 21.7% strongly disagree, 18.6% agree, 41% students were agree and 5.8% were strongly agree upon this. Statement no 2 was about availability of Wi-Fi network to students, results show that 30.2% students were agreed, 4.7% were strongly agree that university has provided Wi-Fi facility but on the other hand 17.6% strongly disagree and 18.6% disagree on this. Statement 3 results revealed that 34.9% students were agreed and 23.7% were disagreed that university has provided intranet facility. In statement no 4 students seem to disagree about availability of computers in sufficient number, 33.9% disagree

with it and 18.6%% strongly disagree. Statement 5 inquired about availability of laptops in sufficient amount for students, 40.7% students disagree and 38% strongly disagree on this which shows that laptops are not available in sufficient number for students. Statement no 6 inquired about the availability of printers free of cost for students, 38.6% students disagree and 40.3% strongly disagree. Statement 7 was about availability of lectures for students in electronic form (DVDs, Cassettes and CD's) 43.7% students disagree and 31.2% students strongly disagree on this. Statement 8 was about availability of multimedia in classroom for students, 19.7% strongly disagree and 23.4% disagree and 21% remain neutral on this statement. Statement no 9 was that scanners are available at university, 23.1% strongly disagree, 26.4% disagree, 27.8% agree and 2.7% strongly agree on this. Statement 10 was that university has its own digital library, 35.3% agree, 7.1% strongly agree and 18% remain neutral on this. Statement 11 inquired about the availability of trained technical staff for students to resolve issues related with ICT equipment, 34.6% students remain neutral, 24.7%disagree and 12.2% strongly disagree on this. Statement 12 was that university has provided photo copy machine to each department for students, as shown in table 48.3% strongly disagree, 14.5% disagree, 21% students were agree and 6% were strongly agree upon this. Statement no 13 was about availability and arrangement of blended classroom to students, results show that 10% students were agreed, 8% were strongly agree but on the other hand 51.3% strongly disagree and 20.5% disagree on this. Statement 14 inquired about availability of video conference rooms for students, 10.9% students disagree and 53.1% strongly disagree on this which shows that video conference rooms are not available for students. Overall result shows that majority of students were not agree that ICT facilities are available at university level.

Table 4
Percentages of University Students regarding Problems Accessing in ICT

Problems in Accessing ICT

Statement	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %
Electricity	8.1	12.9	13.6	44.1	21.4
Phone lines	6.8	11.5	17.3	43.7	20.7
Lack of staff	6.4	12.9	29.5	35.3	15.9
Use internet	14.6	27.1	20.3	31.5	6.5
Access to digital library	18.0	25.4	20.0	24.7	11.9
Conference room	25.8	31.5	17.3	23.1	2.3
Multimedia	14.6	24.7	28.5	27.1	5.1
Projector	14.9	18.0	22.0	39.3	5.8
Technical support	15.9	23.4	30.2	24.4	6.1
Computer	17.2	37.5	17.2	7.8	20.3
Skills	26.6	17.2	31.2	20.3	4.7

Table No 4 describes the opinion of students regarding problems in accessing Information and Communication Technologies at tertiary level. On statement 1, 44.1% respondents agree and 21.4% strongly agree that due to unavailability of electricity it becomes difficult to access computers. Statement no 2 was that due to weak phone lines it becomes difficult to access internet, 43.7% agree on this and 20.7% strongly agree. Statement no 3 was that due to lack of supporting staff students face problems in using internet, computers, projectors and printers, 35.3% agree on this and 15.9% strongly agree. On statement no 4, 27.1% disagree, 14.6% strongly disagree, 31.5% students agree and 6.5% strongly agree that they can use internet and computer at university whenever they want to use them. Statement no 5 was that students don't have open access to digital library in university where they can found journals, E-books, articles and projects in electronic form, 20% remain neutral on this, 24.7% agree and 11.9% strongly agree, 18% strongly disagree and 25.4% disagree. Statement no 6 was that virtual-conference room is easily accessible by students, 31.5% disagree and 25.8% strongly disagree on this, 23.1% agree, 2.3% strongly agree. On statement 7 that multimedia is not accessible for students 14.6% strongly disagree, 24.7% disagree, 27.1% agree and 5.1% strongly agree. Statement no 8 was that library is not linked to internet which makes easy access to online

material, 22% remain neutral, 39.3% agree and 5.8% strongly agree on this. Statement no 9 was that technical support is not easily accessible when needed, 30.2% remain neutral, 23.4% disagree and 15.9% strongly disagree. On statement 10 that due to less numbers of computers they are not accessible for students, 17.2% strongly disagree, 37.5% disagree, 7.8% agree and 20.3% strongly agree. On statement no 11, 17.2% disagree, 26.6% strongly disagree, 20.3% students agree and 4.7% strongly agree that they have skills to handle software's at their own. Overall result shows that majority of students were agree that they are facing problems in accessing ICT's at university

Table 5
Mean of respondents score for the variable Gender

Gender	Male	Female
	M	M
Availability of ICT	29.8	26.3
Problems in Accessing ICT	28.1	26.7

Table No 5 shows the mean score of male and female students on availability of ICT and problems in accessing ICT. Mean of male students on availability of ICT were 29.8 and female mean were 26.3. Female mean score 26.7 were lower as compare to male mean score of 28.1 on problems in accessing ICT. Result shows that male students have high mean score while female students exhibit lower score.

Findings and Discussion

Information and communication technology includes the new digital technologies as well as the traditional media of communication of radio, television and mobile (UNESCO Bangkok, 2003). Integration of ICT at tertiary level is of particular importance to emergent countries because it provides opportunity to education systems to leapfrog inbuilt limitations and to obtain new resources and formulate inventive strategies. Students opinion with the subscale availability of ICTs, the result shows that majority of students were not agree for the fact that ICT tools such as Wi-fi network, computers in sufficient number, laptops, free of cost printers, lectures in electronic form, multimedia, scanners and trained technical staff are available to make their learning more effective and facilitative. So the score of disagree respondents were more than the positive respondents score. Few respondents were agreed upon the fact

that university has provided broad band internet, Intranet and digital library. Overall result shows that majority of students were not agree that ICT facilities are available in university. Maharana, Biswal and Sahu (2009) explored the use of ICTs by medical students. They found that 77% of respondents believe that ICT should be integrated in their syllabus. Almost all of the respondents expressed the hope that there would be a computer lab in their university. Of the 100 respondents in 128, responded that now a day's education would not be effective without the availability of ICT-based resources and services.

Findings from the study revealed that majority of students were agree for the fact that they are facing problems in accessing information and communication technology tools such as unavailability of electricity, weak phone lines, lack of supporting staff, no access to virtual conference room and problems in accessing online material at university. From the finding researcher concluded that students are facing a lot of problems regarding the accessibility of ICTs especially in making assignments, presentations and doing work at time due to unavailability of infrastructure related to ICT. Male university students have high mean score on availability of ICT and problems in accessing ICT facilities, while female students exhibit lower score. Beena (2012) found that male students have a higher awareness of the use of Information and Computer Technologies in education than female students.

Recommendations

1. It is recommended that computers, laptops, printers, multimedia, lectures in electronic form and scanners may be provided to students sufficiently at tertiary level and trained technical staff should be available at university to resolve issues related with Information and Communication Technology equipment for students.
2. It is suggested that university may provide ICT tools and make sure that all students are utilizing information and communication technology tools such as electronic bulletin board, computers for blended learning and flipped classrooms. It is recommended that use of computers, electronic bulletin board for students may be promoted and encouraged to participate in blended and flipped classrooms.
3. It is recommended that problems in accessing ICTs tools may be reduced for students by universities. Access to internet may be improved for students so that they can enhance their knowledge by using the educational literature, references, encyclopedia, collaborative projects, databases and dictionaries.

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