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EFFICACY AND USAGE OF ICT TOOLS FOR QUALITY EDUCATION AND LEARNING AMONG SELECTED UNIVERSITIES IN COIMBATORE DISTRICT

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ABSTRACT

In India the usage of Information Communication Technology (ICT) for providing quality education and learning is inevitable today. The usage of ICT among the teaching staffs, non-teaching staffs, administrations, technicians, students, research scholars and parents benefits a lot and plays a crucial role in improving the total quality education and learning system in the higher education/Institutions/Universities in India. This paper made an effort to evaluate the important issues for effective utilization and implementation of ICT in all levels of education systems in selected Universities in Coimbatore District to upgrade their quality education system. It also focused towards certain necessary factors for the use of ICT in higher education/Universities. The research study describe the implications of force of ICT to the teachers, students, teachers, research work, institutional, higher education's and societal effectiveness. ICT in teaching and learning is planned to build knowledge among the faculty in higher education, creation of virtual learning and laboratories, creating a huge database and server, access to expert lectures and technological developments in Industries. In this context, an attempt is made to examine the efficacy of ICT tools for quality education and Learning among selected universities in Coimbatore District. The study is carried out with the help of a structured questionnaire administered to respondents and with the help of their responses analysis is made thereafter, which is followed by findings of the study with few suggestions.

Key Terms: ICT tools, Quality Education, Higher Education/Universities, Teaching aids, Virtual Education and Internet Gate way

1. Introduction

Higher Education in India – A Quick Glance Higher education plays a pivotal role in the development of a country, as it is viewed as a powerful means to build knowledge based society. In India, higher education imparted by universities is facing challenges in terms of Access, Equity and Quality. The Government of India has taken several initiatives during the Eleventh Five Year Plan period to increase access to higher education by adopting state specific strategies, enhancing the relevance of higher education through Curriculum reforms, Vocational programs, Networking, Information Technology adoption and Distance Education along with reforms in governance. However in terms of Gross Enrollment Ratio (GER), India still lags behind the worldwide average and emerging countries like Brazil and China. The Indian Higher Education System has established itself as the largest system in the world in terms of number of institutions and third largest in terms of student enrollment (after China

and USA). While several new institutions have emerged due to significant increase in private sector participation over the last few years, concerns remain regarding the quality of education being imparted to students. The main governing body at the tertiary level is the University Grants Commission, which enforces its standards, advises the government, and helps coordinate between the center and the state. Indian higher education is decentralized with separate councils responsible for the regulation of different institutions.

2. Review of Literature

Review of a few important works is made in the following paragraphs with an important objective to identify the research gap that exists at present.

Ashish Hattangdi and Prof. Atanu Ghosh, (2009), Enhancing the quality and accessibility of higher education through the use of Information and Communication Technologies, explores the factors related to policy, planning, technical requirements as well as the training required for the stakeholders for the successful implementation of ICT in an education system. Dr.R.Krishnaveni and J.Meenakumari (2010), Usage of ICT for Information Administration in Higher education Institutions – A study identified the various functional areas to which ICT is deployed for information administration in higher education institutions and to find the current extent of usage of ICT in all these functional areas pertaining to Information administration.

Kumar et, al (2011), in their study *A Study on Information Communication Technology among Engineering College Libraries in Coimbatore, Tamil Nadu* examined the use of Information Communication Technology (ICT) and investigated the ICT infrastructure, current status of library automation, bar implementation of library automation and librarians attitudes towards ICT. Sukanta Sarkar (2012) *The Role of Information and Communication Technology (ICT) in Higher Education for the 21st Century*The use of ICT in education lends itself to more student-centred learning settings and often this creates some tensions for some teachers and students. Ulka Toro (Gulavani) and Millind Joshi (2012), ICT in Higher Education: Review of Literature from the Period 2004-2011, ICT allows the academic Institutions to reach disadvantaged groups and new international educational markets. Yusuf Musibau Adeoye (2013) Appraising the role of information communication technology (ICT) as a change agent for higher education in Nigeria studied various constraints to ICT utilization.

Uttam Kr Pegu, (2014), Information and Communication Technology in Higher Education in India: Challenges and Opportunities, assessed how Information Technology has facilitated the growth in interactive learning and what has been its impact in the higher educational scenario in the country. Sriram C and Dr. N.Mathutalagan, (2015), *Information and Communication Technology adoption by Healthcare Professionals: A Systematic Review of the Proposed Theoretical Models* reviewed some of the theoretical models that have been applied to the study of ICT adoption in the healthcare sector. A knowledge synthesis on factors involved in ICT adoption among healthcare professionals has also been carried out.

Like this a number of studies are carried out in India and abroad focusing on various aspects of Gender equalities and neutrality in Trade.

3. Statement of the Problem and Need for the Study

Today ICT tools plays a crucial role in bringing efficiency in the higher education/Institutions/Universities/ organization which in turn brings a tremendous shift towards the growth, standards and quality of teaching and learning all over the world. In addition to this, e-learning is emerging as an important strategy to provide widespread and easy access to quality higher education. ICT has the potential to drive innovative and effective ways o teaching and learning and research. ICT in the Universities or Institutions or Higher Education system has changed from teacher centered to student centered learning system. In order to support this, few systems was considered such as Tele-Education System, Virtual Learning Campus (VLC), Virtual libraries and digital learning, Distance learning, wireless connectivity (wifi), digitization of Books (E-text Books), Learning Management System(LMS), Computer Aided Learning (CAL), etc. As a result of these developments in learning system, ICT application for the quality education improvement is today inevitable and becoming indispensable parts of contemporary culture across the nation. Usages of ICTs in education system require most important move in the form of content is deliberated and delivered. New technologies cannot be forced without enabling teachers and learners to understand these elementary shifts. Constant training is necessary for the trainers in institutions and organizations who are engaged in the design of curriculum, teaching materials and delivery of ICT- enabled education. Quality in education through ICT and its awareness among stakeholders will have positive collision on the society. ICT can be helpful in quality and standards of education by implementing it in various phases of education systems in the University levels/Higher Education. In this context, it is necessary to examine An Effective usage of ICT Tools for Quality Education and Learning among Selected Universities in Coimbatore District. Hence, an attempt is made to analyse and examine the efficacy, usages and impact of ICT tools to improve the quality education and learning at University levels to overcome certain challenges licensing, quality assurance and accreditation of technology in the modern days.

4. Objectives of the Study

- To examine the impact and usage of ICT tools among the selected Universities; and
- To know the implications and Effectives of ICT in quality education and learning in the higher education system.

5. Hypothesis of the Study

01. **H_{01}:** Effective usages of ICT tools in quality education and Learning have strong impact on the development of Higher Education;

6. Scope of the Study

The study aims to investigate and evaluate the Effective usages of ICT tools for Quality Education and Learning among Selected Universities in Coimbatore District. The study covers only selected Universities located in and around the Coimbatore District to know the factors influencing the quality education and learning in the higher education and to understand it implications among the stakeholders of the Universities such as faculty

members, students, research scholars, administrators and others non – teaching staff members.

7. Sample Design

The Multi Stage Sampling method is used for the present study in the selected area. In the first stage it is respondents are selected based on the Education Systems/Higher Education in the Universities levels / Institutions. Second stage area wise selection is done, where in Tamil Nadu, Coimbatore district is chosen and in the third stage, the study concentrated only on selected Universities employees, employers (both including teaching and non-teaching members), research scholars, project assistants, technicians and others who use ICT tools in their routine life within the Universities for education and learning in improving the quality of education. The respondents for the current study is chosen based on the employment in educational institutions/Universities and the target respondents are all the stakeholders of University which includes only six Universities located in and around the Coimbatore district. The Universities is selected based on the number of universities situated in Coimbatore and those who uses ICTs for Education and learning in improving the quality education. The sample size taken for the study is 200.

8. Statistical Tools and Techniques

The present study has used percentages and Structural Equation Model (SEM) - Amos (Analysis of Moment Structures) (IBM version 20.0) is used which is an easy-to-use program for visual SEM. With Amos, you can quickly specify, view, and modify your model graphically using simple drawing tools.

9. Period of the Study

The study covered a period of one year from July and November, 2016.

10. Sources of Data Collection

Primary data for the study are collected from the selected group of University employees, employers (Including teaching and non-teaching staff members), students (UG and PG students), and research Scholars in the selected University in Coimbatore District. **Secondary data** are collected from books, journals, research papers, newspapers, on-line sources, Reports of Economic Indicators, University web portal, India studies, and University Library resources (Both offline and Online sources) etc.,

11. Analysis and Interpretation

The present study which is focused mainly on the impact of gender neutrality on trade and finance which directly influence the economic development with the help of collected data is presented here.

(a) Socio Economic Profile of Respondents

Table – 1: Demographic Profile of the Respondents

Group	No. of Respondents	In Percentage
Gender		
Male	109	54.50
Female	091	45.50
Total	**200**	**100.0**
Age		
25 - 35	036	18.00
35 - 45	061	30.50
45 - 55	064	32.00
55 and Above	039	19.50
Total	**200**	**100.0**
Marital Status		
Married	068	34.00
Single	132	66.00
Total	**200**	**100.0**
Educational Level/Positions		
Pre University Level (PUC) / + II	005	02.50
Diploma/Certificate Course/Professional Degree	022	11.00
Under Graduates	068	34.00
Post Graduates	064	32.00
Master of Philosophy (M. Phil)	021	10.50
Doctoral Degree (Ph. Ds)	018	09.50
Post Doctoral Degree	002	01.00
Total	**200**	**100.0**
Occupation		
Students	036	18.00
Teachers/Faculty	051	25.50
Research Scholars	037	18.50
Non – Teaching Staff members	036	18.00
Administrators	029	14.50
Project Assistant/Fellowship	012	06.00
Technical Assistants/Technicians	010	05.00
Others if any	000	00.00
Total	**200**	**100.0**

Source: Survey Data, 2016, N – Number of samples, Sample size: N – 200

Table – 2: Selected respondents of Universities in Coimbatore District

University	Students (S)	Teachers (T)	Research Scholars (RS)	Non – Teaching (NS)	Admin	Project Assistant (PA)	Technicians (T)	Total (N)
	1	2	3	4	5	6	7	8
Amrita Vishwa Vidyapeetham	09 (23.68)	08 (15.69)	06 (16.22)	04 (15.34)	08 (27.59)	02 (16.67)	01 (10.00)	38 (19.00)
Avinashilingam University for Women	05 (13.15)	07 (13.73)	07 (18.92)	05 (19.23)	07 (24.14)	02 (16.67)	00 (00.00)	33 (16.50)
Bharathiar University	06 (15.79)	11 (21.57)	08 (21.62)	05 (19.23)	04 (13.79)	01 (08.33)	01 (10.00)	36 (18.00)
Karpagam University	04 (10.52)	07 (13.73)	03 (08.11)	03 (11.54)	01 (03.45)	01 (08.33)	00 (00.00)	19 (09.50)
Karunya University	05 (13.15)	05 (09.80)	02 (05.41)	02 (07.69)	03 (10.34)	02 (16.67)	04 (40.00)	21 (10.50)
Tamil Nadu Agricultural University	09 (23.68)	13 (25.50)	11 (29.73)	07 (29.92)	06 (20.69)	04 (33.33)	03 (30.00)	53 (26.50)
Total	**36 (100)**	**51 (100)**	**37 (100)**	**26 (100)**	**29 (100)**	**12 (100)**	**09 (100)**	**200 (100)**

Source: Survey Data, 2016

Note: The numbers mentioned in the parenthesis ( ) represents the percentages and the Percentages are shown in column wise; N – Number of samples, Sample size: N – 200

Table – 3: Qualifications of the selected respondents in University Level, Coimbatore District

University	PUC	Diploma	UG	PG	M. Phil	Ph. D	Post Doctoral	Total (N)
	1	2	3	4	5	6	7	8
Amrita Vishwa Vidyapeetham	01 (20.00)	04 (18.18)	16 (23.53)	12 (18.75)	03 (14.29)	02 (11.11)	00 (00.00)	38 (19.00)
Avinashilingam University for Women	01 (20.00)	02 (09.09)	21 (30.88)	06 (09.38)	02 (09.52)	01 (05.55)	00 (00.00)	33 (16.50)
Bharathiar University	02 (40.00)	06 (27.27)	06 (08.82)	09 (14.06)	07 (33.33)	05 (27.78)	01 (50.00)	36 (18.00)
Karpagam University	00 (00.00)	02 (09.09)	07 (10.29)	04 (06.25)	04 (19.05)	02 (11.11)	00 (00.00)	19 (09.50)
Karunya University	00 (00.00)	03 (13.64)	06 (08.82)	08 (12.50)	02 (09.52)	02 (11.11)	00 (00.00)	21 (10.50)
Tamil Nadu Agricultural University	01 (20.00)	05 (22.73)	12 (17.65)	25 (39.06)	03 (14.29)	06 (33.33)	01 (50.00)	53 (26.50)
Total	**05 (100)**	**22 (100)**	**68 (100)**	**64 (100)**	**21 (100)**	**18 (100)**	**02 (100)**	**200 (100)**

Source: Survey Data, 2016

Note: The numbers mentioned in the parenthesis ( ) represents the percentages and the Percentages are shown in column wise; N – Number of samples, Sample size: N – 200

Table – 4: Application of ICT tools influence more in Education and Learning Process

Sl. No.	DESCRIPTION	SA		A		N		D		SD	
		N	%	N	%	N	%	N	%	N	%
01.	Virtual Libraries and Digital learning/Digital Library (VL/DL)	73	36.5	43	21.5	22	11.0	45	22.5	17	8.5
02.	E-Learning	66	33.0	21	10.5	43	21.5	39	19.5	31	15.5
03.	Satellite Instructional Television Experiment (SITE) or EDUSAT	55	27.5	31	16.0	33	16.5	48	24.0	32	16.0
04.	Educational Media Resource Centers (EMRCs)	55	27.5	21	10.5	45	22.5	38	19.0	41	20.5
05.	Audio-Visuals Resource Centers	43	21.5	20	10.0	50	25.0	45	22.5	42	21.0
06.	Library Network (INFLIBNET)	52	26.0	32	16.0	40	20.0	49	24.5	27	13.5
07.	Virtual Learning Campus (VLC)/Virtual Class Rooms	54	27.0	27	13.5	51	25.5	40	20.0	28	14.0
08.	LCD Projectors	67	33.5	29	14.5	40	20.0	38	19.0	26	13.0
09.	Tele-Education System (TES)	36	18.0	19	9.5	58	29.0	53	26.5	34	17.0
10.	Computer Based Training (CBT)	57	28.5	30	15.0	39	19.5	35	17.5	39	19.5
11.	Wireless Connectivity (wifi)	51	25.5	40	20.0	28	14.0	54	27.0	27	13.5

Source: Survey Data, 2016,

Note: (a) N – Number of samples, Sample size (N) – 200

(b) Strongly Agree (5); Agree (4); Neutral (3); Disagree (2); Strongly Disagree (1)

Table – 5: Opinions of the respondents on the factors influencing the ICT Tools for Quality Education Learning

[Level of Influence or Impact: 1 – Not at all Influence, 2 – Slightly Influence, 3 – Somewhat Influence, 4 – Very Influence and 5 – Extremely Influence]

Description	Level of Impacts/Influences				
	1	2	3	4	5
Virtual Libraries and Digital learning/Digital Library (VL&DL)					
▪ **VL&DL 1:** Teachers and students must be able to get information quickly and conveniently. And distance education requires virtual libraries	62 (31.00)	45 (22.50)	43 (21.50)	32 (16.00)	18 (09.00)
▪ **VL&DL 2:** Digital education creates changing patterns for students, teachers, librarians, and others. This new pattern will increase the role of curators in this process.	70 (35.00)	35 (17.50)	39 (19.50)	33 (16.50)	23 (11.50)
▪ **VL&DL 3:** It provides text, video, audio, and other formats for teaching and learning and support digital learning.	77 (38.50)	28 (14.00)	29 (14.50)	37 (18.50)	29 (14.50)
▪ **VL&DL 4:** INFONET and CEC (Consortium for Educational Communication) services of University Grants Commission to the teachers and students	73 (36.50)	43 (21.50)	22 (11.00)	45 (22.50)	17 (08.50)
▪ **VL&DL 5:** Supporting E-content, E-learning and E-course systems. Information and Library Network (INFLIBNET) Centre is an Autonomous Inter-University Centre (IUC) of University Grants Commission (UGC) involved in creating infrastructure for sharing of library and information resources and services among Academic and Research Institutions	67 (33.50)	29 (14.50)	40 (20.00)	38 (19.00)	26 (13.00)
Satellite Instructional Television Experiment (SITE) or EDUSAT					
▪ **SITE 1:** To establishment of CIET-SIET studios for production and transmission of school oriented programs, initiation of the country-wide classroom of the UGC with CEC as the nodal agency by creating educational media resource centers (EMRCs) and audio-visual resource centers (AVRCs) in several universities.	55 (27.50)	21 (10.50)	45 (22.50)	38 (19.00)	41 (20.50)
▪ **SITE 2:** EDUSAT would bring both quantitative and qualitative revolution in education.	66 (33.00)	21 (10.50)	43 (21.50)	39 (19.50)	31 (15.50)

Virtual Learning Campus (VLC)/Virtual Class Room					
VLC 1: To improve the knowledge, interaction environment, Servers and Portals, E-learning & Digital library, ERP management solutions etc. under centers of specializations in different Institutions in different disciplines	55 (27.50)	21 (10.50)	45 (22.50)	38 (19.00)	41 (20.50)
▪ **VLC 2:** The responsibility of building, commissioning and running the different systems and Information Infrastructure for education like Broadband, EDUSAT and ERNET services, Synchronous class room environment, Asynchronous	57 (28.50)	30 (15.00)	39 (19.50)	35 (17.50)	39 (19.50)
▪ **VLC 3:** To maintain basic e-learning and library portals for convenience and providing convenient access to information	43 (21.50)	20 (10.00)	50 (25.00)	45 (22.50)	42 (21.00)
Audio-Visuals Resource Centers (AVRC)					
▪ **AVRC 1:** Visual component, such as slide-tape presentations, films, television programs, church services and live theater productions.	52 (26.0)	32 (16.00)	40 (20.00)	49 (24.50)	27 (13.50)
▪ **AVRC 2:** Innovative methods like Power point presentations and animations, modeling and simulations, video clips and using AV aids, LCD projectors etc.	54 (27.0)	27 (13.50)	51 (25.50)	40 (20.00)	28 (14.00)
▪ **AVRC 3:** Audiovisual service providers frequently offer web streaming, video conferencing and live broadcast services.	36 (18.00)	19 (09.50)	58 (29.00)	53 (26.50)	34 (17.00)
▪ **AVRC 4:** Audio by speaking, and supplements it with a series of images projected onto a screen, either from a slide projector, or from a computer connected to a projector using presentation software.	37 (18.50)	45 (22.50)	45 (22.50)	56 (28.00)	17 (08.50)
Tele-Education System (TES)					
▪ **TES 1:** An integrated network system comprising of EDUSAT, Broadband and V-SAT networks helps in bringing virtual class rooms	58 (29.00)	26 (13.00)	50 (25.00)	51 (25.50)	15 (07.50)
▪ **TES 2:** Emulated classroom interaction through the use of real time interactive satellite technology. ERNET & EDUSAT (GSAT-3) systems provide support to Tele-education system of Distance learning to reach the un-reached people of India in every nook and corner.	63 (31.50)	20 (10.00)	40 (20.00)	33 (16.50)	44 (22.00)

Source: Survey Data, 2016.

Note: The numbers mentioned in the parenthesis ( ) represents the percentages.

(b) Testing of Hypothesis

01. **H_{01}:** Effective usages of ICT tools in quality education and Learning have strong impact on the development of Higher Education;

An Effective usage of ICT Tools for Quality Education and Learning among Selected Universities in Coimbatore District helps to increase in the performance of teaching and learning process with the quantitative expansion, it also appears to have been achieved, yet the qualitative revolution envisioned due to introduction of new services and better quality teaching with learning materials. The major dimensions to assess and to know the association between the efficient usages of ICT tools is by using Confirmative Factor Analysis (CFA) and the grouping of items is presented in table below. Based on the underlying meaning of each item, the first component (comprising of three items) is termed as *Virtual Libraries and Digital learning/Digital Library (VL&DL)* the second factor (comprising of four items) as *"Satellite Instructional Television Experiment (SITE) or EDUSAT*" third factor (comprising of four items) as *"Virtual Learning Campus (VLC)/Virtual Class Room*", fourth factor (comprising of four items) as *"Audio-Visuals Resource Centers (AVRC)". And fifth factor "Tele-Education System (TES)".* The measurement model is depicted in Figure – 1

Table – 8: Reliability and Item Loadings Constructs

Measured Variables	Items	Standardized Loadings	Composite Reliability	Average Variance Extracted
(H_{1a}) - Virtual Libraries and Digital learning/Digital Library (VL&DL)	VL&DL 1	0.561	0.738	0.572
	VL&DL 2	0.950		
	VL&DL 3	0.665		
	VL&DL 4	0.646		
	VL&DL 5	0.869		
(H_{1b}) - Satellite Instructional Television Experiment (SITE) or EDUSAT	SITE 1	0.185	0.716	0.479
	SITE 2	0.405		
(H_{1c}) - Virtual Learning Campus (VLC)/Virtual Class Room	VLC 1	0.416	0.689	0.220
	VLC 2	0.481		
	VLC 3	0.665		
(H_{1d}) - Audio-Visuals Resource Centers (AVRC)	AVRC 1	0.605	0.602	0.387
	AVRC 2	0.673		
	AVRC 3	0.332		
(H_{1e}) Tele-Education System (TES)	AVRC 4	0.587		
Overall of ICT Tools for Quality Education and Learning (QEL)	ICT on QEL 1	0.548	0.654	0.237
	ICT on QEL 2	0.468		
	ICT on QEL 3	0.310		
	ICT on QEL 4	0.684		
	ICT on QEL 5	0.728		

Table – 9: Correlation between the Factors

Measured Variables	(1) VL&DL	(2) SITE	(3) VLC	(4) AVRC	(5) TES	(6) QEL
(1) Virtual Libraries and Digital learning/Digital Library (VL&DL)	1.000					
(2)Satellite Instructional Television Experiment (SITE) or EDUSAT	0.085*	1.000				
(3)Virtual Learning Campus (VLC)/Virtual Class Room	0.073	0.198*	1.000			
(4)Audio-Visuals Resource Centers (AVRC)	0.097*	0.223*	0.107*	1.000		
(5)Tele-Education System (TES)	0.013	0.058	0.028	-0.013	1.000	
(6) Overall of ICT Tools for Quality Education and Learning (QEL)	0.577	0.758	0.469	0.455	0.017	1.000

** Significant at 5 % level.*

Table – 6: Measurement of Instruments of usage of ICT Tools for Quality Education and Learning in different aspects

Virtual Libraries and Digital learning/Digital Library (VL&DL)
▪ **VL&DL 1:** Teachers and students must be able to get information quickly and conveniently and distance education requires virtual libraries
▪ **VL&DL 2:** Digital education creates changing patterns for students, teachers, librarians, and others. This new pattern will increase the role of curators in this process.
▪ **VL&DL 3:** It provides text, video, audio, and other formats for teaching and learning and support Digital learning.
▪ **VL&DL 4:** INFONET and CEC (Consortium for Educational Communication) services of University Grants Commission to the teachers and students
▪ **VL&DL 5:** Supporting E-content, E-learning and E-course systems. Information and Library Network INFLIBNET) Centre is an Autonomous Inter-University Centre (IUC) of University Grants Commission (UGC) involved in creating infrastructure for sharing of library and information resources and services among Academic and Research Institutions
Satellite Instructional Television Experiment (SITE) or EDUSAT
▪ **SITE 1:** To establishment of CIET-SIET studios for production and transmission of school oriented programs, initiation of the country-wide classroom of the UGC with CEC as the nodal agency by creating educational media resource centers EMRCs) and audio-visual resource centers (AVRCs) in several universities.
▪ **SITE 2:** EDUSAT would bring both quantitative and qualitative revolution in education.

Virtual Learning Campus (VLC)/Virtual Class Room
▪ **VLC 1:** To improve the knowledge, interaction environment, Servers and Portals, E-learningand Digital library, ERP management solutions etc. under centers of specializations in different Institutions in different disciplines
▪ **VLC 2:** The responsibility of building, commissioning and running the different systems and Information Infrastructure for education like Broadband, EDUSAT and ERNET services, Synchronous class room environment, Asynchronous
▪ **VLC 3:** To maintain basic e-learning and library portals for convenience and providing convenient access to information
Audio-Visuals Resource Centers (AVRC)
▪ **AVRC 1:** Visual component, such as slide-tape presentations, films, television programs, church services and live theater productions.
▪ **AVRC 2:** Innovative methods like Power point presentations and animations, modeling and simulations, video clips and using AV aids, LCD projectors etc.
▪ **AVRC 3:** Audiovisual service providers frequently offer web streaming, video Conferencing and live broadcast services.
▪ **AVRC 4:** Audio by speaking, and supplements it with a series of images projected onto a screen, either from a slide projector, or from a computer connected to a projector using presentation software.
Tele-Education System (TES)
▪ **TES 1:** An integrated network system comprising of EDUSAT, Broadband and V-SAT networks helps in bringing virtual class rooms
▪ **TES 2:** Emulated classroom interaction through the use of real time interactive satellite technology. ERNET & EDUSAT (GSAT-3) systems provide support to Tele-education system of Distance learning to reach the un-reached people of India in every nook and corner.
Overall of ICT Tools for Quality Education and Learning (QEL)
▪ **ICT for QEL 1:** Virtual Libraries and Digital learning/Digital Library (VL&DL)
▪ **ICT for QEL 2:** Satellite Instructional Television Experiment (SITE) or EDUSAT
▪ **ICT for QEL 3:** Virtual Learning Campus (VLC)/Virtual Class Room
▪ **ICT for QEL 4:** Audio-Visuals Resource Centers (AVRC)
▪ **ICT for QEL 5:** Tele-Education System (TES)

Model – 1

The Factors influencing the Effective usage of ICT Tools for Quality Education and Learning

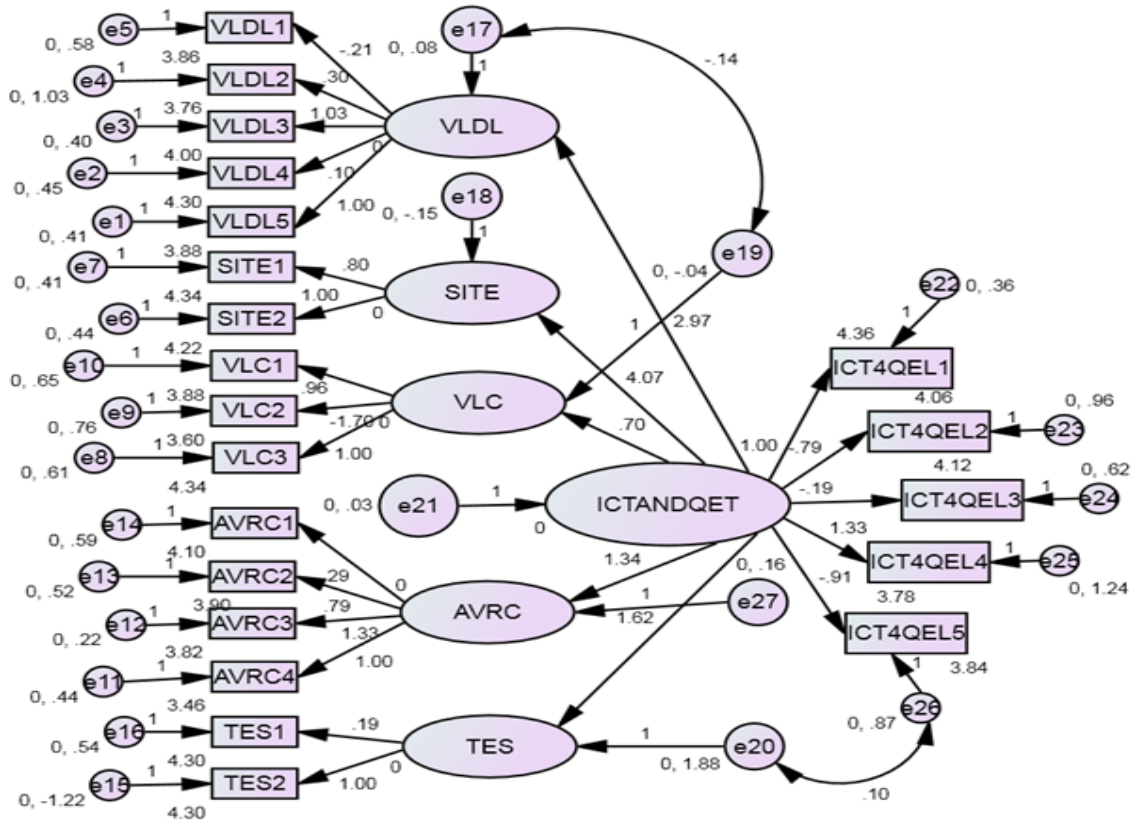

Table – 10: Goodness – of – fit Indices for Structural Model

Fit Indices	Accepted Value	Model Value
Absolute Fit Measures		
χ^2 *(Chi-square)*		1324.19
df (Degrees of Freedom)		182
Chi-square/df (χ^2/df)	< 3	3.014
GFI (Goodness of Fit Index)	> 0.9	0.878
RMSEA (Root Mean Square Error of Approximation)	< 0.10	0.096
Incremental Fit Measures		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.839
NFI (Normed Fit Index)	> 0.90	0.925
CFI (Comparative Fit Index)	> 0.90	0.951
IFI (Incremental Fit Index)	> 0.90	0.862
RFI (Relative Fit Index)	> 0.90	0.859
Parsimony Fit Measures		
PCFI (Parsimony Comparative of Fit Index)	> 0.50	0.622
PNFI (Parsimony Normed Fit Index)	> 0.50	0.794

Properties of the causal paths for the structural model (standardized path coefficients (β), standard error, and hypotheses result) are signified in Table – 7. The square multiple correlations for the structural equations index connotes that the predictors *Virtual Libraries and Digital learning/Digital Library (VL&DL)*,*"Satellite Instructional Television Experiment (SITE) or EDUSAT*", *"Virtual Learning Campus (VLC)/Virtual Class Room*", *"Audio-Visuals Resource Centers (AVRC)"* and *"Tele-Education System (TES)"* have together explained only 14.2% of the variance in overall ICT usages in selected universities in the selected area has impact.

Table – 7: Summary of Hypotheses Testing Results

Path			Estimate (β)	S.E.	C.R.	*p*	Results
(H_{1a}) - Virtual Libraries and Digital learning/Digital Library (VL&DL)	<---	VL&DL	2.968	1.682	1.764	0.078	Not Supported
(H_{1b}) - Satellite Instructional Television Experiment (SITE) or EDUSAT	<---	SITE	4.070	2.209	1.843	0.065*	Supported
(H_{1c}) - Virtual Learning Campus (VLC)/Virtual Class Room	<---	VLC	0.698	0.524	1.333	0.182	Not Supported
(H_{1d}) - Audio-Visuals Resource Centers (AVRC)	<---	AVRC	1.342	0.913	1.470	0.142	Not Supported
(H_{1e}) Tele-Education System (TES)	<---	TES	1.619	1.105	1.466	0.143	
Overall of ICT Tools for Quality Education and Learning (QEL)	<---	ICT for QEL	0.674	0.184	3.663	0.000*	Supported

*Note: β = standardized beta coefficients; S.E. = standard error; C.R. = critical ratio; *p< 0.05*

Hypothesis 1, 2, 3, 4 and 5 postulate the associations between ICT tools impact on effective teaching and learning in the selected universities and five Predictors of ICT usages namely *Virtual Libraries and Digital learning/Digital Library (VL&DL)* the second factor (comprising of five items) as *"Satellite Instructional Television Experiment (SITE) or EDUSAT*" third factor (comprising of two items) as *"Virtual Learning Campus (VLC)/Virtual Class Room*", fourth factor (comprising of three items) as *"Audio-Visuals Resource Centers (AVRC)"* (comprising of four items) *and fifth factor "Tele-Education System (TES)"* (comprising of two items). As evident in Table – 7, cultural impact is not significantly ($p > 0.05$) influenced by any of the Predictors of ICT tools impact on effective teaching and

learning in the selected universities which influence the quality teaching in the higher education system all over the nation except for one predictor namely *SITE* and ($\beta 2 = 0.136$) which had significant gender neutrality impact on trade and finance for the economic development at 5% level of significance.

Limitations of the Study

The present study has certain shortcomings which are enlisted as follows:

- This paper examines only the effective usages of ICT tools in the selected Universities located in and around the Coimbatore District; and
- It covers only to quality teaching and learning in higher education using the ICT tools in the selected area of which the confined sample size 200 respondents.

Major Findings of the Study

The following are few findings of the study which are presented below:

01. The Male respondents are very high which is about 54.50 percent from the selected sample;
02. The highest age group fall under the category of 45 to 55 years where it indicates 53.3 percent;
03. About 66 percent of the respondents are single in their marital status;
04. The under – graduates from various field are opined more which accounts to 68.00 percent;
05. Occupation wise, the 51.00 percent are from the teaching community in the study;
06. Out of 53 respondents, 53.0 percents are from Tamil Nadu Agricultural University, opined more about the usages of ICT tools in the selected areas;
07. It is identified that about 36.0 percent of respondents opined that the extremely influence and effect of virtual libraries/digital learning in the higher education system in the long run;
08. The role of SITE or EDUSAT showed that it strongly plays a crucial role in improving the quality and standard of the education and learning at universities level, which accounts to 27.5 percent;
09. The impact of E-leaning toward the quality education and learning is strongly agreed by the selected respondent and which accounts to 33.0 percent;
10. The impact of audio-visuals resources centers showed neutral results , which accounts to 25 percent;
11. Library network in education played a major role in the quality education and it is proved the respondents opinion which accounts to about 26 percent in the study;
12. Interestingly noticed that 27 percent of respondents opined that virtual learning campus/class rooms, which facilities effective learning which in turn leads to the improvement of quality education in the university level;
13. It is evidenced that the 33.5 percent of the respondents opined that LCD projectors are concentrated more in the current education system to make teaching easy and quick reach to the students with the help of latest ICT tool available in the current days;
14. It is indentified only 26.5 percent are not satisfied with tele-education system (TES);

15. 28.5 percent of the respondents strongly agreed that ICT has influenced on the quality teaching and learning the higher education;
16. From the study 25.5 percent of the respondent expressed that wireless connectivity is very essential ICT tools which is used to update their skills and knowledge in improving their learning process in the selected universities in Coimbatore district;
17. The usages of digital learning and digital library is 77 percent extremely influence the efficacy of the teaching and learning in the selected universities;
18. Only 10.50 percent of the SITE not alt all influence the usages of ICT tool in education systems;
19. The virtual learning campus/class rooms has evidenced that 57 percent extremely influence the quality education and learning to develop the skills of the students;
20. Interestingly 29 percent slightly influence the impact on ICT on quality education;
21. It is opined by the respondent that 63 percent of tele-education may influence the effective usages of ICT tools; and
22. Overall Over all Gender neutrality in the study is evidenced that 14.2 percent on trade and Finance in the selected area has Impact

Conclusion

Transmission of ICTs in Indian universities OR Higher Educational Institutions would take action to the twenty-first century demands. In modern-day higher education systems are designed for getting hold of ICT skills as central part education structure, prerequisite of infrastructure/ fully operational labs, proficient support and other hold looked-for enhancement of the quality in education and learning methods. The relevance of ICTs in supervision of higher education institutions and use of the know-how to normalize worth of education in the highly varied in the current scenario across the universities established in the Coimbatore District, Tamil Nadu would promote many students in developing their skills and knowledge. The influence against the introduction of ICTs has pointed out that ICTs would do high-quality to the teaching fraternity and student community. The procedures taken for the achievement of ICT needs to be a suitable action plan and training to all stakeholders implicated in the integration and bring change on quality of teaching and learning in the university level education system.

It is vital to assess the impact of efficacy of implementation and usages of ICT tools in quality teaching and learning among the selected universities in the Coimbatore district. In the present study, it is identify that the purpose of ICTs in managing higher education institutions and use of the technology to homogenize the excellence of teaching and learning is highly diverse state of affairs across the universities established in the country would profit many students. From the study, it is evidenced that ICT tools strongly plays crucial role and influencing the all the stakeholders of the selected universities such as teachers, students, research scholars, research assistant, Project fellowship holders, and parents too in the modern education system.

References

* Kumar, C. S. Chandra Mohan; Dominic, J. (2011), A Study on Information Communication Technology among Engineering College Libraries in Coimbatore, *Tamil Nadu Asian Journal of Information Science & Technology (AJIST)*; 2011, Vol. 1 Issue 2, PP No. 45
* Sriram C, Dr. N. Mathutalagan, (2015), Information and Communication Technology adoption by Healthcare Professionals: A Systematic Review of the Proposed Theoretical Models, *International Journal of Social Science and Interdisciplinary Research (IJSSIR)*, Volume 4(2), 2015, PP No. 86 – 95
* Dr.R.Krishnaveni and J.Meenakumari, Usage of ICT for Information Administration in Higher education Institutions – A study, *International Journal of Environmental Science and Development*, Vol. 1, No. 3, August 2010 ISSN: 2010-0264, PP No. 282 – 286
* Uttam Kr Pegu, (2014), Information and Communication Technology in Higher Education in India: Challenges and Opportunities, *International Journal of Information and Computation Technology*. ISSN 0974-2239 Volume 4, Number 5 (2014), PP No. 513 – 518
* Yusuf Musibau Adeoye, Afolabi Festus Oluwole, Loto Antonia Blessing (2013), Appraising the role of information communication technology (ICT) as a change agent for higher education in Nigeria, *International Journal of Educational Administration and Policy Studies*, 2013, Vol. 5(8), pp. 177 – 183,
* David Lewis and Ruth Goodison, Enhancing learning with Information and Communication Technology (ICT) in Higher Education
* Ron Oliver (2002), The role of ICT in higher education for the 21st century: ICT as a change agent for education, *Edith Cowan University*, Perth, Western Australia
* Sukanta Sarkar (2012), The Role of Information and Communication Technology (ICT) in Higher Education for the 21st Century, *The Science Probe* Vol. 1 No. 1 (May 2012) PP No- 30 – 41
* An Alten Group Company, Calsoft labs (2012) IT/ICT Adoption in Indian Higher Education
* Ulka Toro (Gulavani) and Millind Joshi (2012), ICT in Higher Education: Review of Literature from the Period 2004 – 2011, *International Journal of Innovation, Management and Technology*, Vol. 3, No. 1, February 2012, PP No. 20 – 23
* Ashish Hattangdi and Prof. Atanu Ghosh, (2009), Enhancing the quality and accessibility of higher education through the use of Information and Communication Technologies,
* Samuel Ereyi Aduwa et.al, (2005), Using Information and Communication Technology in Secondary Schools in Nigeria: Problems and Prospects
* Kirkup, Gill and Kirkwood, Adrian (2005). Information and communications technologies (ICT) in Higher Education Teaching – A Tale of Gradualism rather Than Revolution. Learning, *Media and Technology*, 30(2) pp. 185–199.
* ICT for higher education case studies from Asia and the Pacific (2011) , Published by *UNESCO Bangkok Asia and Pacific Regional Bureau for Education Mom Luang Pin Malakul Centenary Building 920* Sukhumvit Road, Prakanong, Klongtoey Bangkok 10110, Thailand

Internet Sources

* http://connection.ebscohost.com/c/articles/70839123/study-information-communication-technology-among-engineering-college-libraries-coimbatore-tamil-nadu
* http://indianresearchjournals.com/pdf/IJSSIR/2015/February/10.pdf
* http://shodhganga.inflibnet.ac.in/bitstream/10603/27365/9/09_chapter4.pdf
* http://www.ijesd.org/papers/55-D461.pdf
* http://www.ripublication.com/irph/ijict_spl/ijictv4n5spl_11.pdf
* http://files.eric.ed.gov/fulltext/EJ1084266.pdf
* December 2013 DOI: 10.5897/IJEAPS12.027 ISSN 2141-6656 © 2013 Academic Journals http://www.academicjournals.org/IJEAPS
* http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/RR533.pdf
* http://bhs-ict.pbworks.com/f/role+of+ict.pdf
* http://www.thesciprobe.com/files/documents/5-The-Role-of-Information-and-Communication-Technology-_ICT_-In-Higher-Education-for-The-21st-Century.pdf
* http://www.calsoftlabs.com/downloads/ict-role-indian-higher-education.pdf
* http://ijimt.org/papers/190-M633.pdf
* http://www.iitk.ac.in/infocell/announce/convention/papers/Strategy%20Learning-01-Ashish%20Hattangdi,%20%20Atanu%20Ghosh.pdf
* http://www.ifets.info/journals/8_1/13.pdf
* http://oro.open.ac.uk/6213/1/A_tale_of_gradualism__final_handover.pdf
* http://unesdoc.unesco.org/images/0021/002141/214143E.pdf