

ICT & Online Education – Factors affecting Employees' preference for Online Education

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Abstract: *The potential of ICTs in promoting the development and reach of educational avenues in India is unambiguously clear in the light of the challenges facing the country. Role of ICTs with enhanced focus on development of content and the applications to provide enhanced quality of education must be synchronized with the various initiatives for using ICT for education and should be guided by adequate guidelines and framework. Provisioning of ICT is limited by the Infrastructure especially in the rural areas, where Internet and electrification are major issues of concern. It is well known that higher penetration of mobile phone, radio and TV implies increased development and delivery of innovative content via these media. This paper is focussed on the necessity to incorporate ICT as a part of the curriculum and also use it to strengthen the teaching learning process. The paper explores the key factors that drive the growth in the E-Learning sector. The authors undertook a research for identifying the various factors that may affect the choice and preference of employees for opting for online education as a measure for career/knowledge enhancement. The study indicates that online education market in India is currently booming. The growth of the market is dependent on the field of study, the willingness to pay, the credibility of the offering organization and the acceptability of the learning in the Corporate sector.*

Index Terms: *ICT, SSA, CLASS, EDUSAT, UGC, challenges, objectives, Online Education.*

I. INTRODUCTION

Definition: ICT (Information & Communication Technology) refers to a set of technical resources and tools for managing the creation, storage and dissemination of information thereby providing anytime anywhere access to the remote resources. ICT plays a crucial role in provisioning the remote learning environment motivating students to engage in active and collaborative learning.

Information Technology and Communication solutions can be implemented with following key objectives:

- Facilitating learning opportunities to everyone seeking knowledge irrespective of their geographic location, socio-economic or cultural backgrounds.
- Ensuring access to education and an environment for effective learning to support the children that have special needs.

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- Supporting IT literacy especially in young generation.
- Introducing low cost & low energy consuming solutions in delivery of education
- Delivering better student services
- Opportunities of e-learning from good teachers coming from cities to students based in rural areas.
- Ensuring the availability and quality of on-line content and its access through the access-devices.
- Transforming the learning environment in the classroom from teacher-centric to student-centric.
- Promoting the use of ICT in distance education.

II. ICT AND EDUCATION: INITIATIVES OF THE INDIAN GOVERNMENT

The Government of India (in 1994) launched the District Primary Education Programme (DPEP) as a comprehensive scheme to enhance the quality of school-education with the help of international funding support from the European Union and the World Bank. The Distance Education Programme (DEP) was added to it as an integral part to help in the professional development of all the functionaries including teachers. The project named Sarva Shiksha Abhiyan (SSA), was initially implemented in 18 states, and later extended to cover all the 29 states and 6 union territories. Existing Open and distance education systems use different technology options for delivering content-EduSAT, other TV and Radio channels. Developing countries are striving to provide ICT access to all segments of the society. To emerge competitive in the 21st century it is inevitable to exploit these tools for economic development. Countries that would utilise multimedia for education and training may emerge above the rest in terms of economic prosperity.

Notable initiatives by the Indian Government in this direction are as below:

A. CLASS (initiated in 1984 – 85)

CLASS (Computer Literacy and Studies in Schools) Project brought out the importance of ICT Education in India. This project was initially a pilot project and was accompanied with the distribution of BBC micro computers to Sec. and Sr. Sec. Schools by the State Govts. It was later accepted as a centrally sponsored scheme in the 8th Five Year Plan (1993-98), in which financial grants were also provided to the institutions to whom the BBC computers were distributed along with new Govt. aided Sec. and Sr. Sec. schools. A total of around 2598 schools were benefitted under this scheme



and the aid included providing teachers, maintaining the hardware, providing text books for the students and training the teachers. In addition 2371 schools were given help for new hardware and services in the form of annual cash provisioning amounting to Rs. 1 lakh for configuration of the hardware and Rs 80 thousand for handling recurring cost. The agency mediating all these schemes was NIC.

B. IT Task Force

IT Task Force is the name given to National Task Force on Information Technology and Software Development. It was constituted by the Prime Minister of India in July 1998. This committee had recommended introduction of IT in the education sector including schools also.

Notable recommendations are as below:

- 1) *Launching Vidyarthi Computer Scheme, Shikshak Computer Scheme and School Computer Scheme: These aim to provide financial assistance, donations and smooth loan facility to help students, teachers or schools to buy computers.*
- 2) *Computers and Internet connections to be made available in schools, colleges, hospitals and other public domain areas by 2003*
- 3) *The SMART School concept to be made a reality in each state.*

C. 11th Five Year Plan

The 11th Five Year Plan of the government has put in a tremendous focus on ICT in education and has decided to significantly increase the IT infrastructure in schools and colleges. To help support the same, the Government sanctioned an amount of Rs. 5000 crores for enhancing the ICT Infrastructure in schools. The schools were provided 10 computers, one server, a LAN based printer and a 2Mbps broadband internet connection. Teachers were also trained as part of this initiative.

D. Innovative Projects

EDUSAT, UGC INFONET, INFLIBNET and SAKSHAT are some innovative projects undertaken by the Government of India. A national mission in education through ICT has been launched to increase ICT coverage in all major universities and colleges.

III. CRITICAL SUCCESS FACTORS

The Introduction and adoption of ICTs is aimed at provisioning good quality education to all. The factors limiting this goal are as below:

A. Education is consistently neglected

B. Opportunity cost of education: Funding is great challenge.

C. Lack of Quality education

Lack of critical thinking and analytical skills in students requires creating student-centric teaching environments.

D. How to distribute human and financial resources?

E. Technology and pedagogy should meet

ICT enablement requires appropriate and affordable technical infrastructure. Deployment of e-learning is limited by Bandwidth, which is related to the quality of communication technology equipment. The higher the quantity of audio, video and processing tasks, the higher is the sophistication required in the telecommunication equipment. Bandwidth confers financial imperative particularly for long distance e-learning support.

F. Identifying the rural needs

Understanding of issues in rural education includes

1. Parents are concerned about the schooling and limited opportunities available for their children. They are worried about the extra expenditures incurred in sending children to cities for further education.
2. Teachers are faced with the challenges of maintaining high standards of professional practice as compared to the urban counterparts. They cannot access opportunities to update skills for handling newer syllabi and the newer assessment methods.

G. Gender specific barriers

Most women use IT at their work places. Barring the upper income bracket people, the access to Internet and computer at home is not a common phenomenon. Women' access to ICT is constrained by factors as literacy, cost, time, geographical location, social norms and cultural factors. IT can offer significant advantages to these ladies but they are limited by policies of the government and the enabling environment.

H. Lack of political interest

Non existence of Conceptual Framework or Policy on ICT in Education. Hence, individual educational institutions themselves handle the issues as per their experience and requirements. The strategic plan for incorporating this must include the following steps:

- Integration of the ICT skills in the National curriculum
- Provisioning computers and internet in the schools.
- Motivating the involvement of the private sector through specific programs and initiatives.

I. Teachers' comfort with ICT

Some teachers are hesitant in the use of ICT for teaching. Reasons are attributed to poor design of the software, doubts about attaining outcomes through effective use of computers, training time and lack of administrative support. The most important hindrance being the fear of losing class control and individuality. These concerns need to be addressed both during the pre-service education and the in-service development programmes, to incorporate Internet as an educational tool. The administration and the community must be supportive and adequate access to functional computers must be provided. Further the pedagogy shift and curriculum redesign and incorporation of assessment tools shall contribute to optimal use of ICT in education.



J. Reconsidering Content & Curriculum

Access to data and information is the prime utility of ICTs in education. They provide access to infinite educational resources. These resources are in varied formats and not readily relevant to educationists. Hence relevance to local needs is a prime concern with the usage of this content. Therefore unless the online content is directly related to the curriculum and is in line with the assessment methods, it cannot serve its purpose completely and ICT interventions may be rendered useless.

IV. HYPOTHESIS

The paper is designed to test the relevance of online education for corporates and to test the guiding factors for preference for online education in the corporate employees. The following hypothesis have been tested:

H1. The preference for on-line training will depend on the type of company of the person concerned i.e. whether the person is working in MNC, Public Sector Unit, Private Ltd. Company or is involved in Family Business.

H2. The preference for online education will depend on the sector to which the company belongs such as Marketing, Services, Infrastructure etc.

H3. The adaptability to online education will depend on the academic discipline of the person concerned which can be either Medicine, Engineering, Law or Information Technology.

H4. The preference for online education for employees will depend on the size of their respective organizations.

H5. Preference for online education will depend on Internet usage habits of the concerned employee.

H6. The mode of education is dependent on the gender of the person concerned.

V. METHODOLOGY

The Research was carried out in following two phases.

A. Exploratory Research:

In this step backdrop information was collected from secondary sources of information as existing articles, research papers, related literatures and the internet.

In addition in-depth interviews were conducted on a random sample of a large population of potential learners of online education. This step led to the design of an effective questionnaire and formulation of the hypothesis.

B. Conclusive Research

- Pre-tested questionnaire was submitted to the target segment a stratified sample of 500 respondents in two broad levels:
- 250 existing adult learners (pursuing DLP / correspondence / part – time / Online programs).
- 250 potential learners working in various organizations.
- In-depth interviews were planned with 100 HR heads / Training Managers of top Indian corporates regarding their perception of e-learning at the workplace.

The data thus obtained was then applied to test the hypothesis formulated.

VI. SAMPLE SIZE AND TYPE

The sample on which the study was conducted had the following specifications:

- A. Types of Respondents belonged to three categories:**
- a. Pursuing online education at the time of survey
 - b. Pursuing offline education at the time of survey and
 - c. HR Managers/Employers
- B. Locations from where the sample was drawn:**
- a. Mumbai - 100
 - b. Delhi - 200
 - c. Bangalore- 100
 - d. Chennai - 50
 - e. Calcutta - 50
 - Total - 500
- C. Types of companies of the respondents of the sample:**
- a. MNC (Multinational Companies)
 - b. Public Sector Units
 - c. Private Ltd. Companies
 - d. Family Business
- D. Disciplines of the Respondents of the sample:**
- a. Medicine
 - b. Engineering
 - c. Law
 - d. Management
 - e. Information Technology (IT)
- E. Actual sample size consisted of 463 adult learners, out of whom**
- a. 369 were pursuing offline courses
 - b. 94 were pursuing online courses
 - c. 85 HR Managers were interviewed

VII. ASSESSMENT OF KNOWLEDGE ACQUISITION NEEDS

An assessment of the Knowledge Acquisition needs can be listed in the following points:

- The knowledge acquisition needs of an adult learner depend to a great extent on the quality of education he has received and his work experience.
- The career objectives and aspirations also define the knowledge acquisition needs.
- The skill sets (functional skills and/or soft skills) needed by different people vary with the individual.
- There would be a need for different knowledge areas in the same domain.
- The profile of the adult learner and the nature of the program together attribute importance to the various aspects of the program such as the fees, course structure, duration, certification, market value etc.
- Different online programs have different preferred price points.
- Certain academic disciplines are more amenable to online methodology due to inherent content characteristics.



VIII. RESULT AND DISCUSSIONS

A. Results Of The Interviews With Hr Managers

- (a) For an employee at the junior level, computer operation skills, accounting skills and time-management skills are more important, whereas planning and interpersonal skills are least important.
- (b) For an employee at the middle level, time-management skills and business related skills are more important, whereas planning, interpersonal, accounting and technical skills are least important.
- (c) For an employee at the senior level, communication, planning, negotiation, time-management, technical and business related skills are most important.
- (d) Product and company knowledge are most important for employees at all levels in the organization.
- (e) Certification is the most important element any learning undertake for upgrading skills and knowledge, while pedagogy takes a back seat.
- (f) Ideal duration for online skill upgradation and knowledge acquisition programmes could be something between 3-6 months and an investment of Rs. 20,000-30,000 would be appropriate for an online skill upgradation and knowledge acquisition programme.

B. **Hypothesis1:** The preference for on-line training will depend on the type of company of the person concerned i.e. whether the person is working in MNC, Public Sector Unit, Private Ltd. Company or is involved in Family Business.

Conclusion:

- 1) *Sample taking offline Training:* The company in which a person is working is a decisive factor in deciding the preference for online courses of employees.
- 2) *Sample taking online Training:* For online training the type of company in which the person is working does not serve as a factor.
- 3) *HR Manager (Employers):* 32% HR Managers of Pvt. Ltd companies were interested in providing online training to their employees. This figure reached 54% and 58% when the training was to be given to middle and senior levels. Further the study suggests that online training is considered more suitable for the senior and middle employees as compared to the junior level. The trend in MNCs was completely reversed, where there was more stress on the training the junior staff.

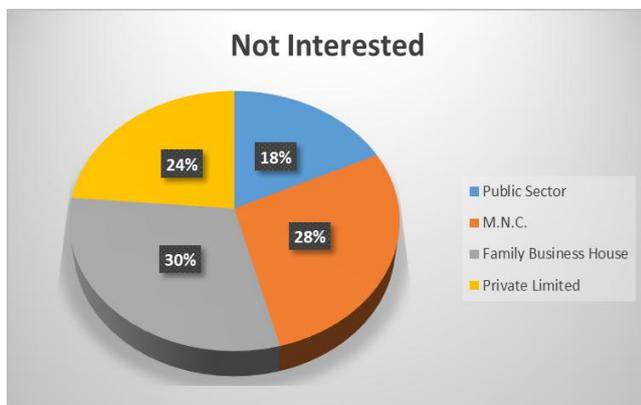


Figure1: Impact of type Company on preference for Online Courses (Source: Online Sample)

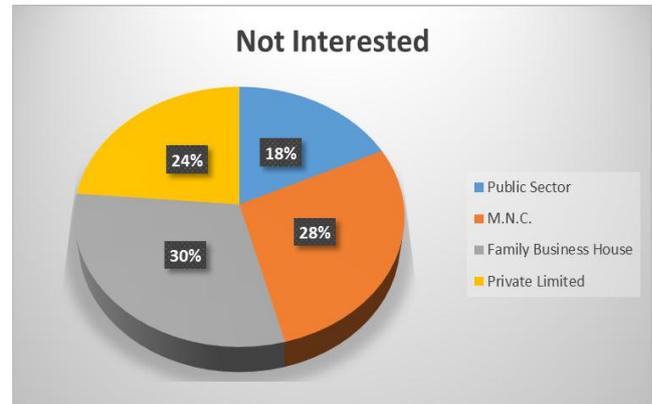


Figure2: Impact of type Company on preference for Online Courses (Source: Offline Sample)

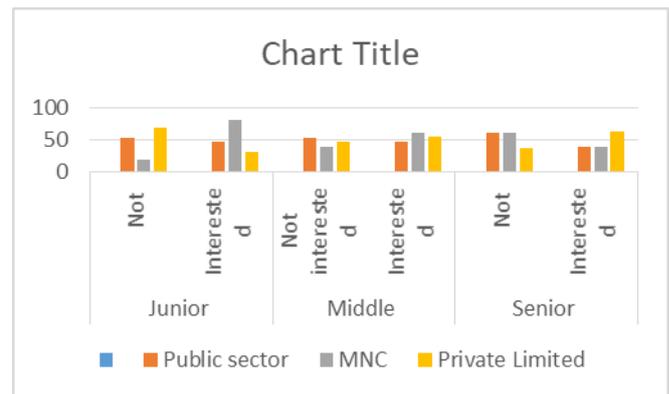


Figure3: Impact of type Company on preference for Online Courses (Source: HR Managers)

C. **Hypothesis 2:** The inclination for online education depends on the sector of the company such as Marketing, Services, Infrastructure etc.

Conclusion:

- 1) *Sample taking offline Training:* The sector generally does not serve as a factor in the deciding the preference for offline training, however people in infrastructure sector were found to be more inclined toward joining offline courses as compared to other sectors.
- 2) *Sample taking online Training:* So far people employed in the manufacturing and services sector have been interested in joining online courses, while the infrastructure remains uninterested.
- 3) *HR Manager (Employers):* 38% HR Managers belonging to the manufacturing sector were interested in providing online training to their junior staff. This figure reached 58% for middle and 67% for senior employees. In other sectors the HR managers are hardly interested in the online education of its junior employees, but have preference for the same for its middle and senior employees. Hence it can be deduced that:
 - HR managers feel the need for upgrading the skills on a regular basis,
 - They are more inclined towards online education for senior employees as a reward as they feel that training the senior people will benefit the organization.

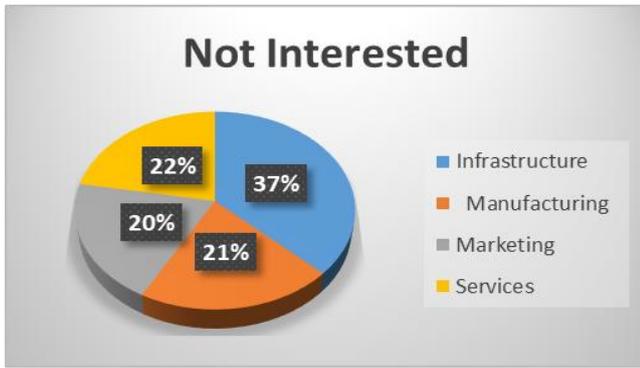


Figure4: Impact of sector on preference for Online Courses (Source: Online Sample)

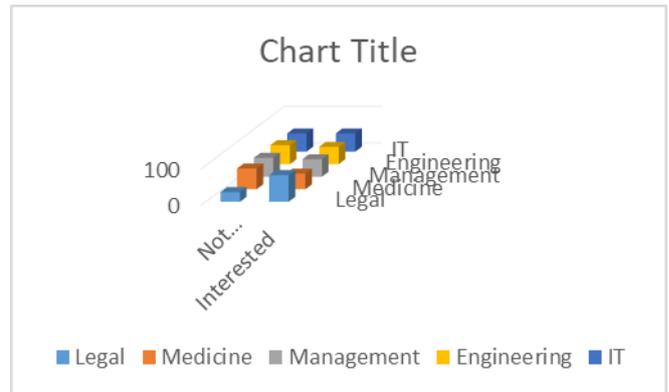


Figure 7 - Impact of Academic Field on Preference for Online Courses (Source: Online Sample)

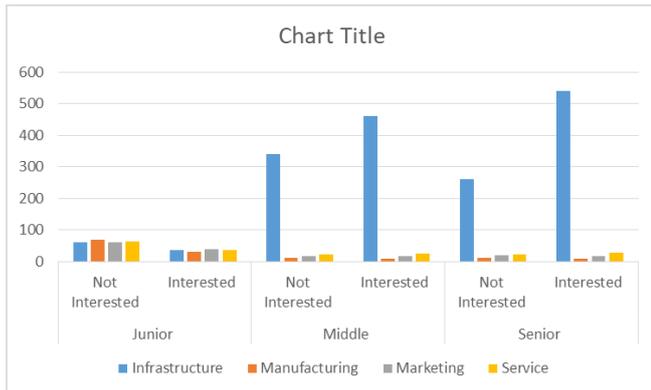


Figure 5 -Impact of Sector on Preference for Online Courses (Source- HR Managers)

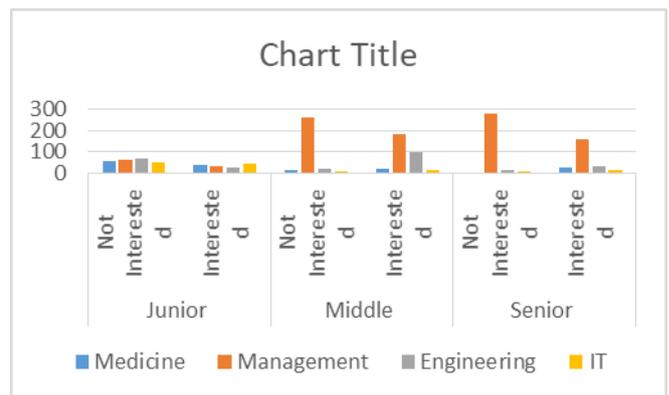


Figure 8 - Impact of Academic Field on Preference for Online Courses (Source: HR Managers)

D. **Hypothesis 3:** The adaptability to online education will depend on the academic discipline of the person concerned which can be either Medicine, Engineering, Law or Information Technology.

Conclusion:

- 1) *Sample taking offline Training:* Employees from management field are more interested in offline trainings than those belonging to engineering and legal domains.
- 2) *Sample taking online Training:* For online courses academic field does not help define the training requirements.

HR Manager (Employers): More than 66% HR Managers are in favour of providing on-line training to their senior officials as compared to 28% being inclined for training of junior employees. In the IT field online training is felt a necessity for almost all employees. The figures are 48% HR Managers favour online training for Junior employees and 58% for middle and senior officials.

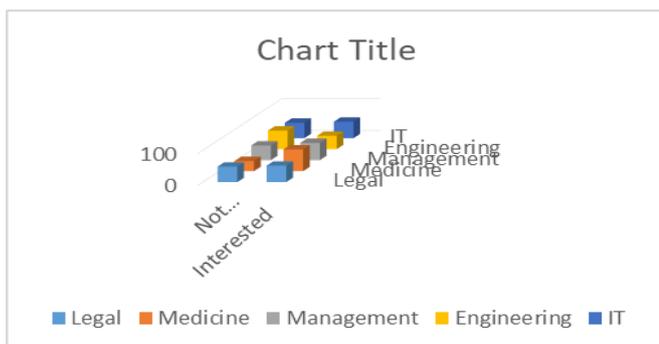


Figure 6 - Impact of Academic Field on Preference for Online Courses (Source: Offline Sample)

E. **Hypothesis 4:** The inclination towards online education for employees will depend on the size of their respective organizations.

Conclusion:

- 1) *Sample taking offline Training:* Employees working in organisations with turnovers ranging from 2000 million US\$ to 5000 million US\$ were found to be more interested in offline training as compared to those working in less than organizations worth less than 50 crore.
- 2) *Sample taking online Training:* NA
- 3) *HR Manager (Employers):* The HR Managers of organizations with worth less than 500 million US\$ are quite interested in providing online training to their senior officials. While large companies with worth ranging from 2000-5000 million US\$ were not surprisingly not interested in providing online education to their employees. Small companies are short of resources and consider trainings only on need basis. It was observed that 49% of HR Managers of mid size (500-2000million US\$) organizations feel the need to provide training to their junior employees, while 49% prefer for middle employees and 51% for senior employees.

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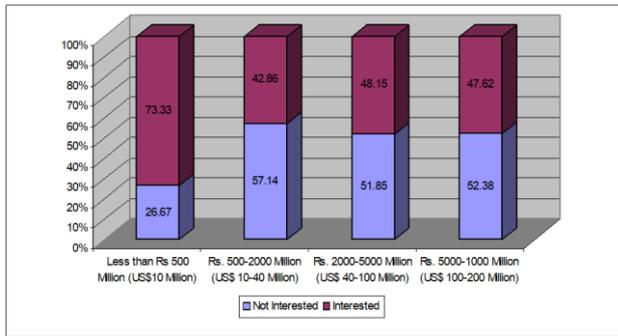


Figure 9: Impact of Company Turnover on Preference for Online Courses (Source: Offline Sample)

F. Hypothesis 5: Preference for online education will depend on Internet usage habits of the concerned employee

Conclusion:

- 1) *Sample taking offline Training:* Study shows no effect of internet usage habits on preference for offline education.
- 2) *Sample taking online Training:* Preference for online education is somehow guided by Internet usage habits. Low and moderate users are more inclined while heavy users are less inclined.
- 3) *HR Manager (Employers):* NA

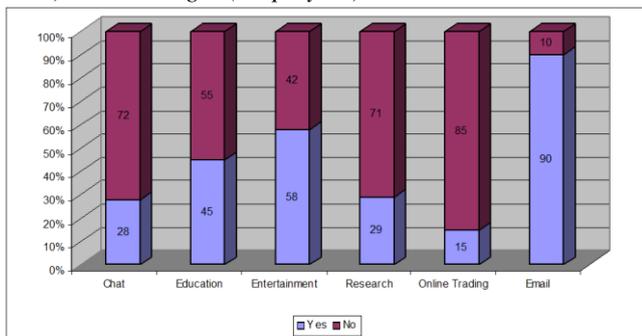


Figure 10: Purpose for which Internet Surfing is utilized

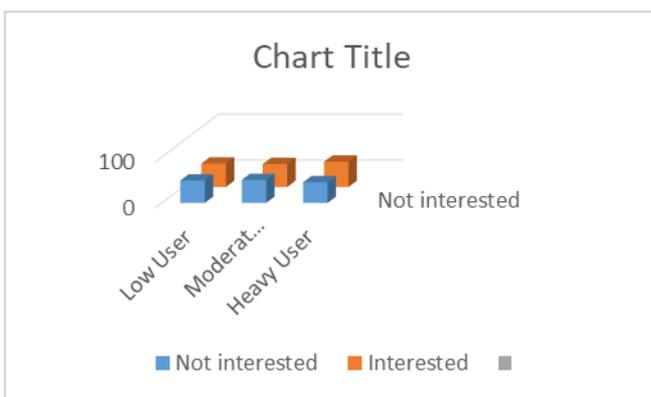


Figure 11: Impact of Internet Usage on Preference for Online Courses

G. Hypothesis 6: The mode of education is dependent on the gender of the person concerned

Conclusion:

- 1) *Sample taking offline Training:* There is no influence of gender on choice of mode of education.
- 2) *Sample taking online Training:* There is no influence of gender on choice of mode of education.
- 3) *HR Manager (Employers):* NA

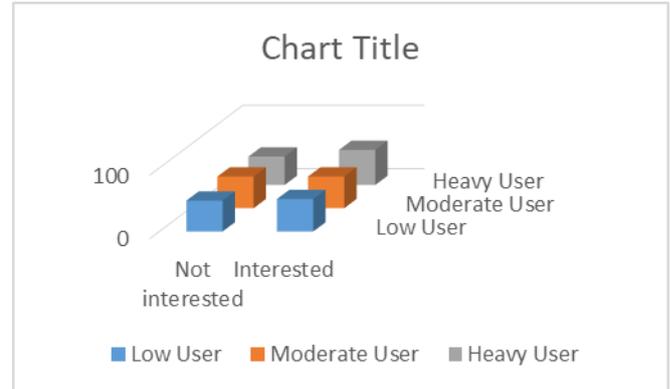


Figure 12: Impact of Internet Usage on Preference for Online Courses

IX. DISCUSSIONS

The research study brought out that the market segmentation of the online education industry is based on two parameters namely:

- The suitability and acceptance of the courses by industry for career enhancement.
- The willingness of the learner to pay for the course.
 - Industry acceptance and willingness to pay is highest in respect of IT field.

X. CONCLUSION

ICT definitely has a great potential in the Education Sector. The various schemes and initiatives of the Government and the private players will help in taking the Education to all those who cannot for any reason visit schools or varisities. Further with ICT in place there is no age limit for enhancing qualification. We can, at any age and from any corner of the world undertake further education and courses for self growth. The future scope of ICT in education is tremendous and the number of people moving towards online education systems is increasing day by day. Virtual universities, virtual classrooms and virtual education at large is not a dream anymore and is becoming a reality. The prime motivators for growth in the E-Learning industry, that have been found in this research are as below:

1. Commendable growth in the Education Sector
2. The distance learning mode is not offered through the traditional ways.
3. The technology is constantly
4. There is a need for change in the skill sets
5. Newer models for conducting business are emerging such as geographically distributed work-force and third party outsourcing.

REFERENCES

1. Panda, S. & Garg, S. (2003), “Distance learning in India with open schools”, Bradley-J.(ed.), “The Open Classroom: Distance Learning in and out of Schools. London: RoutledgeFalmer”
2. Potashnik, M.and J.Capper, “Distance Education: Growth and Diversity”,<http://www.worldbank.org/fandd/english/pdfs/0398/0110398.pdf>
3. Haddad,Wadi D. & Alexandra Drexler (2002),“The Dynamics of Technologies for Education”, in Haddad,W. & Drexler, A. (eds.) Technologies for Education: Potentials,Parameters, and



Prospects (Washington DC: Academy for Educational Development and Paris: UNESCO), p. 9.

4. Varma's Portal: http://www.cse.iitb.ac.in/~a_varma/portal/
5. Hardeep's Portal <http://www.cse.iitb.ac.in/~hardeep/portal/index.html>
6. AKSHAYA - Official Website of Kerala Agastya International Foundation portal <http://www.agastya.org/>
7. Andersen, K.V. and H.Z. Henriksen. (2006). "E-Government maturity models: Extension of the Layne and Lee model" Government Information Quarterly, Volume 23, Issue 2, 236-248.
8. Annamalai, Kuttayan and Sachin Rao. (2003), "What Works: ITC's e-Choupal and Profitable Rural Transformation Web-Based Information And Procurement Tools For Indian Farmers", Jointly published as "What Works Case Study" by World Resources Institute, Digital Dividend and University of Michigan, (August 2003) http://www.digitaldividend.org/pdf/echoupal_case.pdf.
9. Mitra, R.K. and M.P. Gupta. (2003), "Evolution of e-Governance in India: Learning from Select Cases", Indian Management (August, 2003) A Journal of All India Management Association, New Delhi, India.
10. Consortium for School Networking, "Taking TCO to the Classroom: A School Administrator's Guide to Planning for the Total Cost of New Technology", <http://ctap.fcoe.k12.ca.us/ctap/dhs3.4/tco2class.pdf>.
11. Salomon, K., "A Primer on Distance Learning and Intellectual Property Issues", <http://www.teletrain.com/copyrigh.htm#3.student%20Waivers>.
12. Blurton, C. "New Directions of ICT-Use in Education", p. 35.
13. Whyte, A., "Assessing Community Telecentres. Guidelines for Researchers", cited in S. Cisler, "Planning for Sustainability..."
14. <http://www.giripragna.org/giripragna.htm>
15. <http://www.agastya.org>
16. <http://ggkbhu.org/html/index.html>
17. <http://www.azimpremjifoundation.org/>

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Prof. Kamal Kundra, born and brought up in Delhi, India. has completed his Masters in Technology with specialization in Information Technology. He is an engineering graduate in Computer Science from Pune University. He has over 25 years of experience in academics and Industry. His proficiency areas include E-commerce, MIS, Business Analytics, Databases, etc. He has been a resource person for a number of FDPs on various areas of research and technology as part of his academic career.



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