

# INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

I  
J  
R  
C  
M



A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories  
Indexed & Listed at:

Ulrich's Periodicals Directory ©, ProQuest, U.S.A., EBSCO Publishing, U.S.A., Cabell's Directories of Publishing Opportunities, U.S.A.  
as well as in Open J-Gate, India [link of the same is duly available at Inlibnet of University Grants Commission (U.G.C.)]

Registered & Listed at: Index Copernicus Publishers Panel, Poland

Circulated all over the world & Google has verified that scholars of more than 1500 Cities in 141 countries/territories are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

[www.ijrcm.org.in](http://www.ijrcm.org.in)

# CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	THE USE OF INTERNATIONAL STANDARDS FOR THE PROFESSIONAL PRACTICE OF INTERNAL AUDITING NO. 1300: QUALITY ASSURANCE AND IMPROVEMENT PROGRAM BY INTERNAL AUDITORS IN JORDANIAN INSURANCE COMPANIES <i>DR. AHMAD FAISAL KHALED HAYEK</i>	1
2.	COMPUTERIZATION OF NIGERIAN UNIVERSITY LIBRARY SERVICES <i>ABDUL RAHMAN GARUBA</i>	4
3.	ANTECEDENTS OF CUSTOMER LOYALTY IN THE MOBILE TELECOMMUNICATION SECTOR IN KENYA <i>DANIEL K. TARUS, NICHOLAS RABACH &amp; RONALD N. BONUKE</i>	9
4.	SIX SIGMA FOR IMPROVING PRODUCTIVITY AND ATTAINING SUSTAINABLE PERFORMANCE BREAKTHROUGH: THE BANGLADESH PERSPECTIVE <i>MD. KAZI RAIHAN UDDIN &amp; MUHAMMAD SHAHIN MIAH</i>	16
5.	IMPROVEMENT IN TELECOM NETWORK QUALITY & OPERATIONAL EFFICIENCY THROUGH ON-THE-JOB TRAINING <i>MADHAV DURGE, SUDHIR WARIER &amp; LRK KRISHNAN</i>	24
6.	PEOPLE MANAGEMENT PRACTICES AT ICHALKARANJI SPINNING MILLS: AN INVESTIGATIVE STUDY <i>DR. B S SAWANT &amp; AVINASH DHAVAN</i>	31
7.	A STUDY ON SOCIAL NETWORKS AND ONLINE COMMUNITIES CONCEPT & PRACTICES AT BHAVNAGAR CITY <i>DR. K. S .VATALIYA &amp; KALYANI M. RAVAL</i>	35
8.	COST REDUCTION THROUGH e-RECRUITMENT: A CASE STUDY OF INDIAN IT INDUSTRY <i>DR. SATISH KUMAR MATTA &amp; DR. SONIA SARDANA</i>	38
9.	12 DIGIT AADHAR FOR REVENUE ADMINISTRATION <i>SHIVAJIRAO KRISNARAO BACHCHHAVPATIL &amp; DR. RAJASHREE GUJARATHI</i>	44
10.	RESEARCH PAPER ON PERCEPTION OF MANAGEMENT FACULTY ON INSTITUTIONAL CULTURE AND VALUES AFFECTING FACULTY RETENTION IN PUNE CITY <i>VIJAYASHRI .M. BHAGAWATI &amp; DR. SHAILAJA.S.ARALELIMATH</i>	48
11.	TESTING THE EFFECTIVENESS OF PERFORMANCE APPRAISAL SYSTEM IN FACILITY SERVICES SECTOR AT COIMBATORE CITY <i>DR. S. NIRMALA &amp; I. M. CHRISTINA FEBIULA</i>	51
12.	TWO DIMENSIONAL DAY TRADING TECHNICAL STRATEGY FOR EQUITY, COMMODITY AND CURRENCY TRADING <i>DR. PRAVIN MOKASHI</i>	54
13.	A STRATEGIC FRAMEWORK FOR E-TOURISM DEVELOPMENT IN JAMMU AND KASHMIR STATE <i>AASIM MIR &amp; SHAFQAT AJAZ</i>	58
14.	IMPACT OF EMPLOYEES MOTIVATION ON BANKING EFFECTIVENESS - A STUDY OF SELECTED BANKS IN SHIMOGA CITY INDIA <i>MOHAMMED AHMED ALSABRI &amp; DR. H.N. RAMESH</i>	61
15.	CLOUD COMPUTING: DESCRIBING THE CONCEPT, FEATURES AND CONCERNS FROM A BUSINESS PERSPECTIVE <i>DEVESH KUMAR</i>	69
16.	FII INVESTMENT FORECASTING: AN INSIGHT INTO FUTURE TREND USING ARIMA MODEL <i>SURESH KUMAR, UTKARSH SHRIVASTAVA &amp; JASDEEP DHAMI</i>	73
17.	A STUDY ON CONSUMER'S PURCHASING BEHAVIOUR WITH SPECIAL REFERENCE TO NON-DURABLE GOODS IN COIMBATORE CITY <i>V.PRADEEPA &amp; D. MOORTHY</i>	79
18.	e-RECRUITMENT - WEB 2.0 <i>BRIJESH PILLAI &amp; RAJASSHRI SURESSH DHOBAL</i>	85
19.	SMART CAMERA FOR GESTURE RECOGNITION AND GESTURE CONTROL WEB NAVIGATION <i>N.DEVI, S.KUZHALI &amp; M.MUBEENA</i>	93
20.	AN EMPIRICAL STUDY ON BREAST CANCER USING DATA MINING TECHNIQUES <i>GOMATHI.K</i>	97
21.	A STUDY ON STRESS: SOURCES, EFFECTS AND RELIEVING TECHNIQUES USED BY MALE AND FEMALE TO COMBAT STRESS AT WORKPLACE IN AHMEDABAD CITY <i>REVATI C. DESHPANDE</i>	103
22.	PERFORMANCE EVALUATION OF PUBLIC SECTOR BANKS IN INDIA – A CAMEL APPROACH <i>K.SARALA RAO</i>	106
23.	A STUDY ON THE PRODUCT FACTORS AFFECTING AN INVESTOR'S PREFERENCE TOWARDS PUBLIC SECTOR LIFE INSURANCE PRODUCTS <i>KRISHNAN M</i>	113
24.	EARNING MANAGEMENT – OPPORTUNITY OR A CHALLENGE <i>SHWETA VERMA</i>	116
25.	MARKET SHARE THROUGH TELECOM RETAILING: AN EVIDENCE FROM AIRTEL <i>AYAN MITRA, NILANJAN RAY &amp; DR. KAUSHIK CHAKRABORTY</i>	121
26.	TRAVEL SERVICE DISTRIBUTION IN INDIA – IN TRANSITION?? <i>CHAKRAVARTHI JANTHALUR</i>	127
27.	AN EMPIRICAL STUDY OF CONSUMER BEHAVIOUR TOWARDS FINANCIAL PLANNING AMONG FACULTY MEMBERS OF DIFFERENT COLLEGES OF PUNJAB TECHNICAL UNIVERSITY <i>KAVITA MAHAJAN</i>	131
28.	AN INSIGHT INTO SUSTAINABILITY REPORTING PRACTICES - STUDY OF ITC & TATA MOTORS <i>ANANDARAJ SAHA</i>	135
29.	PERFORMANCE EVALUATION AND ENHANCEMENT OF THE INITIAL RANGING MECHANISM IN MAC 802.16 FOR WIMAX NETWORKS USING NS-2 <i>MOHAMMED SHAFEEQ AHMED</i>	141
30.	SOCIAL MEDIA MARKETING: AN ADVANCE MARKETING PRACTICE <i>RAMULU BHUKYA</i>	149
	REQUEST FOR FEEDBACK	154

**CHIEF PATRON**

**PROF. K. K. AGGARWAL**

Chancellor, Lingaya's University, Delhi  
Founder Vice-Chancellor, Guru Gobind Singh Indraprastha University, Delhi  
Ex. Pro Vice-Chancellor, Guru Jambheshwar University, Hisar

**PATRON**

**SH. RAM BHAJAN AGGARWAL**

Ex.State Minister for Home & Tourism, Government of Haryana  
Vice-President, Dadri Education Society, Charkhi Dadri  
President, Chinar Syntex Ltd. (Textile Mills), Bhiwani

**CO-ORDINATOR**

**MOHITA**

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadhola, Yamunanagar

**ADVISORS**

**DR. PRIYA RANJAN TRIVEDI**

Chancellor, The Global Open University, Nagaland

**PROF. M. S. SENAM RAJU**

Director A. C. D., School of Management Studies, I.G.N.O.U., New Delhi

**PROF. S. L. MAHANDRU**

Principal (Retd.), Maharaja Agrasen College, Jagadhri

**EDITOR**

**PROF. R. K. SHARMA**

Professor, Bharti Vidyapeeth University Institute of Management & Research, New Delhi

**CO-EDITOR**

**MOHITA**

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadhola, Yamunanagar

**EDITORIAL ADVISORY BOARD**

**DR. RAJESH MODI**

Faculty, Yanbu Industrial College, Kingdom of Saudi Arabia

**PROF. PARVEEN KUMAR**

Director, M.C.A., Meerut Institute of Engineering & Technology, Meerut, U. P.

**PROF. H. R. SHARMA**

Director, Chhatrapati Shivaji Institute of Technology, Durg, C.G.

**PROF. MANOHAR LAL**

Director & Chairman, School of Information & Computer Sciences, I.G.N.O.U., New Delhi

**PROF. ANIL K. SAINI**

Chairperson (CRC), Guru Gobind Singh I. P. University, Delhi

**PROF. R. K. CHOUDHARY**

Director, Asia Pacific Institute of Information Technology, Panipat

**DR. ASHWANI KUSH**

Head, Computer Science, University College, Kurukshetra University, Kurukshetra

**DR. BHARAT BHUSHAN**

Head, Department of Computer Science & Applications, Guru Nanak Khalsa College, Yamunanagar

**DR. VIJAYPAL SINGH DHAKA**

Dean (Academics), Rajasthan Institute of Engineering & Technology, Jaipur

**DR. SAMBHAVNA**

Faculty, I.I.T.M., Delhi

**DR. MOHINDER CHAND**

Associate Professor, Kurukshetra University, Kurukshetra

**DR. MOHENDER KUMAR GUPTA**

Associate Professor, P.J.L.N. Government College, Faridabad

**DR. SAMBHAV GARG**

Faculty, M. M. Institute of Management, Maharishi Markandeshwar University, Mullana

**DR. SHIVAKUMAR DEENE**

Asst. Professor, Dept. of Commerce, School of Business Studies, Central University of Karnataka, Gulbarga

**DR. BHAVET**

Faculty, M. M. Institute of Management, Maharishi Markandeshwar University, Mullana

***ASSOCIATE EDITORS***

**PROF. ABHAY BANSAL**

Head, Department of Information Technology, Amity School of Engineering & Technology, Amity University, Noida

**PROF. NAWAB ALI KHAN**

Department of Commerce, Aligarh Muslim University, Aligarh, U.P.

**ASHISH CHOPRA**

Sr. Lecturer, Doon Valley Institute of Engineering & Technology, Karnal

**SAKET BHARDWAJ**

Lecturer, Haryana Engineering College, Jagadhri

***TECHNICAL ADVISORS***

**AMITA**

Faculty, Government M. S., Mohali

**MOHITA**

Faculty, Yamuna Institute of Engineering & Technology, Village Gadholi, P. O. Gadholi, Yamunanagar

***FINANCIAL ADVISORS***

**DICKIN GOYAL**

Advocate & Tax Adviser, Panchkula

**NEENA**

Investment Consultant, Chambaghat, Solan, Himachal Pradesh

***LEGAL ADVISORS***

**JITENDER S. CHAHAL**

Advocate, Punjab & Haryana High Court, Chandigarh U.T.

**CHANDER BHUSHAN SHARMA**

Advocate & Consultant, District Courts, Yamunanagar at Jagadhri

***SUPERINTENDENT***

**SURENDER KUMAR POONIA**

## CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the area of Computer, Business, Finance, Marketing, Human Resource Management, General Management, Banking, Insurance, Corporate Governance and emerging paradigms in allied subjects like Accounting Education; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Monetary Policy; Portfolio & Security Analysis; Public Policy Economics; Real Estate; Regional Economics; Tax Accounting; Advertising & Promotion Management; Business Education; Management Information Systems (MIS); Business Law, Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labor Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; Public Administration; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism, Hospitality & Leisure; Transportation/Physical Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Digital Logic; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Multimedia; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic and Web Design. The above mentioned tracks are only indicative, and not exhaustive.

Anybody can submit the soft copy of his/her manuscript **anytime** in M.S. Word format after preparing the same as per our submission guidelines duly available on our website under the heading guidelines for submission, at the email address: [infoijrcm@gmail.com](mailto:infoijrcm@gmail.com).

## GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: \_\_\_\_\_

**THE EDITOR**  
IJRCM

**Subject: SUBMISSION OF MANUSCRIPT IN THE AREA OF**

(e.g. Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/Engineering/Mathematics/other, please specify)

**DEAR SIR/MADAM**

Please find my submission of manuscript entitled ' \_\_\_\_\_ ' for possible publication in your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published elsewhere in any language fully or partly, nor is it under review for publication elsewhere.

I affirm that all the author (s) have seen and agreed to the submitted version of the manuscript and their inclusion of name (s) as co-author (s).

Also, if my/our manuscript is accepted, I/We agree to comply with the formalities as given on the website of the journal & you are free to publish our contribution in any of your journals.

**NAME OF CORRESPONDING AUTHOR:**

Designation:

Affiliation with full address, contact numbers & Pin Code:

Residential address with Pin Code:

Mobile Number (s):

Landline Number (s):

E-mail Address:

Alternate E-mail Address:

**NOTES:**

- a) The whole manuscript is required to be in **ONE MS WORD FILE** only (pdf. version is liable to be rejected without any consideration), which will start from the covering letter, inside the manuscript.
- b) The sender is required to mention the following in the **SUBJECT COLUMN** of the mail:  
**New Manuscript for Review in the area of (Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/Engineering/Mathematics/other, please specify)**
- c) There is no need to give any text in the body of mail, except the cases where the author wishes to give any specific message w.r.t. to the manuscript.
- d) The total size of the file containing the manuscript is required to be below **500 KB**.
- e) Abstract alone will not be considered for review, and the author is required to submit the complete manuscript in the first instance.
- f) The journal gives acknowledgement w.r.t. the receipt of every email and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of manuscript, within two days of submission, the corresponding author is required to demand for the same by sending separate mail to the journal.

2. **MANUSCRIPT TITLE:** The title of the paper should be in a 12 point Calibri Font. It should be bold typed, centered and fully capitalised.

3. **AUTHOR NAME (S) & AFFILIATIONS:** The author (s) **full name, designation, affiliation (s), address, mobile/landline numbers**, and **email/alternate email address** should be in italic & 11-point Calibri Font. It must be centered underneath the title.

4. **ABSTRACT:** Abstract should be in fully italicized text, not exceeding 250 words. The abstract must be informative and explain the background, aims, methods, results & conclusion in a single para. Abbreviations must be mentioned in full.

5. **KEYWORDS:** Abstract must be followed by a list of keywords, subject to the maximum of five. These should be arranged in alphabetic order separated by commas and full stops at the end.
6. **MANUSCRIPT:** Manuscript must be in **BRITISH ENGLISH** prepared on a standard A4 size **PORTRAIT SETTING PAPER**. It must be prepared on a single space and single column with 1" margin set for top, bottom, left and right. It should be typed in 8 point Calibri Font with page numbers at the bottom and centre of every page. It should be free from grammatical, spelling and punctuation errors and must be thoroughly edited.
7. **HEADINGS:** All the headings should be in a 10 point Calibri Font. These must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.
8. **SUB-HEADINGS:** All the sub-headings should be in a 8 point Calibri Font. These must be bold-faced, aligned left and fully capitalised.
9. **MAIN TEXT:** The main text should follow the following sequence:

**INTRODUCTION****REVIEW OF LITERATURE****NEED/IMPORTANCE OF THE STUDY****STATEMENT OF THE PROBLEM****OBJECTIVES****HYPOTHESES****RESEARCH METHODOLOGY****RESULTS & DISCUSSION****FINDINGS****RECOMMENDATIONS/SUGGESTIONS****CONCLUSIONS****SCOPE FOR FURTHER RESEARCH****ACKNOWLEDGMENTS****REFERENCES****APPENDIX/ANNEXURE**

It should be in a 8 point Calibri Font, single spaced and justified. The manuscript should preferably not exceed **5000 WORDS**.

10. **FIGURES & TABLES:** These should be simple, crystal clear, centered, separately numbered & self explained, and **titles must be above the table/figure. Sources of data should be mentioned below the table/figure.** It should be ensured that the tables/figures are referred to from the main text.
11. **EQUATIONS:** These should be consecutively numbered in parentheses, horizontally centered with equation number placed at the right.
12. **REFERENCES:** The list of all references should be alphabetically arranged. The author (s) should mention only the actually utilised references in the preparation of manuscript and they are supposed to follow **Harvard Style of Referencing**. The author (s) are supposed to follow the references as per the following:
  - All works cited in the text (including sources for tables and figures) should be listed alphabetically.
  - Use **(ed.)** for one editor, and **(ed.s)** for multiple editors.
  - When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc, in chronologically ascending order.
  - Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
  - The title of books and journals should be in italics. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
  - For titles in a language other than English, provide an English translation in parentheses.
  - The location of endnotes within the text should be indicated by superscript numbers.

**PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:****BOOKS**

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

**CONTRIBUTIONS TO BOOKS**

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

**JOURNAL AND OTHER ARTICLES**

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

**CONFERENCE PAPERS**

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

**UNPUBLISHED DISSERTATIONS AND THESES**

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

**ONLINE RESOURCES**

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

**WEBSITES**

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 <http://epw.in/user/viewabstract.jsp>



## IMPROVEMENT IN TELECOM NETWORK QUALITY & OPERATIONAL EFFICIENCY THROUGH ON-THE-JOB TRAINING

**MADHAV DURGE**

**ASST. GENERAL MANAGER & LEAD TRAINER, NETWORK LEARNING CENTER  
RELIANCE COMMUNICATIONS LIMITED  
MUMBAI**

**SUDHIR WARIER**

**ASST. GENERAL MANAGER & LEAD TRAINER, NETWORK LEARNING CENTER  
RELIANCE COMMUNICATIONS LIMITED  
MUMBAI**

**LRK KRISHNAN**

**SR. VICE PRESIDENT & HEAD HR NETWORK GROUP & LEARNING CENTER  
RELIANCE COMMUNICATIONS LIMITED  
MUMBAI**

### ABSTRACT

*The liberalization of the Indian economy & new telecom policy has enabled introduction of new technologies and deployment of state-of-the-art equipments into the telecom network. In order to maintain high standards of network quality and services, telecom service providers require experienced and trained technical professionals to address the ever growing needs of the business. Evolutions of technology, network rollout, increase in subscriber base coupled with high equipment cost and attrition rates, demands highly engaged and skilled employees. In view of the above, it goes without saying that continuous skill up-gradation of employee's is the need of the hour. The conventional practices of classroom training are being rendered ineffective as network uptime and operation & maintenance challenges are accorded priority to ensure uninterrupted customer services. This calls for an on-the-job training model that is customized to address the challenges faced by the telecom organizations. Network Learning Center (NLC) of a leading integrated telecom player has been actively engaged in knowledge dissemination on technology, product and service since 2002. This paper presents and empirically validates a unique learning methodology using Intranet/Internet, Audio Visual conferencing tools, electronic writing pads, and desktop sharing tools. The effectiveness of this training methodology has been validated based on data collected from NLC and network operation over the past 2 years.*

### KEYWORDS

OJT, Training Effectiveness, Telecom Training, Telecom Network Quality, Telecom Operational Efficiency.

### INTRODUCTION

The Indian Telecommunications network is the third largest in the world and the second largest among the emerging economies of Asia. The Indian telecom industry has witnessed tremendous growth in the last 10 years due to liberal policies of the government and the extensive need for communication. The number of telephone subscribers in India was 906.93 million at the end of September 2011. The Urban Teledensity was 157.32 and Rural Teledensity was 33.79 with overall Teledensity at 70.89 as on 31st March 2011. India's active mobile penetration rate is 48%, which in other terms means ample opportunities are still untapped and will drive Indian telecom success story further in future. The new National Telecom Policy will encourage the much-needed investments in the sector to drive the next avenues of expansion in rural areas and mobile broadband. The telecom technology has evolved significantly over the last decade as compared to the past. Telecom networks today an amalgamation of the ubiquitous time division multiplexing (TDM) techniques and the IP based packet switched networks. The next generation networks would be completely IP based and would offer inclusive service migration, network convergence and network interconnectivity while bringing about a paradigm shift in skill sets required to operate and maintain them.

Individuals learn from experience which involves action, reflecting, connecting and testing in a continuous cycle. Learning starts by taking action, then reflecting on the outcomes of the action, making connections with what we already know and understand and then testing those connections and new ideas through further action (David Kolb, 1984). Organizational knowledge sources are both internal and external. Accumulated over time, organizational knowledge enables firms to attain deeper levels of understanding, perception, and all characteristics of wisdom (Grant, 1997). Organizational learning is to increase its chances for survival and strengthen their market positions (Thomsen and Hoest, 1999). The Indian telecom industry, the third largest in the world, is facing a tumultuous time on account of falling revenues and non-availability of sufficiently trained technical manpower. This has been coupled with a high rate of attrition. Operators are putting efforts to make world class network. In such a scenario competency building through training has an important role to play in increasing organizational performance and hence its revenues.

The Network Learning Center (NLC), an ISO 9001:2008 certified entity of a leading integrated telecom player, is responsible for technology training of the manpower in consonance with the business requirements. Over the past nine years NLC has trained & certified more than 32,000 employees through instructor led trainings as well as distance learning programs. In addition over 61,000 employees were certified using proprietary self learning methodologies. The NLC lead trainers (Subject Matter Experts – SME) are functionally aligned to the domain experts to ensure that learning solutions reflect the ground realities. Courses are designed & developed based on identified needs by the lead trainers and the functional experts. Its in-house integrated labs for hands on experience cover all equipment of most of the brands which are used in the network.

### REVIEW OF LITERATURE

Knowledge Management is the collection of processes that govern the creation, dissemination, and utilization of knowledge. Knowledge management is the management of the organization towards the continuous renewal of the organizational knowledge base. Knowledge is the full utilization of information and data, coupled with the potential of people's skills, competencies, ideas, intuitions, commitments and motivations. In today's economy, knowledge is people, money, leverage, learning, flexibility, power, and competitive advantage. Knowledge is more relevant to sustained business than capital, labor or land. Nevertheless, it remains the most neglected asset. It is more than justified true belief and is essential for action, performance and adaption. Knowledge provides the ability to respond to novel situations. A holistic view considers knowledge to be present in ideas, judgments, talents, root causes, relationships, perspectives and concepts. Knowledge is stored in the individual brain or encoded in organizational processes, documents, products, services, facilities and systems. Knowledge is the basis for, and the driver of, our post-industrial economy. Knowledge is the result of learning which provides the only sustainable competitive advantage. Knowledge is the next paradigm shift in computing following data processing 1945-1965 and information management 1966-1995. Knowledge is

action, focused innovation, pooled expertise, special relationships and alliances. Knowledge is value-added behavior and activities. For knowledge to be of value it must be focused, current, tested and shared.

The approach to telecom network improvement research explores cause-and-effect relationships that are pertinent to the learning process and have been established through years of training research, including meta-analyses. For the purpose of training assessment, the cause-and-effect relationships of interest are those between the process, outcomes, and impacts of training (NIOSH 1999, Krikpatrick 1994). In these relationships, the training process variables are indicators of the outcomes of the effective training. The "Bloom's Taxonomy" classifies learning objectives into Cognitive, Affective, and Psychomotor and differentiates variables effecting training effectiveness (Bloom 1956). Further psychomotor objective was classified into levels. (Dave 1975). The white paper on structured on-the-job training concludes that systematically developed OJT is required for any continuous improvement initiative and add value to high performance manufacturing (Richard et al. 2007).

**Bloom B S, (1956), Bloom's Taxonomy of Learning Domains, viewed on February 23 2012**

**Source URL <<http://www.nwlink.com/~donclark/hrd/bloom.html#psychomotor>>**

Organizations are discovering that Structured On-the-Job Training (SOJT) provides many benefits for both the short-term and long-term success. Learning is less effective and transfer of knowledge is only temporary when trainees just learn by watching another worker or through informal instruction. With SOJT, the training that occurs at the work center becomes purposeful, intentional, and permanent. SOJT also employs standardized work practices in which the outcome of all work is highly specified.

#### **STRUCTURED ON-THE-JOB-TRAINING**

Research has shown that casual, informal OJT does not provide consistent instruction for someone that is new to their job. In addition, bad habits are quite often passed down from one worker to the next in this type of arrangement. When trainees receive a different set of work instructions from each shift or team leader, performance of the learner suffers and worker morale is adversely affected. Unstructured or informal OJT can be incomplete, including only partial elements of the job, and is many times done in a hurry, often lacking the very important feedback regarding how well the job or task has been done. Without systematic feedback regarding job performance, the ability to create lasting, permanent knowledge can be limited. SOJT on the other hand uses a formalized system that breaks the training down into manageable units or chunks and provides consistency from shift to shift and day to day. A standardized work system that consists of well-written procedures, work instruction packages and job-aids provide a road map for consistent, sustained knowledge creation and learning. A system of SOJT also provides designated OJT specialists the tools to become successful trainers and leaders on the plant floor. When properly trained and supported, an OJT specialist can reduce training times in excess of 50%.

This concept is highly relevant to the telecos especially their National Network Operations Center (NNOC) which provides 24\*7 surveillance, fault management of the network. The skills sets of the engineers operating in this high technology environment are unique and SOTJ training provides an effective method for knowledge transfer.

#### **ORGANIZATIONAL KNOWLEDGE CREATION & ON-THE-JOB-TRAINING**

Information can be described as a simple flow of messages, while formal knowledge is created and organized by the flow of information and is connected to the beliefs and commitment of the holder. Knowledge creation cycle can be broken down into two categories, known as "explicit" and "tacit" knowledge. Explicit knowledge can be transferred through formal language or written documents, while tacit knowledge refers to knowledge that is harder to formalize and communicate. Tacit knowledge is usually connected to actions or involvement in a specific context or concept. Tacit knowledge is further broken down into two elements, "cognitive" and "technical". The cognitive elements of tacit knowledge involve "mental models" that allow the employee to form an opinion or viewpoint that leads to perceptions about the task or job at hand. The technical elements of tacit knowledge involve concrete know-how such as skills, crafts, and procedures that apply to specific parts of their job or machine center.

The two elements of knowledge creation (explicit and tacit) can be directly linked to a learning system that involves both formal classroom training and SOJT. Much of the explicit knowledge can be transferred in the classroom and much tacit knowledge is picked up through formal instruction on the plant floor. When a worker receives training in the actual "doing" part of the job, tacit knowledge can be transferred through realistic work experiences. After engaging in shared observations and job experience on the plant floor with the OJT specialist, the trainee can loop back after repeated practice and make better decisions. Tacit knowledge can be acquired after repeated observation, imitation and practice. This allows the trainee to reach full operating potential faster with more accuracy than in informal OJT environments. In fact, research (Jacobs, 1996) has shown that full operating potential and productivity can be reached 85% faster with an SOJT system. A system that transfers tacit knowledge on the plant floor will allow operators to make more informed decisions, react to abnormal operating or "upset conditions" faster and have a much better understanding of how their machine center operates. This can have major implications for quality and reliability initiatives such as Six Sigma, Lean Manufacturing or Total Productive Maintenance (TPM).

The continued use of SOJT over time will lead to the creation of permanent organizational knowledge. This is accomplished when the full variety of tasks at the work location are included as part of the OJT system, including a clear understanding of the criteria for success in the processes. Procedures, troubleshooting, problem solving and quality inspections should all be part of the SOJT that is performed. Show/tell checklists, pre-shift inspections, actual operation of equipment and upset condition scenarios should also be part of the SOJT system. Using a wide-variety of training methods promotes the internalization of knowledge. Internalization is the ability to take explicit knowledge and convert it to tacit knowledge. This improves the productivity of workers in manufacturing systems while at the same time enhancing creation of organizational knowledge.

When all training topics or elements are linked systematically with feedback loops to evaluate the conditions for success, the learner will have an easier time internalizing the knowledge. Regular updates to training material or job-aids and frequent coaching and mentoring sessions for workers on the plant floor will also enhance the permanence of learning. SOJT systems that promote organizational learning will have many of the following elements:

- An initial evaluation and selection process for SOJT specialists
- Accountability for SOJT implementation is clearly defined
- Coaching and mentoring for SOJT specialists for skills upgrades
- Linked directly to written performance/work standards
- Data gathering for effective performance measurement

In order to implement a successful SOJT system, standards of performance must be developed that clearly link back to the employee job location. The standards of performance must be validated with job analysis processes including the use of a detailed functional position description. Effective standards of performance and related materials for use by the SOJT specialist should include the following:

- Step by step procedures associated with each job
- Job proficiency code system
- Qualifications cards
- Includes testing for task performance and task knowledge
- Job aids and administrative tools
- OJT product and process checklists

**Mark Huselid, The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance, April 5, 1995, Academy of Management Journal, Vol. 38, No. 3, pp. 635-672, 1995**

This study comprehensively examined the linkages between systems of High Performance Work Practices and organizational performance. The results based on a national sample of nearly one thousand firms indicate that these practices have an economically and statistically significant impact on both intermediate outcomes (turnover and productivity) and short- and long-term measures of corporate financial performance. The support for the predictions that the impact of High Performance Work Practices is in part contingent on their interrelationships and links with competitive strategy was limited. The major conclusions of the study were:



1. Systems of High Performance Work Practices (HPWPs) will decrease turnover and increase productivity and performance
2. Turnover and productivity will mediate the relationship between HPWPs and performance
3. Complementarities or synergies among HPWPs
4. Alignment between HPWPs and competitive strategy will reduce turnover and improve productivity and performance

**Mehrdad Alipour, Mahdi Salehi & Ali Shahnava, A Study of on the Job Training Effectiveness: Empirical Evidence of Iran, International Journal of Business Management, Vol 4, No. 11, 2009, pp 1-3**

Many training techniques are created almost every year by the rapid development in technology. Deciding among methods usually depends on the type of training intended, the trainees selected, the objectives of the training program and the training method. Training is a situational process that is why no single method is right for every situation. While some objectives could be easily achieved through one method, other objectives could necessitate other methods. Many training programs have learning objective in more than one area. When they do, they need to combine several training methods into an integrated whole. Training methods could be classified as cognitive and behavioral approaches. Cognitive methods provide verbal or written information, demonstrate relationships among concepts, or provide the rules for how to do something. These types of methods can also be called as off the job training methods. On the other hand, behavioral methods allow trainee to practice behavior in real or simulated fashion. They stimulate learning through behavior which is best for skill development and attitude change. These methods can be called as on-the-job training methods. Thus; either behavioral or cognitive learning methods can effectively be used to change attitudes, though they do so through different means. Cognitive methods are best for knowledge development and behavioral methods for skills (Blanchard and Thacker, 1998:277). The decision about what approach to take to training depends on several factors that include the amount of funding available for training, specificity and complexity of the knowledge and skills needed, timeliness of training needed, and the capacity and motivation of the learner.

To be effective, training method should; motivate the trainee to improve his or her performance, clearly demonstrate desired skills, provide an opportunity for active participation by the trainee, provide an opportunity to practice, provide timely feedback on the trainee's performance, provide some means for reinforcement while the trainee learns, be structured from simple to complex tasks, be adaptable to specific problems, encourage positive transfer from training to the job (Woods, 1995:180).

The study of literature validated the research problem and the fact that effective training delivery has an impact on the overall organizational productivity, but there is no clear evidence of delivering psychomotor skills training in challenging environment of telecom organizations.

### PROBLEM STATEMENT

The modern telecom network is continuously changing due to technological updates, new equipments and customers demanding customized and quality services. To satisfy this requirement telecom companies have a challenge of investing in advanced technologies & equipments, improve network and service quality, and obtain optimum operational efficiency. The Shortage of talent in telecom domain is one of the main impediments for further growth and development in this sector.

The Indian telecom sector is witnessing great competition from public sector enterprises and private sector players. With more and more players entering the industry, the competition in the industry in terms of attracting and retaining the talent is also increasing. The key problems that form the basis of this research study can be summarized as under:

1. The telecom sector has a huge demand for trained and qualified engineers.
2. The employee turnover rate in the telecom industry is the highest at around 25 – 30%
3. The rapidly changing technology environment coupled with the high turnover rate has rendered conventional learning techniques ineffective and has forced the organizations in the telecom industry to develop a alternative methodologies to ensure sustained competitive advantage through competency building/skill development of their employees.

This challenge can be met by enhancing skills and knowledge of employees during implementation of technology & equipment, followed by comprehensive on-the-job training (OJT) on operation, maintenance, planning and optimization activities. The conventional classroom & lab training is resource intensive and results in wastage of productive time in logistics. The modern telecom organization, responsible for 24 x 7 uninterrupted customer services needs effective OJT including hands-on in a controlled environment at the work place.

### RESEARCH OBJECTIVES

Knowledge can be classified in to two types - tacit & explicit. Tacit knowledge resides in the minds of employees while explicit is available through the various informational repositories. For effective knowledge transfer a tacit-explicit-tacit knowledge conversion is required. Formal OJT with structured hands-on session accelerates the knowledge conversion process. This research focuses on identifying the ideal mechanisms for gaining tacit knowledge in telecom organization. The specific objectives of this study are:

1. To analyze the optimal method of delivering OJT in the modern telecom organization
2. To measure the effectiveness of OJT on network operation, maintenance, and optimization of a telecom network
3. To assess the relationship between OJT and customer satisfaction

### HYPOTHESIS

**Hypothesis 1:** Training of employees through OJT has positive impact on network quality and operational efficiency of the telecom network.

**Hypothesis 2:** Sustained OJT had positive impact on customer satisfaction

### RESEARCH METHODOLOGY

This section outlines the methodology adopted for this research.

#### RESEARCH DESIGN

This study is based on empirical design to ascertain the characteristic of the variables of interest. The design was applied in this study to understand the training delivery methodology that drives performance in the organization. Primary Data was collected for a sufficiently large period of time to ensure the reliability and the validity of the inferences.

#### SAMPLING DESIGN

The data was collected on drop call rate (DCR), NW RX Quality, mean time to restore (MTTR), Broadband service uptime, and GSM SLA achievement parameters from network quality department for the period Apr-2010 to Dec-2011. Along with this, data of employees trained during this period using OJT is also collected from NLC MIS. A stratified random sampling technique was employed for the purpose of this study. About 21 months usable data is available for analysis. Stratification is the process of dividing members of the population into homogeneous subgroups before sampling. The strata should be mutually exclusive: every element in the population must be assigned to only one stratum. The strata should also be collectively exhaustive: no population element can be excluded. Then random or systematic sampling is applied within each stratum. This often improves the representativeness of the sample by reducing sampling error. It can produce a weighted mean that has less variability than the arithmetic mean of a simple random sample of the population which apt for the current study.

#### DATA COLLECTION SOURCES

The primary source of data includes record of OJT from NLC. NLC has conducted than 28,000 man days during the research period. The quality parameters measured on a daily basis from the network equipments and operations support system constitute the second part of the data collection. This data is used to co-

relate the effectiveness of the OJT on the network performance. There are three quality parameters considered for this study and data is collected across 25 administrative circles of a leading telecom player in the country.

**DATA ANALYSIS & INTERPRETATION**

The data analysis was done using the MS Excel 2010. The analysis included Regression and Analysis of variance (ANOVA). Regression analysis is widely used for prediction and forecasting. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. In restricted circumstances, regression analysis can be used to infer causal relationships between the independent and dependent variables. ANOVA is a collection of statistical models, and their associated procedures, in which the observed variance in a particular variable is partitioned into components attributable to different sources of variation. In its simplest form, ANOVA provides a statistical test of whether or not the means of several groups are all equal, and therefore generalizes *t*-test to more than two groups. Doing multiple two-sample *t*-tests would result in an increased chance of committing a type I error. For this reason, ANOVAs are useful in comparing two, three, or more means. These statistical techniques are the most suited to analyze the data pertinent to the research study.

**TABLE 1 – TRAINING & NETWORK PERFORMANCE – 2010 -11**

Month	Trainee Mandays	CDR	NW RX Quality	MTTR	Uptime	Customer Satisfaction
Apr-10	2228	1.516			99.999	95.539
May-10	1625	1.462			100.000	95.851
Jun-10	1498	1.551			100.000	98.015
Jul-10	1273	1.638	96.556		100.000	98.320
Aug-10	688	1.381	96.533		99.998	90.920
Sep-10	1173	1.392	97.946	4.114	100.000	96.842
Oct-10	983	1.348	97.072	4.145	99.976	97.368
Nov-10	1115	1.274	97.074	4.995	100.000	97.227
Dec-10	1178	1.273	97.192	3.884	99.995	97.205
Jan-11	1214	1.255	97.190	4.298	99.999	96.830
Feb-11	1088	1.319	97.856	4.681	100.000	97.940
Mar-11	943	1.216	97.326	5.337	99.983	97.270
Apr-11	1248	1.289	97.806	4.447	99.999	96.630
May-11	1532	1.640	97.740	3.146	100.000	97.050
Jun-11	1531	1.661	97.510	2.822	100.000	98.380
Jul-11	1706	1.754	98.710	2.549	100.000	97.670
Aug-11	1833	1.758	98.770	2.675	100.000	98.110
Sep-11	1874	1.605	97.940	2.601	100.000	98.479
Oct-11	1907	1.490	98.050	2.546	99.999	99.170
Nov-11	1219	1.360	98.080			98.710
Dec-11	783	1.239	97.110			94.460

**MISSING VALUE ANALYSIS**

**TABLE 2 – MISSING VALUE ANALYSIS OF TABLE 1**

Univariate Statistics							
	N	Mean	Std. Deviation	Missing		No. of Extremes <sup>a</sup>	
				Count	Percent	Low	High
VAR00002	21	1363.76	398.247	0	.0	0	0
VAR00003	21	1.45	.175	0	.0	0	0
VAR00004	18	97.58	.634	3	14.3	0	0
VAR00005	14	3.73	.985	7	33.3	0	0
VAR00006	19	100.00	.006	2	9.5	3	0
VAR00007	21	97.05	1.794	0	.0	2	0
VAR00001	21			0	.0		

**TABLE 3 – MVA – TABULATED PATTERNS**

**Tabulated Patterns**

Number of Cases	Missing Patterns <sup>a</sup>							Complete if ... <sup>b</sup>	VAR00002 <sup>c</sup>	VAR00003 <sup>c</sup>	VAR00004 <sup>c</sup>	VAR00005 <sup>c</sup>	VAR00006 <sup>c</sup>	VAR00007 <sup>c</sup>
	VAR0000	VAR0000	VAR0000	VAR0000	VAR0000	VAR0000	VAR0000							
14								14	1380.36	1.45	97.73	3.73	100.00	97.58
2							X	16	980.50	1.51	96.54	.	100.00	94.62
3							X	19	1783.67	1.51	.	.	100.00	96.47
2					X		X	18	1001.00	1.30	97.60	.	.	96.59

- a. Variables are sorted on missing patterns.
- b. Number of complete cases if variables missing in that pattern (marked with X) are not used.
- c. Means at each unique pattern

TABLE 4 – DESCRIPTIVE ANALYSIS OF TRAINING & NETWORK PERFORMANCE DATA

Descriptive Statistics						
	Count	Mean	Median	Standard Deviation	Minimum	Maximum
Trainee Mandays	21	1363.761905	1248	398.2470219	688	2228
CDR	21	1.448564476	1.391951254	0.174928352	1.21595285	1.758
NW RX Quality	18	97.58114089	97.625	0.634032504	96.5328	98.77
MTTR	14	3.731401579	3.999244546	0.985121613	2.545665744	5.336925681
Uptime	19	99.99726316	100	0.006479387	99.976	100
Customer Satisfaction	21	97.0469345	97.27	1.794187387	90.92031946	99.17

TABLE 5 – IMPACT OF TRAINING ON NETWORK PERFORMANCE  
REGRESSION: X – TRAINEE MANDAYS Y- DROP CALL RATE

Regression Statistics	
Multiple R	0.691536466
R Square	0.478222684
Adjusted R Square	0.45076072
Standard Error	0.12964059
Observations	21

  

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.292671597	0.292672	17.414	0.000516144
Residual	19	0.31932697	0.016807		
Total	20	0.611998568			

  

	Coefficients	Standard Error	t Stat	P-value
Intercept	1.034315628	0.103221019	10.0204	5.09E-09
Trainee Mandays	0.000303755	7.27903E-05	4.173009	0.000516

In the regression statistics table above, we can see R (0.692) the correlation of dependent variable DCR with the independent variable training man days, whereas the R Square (0.478) denotes variance. The ANOVA table shows that the F value of 17.414 is significant. Therefore, around 48% of the variance in DCR has been significantly explained by the independent variable training man days. **Thus hypothesis 1 was substantiated.**

TABLE 6 – IMPACT OF TRAINING ON NETWORK QUALITY  
REGRESSION: X – TRAINEE MANDAYS Y- NW RX QUALITY

Regression Statistics	
Multiple R	0.710528795
R Square	0.504851169
Adjusted R Square	0.473904367
Standard Error	0.45987931
Observations	18

  

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	3.450128991	3.450129	16.31352	0.000950818
Residual	16	3.383823673	0.211489		
Total	17	6.833952663			

  

	Coefficients	Standard Error	t Stat	P-value
Intercept	95.97929633	0.411140492	233.4465	1.08E-29
Trainee Mandays	0.001238114	0.00030654	4.038999	0.000951

In the regression statistics table above, we can see R (0.711) the correlation of dependent variable NW RX Quality with the independent variable training man days, whereas the R Square (0.505) denotes variance. The ANOVA table shows that the F value of 16.314 is significant. Therefore, around 51% of the variance in NW RX Quality has been significantly explained by the independent variable training man days. **Thus hypothesis 1 was substantiated.**

TABLE 7 – IMPACT OF TRAINING ON NETWORK OPERATIONS & MAINTAINANCE  
REGRESSION: X – TRAINEE MANDAYS Y- MEAN TIME TO RESTORE

Regression Statistics	
Multiple R	0.927329555
R Square	0.859940104
Adjusted R Square	0.848268446
Standard Error	0.383731809
Observations	14

  

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	10.84903849	10.84904	73.67763	1.81563E-06
Residual	12	1.767001214	0.14725		
Total	13	12.6160397			

  

	Coefficients	Standard Error	t Stat	P-value
Intercept	7.429106728	0.442828294	16.7765	1.07E-09
Trainee Mandays	-0.002678803	0.000312085	-8.58357	1.82E-06

In the regression statistics table above, we can see R (0.927) the correlation of dependent variable MTTR with the independent variable training man days, whereas the R Square (0.860) denotes variance. The ANOVA table shows that the F value of 73.678 is significant.

Therefore, around 86% of the variance in MTTR has been significantly explained by the independent variable training man days. **Thus hypothesis 1 was substantiated.**

**IMPROVEMENT IN CUSTOMER SERVICE**

**TABLE 8 – IMPACT OF TRAINING ON CUSTOMER SERVICE  
ANOVA: SINGLE FACTOR - UPTIME**

SUMMARY				
Groups	Count	Sum	Average	Variance
Less than 1000 trainee days a month	3	299.957	99.98567	0.000126
1001 to 1500 trainee days a month	8	799.993	99.99913	2.98E-06
1501 and above trainee days a month	8	799.998	99.99975	2.14E-07

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.000481	2	0.00024	13.98021	0.000308	3.633723
Within Groups	0.000275	16	1.72E-05			
Total	0.000756	18				

**TABLE 9 – IMPACT OF TRAINING ON CUSTOMER SATISFACTION  
ANOVA: SINGLE FACTOR - CUSTOMER SATISFACTION**

SUMMARY				
Groups	Count	Sum	Average	Variance
Less than 1000 trainee days a month	4	380.018	95.00449	9.232103
1001 to 1500 trainee days a month	9	877.7188	97.52431	0.548895
1501 and above trainee days a month	8	780.2489	97.53111	1.66886

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	20.61268	2	10.30634	4.238435	0.031021	3.554557
Within Groups	43.76949	18	2.431638			
Total	64.38217	20				

The result of ANOVA test shown above has  $P \leq 0.05$ , which means number of OJTs has positive effect on customer service, which means sustained OJT can lead to improvement in customer satisfaction. **Thus, hypothesis 2 stands accepted**

**KEY FINDINGS & CONCLUSION**

The NLC Learning Framework is a result of the practical insights gained by imparting training to over 32,000 employees over the past nine years. It has been reinforced by adopting the best features of industry standard models. From 2002, the year NLC was established, to 2008, all training programs were instructor led direct contact programs at their national headquarters and required the participants to travel to the centralized NLC facilities. This method was ideal for equipment training, where engineers could access the state-of-the-art labs for hands-on practice. The Labs are built as per the scaled down model of the functional network, simulating actual fault management, provisioning and operational scenarios. This provides the participants complete exposure to field realities and enhances their psycho-motor skills. This method has yielded desired result in the network operations.

In 2008 the global economic environment changed with most of the countries facing economic slowdown. The global meltdown also affected India with organizations looking to rationalize their expenses. NLC came out with an innovative solution to meet this challenge in the form of "On-the-job Training" coupled with hands-on using NLC lab. The NLC classrooms are equipped with latest PCs, connected to the corporate Intranet, access to integrated labs. NLC also access Vendor Labs through internet. The rooms are also equipped with Video Conferencing (VC) facilities and modern training aids like digital tablets to simulate classroom experience. Participants join the training program form their respective locations through the video conference facilities. The trainer drives the session from the centralized NLC facility using conferencing tools like Microsoft Net Meeting, WebEx etc. The table 10 below provides a summary of the NLC technology infrastructure used for on-the-job hands-on training.

**TABLE 10 – NLC TRAINING INFRASTRUCTURE**

Equipment Types	Nos.	Equipment Types	Nos.
SDH	25	LMDS	4
DWDM	11	UBR	2
Core Routers	6	VSAT	2
MEN Routers	7	DLC	5
MEN Switches	11	IPDSLAM	1
Microwave	12	TAG	1
BTS	3	EoPDH	2
Wi-Max	2	OSS Server	1

The following are the important findings of this study:

- OJT for all employees across geographies enable telecom companies to improve network quality and operational efficiency.
- The optimal method of training delivery for telecom organization is the OJT using video/audio conferencing and collaborative tools over the corporate intranet.
- OJT method can be effectively used to deliver technology as well as hands-on equipment training for people with diverse skill sets and functions including Planning & Engineering, Network Operations & Maintenance and provisioning teams.
- OJT is highly relevant to the telcos especially their National Network Operations Center (NNOC) which provides 24\*7 surveillance, fault management of the network. The skills sets of the engineers operating in this high technology environment are unique
- Training has high correlation with operational efficiency in the manpower intensive and technology driven telecom industry.
- Sustained OJT has positive effect in customer service and results in improved customer satisfaction.

7. OJT provides many benefits for both the short-term and long-term success of an organization.

## REFERENCES

1. Barbara Means, et. al., Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies, Revised September 2010, U.S. Department of Education, Office of Planning, Evaluation, and Policy Development Policy and Program Studies Service
2. Bloom B S, (1956). "Bloom's Taxonomy of Learning Domains", viewed on February 23 2012. <http://www.nwlink.com/~donclark/hrd/bloom.html#psychomotor>
3. Dave, R.H. (1975). Developing and Writing Behavioural Objectives, R J Armstrong, ed., Educational Innovators Press, Tucson, Arizona, USA.
4. Deb Sagarmay, Effective Distance Learning in Developing Countries Using Mobile and Multimedia Technology, International Journal of Multimedia and Ubiquitous Engineering, Vol. 6, No. 2, April, 2011
5. Effectiveness Training – Systems, Strategies and Practices – P Nick Blanchard & James W. Thacker C 2nd Edition Pearson Education 2004
6. Employee Training and Development by Raymond A Noe (2008), McGrawHill Publication
7. Evaluating Training Programs: The Four Levels by, James D Kirkpatrick
8. How to Measure Training Results: A Practical Guide to Tracking the Six Key Indicators by Jack Phillips, Ron Stone (2002)
9. "Huawei Telecom Industry Trend", viewed on March 31 2012. <http://www.malaysianwireless.com/2012/01/huawei-telecom-industry-trends-for-2012/>
10. Khandekar, A and Sharma, A (2006). Organizational learning and performance: Understanding Indian scenario in present global context
11. Kirkpatrick, D. L. (1994). "Evaluating Training Programs", Berrett-Koehler Publishers, San Francisco.
12. Kumar, R (2003). Identification of Problems Associated with Implementing Organizational Learning through A Systems-based Approach
13. Mark Huselid, The Impact of Human Resource Management Practices on Turnover, Productivity, and Corporate Financial Performance, April 5, 1995, Academy of Management Journal, Vol. 38, No. 3, pp. 635-672, 1995
14. Mehrdad Alipour, Mahdi Salehi & Ali Shahnava, A Study of on the Job Training Effectiveness: Empirical Evidence of Iran, International Journal of Business Management, Vol 4, No. 11 , 2009, pp 1-3
15. NAIDU SOM, E-Learning – A Guidebook of Principles, Procedures and Practices, 2nd Revised Edition, CEMCA, 2006, Commonwealth Educational Media Center for Asia (CEMCA)
16. Newell E. Chiesl, Indiana State University, DESIGNING INTERACTIVE SELF-LEARNING MODULES USING MACROMEDIA DIRECTOR, Developments in Business Simulation and Experiential Learning, Volume 28, 2001
17. NIOSH., (1999). "A Model for Research on Training Effectiveness", viewed on December 06 2011. <http://www.cdc.gov/niosh/pdfs/99-142.pdf>
18. Organization Development and Transformation by Wendell French, Cecil H. Bell, Robert A. Zawacki (2005)
19. Personnel Management and Industrial Relations – N.G. Nair, Latha Nair – s. chand Company Ltd., New Delhi C 1999)
20. Richard Doss, Dr. Kevin, Gary Floss, Ron McGuire (2007). "Structured On-the-Job Training and Its Value to High Performance Manufacturing", viewed on April 06 2012. [http://www.rwd.com/uploadedfiles/industries/consumer\\_products/manufacturing/structured%20on%20the%20job%20training%20white%20paper.pdf](http://www.rwd.com/uploadedfiles/industries/consumer_products/manufacturing/structured%20on%20the%20job%20training%20white%20paper.pdf)
21. The ASTD Training and Development Handbook: A Guide to Human Resource Development by Robert Craig



## **REQUEST FOR FEEDBACK**

**Dear Readers**

At the very outset, International Journal of Research in Computer Application and Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you to supply your critical comments and suggestions about the material published in this issue as well as on the journal as a whole, on our E-mail [infoijrcm@gmail.com](mailto:infoijrcm@gmail.com) for further improvements in the interest of research.

If you have any queries please feel free to contact us on our E-mail [infoijrcm@gmail.com](mailto:infoijrcm@gmail.com).

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

**Academically yours**

Sd/-

**Co-ordinator**

## ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

### *Our Other Journals*

