A STUDY OF THE APPLICATION OF INFORMATION TECHNOLOGY IN DISTANCE EDUCATION IN PAKISTAN

By

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ABSTRACT

Education plays a vital role to develop the nation culturally, economically and socially. That is why every nation focuses on this sector. For its improvement all endeavors are being made through formal education, Non-formal education and Distance Education. The trend of distance education has developed considerably in developed countries and developing countries. Information technology plays a pivotal role for the development of Distance Education. Keeping in view the importance of I.T in education, this study was developed. The main aim of this study was to investigate the use of information technology in distance education in Pakistan. Population comprised of the I.T users, persons helping, operating or supervising the I.T tools as planners, academicians, designers, programmers, producers, operators, regional directors and Deans of AIOU. Questionnaire on five point Likert scale was prepared. Collected data was tabulated and analyzed. The main conclusions of the study are: The use of information technology is still limited. Computer net work was not used for distance learners, Radio, T.V programs and relevant audio material, videocassettes were prepared and CDs, software still not in use. University library was not computerized. Staff got training from time to time in I.T Education in their specialization. But there is need to make I.T system more sophisticated according to new trends and students' needs. There is also need to develop regional centers, which should serve as resource centers to the facilitation of distance learners.

Keywords: Information Technology, Distance Education, AIOU, Non-Formal Education.

INTRODUCTION

Education plays a vital role in human development. It is the most important factor in human resource development process and therefore needs maximum attention and care. As a member of Muslim society, acquisition of knowledge is compulsory for all of us. Allah says "Read in the name of Allah who has created the universe and Adam from a clot of blood" (Cited in Azam Minhas, 2000, p. 5). All the countries of the world consider education as a basic requirement for economic development and political stability. Pakistan is a developing country and currently facing a lot of problems. All these problems can be solved by imparting education (Siddiqui, 1999, p.1). To impart education, various systems have been introduced. These systems are formal, informal, non-formal and distance education. Formal system of education does not fulfill the entire needs of the concerned society (Rashid, 1999, p.3). In Pakistan Allama Iqbal Open University plays a pivotal role in promoting education through distance education system. Allama Iqbal Open University established in 1974 was the second Open University in the world (Siddiqui, 1999, p.1)

To disseminate knowledge and information, various teaching techniques are used in this system. These techniques include print and electronic media, newspapers, radio, T.V and audiovisual equipments. In the present age of knowledge and awareness, the world scenario is rapidly changing. The tremendous achievements in the field of information have transformed the world into a global village. The things, which are impossible and unimaginable even in the near past, are now part and parcel of our daily life. The electronic mail and internet are the most significant achievements of the present age. Although the development of information technology has influenced the whole sphere of human activity, distance education is more susceptible to it than

the formal system of education. It is very easy for distance learners to make the best use of information techniques. Now to be familiar with the term information technology let us see the definitions.

The whole gamut of computer and communication is the subject of information technology. It includes all activities, connecting with fabricating of computers; producing peripherals, spheres and accessories and developing software dealing with collection, processing transmitting and presenting of data in the form of meaningful information in any medium. The data may relate to any walk of life (Banerjee, 1996, p. 98).

Technology is involved in acquiring, storing, processing and distributing information by electronic means "including radio, television, telephone, computer" (Khana Anil, 1994,p.176).

"Information technology that merges computing with high speed communications links carrying data, sound and video" (Williams, 1999, p.41).

It means that information technology provides rapid, latest and accurate information in very limited time. By using this modern technique efficiently, standard can be achieved. It helps to eradicate the problems of distance learners and makes teaching learning process most effective and fruitful.

To achieve this standard and strengthening the distance education system different latest tools of information technology (computer, software, internet, email, web page, CD room, online services, phone, fax, voice and video communications. satellite, teleconferencing, radio and T.V programs, LAN, WAN projects, Computerized library) can be used in each module of the university.

Information technology is divided into two parts, first hard ware and second software. Hardware is concerned with physical classification of all devices and software is concerned with services and applications. Main emphasis is laid on databases, web services, internet and online services.

Objectives of The Study

This study was based on the following objectives:

- To identify the use of information technology in the university courses at different levels.
- To highlight the problems of AIOU in the application of information technology in its system.
- To suggest some recommendations for the improvement and uplift of information technology in distance education.

Research Methodology

Population and Sampling

Population of the study consisted of all the planners, academicians, producers and regional directors of Allama Iqbal Open University. One hundred from all the categories were taken as the sample of the study.

Research Tool Development and Data Collection

Since the study was descriptive in nature, survey approach was considered appropriate to collect data. For this purpose, one questionnaire consisting of 33 items on five points (Likert Scale) was developed. The reliability of the questionnaire was 0.987(Cronbach's Alpha).

Administration of Research Tool

The finalized questionnaire was administered on the selected sample personally as well by some contacts. (Whole sample responded).

Data Analysis

Data collected through questionnaire were coded and analyzed by utilizing SPSS XII in terms of Mean scores, Standard deviation and taking the test value 3.5 ran independent sample t-test. Scale values assigned to each of the five responses were as follows.

Level of Agreement	Scale Value
SA	5
A	4
UNC	3
DA	2
SDA	1

Findings

Data collected through the questionnaire was analyzed in terms of mean, standard deviation, and standard error of mean and one sample t-test by taking test value 3.5. The findings drawn out from the data analysis are given below.

It is evident from Table 1 that mean score is significantly lower than the test value, and there is a significant difference, which shows that the data and basic information are not provided by computer to the distance learners.

Table 2 shows that mean score is significantly lower than the test value on regional offices connected through computer network. So it can be concluded that all the offices and regional offices are not connected through the computer network.

Table 3 indicates that mean score is significantly lower than the test value which shows that relevant material is not available as CDs and Cassettes.

Table 4 indicates that mean score is greater than test value but not significant which shows that almost all the information about admission programs and fee structure is available on web.

It is revealed from Table 5 that mean score is significantly lower than the test value it means that Tele/video conferencing opportunities are not sufficiently available at all levels.

Table 6 shows that the mean score is not significantly lower than the test value and hence it shows that Email facility is approximately available at each activity of the university.

From Table 7 it is indicated that the mean score is significantly lower than the test value where it concludes that Information and counseling are not provided to the students through online services, internet and databases.

It is evident from Table 8 that mean score is significantly lower than the test value, which shows that students are not facilitated through AIOU computerized library.

It is evident from Table 9 that mean score is significantly lower than the test value, which shows that Computer is not frequently used in the system of distance teaching/ learning.

Table 10 shows that the overall mean score on Telecommunication and Computer Facilities is significantly lower than the test value. Hence it can be concluded that telecommunication and computer facilities are not

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
The computer provides all the data and basic information to the distance learners.	100	2.32	1.109	.111	-10.640	.000

Table1. Showing the mean score on provision of data through computer

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
All the offices and regional offices are connected through the computer network	100	2.88	1.094	.109	-5.666	.000

Table 2. Showing the mean score on computer network facility to connect all offices

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Concerning all educational program (relevant material) is available as CDs and audio video cassettes	100	2.86	1.045	.104	-6.126	.000

Table 3. Showing the mean score on availability of relevant material through CDs and cassettes

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
All the information about admission programs and fee structure is available on web	100	3.54	1.141	.114	.351	.727

Table 4. Showing the mean score on provision of all information on web

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Tele/video conferencing opportunities sufficiently available at each level/courses	100	2.20	1.064	.106	-12.22	.000

Table 5. Showing the mean score on availability of tele/video conferencing opportunities

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Email facility is available at each activity of the university	100	3.40	1.223	.122	-.818	.415

Table 6. Showing the mean score on availability of Email facility at each activity

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Information and counseling are provided to the students through online services, internet and databases etc	100	2.78	1.194	.119	-6.030	.000

Table 7. Showing the mean score on provision of online services for information and counseling

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
AIOU computerized library facilitates the distance learners	100	2.60	1.101	.110	-8.175	.000

Table 8. Showing the mean score on computerized library facility to learners

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Computer is frequently used in the system of distance teaching/ learning	100	2.89	1.163	.116	-5.247	.000

Table 9. Showing the mean score on using computer in the system of distance education

provided properly to the students of distance education.

Table 11 shows that the mean score is significantly lower than the test value, which shows that Radio programs are not prepared for almost all courses at each level.

It is evident from Table 12 that the mean score is significantly lower than the test value, which shows that almost all Radio programs are not updated according to the students needs.

Table 13 shows that the mean score is significantly lower than the test value which shows that T.V programs are not almost prepared and telecasted for each course to enhance the learning interest of distance learners.

It is evident from Table 14 that mean score is significantly lower than the test value, which shows that Broadcast media is not used sufficiently from basic to master level.

Results obtained from Table 15 indicates that there is a significant difference between the mean score and test value, in which the mean score is significantly lower, and hence it can be concluded that radio and T.V programs are not used mostly to facilitate students of distance education.

It is revealed from Table 16 that the mean score is significantly lower than the test value which shows that basic knowledge about I.T is not included at all levels of study.

It is evident from Table 17 that mean score is significantly lower than the test value, which shows that at AIOU I.T infrastructure is not developed according to the students needs.

It is concluded from Table 18 that the mean score is significantly lower than the test value which shows that the I.T personnel do not get proper training time to time about

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Telecommunication and Computer Facilities	100	25.4700	9.71249	.97125	-6.209	.000

Table 10. Showing the over all mean score on Telecommunication and Computer Facilities

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Radio programs are prepared for all courses at each level	100	0.03	1.105	.111	-4.253	.000

Table 11. Showing the mean score on preparation of radio programs for all courses

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Radio programs are updated according to the students needs	100	3.36	1.168	.117	-1.199	.234

Table 12. Showing the mean score on updating radio programs according to students needs

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
T.V programs are also prepared and telecasted for each course to enhance the learning interest of distance learners	100	3.09	1.102	.110	-3.721	.000

Table 13. Showing the mean score on enhancing students learning through T.V programs

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Broadcast media is used sufficiently from basic to master level	100	2.88	1.066	.107	-5.815	.000

Table 14. Showing the mean score on use of Broadcast media from basic to masters

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Information about Application Of Radio & T.V Programs	100	12.3600	4.31001	.43100	-3.805	.000

Table 15. Showing the over all mean score on Information about Application of Radio T. V Programs

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Basic knowledge about I.T is included at all levels of study	100	2.24	1.006	.101	-12.522	.000

Table 16. Showing the mean score on including basic knowledge of I.T at all levels of study

their profession.

It is evident by the Table 19 that the mean score is not significantly lower than the test value which indicates that the AIOU system is approximately designed according to the future needs.

It is concluded by Table 20 that mean score is not significantly lower than the test value it shows that Lack of funds is not the biggest problem to establish proper I.T structure.

Over all mean score from Table 21 indicate that there is a significant difference between the mean score and table value. Mean score is significantly lower than table value. This shows that IT infrastructure is in not good and AIOU is not focusing much on IT infrastructure reforms for the students of distance education.

From Table 22 it is revealed that mean score is significantly higher than test value it is concluded that I.T is quickest way of disseminating knowledge.

It is evident by Table 23 that mean score is significantly higher than test value which shows that the I.T tools are helpful to minimize the financial restraints of the distance learner and university itself.

It is concluded by Table 24 that the mean score is significantly greater than the test value and hence, it shows that the I.T tools are of extensive help for the students of remote areas to solve their problems.

It is evident by Table 25 that there is a great difference between mean score and test values and mean score is significantly higher than test value. It is concluded that the I.T can play a vital role to organize the evaluation system in AIOU.

It is revealed by Table 26 that mean score is significantly higher than test value which shows that Quality of education in distance learners can be improved through I.T techniques.

It is evident by Table 27 that there is a great difference between mean score and test values and mean score is

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Radio programs are prepared for all courses at each level	100	2.96	1.180	.118	-4.576	.000

Table 17. Showing the mean score on developing I.T infrastructure according to students needs

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
The I.T personnel get training time to time about their profession	100	3.20	1.206	.121	-2.487	.015

Table 18. Showing the mean score on training of personnel

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
The AIOU system is designed according to the future needs	100	3.35	1.140	.114	-1.315	.191

Table 19. Showing the mean score on designing system according to future needs

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Lack of funds is the biggest problem to establish proper I.T structure	100	3.23	1.469	.147	-1.838	.069

Table 20. Showing the over all mean score on lack of funds not a problem for IT infrastructure

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
IT Infrastructure Reforms	100	14.9800	5.78396	.57840	-4.357	.000

Table 21. Showing the over all mean score on I.T Infrastructure Reforms

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
I.T is quickest way of disseminating knowledge	100	4.50	.541	.054	18.476	.000

Table 22. Showing the mean score on disseminating knowledge through I.T

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
The I.T tools are helpful to minimize the financial restraints of the distance learner and university itself	100	4.22	.629	.063	11.448	.000

Table 23. Showing the mean score on helpfulness of I.T tools

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
The I.T tools are of extensive help for the students of remote areas to solve their problems	100	3.72	1.026	.103	2.145	.034

Table 24. Showing the mean score on helpfulness of I.T tools for remote area students

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
The I.T can play a vital role to organize the evaluation system in AIOU	100	4.09	.668	.067	8.831	.000

Table 25. Showing the mean score on role of I.T to organize evaluation system

significantly higher than test value. It is concluded that I.T is helpful to buildup a student - teacher cooperation.

Results from Table 28 shows that mean score is significantly higher than test value which concludes that I.T is widely applicable to administrative / managerial activity.

Results in the Table 29 indicate that there is a significant difference between the mean score and the table value. Mean score is significantly greater than table value and this reveals that IT is helpful to uplift the standard of distance education in future.

Discussion

Mean score on provision of data through computer reveals that mean score is significantly lower than the test value, which shows that the data and basic information are not provided by computer to the distance learners (Table 1).

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Quality of education in distance learners can be improved through I.T techniques	100	4.29	.795	.080	9.936	.000

Table 26. Showing the mean score on improving quality of education through I.T

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
I.T is helpful to buildup a student - teacher cooperation	100	4.12	.956	.096	6.482	.000

Table 27. Showing the mean score on helpfulness of I.T to buildup student-teachers cooperation

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
I.T is widely applicable to administrative / managerial activity	100	4.49	.674	.067	14.686	.000

Table 28. Showing the mean score on application of I.T to administrative/managerial activity

Variable	N	Mean	Std. Deviation	Std. Error Mean	t-value	P-value
Helpfulness Of IT in Distance Education	100	29.4300	4.90980	.49098	10.041	.000

Table 29. Showing the over all mean score on helpfulness of I.T in distance education

Regarding computer network facility, mean score is significantly lower than the test value on regional offices is connected through computer network. So it can be concluded that all the offices and regional offices are not connected through the computer network (Table 2).

As far availability of relevant material through CDs and cassettes is concerned, mean score is significantly lower than the test value, which shows that relevant material is not available as CDs and Cassettes (Table 3).

Results on provision of all information on web (Table 4) indicates that mean score is slightly greater than test value which shows that almost all the information about admission programs and fee structure is available on web.

Mean score is significantly lower than the test value on availability of tele/video conferencing opportunities. It means that Tele/video conferencing opportunities are not sufficiently available at all levels (Table 5).

On availability of Email facility at each activity mean score is not significantly lower than the test value, hence it shows that Email facility is approximately available at each activity of the university (Table 6).

Mean score on provision of online services for information and counseling (Table 7) indicates that there is a significant difference between the mean score and the test value, hence it can be concluded that Information and counseling are not provided to the students through online services, internet and databases.

On provision of computerized library facility to learners (Table 8) mean score is significantly lower than the test value, which shows that students are not facilitated through AIOU, computerized library.

The mean score on using computer in the system of distance education mean score is significantly lower than the test value (Table 9), which shows that Computer is not frequently used in the system of distance teaching/ learning.

Over all mean score on Telecommunication and Computer Facilities is significantly lower than the Table

value, here it can be said that telecommunication and computer facilities are not provided properly to the students of distance education (Table 10).

Mean score on preparation of radio programs for all courses is not significantly lower than the test value it shows that Radio programs are prepared for almost all courses at each level (Table 11).

On updating TV and radio programs according to students needs mean score is not significantly lower than the test value it shows that almost all TV and Radio programs are updated according to the students needs (Table 12 and 13).

On use of Broadcast media from basic to masters mean score is significantly lower than the test value (Table 14) which shows that Broadcast media is not used sufficiently from basic to master level.

Regarding over all mean score on Information about application of Radio T. V Programs there is a difference between the mean score and table value but that difference is not significant it can be concluded that radio and T.V programs are almost used to facilitate students of distance education (Table 15).

Mean score on including basic knowledge of I.T at all levels of study significantly lower than the test value (Table 16). Which shows that Basic knowledge about I.T is not included at all levels of study.

Regarding developing I.T infrastructure according to students needs (Table 17) there is a significant difference between mean score and table value. Mean score is significantly lower than the test value, which shows that The AIOU I.T infrastructure is not developed according to the students needs.

Mean score on training of personnel about their profession is not significantly lower than the test value, hence it shows that the I.T personnel get proper training time to time about their profession (Table 18).

Regarding designing system according to future needs (Table 19) shows that the mean score is not significantly lower than the test value, which indicates that The AIOU system is approximately designed according to the future needs.

As far problem of lack of funds to establish I.T structure is concerned, mean score is not significantly lower than the test value, hence it shows that Lack of funds is not the biggest problem to establish proper I.T structure (Table 20).

Over all mean score on I.T Infrastructure reforms indicate (Table 21) that there is a significant difference between the mean score and table value. Mean score is significantly lower than table value. This shows that is IT infrastructure in not good and AIOU is not focusing much on IT infrastructure reforms for the students of distance education.

Mean score on disseminating knowledge through I.T (Table 22) mean score is significantly higher than test value, it is concluded that I.T is quickest way of disseminating knowledge.

Mean score on helpfulness of I.T tools is significantly higher than test value, which shows that the I.T tools are helpful to minimize the financial restraints of the distance learner and university itself (Table 23).

As far helpfulness of I.T tools for remote area students is concerned mean score is not significantly greater than the test value, it shows that the I.T tools are of extensive help for the students of remote areas to solve their problems (Table 24).

Regarding role of I.T to organize evaluation system there is a great difference between mean score and test values and means score is significantly higher than test value. It is concluded that the I.T can play a vital role to organize the evaluation system in AIOU (Table 25).

Mean score on improving quality of education through I.T is significantly higher than test value (Table 26), which shows that Quality of education in distance learners can be improved through I.T techniques.

On helpfulness of I.T to buildup student-teachers cooperation there is a great difference between mean score and test values and means score is significantly higher than test value. It is concluded that I.T is helpful to buildup a student - teacher cooperation (Table 27).

There is a great difference between mean score and test value and mean score is significantly higher than test value. It means that I.T is widely applicable to administrative / managerial activity (Table 28).

That there is a significant difference between the mean score and the table value on helpfulness of I.T in distance education (Table 29). Mean score is significantly greater than table value this reveals that IT is helpful to uplift the standard of distance education in future.

Conclusions

- Telecommunication and computer facilities are not provided properly to the students of distance education.
- Radio and T.V programs are used to facilitate students of distance education.
- IT infrastructure is not good and AIOU is not focusing much on IT infrastructure reforms for the students of distance education.
- IT is helpful to uplift the standard of distance education in future.
- The I.T tools are helpful to minimize the financial restraints of the distance learner and university itself.
- Basic knowledge about I.T is not included at all levels of study.
- Quality of education in distance learners can be improved through I.T techniques.
- Students are not facilitated through AIOU computerized library.

Recommendations

- Students should have access to AIOU computerized library and basic knowledge about IT should be included at all levels of study so that students may have knowledge of using IT.
- Personnel should be trained enough to design courses according to the needs of students.
- AIOU should invest more on infrastructure to facilitate students.
- Online guidance and counseling facility should be provided by the personals to the student.
- IT system should be upgraded, and Tele/video conferencing opportunities should be sufficiently available at all levels to facilitate students.
- Regional offices should be provided with proper IT facilities so that they can communicate with the students properly.

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