

Factors Influencing Preference for Certification Courses Delivered Through Technology-Driven Distance Education

Ansuman Sar, Satya Narayan Misra

Abstract: As per the Merriam Webster dictionary, the definition of the distance learning is - "It is a method of study where teachers and students do not meet in a classroom but use the Internet, e-mail, video conference, audio conference mediums of the study. The assessments and doubt clearing also happen online and still there are some planned face to face interaction programs with the students." In the late 1900s, correspondence courses started coming into the picture. These courses were mainly introduced for the working professionals and for the people who wish to go for competitive examinations as travelling to the university is difficult if it is far off. This is to enhance the access and reach for the learners. Many of the tutorial companies and coaching centers also use distance learning model to cater to the needs of IIT JEE/Civil services aspirants in India. However, distance-learning courses have much better acceptance in the western countries. In Europe and America, they have wider acceptance and several studies done have proven the need of the distance courses and the perception of the people about the distance courses is really good.

Keywords: distance learning, technology-enabled education, online courses, E-learning

I. INTRODUCTION

Initially distance courses involved a lot of mail transactions between the faculty and the student. With the technological disruption/interference, the options for distance education have greatly inflated. Long back, as mentioned in the book of Distance-Learning: Principles for Effective Design/Delivery & Evaluation by C.M. Mehrotra, C. D. Hollister & L. Mc-Gahey, radios (two way communicating) were used for the teaching. After that, gradually different kinds of technological-delivery instruments were involved in online distance learning. The Examples of these are Cable television/Closed circuit/interactive TV/Audio-visual recordings/Telephones/Mobiles/personal computers and desktops, mobile devices and applications etc. Earlier distance learning was very slow and expensive and it was run or conducted for learners who are at a relatively shorter distance. With the satellites and development of scientific electronics, education-programs were accessed all over the world from any university in any continent. Today, live interaction with the counsellor, live doubt clearing classes and online-proctored assessments are possible with the use of technology innovation and high speed internet. These days considering the rapidly moving world and requirement of multiple skills in profession, access to education and increasing employability, distance-learning courses are in huge demand.

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Ansuman Sar, Student, Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar (Odisha), India.

Dr. Satya Narayan Misra, Dean (Academics), Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar (Odisha), India.

It is also seen that there is a consistent rise in the number of registrations for these distance courses in India. However, in India it is still not considered as a mainstream education. We hope that with the use of technology, we can increase the effectiveness of the distance education and make this a success. In this research paper, the objective is to find out the main reason for choosing the online courses is and what are the correlations of these reasons with the gender/age and employment status. The brief history of distance education from eighteenth to twentieth century has been tabled below.

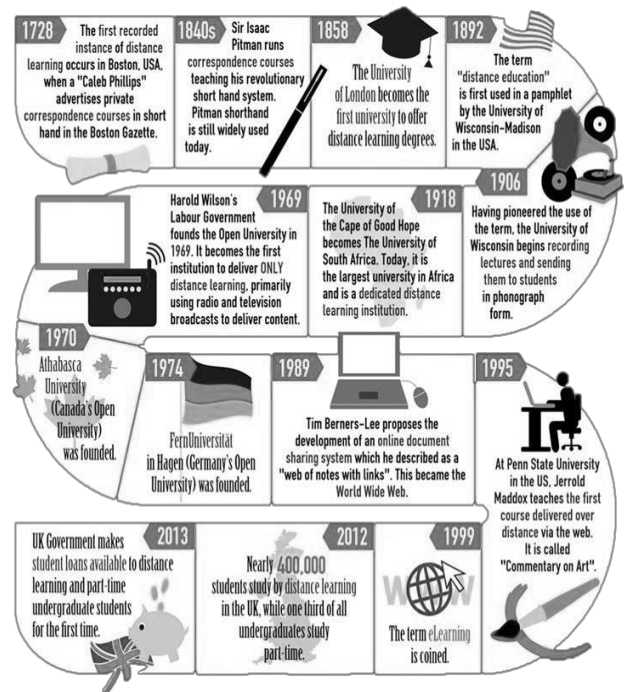


Figure 1. Brief history of distance from 18th to 20th Century (Source: Master Studies, Global trends of Distance learning)

There is a huge increase in the number of enrolments across the India universities in the distance learning courses. Over a period of time, it has grown like anything. As per last year's statistics shared by Coursera (world's largest open education provider):

- I. 13 lakh online learners were from India
- II. Total number of learners – 180 Lakhs


The number of Indian learners have increased by 70% in number. Indian government tries to increase the registrations for these online courses and this is practically not doable by establishing more regular/conventional universities.



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Theresponse to this is online educationsystem.

REACHING OUT		
Year	Distance teaching institutions	Student enrollment
1962	1	1,112
1970-71	17	29,500
1980-81	34	1.6 lakh
1985-86	40	3.5 lakh
1990-91	51	5.9 lakh
1995-96	57	10.3 lakh
2000-01	79	13.7 lakh
2005-06	117	18.3 lakh
2009-10	200	36.6 lakh



Level	Regular enrolment	Distance enrolment
Ph.D	109416	136
M.Phil	24878	0
Post Graduate	768640	1107925
Under Graduate	1599953	2498983
PG Diploma	90769	68604
Diploma	183717	94247
Certificate	15083	34021
Integrated	92823	1
Total	2885279	3803917

Figure 2. Student enrolment data related to distance education (Source –Ministry of Human Resource Development, Government of India)

Today, not only graduation or post-graduation degrees are required - we need a lot of skill enhancement courses and the courses which can help us real time for increasing our employability. While traditional degrees like a bachelors or masters might be the valid - proof of your education and is required during initial screening. Still they don't actually focus on the skills that are very important are the need of the hour. Hence the skill-GAP is filled by these wider range of online - customized courses. One can choose the courses as per his/her choice. These courses are normally named as certificate course or nanodegree course or skill enhancement course. There are examples of professional certification courses.

- i. Awards-certification
- ii. Certified Developers
- iii. Google gives certificates who prove to be experts in multiple domains

Now considering these trends, it is pretty understood that distance education would be an essential tool in meeting the needs of the people in India and its success and effectiveness is of prime importance. However, in India, it is still not the mainstream education and faculties and students still question its effectiveness. Hence, a research study was carried out to determine, what are the perceptions of the people about the distance courses and how we enhance the same using technology? There was limited scope of our study to the students only. These students are from the State Open University of Odisha, an eastern state of India. Survey questionnaire has been used for the same and 51 students' response has been taken who are doing the Basic Computer Knowledge Certification Course through distance mode.

II. LITERATURE REVIEW

Education requires a personal contact of highly qualified teacher with the learners as it is a social activity. The demand for education in India (which is one of the developing nations) has gone up as education continues to be taken as a significant bridge between society, economic conditions, cultural and political scenarios in this nation. Due to infrastructural and socio-economic issues, quality education is not accessible to all; especially to those in remote regions. Information and Communication Technology (ICT) has the tremendous potential to discard and remove these barriers that are causing the problems of lower educational spread and effectiveness of education. ICT can act as a catalyst to overcome the below issues.

- i. Cost issues as the education can be spread through technology / costs due to distance would be minimized
- ii. Lack of faculties (Teacher to Student ratio is very poor)
- iii. Time and distance constraints
- iv. Quality of learning / topic delivery

As validated by UNESCO (2002), students of 21st century would need latest information and communication technologies in their education and learning (across the world - poor/developing or developed). New trends in technology are playing a very important role in education sector. National Policy on Information and Communication Technology in School Education for the year 2012 gives emphasis upon the ICT literate community so that all ICT resources are used in teaching learning process.



NPICT in School education(National policy on Information and communication technology) stresses upon ICT literate community to use ICT resources in learning /teaching process.

TAM- the Technology Acceptance Model developed by Davis(1989) takes into account of social psychology theory of reasoned action, used for modelling user acceptance of information systems.

TAM is based on two major factors-

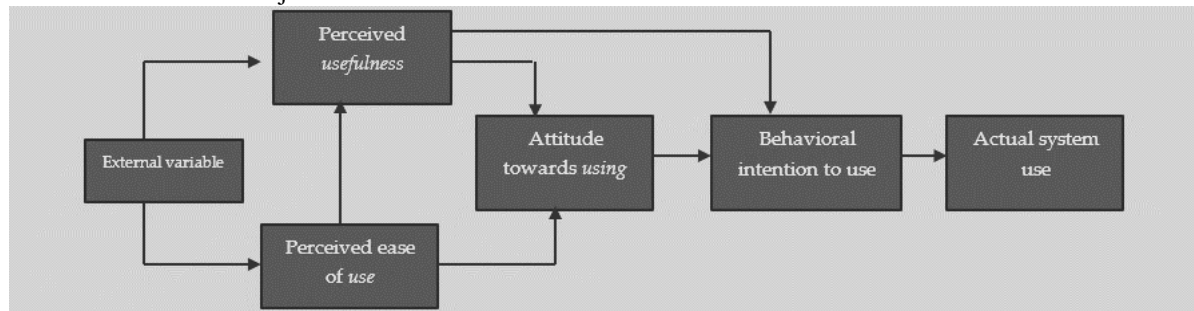


Figure 3.TAM, Source:Perceived Usefulness and IT User Acceptance,Ease of Use Quarterly, 13-3, page no.-339,Davis, F. (1989).

Venkatesh&Davis(2000)exploitedmorethe TAMmodelandproposedasecondmodel called TAM2. Theyexplainedas below.

- Dependent Variables-Perceived usefulness and usageintentions
- Independent variables - cognitive instrumental processes and social influence process.

The theorycanbedepicted asbelow.

The social influence process- It highlights the impact of three inter-related social forces in selecting or rejecting a technology system-

- Subjective norm
- Voluntariness
- Image

Thecognitiveinstrumental processtalks aboutthe individual's job relevanceand quality of theoutput. Foruseracceptanceotherimportant fundamentalfactors are: Results Demonstrability and Perceivedeaseofuse. Unified Theory of Acceptance and Use of Technology (UTAUT) was conceived by Venkatesh(2003) . UTUAT is relied upon similarities based on abstract across various TAMs. The theory conveys that IT user acceptance & usage are explained by four factors viz.Effort Expectancy, Performance Expectancy, Facilitating conditions and Social Influence.(Venkatesh, 2003) Effort expectancy is the degree of comfort or easiness associated with the use of the system. Performanceexpectancy measures the individual belief that the use of system will help the user in increasing the task performance. Social influence is the extent to which an individual perceives that it is important that others should also recommend for using the system. Facilitating conditions measures the belief that necessary infrastructure are in place in order to help use of the system for knowledge gains.

Behavioral intention measures the individual's decision regarding use of the system in the future. Use behavior talks

- Perceived Usefulness means if you use the system it will increase the task performance
- Perceived ease of Use- it should be effortless to use the targeted system

Many research studies say that the perceived usefulness is a substantial determining factor of behavioural intention towards technology. Hence, the user behaviour is explained by Technology Acceptance Model.(Horst et. al. 2007; Venkatesh et. al. 2003)

about the actual usage of the system.

Performance expectancy is the most influential predictor of intention and remains substantially prominent in both voluntary and mandatory settings, during all the steps of measurement. Effort expectancy is prominent in both voluntary and mandatory usage contexts (during the beginning stage only). Social influence is important in volunteer-based context but not significant in compulsory circumstances. Facilitating conditions impacts linearly to usage in addition that is explicated by behavioral intentions exclusively. Society of Information Technology is primarily a result of continuing development in new technologies and the needs of people who use computer science technologies. In this current era, educational systems seek to prepare teachers and students for the work force and computer literacy becomes so important in all levels of education. ICT reduces time required imparting knowledge. Attitude of students engaged in the class positively influences students' engagement in the class. This also shows that ICT will increase the student engagement in the class. This study understands ICT is essential in planning computer based courses as researched and found. (Mahat, Jamsandekar & Nalavade, 2012)

In developing nations, the true potential of distance education lies in expanding across horizons and reaching to people across demographics (Crooks, 1983).

The inclusion of Distance Education in national policy consideration on a wide scale would open up the prospect of students having the option of choosing their courses by home tuition and distance learning. Based on the study of various literature, a literature review matrix has been tabled below.



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Author & Year	Topic	Summary	Scope
Volery & Lord, 2000	Critical success factors in online education.	Important components found are: The instructor (attitudetowards students, instructor technical competence and classroom interaction); andthe previous use of the technology.	Dependency of Online education towards classical education could have been explored.
Krishnan, 2012	Study on Top levelmanagement education through technology-enabled distance education in India.	User satisfaction is a significant predictor of learning outcomes.	The reasonsfor undertaking web based executive education programs, the contributors to learningeffectiveness of such a program, the individual and organizational expectation forundertaking or supporting such a program are still not well understood in the Indian context.
Berking & Gallagher, 2016	Trends of Online Learning in Higher Education: How Online Learning Will Shape Higher Education.	There is a strong need to choose an appropriate LMS in higher education institutions in order to enhance faculty teaching and student learning. The instructor should be able to add content created. (More Customization required)	There is a scope of study effect of collaborative learning at multiple levels.

III. RESEARCH OBJECTIVES

The major objectives of the present study are stated below:

- I. To find out the reason for choosing online courses by working and non-working professionals.
- II. Gender perceptions and preferences about the E-learning course Basic Computer Knowledge Certification Course and finding out correlations if it exists.
- III. To find out the areas where improvement is required in Learning in distance mode.

Research Gaps

The research gaps pertaining to factors influencing the preference for technology-driven distance education are summarized.

The Contributor of Learning Effectiveness in technology-driven distance learning in India. Not much research has been done to find this out in India. In western countries, the research on this topic is prevalent. Perception of Students about current technology intervention in distance learning in India is to be studied. It would also reveal why students choose the distance learning courses and what are the main reasons behind it. Gender perceptions towards online or technology-driven distance education.

Hypothesis

The main hypotheses formulated for the present study are given below:

- H1:** There is significant relationship between the age of learner and the reason for joining the course
H2: There is significant relationship between the gender of learner and the reason for joining the course
H3: There is significant relationship between the employment status and the reason for joining the course

IV. METHODOLOGY

In total of 51 Students from Open University of the state of Odisha, a state of India (two distance learning centers namely SAFE and NIAT Computer Education) were the respondents of the survey. They are doing a technology-driven distance education course which is the recognized de-facto standard certification course for IT Literacy certified by the university and delivered through e Learning Mode through its Distance Learning Centers like SAFE and NIAT. Following are the research details pertaining to the study. In this research, Descriptive methodology has been used with convenient sampling as Sampling method. Measuring instrument is Structured Questionnaire with 5-point Likert Scale.

- Research type: Descriptive
- Sampling method : Convenient Sampling
- Measuring instrument : Structured Questionnaire
- Scale: 5-point Likert scale

Reliability Test

Reliability test was conducted for 32 items and Cronbach's alpha was found to be 0.85 and necessary factor analysis. The questions with the Likert rating are selected for this and other questions that don't have quantifiable answers are ignored. (ordinal questions or open-ended questions)

Demographics of sample

The average age for the group of students comes out to be 23.6 or 24 years. This also includes the assumption that some of the respondents who have not given their age, we have assumed it as zero. This assumption may be correct as we have considered some as outliers and have still included them while calculating. There are respondents who have the age of 30, 35, 37, 47, 60, but mostly people are of the age of 22/23/24 and hence the average age is around 23.6 years. This means most of the students are either Graduates or are going to be the



Graduates. (Male: 47%, Female:53%). Out of the total respondents – 3 are working(5.88%), 47 are not working(92.15%) and 1 person is retired(1.9%)-

Majority of the students from the sample are not working.

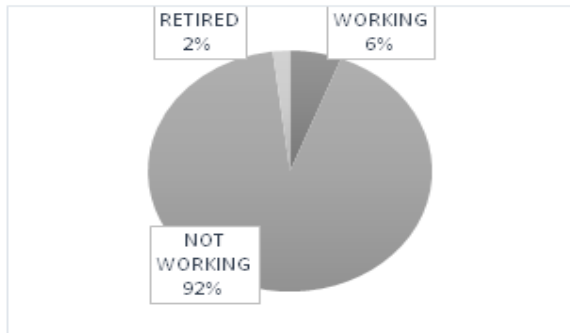


Figure 4. Employment Status of the sample

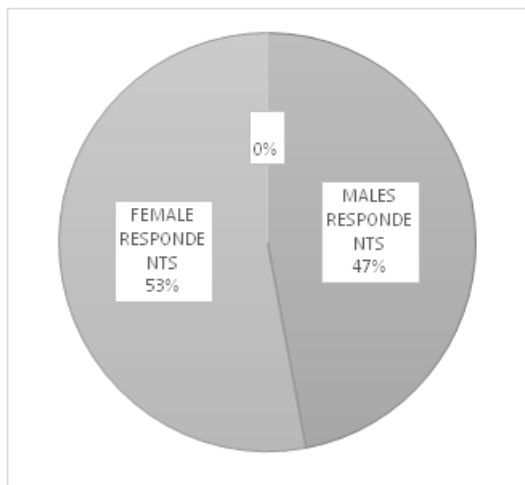


Figure 5. Gender breakup of the sample

TABLE 1: Univariate Analysis

Particulars	Range	Min.	Max.	M	SE	SD	Variance
Student feedback on E-learning(3.1,3.2,4.1,4.2,4.3,4.4,4.5)	1.29	3.43	4.71	4.2409	0.03699	0.26417	0.07
Student feedback on technology used in evaluation-7.7	5	0	5	4.0196	0.15464	1.10436	1.22
Student feedback on new technology intervention in the course(8.1 to 8.14)	2.14	2.36	4.5	4.084	0.04758	0.33978	0.115

Sample Size(N)= 51, Mean = M, SD= Standard Deviation, SE=Standard Error
Overall student feedback on course structure and content is very good - 4.24. Most of them strongly agree or agree.

V. WORK EXPERIENCE
Out of 51 people, 46 are not working and only 5 people are working. Out of those 5, 2 people have maximum two years of experience, one person has 3 years and the other person has 6 years of experience. In addition, an outlier has 37 years of experience. So, it is evident that most of the respondents are not working and they have the intentions of getting a job and enhancing their skills to become the employable.

Educational Background

The majority of the students are graduate students. However, we have almost equal representation from the 12th and post-graduation. Two students have completed their 10th and one student has not completed the 10th class event.

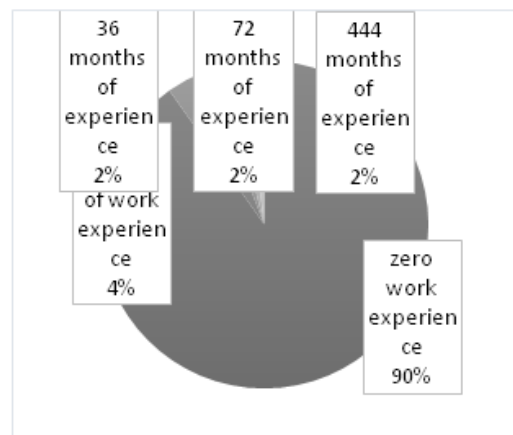


Figure 6. Work Experience Status of the Sample

Feedback on course content and coverage 4.24> feedback on technology intervention 4.0518 (average of 4.0196 & 4.084)- in Basic Computer Knowledge Certification Course technology intervention is required.

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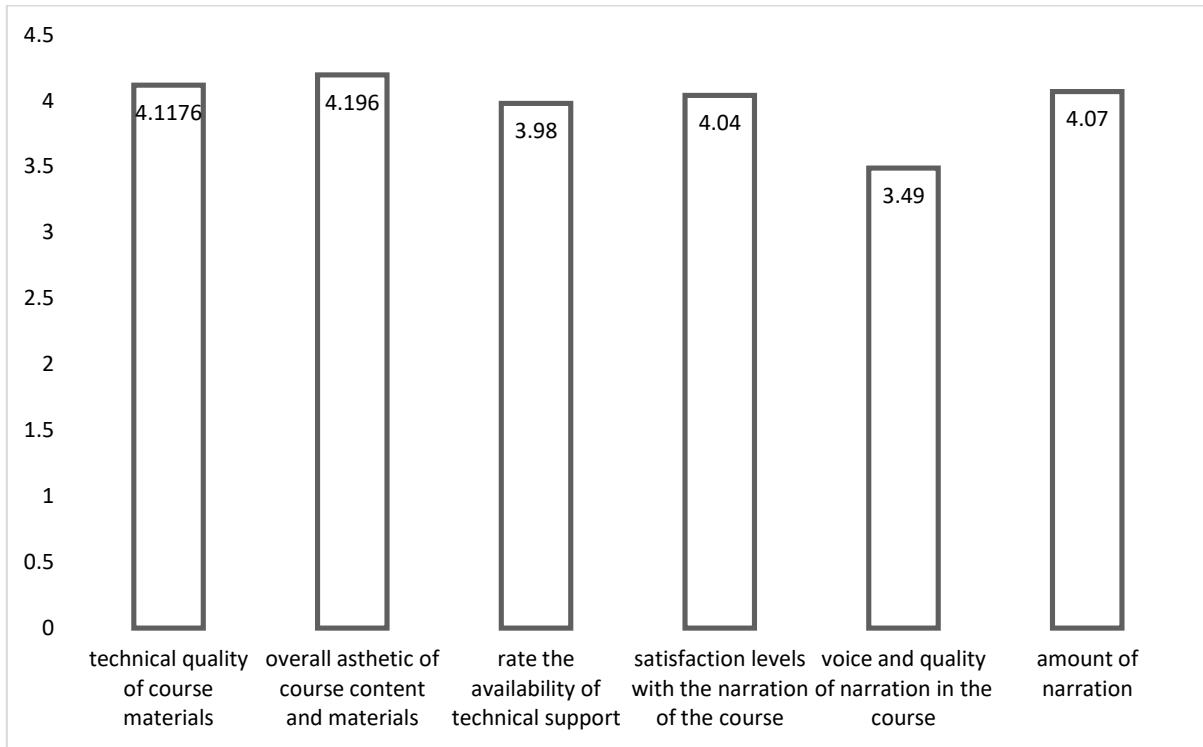


Figure 7. Mean Rating of Students' Feedback

People are satisfied with the overall aesthetic aspect of the course content. Most of the learners have also accepted the fact that the technical quality of course material is good. However, if we go by the rating it becomes evident that the availability of technical support can be improved and this demands for more of counselling and doubt clearing classes by the technically strong faculty. Some of the learners have

taken the neutral stand may be because they could not get adequate support for this. Voice and quality of narration (mean 3.49) is not convincing, whereas satisfaction levels with the narration is good as most of the learners have agreed-(this is because of the course content). Variable 3.1 is referred here.

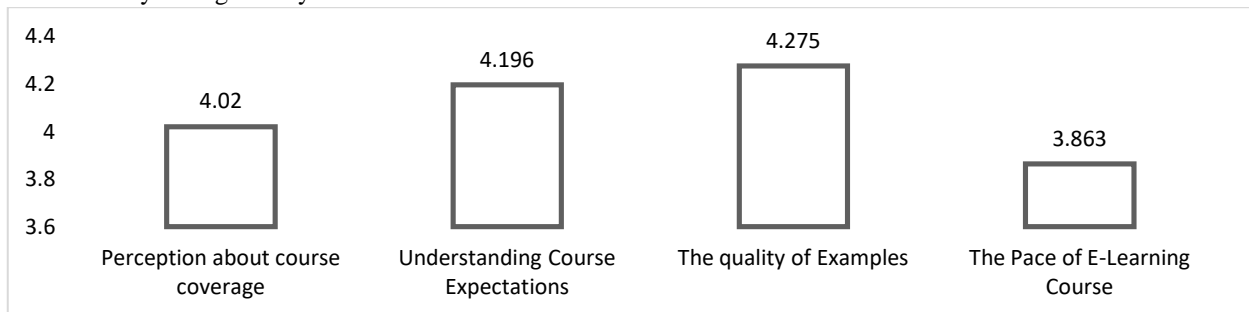


Figure 8. Comparative Rating Graph

From the comparison of Parameters, it is pretty evident that, the Basic Computer Knowledge Certification Course, quality of examples are the highest rated. That also states that the course is interactive and has been accepted well by the students. However, the students just agree or they take a

neutral stand regarding the pace of the online learning factor. Probably we need to see that there is appropriate pace in which the course runs so that it will be well interpreted and understood by the students.

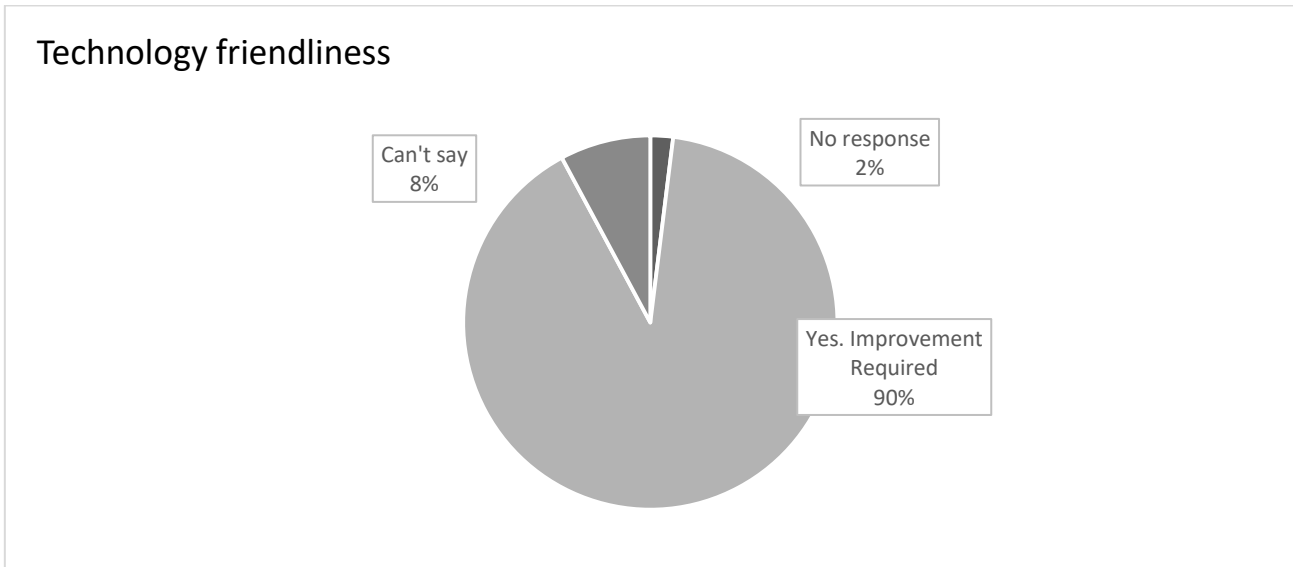


Figure 9. Response based on Technology Friendliness

The backbone of any course is the faculty base- from the ratings it is evident that, State Open University does not have a good faculty base or set of instructors. 92% of the learners said that they would expect a better faculty set or instructors for the course. Ease of Access parameter

has similar trend as that of technology friendliness. However, for Technology Innovation, most of the learners took neutral stand instead of suggesting for improvements.

TABLE 2: BIVARIATE ANALYSIS (CONTINGENCY TABLES for V3 and V51)

Chi-Square Tests(V3 and V51)			
Particulars	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.659	3	0.054
Likelihood Ratio	7.915	3	0.048
Linear-by-Linear Association	6.066	1	0.014
N of Valid Cases		51	

Interpretation: The chi-square value of 7.659 shows that there is hardly any relationship between the gender and the reason for taking the Basic Computer Knowledge Certification Course .

The bivariate analysis between gender and reasons for joining:

- i. Employability
- ii. Skill enhancement
- iii. Requirement in the present job
- iv. Out of interest
- v. Others

TABLE 3: BIVARIATE ANALYSIS (CONTINGENCY TABLES for V2 and V51)

Particulars	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	86.107 ^a	51	0.002
Likelihood Ratio	81.506	51	0.004
Linear-by-Linear Association	9.472	1	0.002
N of Valid Cases		51	

In SPSS- Variables are V3(Gender) and V51 (Reason for registering the course)

Interpretation:

The chi-square value of 86.107 shows that there is A STRONG relation between the AGE and the reason for taking the Basic Computer Knowledge Certification Course .Bivariate Analysis between employment status(working and not working) and the main reason for taking the distance learning course- V5 and V51.

TABLE 4: Correlation Table

Particulars	V51	V2	V3	V5

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Pearson Correlation	V51	1.000	0.435	0.348	-0.028
	V2	0.435	1.000	0.063	0.031
	V3	0.348	0.063	1.000	0.098
	V5	-0.028	0.031	0.098	1.000
Sig. (1-tailed)	V51		0.001	0.006	0.422
	V2	0.001		0.329	0.414
	V3	0.006	0.329		0.246
	V5	0.422	0.414	0.246	
N	V51	51	51	51	51
	V2	51	51	51	51
	V3	51	51	51	51
	V5	51	51	51	51

The P value of 0.157 which is greater than 0.05 means there is not significant relationship between two

variables- this is also supported by the low chi square value of 9.314.

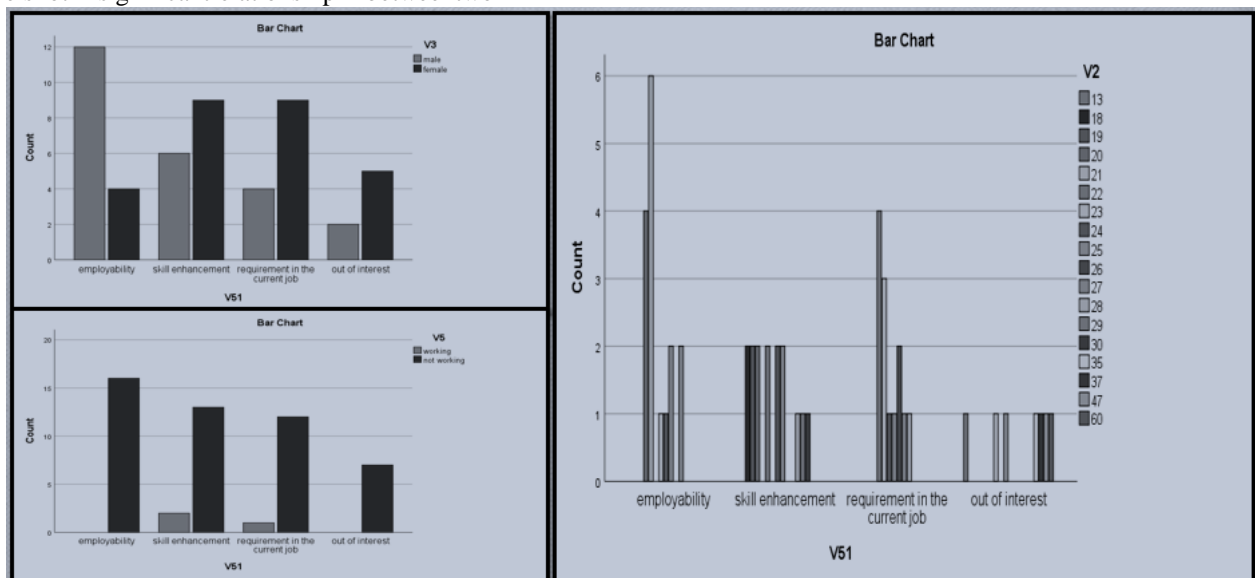


Figure 10. Graphical representation of Bi-variate analysis

Description of Variables:

- V2-Age, V3-Gender, V5-Working/Not Working, V51- Main reason for joining the Basic Computer Knowledge Certification Course .
- Dependent Variable- V51.
- Independent Variable- V2,V3,V5

Interpretation

- V51 has maximum correlation with V2 (age) which is supported by bivariate analysis too. However – it is negatively correlated to V5.
- Positive correlation between the reason for registering for the Basic Computer Knowledge Certification Course and age - 0.435 positive correlation between age and reason for doing Basic Computer Knowledge Certification Course - .348.

- Zero or little Negative correlation between the employment status and reason for choosing the course

From the above study, hypothesis H1 is accepted and H0 is rejected which means there is significant relationship between age and reason for joining the course. Hypothesis H2 is rejected and the null hypothesis is accepted. This implies there is no significant relationship between Gender and reason for joining the course. Hypothesis H3 is rejected and the null hypothesis is accepted connoting that, there is no significant relationship between employment status and reason for joining the course.

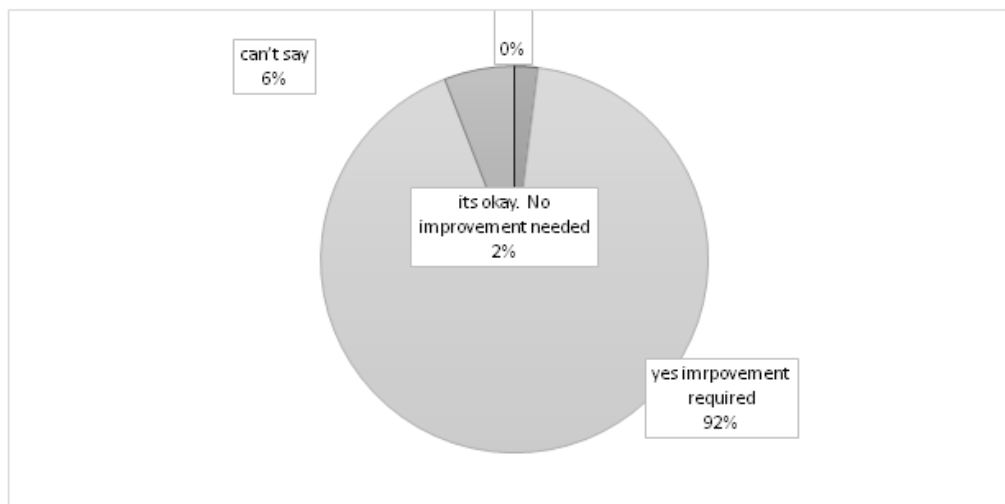


Figure 11. Improvement suggested w.r.t. Good instructor / Faculty

SUMMARY OF SUBJECTIVE FEEDBACK

43.14 % of the respondents suggested improvement required in evaluation pattern. 13.72 % of respondents indicated that, the duration of the Basic Computer Knowledge Certification Course which is 3 months at present needs to be increased to at least 4 months. Rest respondents indicated no improvement required in the course.

SCOPE AND LIMITATIONS OF THE STUDY

Further study can be done on other Open Universities in other Indian states and make a comparison (KSOU, Symbiosis distance University, Sikkim Manipal etc.) with State Open University. Studies also may be done for long term courses as well and try to find out how technology implementation increases their enrolment. The survey for the present study was conducted for 51 students only as the time was limited. We could have gone for more number of students with more number of courses. Personal interaction with the respondents and more of qualitative research can be done.

VI. CONCLUSION

Integration of Technology in University Courses in India is still at very nascent stage. From the study, it is found that, students expect human touch along with technology-driven learning for facilitation. However, overall feedback on course was good but some students indicated for improvement in Evaluation pattern. The findings of the study may be useful to administrators and higher education planners at national level and state level for formulating correct policies and strategies with regard to the modernization and application of Information Technology to meet the rising educational needs.

REFERENCES

- Albirini, A. (2004, August 18). Teachers' attitudes toward information and communication technologies: the case of Syrian EFL teachers. *Elsevier*. Retrieved from www.elsevier.com/locate/compedu
- Alharbi, A. M. (2013). *Teacher's Attitudes towards Integrating Technology: Case Studies in Saudi Arabia and the United States*. Thesis, Grand Valley State University. Retrieved from <http://scholarworks.gvsu.edu/theses>
- Alkana, F., & Erdema. (2010, January 12). The attitudes of student teachers towards educational technologies according to their status of

- receiving teaching application lessons. *Procedia Social and Behavioral Sciences*, 2523-2527. Retrieved October 30, 2017
- Ang'ondi, E. K. (2013, July 2-5). Teachers Attitudes and Perceptions on the Use of ICT in Teaching and Learning as Observed by ICT Champions. *World Conference on Computers in Education*, (pp. 21-28). Mombasa. Retrieved from <https://www.scribd.com/document/231113091/V1-3-100-Angodi-fullIR-FPR>
- Banas, J. R. (2010). Teachers' Attitudes toward Technology: Considerations for Designing Preservice and Practicing Teacher Instruction., (pp. 114-127). Illinois. Retrieved from <http://dx.doi.org/10.1080/02763911003707552>
- Bhattacharya, I., & Sharma, K. (2007). India in the knowledge economy – an electronic paradigm. *International Journal of Educational*, 543-568.
- Breedt, M. (2015). *Aspects influencing accounting teachers' attitude towards Computer Aided Learning*. Pretoria.
- Brown, H. (2014, May 14). Teachers Attitudes and Confidence in Technology Integration. *Marshall Digital Scholar*. Retrieved October 30, 2017, from <http://mds.marshall.edu/etd>
- Caliskan, S., Suzek, S., & Ozcan, D. (2017). Determining student satisfaction in distance education courses. *Procedia*, 529-538.
- Chitlangia, A. K., & Agarwal, S. (2013). Distance Education: Opportunity and Challenges. *Anusandhanika*, 66-73.
- Crooks, S. (1983). Distance Education and the Developing World. *European Journal of Education*, 329-343.
- Fanai, L., & Chhange, R. (2016, August). A study of the attitude of the secondary school teachers towards ICT with Respect to teaching experience and professional qualification. *International Journal of Engineering Science and Computing*, 6(8), 2878-2880.
- Farahani, M. F. (2012). Ethics principles in distance education. *Procedia Social & Behavioral Sciences*, 890-894.
- Farida Umrani-Khan, F., & Iyer, S. (n.d.). *ELAM: A Model for Acceptance and Use of E-learning by Teachers and Students*. Research Paper, Indian Institute of Technology Bombay, Department of Computer Science and Engineering, Mumbai.
- Ganesan, P., & Krishnakumar, R. (2016, May). Attitude of teacher educators towards ICT. *International Journal of Research, Granthaalayah*, 4(5), 7-11. Retrieved from www.granthaalayah.com
- Gregori, P., Martínez, V., & Moyano-Fernández, J. J. (2017). Basic actions to reduce dropout rates in distance learning. *ScienceDirect*, 48-52.
- Haseentaj, & M, P. (2017). Attitude of Chamarajanagara District (India) Secondary School Teachers towards Using New Technology. *Imperial Journal of Interdisciplinary Research (IJIR)*, 3(4), 37-42. Retrieved October 2017, from <http://www.onlinejournal.in>
- Howley, A., Wood, L., & Brian, H. (2011). Rural elementary school teachers' technology integration. *Journal of Research in Rural Education*, 1-13.
- KILINC, E., & KILINC, S. (2016, June 14). Teachers' attitudes toward the use of technology in social studies teaching. *Research in Social Sciences and Technology*, 59-76.

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20. Kyriakidou, M., Chrisostomou, C., & Banks, F. (1999, September 22-25). *Primary Teachers' Attitude to the Use of ICT: a comparative study between Cyprus and the UK*. (E. Line, Producer) Retrieved October 31, 2017, from <http://www.leeds.ac.uk/educol>: <http://www.leeds.ac.uk/educol/documents/00001300.htm>
21. Luaran, E., Daniai, A., Ghazali, M., & Jain, J. (2014). ICT integration in classrooms: the educators' perspective based on their school and home ICT use. *ESTEEM Academic Journal*, 66-74.
22. Mahat, S., Jamsandekar, P., & Nalavade, K. (2012). A study of teachers' attitude towards ICT in Education. *International Journal of Information Technology and Knowledge Management*, 93-97.
23. Mohd Ayub, A. F., Abu Bakar, K., & Ismail, R. (2015). Factors predicting teachers' attitudes towards the use of ICT in teaching and learning.
24. Morrisa, D. (2009, December 10). Are teachers technophobes? Investigating professional competency in the use of ICT to support. *Procedia - Social and Behavioral Sciences*, 4010-4015. Retrieved October 28, 2017, from <http://www.sciencedirect.com>
25. Mukerji, S., & Tripathi, P. (2005). quality education in india: a mission revisited for distance education institutions. *Asian Association of Open Universities Journal*, 45-51.
26. Muthomi, M. W. (2014). Reactions of schools' head teacher toward computer use in teaching and learning in secondary schools in tharaka-nithi county in kenya. *International Journal of Information Science and Education*, 3(1), 7-14. Retrieved from www.ripublication.com
27. Nair, I., & Das, V. M. (2012, March). Using Technology Acceptance Model to assess teachers' attitude towards use of technology as teaching tool : A SEM Approach. *International Journal of Computer Applications*, 42(2), 1-6.
28. Ó Buachalla, S. (1989). Distance Education as an Element of Policy. *European Journal of Education*, 73-78.
29. Oldfield, A. (2010). *A summary of teacher attitudes to ICT use in schools*. Futurelab. Innovative Technologies for Engaging Classrooms (iTEC). Retrieved October 31, 2017
30. Padmavathi, M. (2013, November). A Survey of Secondary School Teachers' Perceptions, Competency and Use of Computers. *International Journal of Education and Psychological Research (IJEPR)*, 2(4), 7-16.
31. Panigrahi, G., Das, A., & Basu, K. (2011). A study to increase effectiveness of distance learning websites in India with special reference to the state West Bengal to increase the present GER of higher education through incorporation of E learning facility in a better way. *Procedia Social & Behavioral Sciences*, 1535-1539.
32. Paul, A. A. (2016). Higher secondary teachers attitude towards the use of ICT in teaching learning process. *IERJ*, 2(7), 1-2. Retrieved October 2017
33. Redmond, P., & Brown, K. (2004, March). Are We There Yet? The Journey of ICT Integration. *International Journal of Science and Research*, 1-8.
34. Sabzian, F., & Gilakjani, A. P. (2013, January 13). International Journal of Applied Science and Technology, Integration, Experience, Anxiety, and Literacy in English Language Teaching and Learning. *International Journal of Applied Science and Technology*, 3(1), 67-75.
35. Salleh, S. (2015, October 25). Examining the influence of teachers' beliefs towards technology integration in classroom. *The International Journal of Information and Learning Technology*, 33(1), 17-35. Retrieved from www.emeraldinsight.com/2056-4880.htm
36. Sanchez, A., & Marcos, J. (2012). In Service teachers' attitude towards the use of ICT in the Classroom. *Procedia - Social and Behavioral Sciences*, 1358-1364. Retrieved October 2017, from www.sciencedirect.com
37. Shirvani, H. (2014, April). Pre-service teachers' attitudes toward using technology in schools. *Journal of Literacy and Technology*, 15(1).
38. Singh, K. S. (2012, July 12). Teachers' Attitude Towards Information and Communication Technology. *Shodh Sanchayan*, 2(2), pp. 1-4. Retrieved October 30, 2017, from www.shodh.net
39. Teachers' Attitude and Competence Towards the use Of ICT Resources: A Case Study Of University Of Agriculture Lecturers, Abeokuta Ogun State, Nigeria. (2013). *The Information Manager*, 13(1 & 2).
40. Verma, A. (2016). Distance Learning Systems of in India. *Splint International Journal of Professionals*, 116-122.
41. Yadav, R. (2015). Attitude of secondary school teachers towards the use of information communication technology in education . *International Journal of Education and Information Studies*, 31-33.

First Author details

Ansuman Sar, Student, Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar (Odisha), India.

Mr. Ansuman Sar has experience of more than six years in Social Project Management. He is doing his Ph.D. at KIIT School of Management (KSoM). His area of research is 'ICT in Education'. He did B. Tech. in Computer Science & Engineering and pursued Post Graduate Program leading to Degree in Management. Presently, he is working as Program Manager at Odisha Knowledge Corporation Limited, a special purpose vehicle under Higher Education Department, Government of Odisha. He is proficient in executing community development and social programs involving planning, operational analysis of policy framework and execution. He has expertise in improving Techno-Education System and spearheading Government Projects including PPP projects in e-Governance sectors. He has orchestrated development in rural areas of Odisha by implementing ICT@Schools project and boosted IT based education on a Build Own Operate Transfer (BOOT) basis. He has used innovative method of teachers' training developing situational-based training modules in the form of episodes telecasted as television serial on Doordarshan Odia. He has built e Content in Odia for 9th and 10th Standard. He has identified and motivated the young entrepreneurs of Odisha, built their capacities for spreading IT Literacy as well as Skill development programs in order to bridge the Digital Divide among the masses and promoting Digital Citizenship.

Second Author details

Dr. Satya Narayan Misra, Dean (Academics), Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar (Odisha), India.

Prof. S.N.Misra, did his MA in Applied Economics with International Trade and Statistics as his special papers with first class. He did his Ph.D. (Economics) on "Challenges, Before Self-Reliance in Critical Defense Technology", a pioneering area on the subject. Initially he was the Indian Economics Service (1976-79) when he did Cost Benefit Analysis of World Bank Projects and handled International Development Agency (IDA) desk. Thereafter, he was an Officer in the Indian Defense Accounts Service (1979-2012), when he served as Director (Finance) with DRDO, Financial Advisor and Joint Secretary to Indian Air Force & JS (Aero Space). He authored the Defense Procurement Manual (2005), drawing encomiums for the Prime Minister's Office. Before voluntary retirement in 2012, he was Principal Controller of Defense Accounts (Navy) & PCDA (Southern Command) in the rank of Addl. Secretary to Govt. of India. He was trained in IRBM, California, Defense Acquisition University, Washington, Marshall Institute of Strategic Studies, Munich, IIMS, Calcutta and Bangalore.

