# Perception of Students towards Adoption of Emerging technologies in Open and Distance Learning in India

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ABSTRACT:

In the last few years we have seen there is remarkably technological development in the educational delivery system throughout world. More and more people are adopting new ways of learning with the help of Information and Communication Technology (ICT) tools. One of the recent development in the Open and Distance Learning in India is launching of Massive Open Online Courses (MOOC's) with the primary aim of teaching thousands of learners in one go. However still, there are number of bottlenecks in the effective implementation of the use of emerging technologies in the teaching learning process adopted by open and distance learning (ODL) imparting intuitions. Further the hardware and software infrastructure across the India is not uniform. At some places it is excellent however at number of places there is lots of work need to be done to make it at par with metro cities.

Based on this above background this paper assesses the perception of students of Indira Gandhi National Open University (IGNOU) about their familiarity and adoption of emerging technological format such as MOOC's, Personal Learning Environments, and Educational Apps etc in their programme of study, towards contributing knowledge delivery society by 2025. This study is based upon the technology acceptance model (TAM) propagated by Davis, Bagozzi & Warshaw (1989) which is an information systems theory that models how users come to accept and use a technology.

Keywords: Open-Distance Learning (ODL), Information and Communication Technology (ICT) Trends, Massive Open Online Courses (MOOC's).

## 1.0 INTRODUCTION

Over the last several years, Information and Communication Technology (ICT) based learning environment like Massive Open Online Courses (MOOCs), Personal Learning Environments, and Educational Apps have received significant coverage in the higher education literature (e.g., Bates, 2014; de Waard, 2011; Pence, 2012). Number of experts in the area of Open and Distance Learning (ODL) has suggested that MOOCs will make high quality education more accessible and decrease the substantial costs of higher education (Carey, 2012; de Waard, 2011; Lewin, 2012). There is other way of thinking in which critics have raised questions on the academic rigor in MOOCs, with the limitations that MOOCs will serve only to generate profit for exclusive universities and private corporations, to the cost of faculty and students (Byerly 2012; Marshall, 2014; Rivard, 2013). However there is more and more focus over using MOOCs in higher education, however a very little work has been done to know about current college students' perceptions and attitudes toward MOOCs. This study has explored further how familiar college students are with the MOOC concept and how they view MOOCs as a source of learning.

In fact MOOC represents a more personalized form of "automated instruction," in which content is provided to students using a

preprogrammed automated system rather than through a live instructor (Cook, 1964). The above definition of MOOCs represent a "self-instructional device" through which students learn, complete course material, and receive feedback at their own pace (Cook, 1964; Silverman 1964). Finn (1964) suggested that before the advent of web-based delivery platforms, content offered through device web based platform is more important to students rather than an instructional device itself. In other words, for students to benefit, those utilizing automated instructional methods must properly incorporate theories of teaching and learning into the execution and design of the self instructional device. Underlying message in Finn (1964) is that the focus should be on the way the technology is experienced by student users, rather than the potential benefits of the technology itself.

In the last few years it has been seen that higher education sector can take great advantage of the increased use of technology, especially the Internet, in delivering the educational content. Further it has been noticed that distance learning via the Internet will drive tremendous growth (Cappelli, 2003). It has been also seen that the more and more usages of new technologies, internet and e-learning in higher education especially in educational programs, can increase speed of development, and educate citizen familiar with ICT and needs of living in 21century.

In the literature the E-learning, or electronic learning, has been defined a number of different ways and forms (Sharma & Mishra, 2007). In general terms, e-learning is the expression broadly used to describe "instructional content or learning experience delivered or enabled by electronic technologies" (Ong, Lai and Wang, 2004). Some definitions of e-learning are narrow one limiting e-learning to content delivery via the Internet only (Jones, 2003). However the broader definition can include the use of the Internet, intranets/extranets, audio- and videotape, satellite broadcast, interactive TV, and CDROM, not only for content delivery, but also for interaction among participants (Industry Canada, 2001). Some scholars have further expanded the definition of e- learning to include mobile and wireless learning applications (Kinshuk, Suhonen, Sutinen, and Goh, 2003; Lehner, Nösekabel and

Lehmann, 2003). It is also defied as instructional content or learning experiences delivered or enabled by electronic technology (The Commission on Technology and Adult Learning, 2001), particularly computer networks and standalone computer.

The various components of E-learning as categorized by Khan (2001) are as follows:
1. Instructional Design (ID)
2. Multimedia Component
3. Internet Tools
4. Computers and Storage Devices
5. Connections and Service Providers

## 2.0 REVIEW OF RELATED LITERATURE

Perris, Zhang, and Poon (2001) in their investigation of Distance Learners' Preferences for and Barriers to Online Learning in Hong Kong pointed out that on-line learning have a positive path for learning in Distance Education and it creates the live interaction in teaching-learning process. Dikshit (2003) mentioned in his study about growth of Open and Flexible Learning in India that ODL system is new, pragmatic and dynamic. Villi (2003) in his study on Knowledge, Attitude Perception and Expectations (KAPE) of the Women Learners of Open University that Open University System is most important to enhance the educational achievement and skills. Interestingly quite a significant percentage found the open learning system to be a formal system of study, with not much difference vis-a-vis the conventional system. The study also stressed on that newspaper and friends emerge as the primary sources of information about Open University Programmes. Ojo and Olakulehin (2006) studied attitudes and perceptions of students to open and distance learning in Nigeria and reported that most students held positive perceptions and attitudes towards ODL. The 120 students who responded to their survey indicated their interest in the unique features that make-up ODL institutions, such as open access, opportunity for flexible learning, provision of quality learning materials, the use of multi-media and ICTs, etc. Tripathi and Fauzdar (2007) studied the learners' perceptions of continuous assessment in the Bachelor Degree Programme (BDP) of IGNOU and selected 1000 BDP learners enrolled in various programmes of the University, the findings of the study indicated

that continuous assessment is the has a key role in ODL settings in promoting regular study and enhancing learning of distantly placed learners. Gogoi & Hazarika (2009) find out the awareness and attitude of the college students towards Open and Distance Learning. The findings indicated a significant difference of the college students toward Open and Distance Learning and awareness of people and a healthy attitude can ensure the equity, access and quality in and through ODL system.

3.0 SIGNIFICANCE OF THE STUDY

Based on survey of related literature, this is the most important case for significantly recognizing and strengthening the Open and Distance Education in our country. The Multi-media services play the best supplement to open and distance teaching-learning process. Today, it is the most need of the Governments to provide the education to all needy persons for making the "Well Human Capital" for growth and development of the nation. With a focus on online learning Indira Gandhi National Open University (IGNOU) is also in the process of designing and launching number of programmes in the e–learning mode and MOOC's is the format in which these programmes are going to be offered. Under these circumstances there is urgent need to assess the perception of IGNOU Students towards adoption of emerging technologies in Open and Distance Learning especially their acceptability of MOOCs so as to assess and implement the future viability of the courses offered through this platform. This study explored the distance learners presently enrolled in the various programme of IGNOU in the state of Uttar Pradesh, India about their perception, readiness and acceptance for the e–learning. This study also arouses keen interest in the researchers as they are academics of IGNOU handling its educational programmes. The present study, therefore, shall be more authentic and realistic in its findings, conclusions and suggestion. Also, it is being helpful to the society to make aware about open and distance learning, its programme and its functioning.

4.0 OBJECTIVES

The study was conducted with the following objectives:
1. To study the familiarity of MOOCs programmes, Gender wise and Programme wise among learners already enrolled in Open and Distance Learning (ODL) institutions.
2. To study the adoption level of emerging technologies among ODL learners.
3. To study the perception of IGNOU Students towards adoption of emerging technologies in Open and Distance Learning.

5.0 HYPOTHESES

Based on the objectives of the study the null hypotheses were postulated, as mentioned below:
1. There is no familiarity of MOOCs programmes among learners of Open and Distance Learning Gender wise as well as Programme wise.
2. There is no significant adoption level of emerging technologies among ODL learners.
3. There is no difference in perception of IGNOU Students towards adoption of emerging technologies in Open and Distance Learning.

6.0 RESEARCH DESIGN

It is a survey based study where we collected the opinion of the students using a survey instrument developed by the authors of this paper.

This study is based upon the technology acceptance model (TAM) propagated by Davis, Bagozzi & Warshaw (1989) which is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably Perceived usefulness (PU) i.e. "the degree to which a person believes that using a particular system would enhance his or her job performance" and Perceived ease-of-use (PEOU) i.e. "the degree to which a person believes that using a particular system would be free from effort" (Davis 1989).
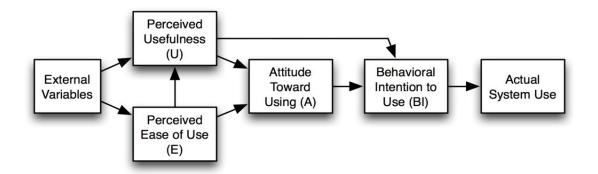
Fig 1 : The Technology Acceptance Model, version 1 (Davis, Bagozzi & Warshaw 1989)

## 7.0 RESEARCH METHODOLOGY

### 7.1 SAMPLING
Sampling is the selection of research sample for the research purpose. For the present study, a Google Form was created and SMSs were sent to all the students enrolled in IGNOU in the year 2015 and 2016. 2450 students enrolled in Bachelors, Masters and Post Graduate Diploma Programmes of IGNOU. The population of study consisted of learners registered at Study Centres under the jurisdiction of Indira Gandhi National Open University, Regional Centre, Lucknow, Uttar Pradesh, India. Due to time & resource constraints only 80 learners filled the questionnaire completely without any error and thus taken as sample for the study.

Table 1: Programme wise number of students

| Name of the Programme | Number of Students |
|---|---|
| BCA | 20 |
| MAPC | 4 |
| MCA | 14 |
| MCOM | 18 |
| MEC | 4 |
| MEG | 2 |
| MLIS | 2 |
| MP | 2 |
| MPA | 2 |
| MSCDFSM | 2 |
| PGDCFT | 2 |
| PGDDM | 2 |
| PGDIBO | 2 |
| PGDIPR | 2 |
| PGDIS | 2 |
| **Grand Total** | **80** |

Table 1 contains programme wise students participation in the survey. It has been observed that the maximum 25% and 17.5% students participated from computer background having pursuing Bachelors in Computer Application(BCA) and Masters in Computer Applications (MCA) programme respectively. Then 22.5% respondents were from commerce background .Besides this it also contains gender wise participants profile.

Table 2: Gender distribution

| Gender | Number of Respondents |
|--------|----------------------|
| Female | 24 |
| Male | 56 |
| **Grand Total** | **80** |

70% male and 30% female participated in the survey (Table 2).

Table 3 contains educational qualification wise respondents profile. 60% respondents were graduates while 30% each were Post Graduate and 10+2 passed.

Table 3: Educational Qualifications

| Educational Qualification | Number of Respondents |
|---------------------------|----------------------|
| 10+2 | 16 |
| Graduation | 48 |
| Post Graduation | 16 |
| **Grand Total** | **80** |

Maximum respondents i.e. 65% were of the age group 20-25 years (Table 4).

Table 4: Age group distribution of students

| Age group of Respondents | Number of Respondents |
|--------------------------|----------------------|
| 20 - 25 Year | 52 |
| 26-30 Years | 8 |
| 31-35 years | 10 |
| 36 - 40 years | 6 |
| 41- 50 years | 2 |
| More than 50 years | 2 |
| **Grand Total** | **80** |

It had been also observed that 62% respondents were not employed while only 18% were employed.

Table 5: Employment status of students

| Employment Status | Number of Respondents |
|-------------------|----------------------|
| Employed | 18 |
| Not Employed | 62 |
| **Grand Total** | **80** |

Table 6 contains details about the city of which respondents belongs. Most of the them were from capital of Uttar Pradesh province of India which is also place where regional centre is located. It is due to the fact that the maximum enrollment comes from the Lucknow city besides it also has good ICT infrastructure.

Table 6: Place of residence of students

| Place of residents | Number of Respondents |
|---|---|
| Banda | 2 |
| Bareilly | 2 |
| Kanpur | 20 |
| Lucknow | 52 |
| Mumbai | 2 |
| Orai | 2 |
| **Grand Total** | **80** |

The survey was conducted using Google Forms over a period of one month. The participants were requested to select their choice on five point Likert Scale on a set of 21 questions about their perception towards adoption of Emerging technologies in Open and Distance Learning like MOOC's, Personal Learning Environments, and Educational Apps with special focus on MOOC's. The outcome of the survey under different sub themes is as follows:

*Objective 1*
To study the familiarity of MOOCs programmes, Gender wise and Programme wise among learners already enrolled in Open and Distance Learning (ODL) institutions. Based

upon the above objective, the following hypothesis has been made to collect the data.

*Hypothesis 1*
There is no familiarity of MOOCs programmes among learners of Open and Distance Learning Gender wise as well as Programme wise.

Based upon the above hypothesis, the data has been collected through a self made questionnaire. It consisted of data of 24 females and 56 males in respect of their familiarity with the ICT devices, their knowledge about MOOC's etc. The distribution of the answers made by the respondents on using ICT devices were as follows:

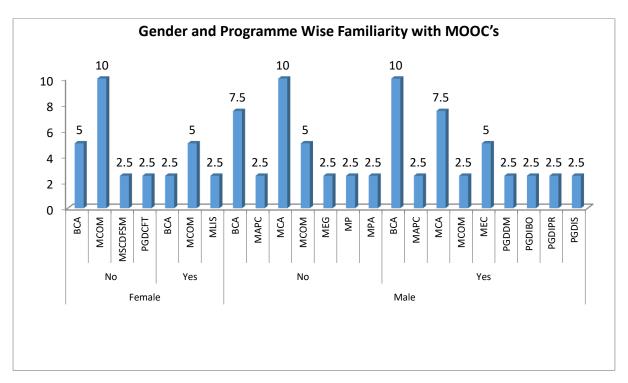Table 7: Device used to access Internet

| Device Type | Percentage |
|---|---|
| Desktop | 5 |
| Laptop | 7.5 |
| Smartphone | 40 |
| All of the above | 47.5 |

Table 8: Gender and Programme wise Familarity with MOOC's

| Particulars | Number of Respondents | Percentage |
|---|---|---|
| Female | 24 | |
| No | 16 | 67 |
| BCA | 4 | 25 |
| MCOM | 8 | 50 |
| MSCDFSM | 2 | 12.5 |
| PGDCFT | 2 | 12.5 |
| Yes | 8 | 33 |
| BCA | 2 | 25 |
| MCOM | 4 | 50 |
| MLIS | 2 | 25 |
| Male | 56 | |
| No | 26 | 46 |
| BCA | 6 | 23 |

| | | |
|---|---|---|
| MAPC | 2 | 8 |
| MCA | 8 | 31 |
| MCOM | 4 | 15 |
| MEG | 2 | 7 |
| MP | 2 | 7 |
| MPA | 2 | 7 |
| Yes | 30 | 54 |
| BCA | 8 | 26 |
| MAPC | 2 | 7 |
| MCA | 6 | 20 |
| MCOM | 2 | 7 |
| MEC | 4 | 13 |
| PGDDM | 2 | 7 |
| PGDIBO | 2 | 7 |
| PGDIPR | 2 | 7 |
| PGDIS | 2 | 7 |
| Grand Total | 80 | |

The above table clearly shows that the most of the learners were well versed with the modern ICT tools and they were regularly using the same.



Gender and Programme Wise Familiarity with MOOC's

Therefore the null hypothesis is rejected that the IGNOU learners were not familiar with the MOOC's etc.

*Objective 2*
To study the adoption level of emerging technologies among ODL learner

*Hypothesis 2*
There is no significant adoption level of emerging technologies among ODL learners

Based upon the above objective, the following hypothesis has been made to collect the data.

The familiarity with Massive Open Online Courses (MOOC's), Personal Learning Environments, and Educational Apps had been accessed and outcome has been depicted as follows:

Table 9: Familiarity with MOOCs

| Gender | Yes / No | Programme | Percentage |
|---|---|---|---|
| | | BCA | 5 |
| | | MCOM | 10 |
| | | MSCDFSM | 2.5 |
| | No | PGDCFT | 2.5 |
| | | BCA | 2.5 |
| | | MCOM | 5 |
| Female | Yes | MLIS | 2.5 |
| | | BCA | 7.5 |
| | | MAPC | 2.5 |
| | | MCA | 10 |
| | | MCOM | 5 |
| | | MEG | 2.5 |
| | | MP | 2.5 |
| | No | MPA | 2.5 |
| | | BCA | 10 |
| | | MAPC | 2.5 |
| | | MCA | 7.5 |
| | | MCOM | 2.5 |
| | | MEC | 5 |
| | | PGDDM | 2.5 |
| | | PGDIBO | 2.5 |
| | | PGDIPR | 2.5 |
| Male | Yes | PGDIS | 2.5 |

Based upon the above hypothesis, the data has been collected through a self made questionnaire and analyzed.

Table 10: Details of the respondents joined any MOOC's towards enriching your knowledge

| Particulars | Number of Respondents | Percentage |
|---|---|---|
| No | 66 | 82.5 |
| Yes | 14 | 17.5 |

It has been found that 47.5 percent of the respondents were well versed with the MOOC's. As per far percentage of the respondents who joined MOOC's programme only 17.5% joined it for enriching their knowledge. It has been also seen that the

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computer background learner were more familiar with the MOOC's etc as compared to the other discipline learners.

*Objective 3*
To study the perception of IGNOU Students towards adoption of emerging technologies in Open and Distance Learning.
*Hypothesis 3*
There is no difference in perception of IGNOU Students towards adoption of emerging technologies in Open and Distance Learning.

Based upon the above hypothesis, the data has been collected through a self made questionnaire and analyzed. The data of 80 learners in respect of perception of IGNOU Students towards adoption of Emerging technologies in Open and Distance Learning.

The data collected is framed in the table and analyzed as given below:

Table 11: Perception of students towards adoption of emerging technologies in Open and Distance Learning

| SN | Statements | S.A | % | Agree | % | Average | % | D.A | % | S.D.A | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Use of MOOC's Improves the learning Process | 22 | 27.5 | 40 | 50 | 16 | 20 | 0 | 0 | 2 | 2.5 |
| 2 | MOOC contribute in Knowledge enrichment | 18 | 22.5 | 52 | 65 | 10 | 12.5 | 0 | 0 | 0 | 0 |
| 3 | MOOC contribute in professional success | 12 | 15 | 58 | 72.5 | 10 | 12.5 | 0 | 0 | 0 | 0 |
| 4 | MOOC's upgrade the Skills of successful life | 12 | 15 | 56 | 70 | 10 | 12.5 | 2 | 2.5 | 0 | 0 |
| 5 | MOOCs are simple and easily Accessible | 10 | 12.5 | 44 | 55 | 24 | 30 | 0 | 0 | 2 | 2.5 |
| 6 | MOOC's contains the basic information only | 8 | 10 | 34 | 42.5 | 30 | 37.5 | 4 | 5 | 4 | 5 |
| 7 | MOOC's are flexible in terms of time and space | 18 | 22.5 | 52 | 65 | 10 | 12.5 | 0 | 0 | 0 | 0 |
| 8 | Use of MOOC's is new learning style | 12 | 15 | 58 | 72.5 | 8 | 10 | 0 | 0 | 2 | 2.5 |
| 9 | MOOC's are Lifelong Learning tools | 14 | 17.5 | 60 | 75 | 6 | 7.5 | 0 | 0 | 0 | 0 |
| 10 | MOOC's are time saving as compared to face to face session. | 18 | 22.5 | 54 | 67.5 | 4 | 5 | 2 | 2.5 | 2 | 2.5 |
| 11 | MOOC's are tool for democratization of education | 16 | 20 | 56 | 70 | 8 | 10 | 0 | 0 | 0 | 0 |
| 12 | MOOC's are information source but lacks rigours of teaching | 6 | 7.5 | 46 | 57.5 | 22 | 27.5 | 4 | 5 | 2 | 2.5 |
| 13 | MOOCs are for general and basic learning experience as compared to interactive classroom | 8 | 10 | 48 | 60 | 16 | 20 | 4 | 5 | 4 | 5 |
| 14 | MOOC's are reliable source of information and learning | 10 | 12.5 | 54 | 67.5 | 14 | 17.5 | 0 | 0 | 2 | 2.5 |
| 15 | MOOC's are less rigour as compared to for-credit course | 4 | 5 | 44 | 55 | 14 | 17.5 | 16 | 20 | 2 | 2.5 |
| | Perception of IGNOU Students towards adoption of Emerging technologies in Open and Distance Learning. | 15.67 | | 63 | | 16.83 | | 2.67 | | 1.83 | |

The investigators had tried to find out the perception of IGNOU Students towards adoption of Emerging technologies in Open and Distance Learning and following observations based on responses received through questionnaire.

- 97.50% learners of IGNOU were more or less agreed that use of MOOC's improves the learning Process and only 02.50% learners of IGNOU were found more or less disagreed that use of MOOC's improves the learning process.
- 100% learners of IGNOU were more or less agreed that MOOC contribute in knowledge enrichment and No learners of IGNOU were found disagreed that MOOC contribute in knowledge enrichment.
- 100% learners of IGNOU were more or less agreed that MOOC contribute in professional success and No learners of IGNOU were found disagreed that MOOC contribute in professional success.
- 97.50% learners of IGNOU were more or less agreed that MOOC's upgrade the skills and only 02.50 % learners of IGNOU were found more or less disagreed that MOOC's upgrade the skills of successful life.
- 97.50% learners of IGNOU were more or less agreed that MOOCs are simple and easily accessible and only 02.50 % learners of IGNOU were found more or less disagreed that MOOCs are simple and easily accessible.
- 90.00% learners of IGNOU were more or less agreed that MOOC's contains the basic information only and 10.00 % learners of IGNOU were found more or less dis-agreed that MOOC's contains the basic information only.
- 100% learners of IGNOU were more or less agreed that MOOC's are flexible in terms of time and space and No learners of IGNOU were found more or less disagreed that MOOC's are flexible in terms of time and space.
- 97.50% learners of IGNOU were more or less agreed that use of MOOC's is new learning style and only 02.50 %

learners of IGNOU were found more or less disagreed that use of MOOC's is new learning style.
- 100% learners of IGNOU were more or less agreed that MOOC's are Lifelong Learning tools and No learners of IGNOU were found more or less disagreed that MOOC's are Lifelong Learning tools.
- 95% learners of IGNOU were more or less agreed that MOOC's are time saving as compared to face to face session and only 05.00% learners of IGNOU were found more or less disagreed that MOOC's are time saving as compared to face to face session.
- 100% learners of IGNOU were more or less agreed that MOOC's are tool for democratization of education and No learners of IGNOU were found more or less disagreed that MOOC's are tool for democratization of education.
- 92.50% learners of IGNOU were more or less agreed that MOOC's are information source but lacks rigours of teaching and only 07.50% learners of IGNOU were found more or less disagreed that MOOC's are information source but lacks rigours of teaching.
- 90.00% learners of IGNOU were more or less agreed that MOOCs are for general and basic learning experience as compared to interactive classroom and only 10.00% learners of IGNOU were found more or less disagreed that MOOCs are for general and basic learning experience as compared to interactive classroom.
- 97.50% learners of IGNOU were more or less agreed that MOOC's are reliable source of information and learning and only 02.50% male learners of IGNOU were found more or less disagreed that MOOC's are reliable source of information and learning.
- 77.50% learners of IGNOU were more or less agreed that MOOC create the interests and provides endless possibilities and opportunities and only 22.50% learners of IGNOU were found more or less disagreed that MOOC

create the interests and provides endless possibilities and opportunities.

As per data, the learners of IGNOU were having positive perception towards towards adoption of emerging technologies in Open and Distance Learning. On an average 15.67% learners of IGNOU strongly agreed, 63.00% male learners of IGNOU agreed,16.83 were average,02.67 were disagreed and 01.87 learners of IGNOU were strongly disagreed that the adoption of emerging technologies in Open and Distance Learning provides equity, knowledge, endless possibilities and opportunities . It clearly shows on an average 95.50% male learner of IGNOU were more or less agreed and only 04.50% male learners of IGNOU were found more or less disagreed with the adoption of emerging technologies in Open and Distance Learning.

## 8.0 DISCUSSION AND CONCLUSIONS

From the above interpretations it is very much clear that most of the IGNOU learners who were enrolled in various programmes have shown their strong preference towards Massive Open Online Courses (MOOC's) assessed across various parameters like its benefit in knowledge enrichment, learning process, personal success in the future, enhancing skill, In the opinion of investigators and as data revealed that MOOCs is very simple, reliability of the information, convenient for those with tricky schedules, lifelong learning, such concepts are making education and knowledge more accessible, its openness etc.

It has been found that 47.5 percent of the respondents were well versed with the MOOC's. As per far percentage of the respondents who joined MOOC's programme only 17.5% joined it for enriching their knowledge. It has been also seen that the computer background learner were more familiar with the MOOC's etc as compared to the other discipline learners. The most of the learners were well versed with the modern ICT tools and they were regularly using the same.

Further, as per data, the learners of IGNOU are having positive perception towards towards adoption of Emerging technologies in Open and Distance Learning. On an average 15.67% learners of IGNOU strongly agreed, 63.00%

male learners of IGNOU agreed,16.83 were average,02.67 were dis-agreed and 01.87 learners of IGNOU were strongly disagreed that the adoption of emerging technologies in Open and Distance Learning provides equity, knowledge, endless possibilities and opportunities .

We may conclude from the above survey that students are willing to be part of technology enabled learning process e- learning programmes especially MOOC's whenever it is launched by IGNOU in future towards contributing knowledge delivery society by 2025.

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