

**“EMPLOYEE TRAINING AND DEVELOPMENT  
THROUGH E-LEARNING”  
(A STUDY OF SOME SELECTED UNITS IN POWER SECTOR)**

**A Thesis**

**Submitted for the Award of Ph.D. degree in**

**Business Administration**

**(Faculty of Commerce & Management)**

**To the**

**UNIVERSITY OF KOTA**

**By**

**AMRITA BHARDWAJ**



**Under the supervision of**

**Dr. KAPIL DEV SHARMA**

**Department of Business Administration**

**Govt. Commerce Girls College, Kota**

**UNIVERSITY OF KOTA, KOTA (RAJ)**

**2019**

# *C E R T I F I C A T E*

I feel great pleasure in certifying that the thesis entitled “EMPLOYEE TRAINING AND DEVELOPMENT THROUGH E-LEARNING” (A STUDY OF SOME SELECTED UNITS IN POWER SECTOR) written by Amrita Bhardwaj under my guidance. She has completed the following requirements as per Ph.D. regulations of the University:

- (a) Course work as per the university rules.
- (b) Residential requirements of the university (200 days).
- (c) Regularly submitted annual progress report.
- (d) Presented her work in the departmental committee.
- (e) Published/accepted minimum of one research paper in a referred research journal.

I recommend the submission of thesis.

*Date:*

Dr. Kapil Dev Sharma

Supervisor

## **ANTI-PLAGIARISM CERTIFICATE**

It is certified that Ph.D. Thesis Titled “EMPLOYEE TRAINING AND DEVELOPMENT THROUGH E-LEARNING” (A STUDY OF SOME SELECTED UNITS IN POWER SECTOR by Amrita Bhardwaj has been examined by us with the following anti-plagiarism tools. We undertake the follows:

- a. Thesis has significant new work/knowledge as compared already published or are under consideration to be published elsewhere. No sentence, equation, diagram, table, paragraph or section has been copied verbatim from previous work unless it is placed under quotation marks and duly referenced.
- b. The work presented is original and own work of the author (i.e. there is no plagiarism). No ideas, processes, results or words of others have been presented as author’s own work.
- c. There is no fabrication of data or results which have been compiled and analyzed.
- d. There is no falsification by manipulating research materials, equipment or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
- e. The thesis has been checked using Academic Help- Plagiarism checker website and found within limits as per HEC plagiarism Policy and instructions issued from time to time.

Amrita Bhardwaj

(Name & Signature of Research Scholar)

Place: Kota

Date:

Dr. Kapil Dev Sharma

(Name & Signature and seal of  
Research Supervisor)

Place: Kota

Date:

## **ABSTRACT**

With rapidly changing work environment and digitalization in social life, it is easier and effective to use electronic learning (E-learning) systems to train human resource. This training can cover various dimensions like technologies, product, services, culture and policies. Because of fast pace of development, to maintain organizational competitiveness and to keep manpower updated with day to day changes sustained learning in general and learning through E mode in particular cannot be ignored . Rising costs and low recoveries has made organizations to look forward to cost effective solutions through learning and development as well.

E-learning helps to meet objective of versatile training and provides a cheaper solution to class room centric trainings. It drastically saves costs of boarding and lodging, man-hours, and not impedes continuity of work processes as learning is possible even after working hours.

This research is confined to few power sector units with a perspective of E-learning potential for training and development. Opinion of employees of various cadres from different divisions and departments such as; Operations, Maintenance, Turbine, Boiler, Coal handling and Distribution from ABB Ltd, KEC International Ltd, SIEMENS Ltd, Torrent Power and Adani Group were taken. The study intends to uncover the effectiveness of E-learning in terms of learning, capacity building and to keep people updated. This also aims to know that how power sector organizations use E-learning to provide a complete edge for employee retention with enhanced performance. The prime objective of this study was to determine effectiveness of E-learning program in covered organizations to enhance core competencies of employees so that they may support business operations.

Another important objective of this study was to develop an understanding about effectiveness of E-learning to enhance employees' productivity and overall performance so as to support organizational growth.

E-learning as a tool to impart training to employees has started receiving an increasing attention of researchers and writers, but its effect on employees' productivity has not been studied particularly for power sector organizations in our country. This study, therefore, attempted to help to fill this gap by providing empirical information that might be of interest to researchers and various stakeholders related to power industry. The research also dealt with effectiveness of E-learning for executive development. It identified various factors which make online training effective. E-learning offers flexibility advantage. Trainees may learn at their convenient place and time. It rule out need of a training venue, a trainer and a particular time slot.

The study begins with a conceptual framework related to the key factors needed to design effective and efficient course content for employee development.

A review of literature was also worked out to develop an understanding of the work undertaken so far on the theme or sub theme of this research. This enabled the researcher to identify unexplored areas. An extensive review of literature was conducted to identify various conceptual issues related to E-learning. The researcher collected this from peer-reviewed journals, web pages, books, published and unpublished dissertations and thesis. This study outlined the strategic importance of E-learning by looking at the industry trends which are causing a convergence towards E-learning. It also identified E-learning as a cost effective way to enrich resources globally and with fast changing landscape of technology, processes and industry.

The researcher collected primary data through a structured questionnaire and by conducting interviews with people involved with training and development. Through pilot study we identified the factors which stakeholders considered as important and which are essential for E-learning to succeed. Secondary data was collected through published papers in journals, websites, and published and unpublished research reports.

This research is a qualitative study which is exploratory in nature. To distribute questionnaire a web based link was mailed to selected respondents in participating organizations. Further, this data was supplemented by review of documents and conduct of participant's interview as an additional source of information. The resource persons from Learning and Development Departments of selected organizations were also invited to participate in the survey. It focused on issues and concepts that are inferred and developed from review of literature.

For selection of sample out of the population stratified random sampling method was used with a sample size of 500. The employees working in selected power sector units were considered. The collected data was consolidated, tabulated and analyzed using relevant tools like Chi-Square, Factor analysis and Regression. The Kruskal Wallis test and H test was applied to test null hypotheses. The tool used for statistical analysis was "SPSS".

The final step was an assessment of the findings. This was done so that suitable conclusions may be drawn and appropriate recommendations be made. These research findings have implications for human resource managers and employee training investment decisions. The researcher concluded that E-learning can provide flexible learning options for employees and allow them to up-skill rapidly.

Part of this work has been published in the following publications:

1. Training and Development through E-Learning: A Case Study.  
(Professional Panorama: An International Journal of Applied Management & Technology, January -June 2016).
2. E-learning in Indian Power sector: A study of KEC international Ltd.  
(IIs University Journal of Commerce and Management, November 2016).
3. Training and Development Through E-learning: Empirical Issues.  
(National Conference on Applied Science and Humanities, February 2018)
4. Challenges of Corporate E-learning in India.  
(13th International Conference on Science, Technology and Management, December 2018).

## **Candidate's Declaration**

I, hereby, certify that the work, which is being presented in the thesis, entitled “EMPLOYEE TRAINING AND DEVELOPMENT THROUGH E-LEARNING” (A STUDY OF SOME SELECTED UNITS IN POWER SECTOR in partial fulfillment of the requirement for the award of the Degree of Doctor of Philosophy, carried under the supervision of Dr. Kapil Dev Sharma, Former Principal, Government Commerce College, Kota and submitted to the University of Kota, Kota represents my ideas in my own words and where others ideas or words have been included. I have adequately cited and referenced the original sources. The work presented in this thesis has not been submitted elsewhere for the award of any other degree or diploma from any Institutions. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will cause for disciplinary action by the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

(Signature)

Amrita Bhardwaj

Date:

This is to certify that the above statement made by Amrita Bhardwaj (Reg. No. RS/300/16) is correct to the best of my knowledge.

Date:

Dr. Kapil Dev Sharma

Supervisor

## **ACKNOWLEDGEMENT**

I like to express my special appreciation and thanks towards my supervisor and mentor Dr. Kapil Dev Sharma, who had been a tremendous source of inspiration for me. He supported me during all the steps pertaining to this study. I am thankful for his counseling, motivation, support and tacit knowledge. His guidance has helped me in every phase of research and timely completion of this thesis. His advice on research design and resolving of my problems during the research have been priceless.

I would also like to thank the entire research cell of the University of Kota for helping me in procedural aspect. I would like to express my gratitude towards my friends and co-scholars who always helped me and suggested in right direction which stimulated me to complete the work well in given timeframe.

Further, I would like to thank the officials of the organizations studied for extending their all possible cooperation in providing needed information. My respondents who were included in primary survey deserve all praise for timely filling of questionnaires and enthusiastically involved in relevant discussion on research theme.

I would also like to record my sense of appreciation towards Mr. Anurag Vijay for keeping my enthusiasm and morale high during the complete research process.

Last but not the least, I would be failing in my duty if I not express my gratitude towards my family members who suffered a lot as I could not take care of them and felt unable to give desired time during work compulsions. I express my heartfelt regards towards my late father Shri Pankaj ji Bhardwaj who wished that I should fully involve and complete this pious work.

**Amrita Bhardwaj**

## **INDEX PAGE**

	<b>PAGE No</b>
CERTIFICATE	i
ANTI PLAGIRISM CERTIFICATE	ii
ABSTRACT	iii
CANDIDATE'S DECLARATION	vii
ACKNOWLEDGEMENT	viii
INDEX PAGE	x
LIST OF TABLES	xv
LIST OF CHARTS	xviii
ABBREVIATIONS	xix
<b>Chapter 1</b>	<b>1-31</b>
<b>CONCEPTUAL FRAMEWORK</b>	
1.1 INTRODUCTION	
1.2 HISTORICAL BACKDROP	
1.3 ERA OF E-LEARNING	
1.4 APPROACHES OF E-LEARNING	
1.5 CHALLENGES IN DELIVERING LEARNING VIA TRADITIONAL METHODS	
1.6 IMPACT OF E-LEARNING	
1.7 RATIONALE FOR E-LEARNING	
1.8 OUTCOMES OF E- LEARNING	

- 1.9 SIGNIFICANCE OF E-LEARNING
  - 1.10 LIMITATIONS OF E-LEARNING
  - 1.11 E-LEARNING ISSUES AND CHALLENGES
  - 1.12 PRESENT SCENARIO
  - 1.13 E-LEARNING: A BREAKTHROUGH IN ENERGY AND POWER  
SECTOR
  - 1.14 RESEARCH OBJECTIVES
  - 1.15 SIGNIFICANCE OF THE STUDY
  - 1.16 FUTURE IMPLICATIONS
  - 1.17 CONCLUSION
  - 1.18 DEFINITION OF TERMS
- References

## **Chapter 2**

**32-82**

### **REVIEW OF LITERATURE**

- 2.1 INTRODUCTION
  - 2.2 RESEARCH CONDUCTED ON E-LEARNING IN INDIA
  - 2.3 RESEARCH UNDERTAKEN ON E-LEARNING ABROAD
- References

**Chapter 3**

**83 - 128**

**A BRIEF PROFILE OF THE COVERED UNDERTAKINGS**

3.1 ADANI POWER LIMITED

3.2 TORRENT POWER LIMITED

3.3 KEC INTERNATIONAL LIMITED

3.4 ABB LIMITED

3.5 SIEMENS

References

**Chapter 4**

**129 - 146**

**RESEARCH METHODOLOGY**

4.1 INTRODUCTION

4.2 RESEARCH PROBLEM

4.3 BRIEF OVERVIEW OF THE RESEARCH OBJECTIVES

4.4 HYPOTHESIS OF THE STUDY

4.5 RESEARCH DESIGN

4.6 RESEARCH METHODS AND JUSTIFICATION

4.7 OPERATIONAL DEFINITION OF VARIABLES

4.8 SAMPLING PROCESS

4.9 DATA COLLECTION

4.10 STATISTICAL TECHNIQUES

4.11 LIMITATIONS OF THE METHODOLOGY

4.12 ETHICAL CONSIDERATION

**Chapter 5**

**147 - 207**

**RESULTS AND DISCUSSION - I**

**(TESTING OF HYPOTHESIZED VARIABLES)**

5.1 INTRODUCTION

5.2 PROFILE OF THE RESPONDENTS

5.3 VALIDATION OF HYPOTHESIZED VARIABLES

5.4 HYPOTHESES VIEWED AS PER THE ANALYSIS

**Chapter 6**

**208 - 241**

**RESULTS AND DISCUSSION - II**

**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

6.1 INTRODUCTION

6.2 VALIDATION OF UNHYPOTHESIZED VARIABLES

**MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS**

7.1 INTRODUCTION

7.2 MAJOR FINDINGS

7.3 CONCLUSIONS

7.4 PROBLEMS AND LIMITATIONS

7.5 RECOMMENDATIONS FOR FUTURE RESEARCH

**SUMMARY**

**i - xxiv**

**APPENDICES**

**xxv - cv**

Appendix I: Bibliography

Appendix II: Cover Letter for Survey and Survey Questionnaire

Appendix III: Published Paper in UGC Referred Journals

Appendix IV: Conference Certificate

## **LIST OF TABLES**

<b>Table No.</b>	<b>Title</b>	<b>Page</b>
Table 1.1	E-learning Approaches	6
Table 1.2	Outcomes of E-learning as a function of its characteristics	15
Table 5.2.1	Gender	149
Table 5.2.2	Age	150
Table 5.2.3	Organization	151
Table 5.2.4	Computer Proficiency	152
Table 5.2.5	Level of Management	153
Table 5.2.6	Functional Area	154
Table 5.2.7	Work Experience	156
Table 5.2.8	Working Hours (Per Week)	157
Table 5.2.9	Type of Employees	158
Table 5.3.1	E-learning's ability to offer content when needed	160
Table 5.3.2	Association between Organizations and E-learning's ability to offer content when needed	161
Table 5.3.3	Emergence of E-learning due to Inflexibility inherent in traditional methods	162
Table 5.3.4	Association between Organizations and Emergence of E-learning due to Inflexibility inherent in traditional methods	163
Table 5.3.5	E-learning's shortcoming as inconvenient schedule	165
Table 5.3.6	Association between Organizations and E-learning's shortcoming as inconvenient schedule	166
Table 5.3.7	E-learning enables employees to handle greater responsibilities	168
Table 5.3.8	Association between Organizations and enabling employees to handle greater responsibilities through E-learning	169
Table 5.3.9	Influence of E-learning on Time Saving	170
Table 5.3.10	Association between Organizations and Influence of E-learning on Time Saving	171
Table 5.3.11	Emergence of E-learning due to lowering down of service quality	173
Table 5.3.12	Association between Organizations and Emergence of E-learning due to lowering down of service quality	174
Table 5.3.13	Influence of E-learning on employee productivity	175
Table 5.3.14	Association between Organizations and Influence of E-learning on employee productivity	176
Table 5.3.15	Influence of E-learning on Quality of Work	177

Table 5.3.16	Association between Organizations and Influence of E-learning on Quality of Work	178
Table 5.3.17	Influence of E-learning on Employee Development	180
Table 5.3.18	Association between Organizations and Influence of E-learning on Employee Development	181
Table 5.3.19	E-learning- a more effective practice	183
Table 5.3.20	Association between Organizations and employees' perception about E-learning as more effective practice	184
Table 5.3.21	E-learning- Effective in providing better interaction and understanding	185
Table 5.3.22	Association between Organizations and superiority of E-learning in providing better interaction and understanding	186
Table 5.3.23	E-learning- More effective in providing relevant and adequate vocational knowledge	187
Table 5.3.24	Association between Organizations and superiority of E-learning in providing relevant and adequate vocational knowledge	188
Table 5.3.25	E-learning- More effective in providing solutions to FAQs	190
Table 5.3.26	Association between Organizations and superiority of E-learning in providing solutions to FAQ	191
Table 5.3.27	E-learning- More effective in meeting needs of employees	192
Table 5.3.28	Association between Organizations and superiority of E-learning in meeting needs of employees	193
Table 5.3.29	Influence of E-learning on Meeting Learning Requirements	194
Table 5.3.30	Association between Organizations and Influence of E-learning on Meeting Learning Requirements	195
Table 5.3.31	E-learning- More effective in providing knowledge to solve situation specific issues	196
Table 5.3.32	Association between Organizations and superiority of E-learning in solving situation specific issues	197
Table 5.3.33	Emergence of E-learning due to delay in resolving urgent issues	199
Table 5.3.34	Association between Organizations and Emergence of E-learning due to delay in resolving urgent issues	200
Table 5.3.35	E-learning's influence on resolution of technical issues	201
Table 5.3.36	Association between Organizations and Influence of E-learning on resolution of technical issues	202
Table 5.3.37	Effectiveness of E-learning in meeting development needs of the organization	204
Table 5.3.38	Association between Organizations and meeting development needs of the organization through E-learning	205
Table 6.2.1	Emergence of E-learning due to Competition	209

Table 6.2.2	Emergence of E-learning due to Globalization	211
Table 6.2.3	Emergence of E-learning due to new products or techniques	212
Table 6.2.4	Emergence of E-learning due to increased customer complaints	214
Table 6.2.5	Objectives of E-learning in order of importance	215
Table 6.2.6	Effectiveness of E-learning on Cost Control	217
Table 6.2.7	Effectiveness of E-learning in Timely completion of assignments	218
Table 6.2.8	Effectiveness of E-learning on reducing employee turnover	220
Table 6.2.9	Effectiveness of E-learning in reducing employee absenteeism	221
Table 6.2.10	Effectiveness of E-learning on Customer satisfaction	223
Table 6.2.11	Effectiveness of E-learning in Competitiveness	224
Table 6.2.12	Poor content	226
Table 6.2.13	Inconvenient schedule	227
Table 6.2.14	No opportunity for interaction with the trainer	229
Table 6.2.15	Passive environment	230
Table 6.2.16	Inability to keep the pace with the instructions	232
Table 6.2.17	Management's insincere approach towards feedback	233
Table 6.2.18	Insufficient resources	235
Table 6.2.19	Influence of E-learning on Job Satisfaction	236
Table 6.2.20	Challenges being experienced pertaining E-learning	238
Table 6.2.21	Techniques for measuring the effectiveness of E- learning	239
Table 6.2.22	Potential developments in learning technologies	240
Table 6.2.23	Competitive Advantage through E-learning	241
Table 7.1	Hypothesis Testing Results	250

## **LIST OF CHARTS**

<b>Chart No.</b>	<b>Title</b>	<b>Page</b>
Chart 3.1	Organization Structure of Adani Ltd.	92
Chart 3.2	Organization Structure of Torrent Power Ltd.	98
Chart 3.3	Organization Structure of KEC International	107
Chart 3.4	Organization Structure of ABB Ltd.	117
Chart 3.5	Organization Structure of Siemens	127
Chart 5.2.1	Gender	149
Chart 5.2.2	Age	151
Chart 5.2.3	Organization	152
Chart 5.2.4	Computer Proficiency	153
Chart 5.2.5	Levels of Management	154
Chart 5.2.6	Functional Area	155
Chart 5.2.7	Work Experience	156
Chart 5.2.8	Working Hours (Per Week)	158
Chart 5.2.9	Type of Employees	159
Chart 6.2.1	Emergence of E-learning due to Competition	210
Chart 6.2.2	Emergence of E-learning due to Globalization	212
Chart 6.2.3	Emergence of E-learning due to new products or techniques	213
Chart 6.2.4	Emergence of E-learning due to increased customer complaints	215
Chart 6.2.5	Objectives of training and development through E-learning	216
Chart 6.2.6	Effectiveness of E-learning on Cost Control	218
Chart 6.2.7	Effectiveness of E-learning in Timely completion of assignments	219
Chart 6.2.8	Effectiveness of E-learning on reducing employee turnover	221
Chart 6.2.9	Effectiveness of E-learning in reducing employee absenteeism	222
Chart 6.2.10	Effectiveness of E-learning on Customer satisfaction	224
Chart 6.2.11	Effectiveness of E-learning in Competitiveness	225
Chart 6.2.12	E-learning's shortcoming as Poor content	227

Chart 6.2.13	Inconvenient schedule	228
Chart 6.2.14	No opportunity for interaction with the trainer	230
Chart 6.2.15	Passive environment	231
Chart 6.2.16	Inability to keep the pace with the instructions	233
Chart 6.2.17	Management's insincere approach towards feedback	234
Chart 6.2.18	Insufficient resources	236
Chart 6.2.19	Influence of E-learning on Job Satisfaction	237

## **ABBREVIATIONS**

Avg	Average
CD-ROM	Compact Disc Read Only Memory
CRM	Customer Relationship Management
DVD	Digital Versatile Disc
ICT	Information and Communication Technology
KV	Kilo Volt
LAN	Local Area Network
LMS	Learning Management System
MW	Mega Watt
MOOC	Massive Open Online Course
T&D	Training and Development
WAN	Wide Area Network
YOY	Year Over Year

**CHAPTER 1**  
**CONCEPTUAL FRAMEWORK**

### 1.1 INTRODUCTION

Training and education related aspects have become a crucial part of effective and operative functioning in power markets. Intense power market pressure in addition to a high financial value of market actions leads to high educative requirements for corporate.

The use of internet is important as many organizations are now adopting technologies to improvise the efficiency in routine operations. Due to international expansion of corporations, the opportunities of working with people from different countries have increased and training people from all those countries together is an issue which E-learning successfully addresses.

In an era of constant learning and growing competition, many organizations ensure that the technology which they are using is so developed that their workforce can learn anything, anywhere, anytime with least manual efforts. The pace of change at workplace and resistance of employees to leave the workplace for training for a longer duration emphasized on reducing cycle time for learning and the implementation of knowledge has resulted in formation of “just-in-time” rather than “just-in-case” learning (Harun 2002). Organizations require more economic and cost-effective training solutions than standard classroom training and many companies consider E-learning as an alternative training solution (Moolman & Blignaut 2008).

To ensure that an employee possess requisite knowledge and skills to perform a specific operation, the importance of corporate training is undisputable for an organization. Primarily, corporate training is centered on knowledge transfer e.g. internal as well as external conferences and workshops are an important yet expensive part for every business. E-learning is a tool which makes it easy, inexpensive and result oriented as sales people can get their training in dealing with new products and formulating sales strategies online from anywhere,

anytime and through any device. E-learning can lead to reduced costs to impart training in a short span of time, especially when employees are scattered worldwide.

Corporate learning however involves another dimension in training where learners as participants contribute in generating new knowledge and skills that assists in the growth and development of the organization. With the constant changes in all types of work environments brought by the knowledge economy and rapid changes in technology, it is needed to train and retrain people in new technologies, products, and services within the given environment (Harun 2002).

E-learning is a way of training which can assist an organization in achieving its goal and the overall competitive advantage of the organization (Chen & Hsiang 2007). It can raise individual's employability and corporate effectiveness by increasing knowledge base and skill base of the organization; also it can improve just-in-time training and employee's control over learning. E-learning means all forms of electronically supported teaching and learning practices (Serrat 2010). Industry training globally is thoroughly prepared to adopt the 'blended learning' approaches where online learning and use of ICT is combined with face-to-face learning (Bielawski 2003), perhaps reflecting the diversity of work-based skills required (De Freitas 2007).

### **1.2 HISTORICAL BACKDROP**

Until about 20 years ago, training was not done in front of a computer, but in the classroom with a qualified trainer. Due to technological advancement, organizations have started using computer based training and the field of E-learning began to take shape. In the early 1990s, many organizations provided

videotape-based training to their employees.

The initiative of delivering training on video was not the perfect solution, hence a new form of training evolved i.e. CBT or Computer based Training. Although, CBT proved more effective but it was unable to measure employee performance in a central database and was also not easy to upgrade. As a result E-learning emerged into. (Clark, 2002)

The term "E-learning" came into existence in the year 1999, the word was initially used at a CBT systems seminar. Other words also began to get noticed in search of an exact description such as "online learning" and "virtual learning". In 2000s, enterprises started adopting E-learning to train their employees. New and experienced workers were having opportunity to advance their industry knowledge base and broaden their skill sets. It allowed individuals at home to access programs that enabled them to earn online degrees and enrich them through extended knowledge.

E-learning is relevant across all areas of employee training including: career development training; new employees' orientation; information on new services or products or just sharing and enhancing work knowledge, competencies, and skills (Harun 2002). In order to respond quickly to persistently changing learning needs, E-learning has emerged as the best and most viable option for corporations. Technological breakthrough and the skills needed to fully exploit and manage it have escalated the demand for organization wide E-learning solutions. There are a variety of E-learning products and services available to meet majority of the organizational training needs.

According to Urdan et.al (2000), E-learning involves a broad set of applications and processes comprise of computer-based learning, web-based learning, virtual classrooms, and digital collaboration. E-learning uses all types

of electronic media, including the Internet, intranets, extranets, satellite, audio/video tape, interactive TV, tele - networking and CD-ROM for imparting knowledge.

### 1.3 ERA OF E-LEARNING

Across the world, every business large or small, local or global is adopting E-learning as a tool to impart effective learning. E-learning in business refers to a kind of training delivered via computer to individuals or groups that helps in achieving organizational goals. The motive of an organization in adopting E-learning is to enable individuals to improve job performance and satisfaction, understand and learn the skills needed for the job and to create a competitive work force in the organization. Undoubtedly, the idea of e-learning over a period of time is spreading rapidly.

E-learning in an organization can be defined as a kind of training delivered via computer that meets individual learning as well as organizational goals. The key to success of E-learning is to achieve the organizations strategic goals through reliable learning. In order to do so, companies need to deliver high-quality training programs that potentially can offer good returns to corporations within their current training plans. They can make it through an electronic medium hence it is the “E” in E-learning. All learning material is derived from the content within the E-learning system. Organizations generally use E-learning to help the learner improve job skills which lead to better performance and satisfaction and in-turn create a competitive work force for the company. Undoubtedly the success of E-learning is spreading rapidly.

Derek Stockley (2003) opined that, “E-learning means delivery of a learning, training or education program through the medium of electronic tools. E-learning delivers content via computer or electronic device (e.g. a mobile phone)

to provide training, educational or learning material”.

“E-learning: The future of learning” White Paper- According to this study, Corporate e-learning is at present a tiny portion of training and education and only 66 per cent of respondents confirmed that they were using or were planning to use a learning portal in the near future.

Extending E-learning and/or blended learning opportunities is a trend which is gaining attraction among training and development professionals. According to a survey conducted by the American Society of Training and Development (2008), it was found that about one-third of all training content is now delivered electronically. As per the overall satisfaction rates of the quality of online learning versus face-to-face instruction, it is certain that this number will continue to increase (Allen & Seaman, 2010)

#### 1.4 APPROACHES OF E-LEARNING

E-learning is delivered via Internet or Intranet and aims to provide a richer training environment than previous CBT (Computer Based Training) products. Table 1.1 represents some of the approaches that can be considered into E-learning practices.

**Table 1.1: E-learning Approaches**

<b>Approach</b>	<b>Description</b>
Web-Based Training (WBT)	This is generally a browser based training equivalent to CBT, delivered via Intranet or Internet. It has the advantage of being able to deliver dynamic data that can be regularly updated from central location.

Synchronous E-learning	Examples of synchronous e-learning are online chat and videoconferencing. Employees can pose questions directly to the presenter and even complete additional activities.
Asynchronous E-learning	Employees can watch e-learning courseware content from their desks and work at their own pace. While the asynchronous model may cause learners to feel isolated, it helps them focus more on the course content and improves their ability to process information.

The above mentioned E-learning methods can be adopted in several combinations such as:

- all online
- blended or hybrid
- micro-learning

Both the online and asynchronous formats are self-directed and self-paced learning methods that enable learners to pursue their training course when they wish to improve their knowledge base.

The dissimilarity between the two is that online approach offers no interaction between learners and instructors while asynchronous approach has some interaction. There could also be a discussion panel where learners post comments according to their convenience and then the instructors revert at a later time to an individual or to whole group.

Blended or hybrid learning is a combination of face-to-face and online learning. The online segment of this learning includes online tutorials, documents, interactive tests, presentations, video, audio, animations and many other types of

interactive media. In general, this approach involves approximately thirty per cent of face-to-face classroom learning in addition to the remaining time spent online (Mitchell & Honore, 2007). The merits of this type of learning are listed as:

- convenient
- increased interaction
- flexibility
- increased learning
- higher retention
- reduced time
- reduced costs

**Asynchronous Learning:** An idea in which interaction between instructors and learners occurs irregularly with a time delay for instance self-paced courses delivered via Internet, Q&A mentoring, online discussion groups, and email. A primary area of investment in corporate learning development is asynchronous learning. Opposite to traditional training or even distance learning that centers on teleconferencing and online presentations, asynchronous-learning occurs in a setting where each learner interacts independently with content via a technology system. It provides maximum possible flexible timing and access to the learner by allowing control of pace, timing, and location.

**Synchronous Learning:** A real-time, instructor based online learning tool requires all participants to get logged in at same time and interact with each other. In such virtual classroom setting, the instructor manages and controls the class with the ability to "call on" participants individually or in-all. It can be done using white board to show the progress. Verbal interaction may also take place via audio or videoconferencing, Internet telephony, or two-way live broadcasts. Media such as videoconferencing and text chat are commonly used to support E-learners in expanding the scope of learning. Synchronous E-

learning is more social as learners and teachers can raise and solve queries in real time. Synchronous learning programs enable E-learners feel like members rather than isolates.

**Hybrid / Blended Learning:** It combines synchronous and asynchronous learning with face-to-face interactions. Previously, training was commonly carried out either via instructor-led training or e-learning method, in a seminar or as a tutorial. But with the inception of BYOD (bring your own device) movement, employees use their own laptops, smart phones and tablets for learning purposes. With the help of new multimedia technologies (from screen casting software to simulations), format and content of training can be tailored as per the needs of the learners. . Blended programs, responsive design and mobile learning are three of the ways are used nowadays.

The plethora of different E-learning options that are available can seem to be bewildering. Large organizations with several field offices and diverse employees will have different requirements than small companies with one site said predictable staff development needs.

### **1.5 CHALLENGES IN DELIVERING LEARNING VIA TRADITIONAL METHODS**

Power and Energy sector is recently facing several challenges and issues related to delivering learning in traditional way. By traditional way it means, attending a live class, or training workshop, or information seminar, where the expert trainer or instructor teaches a group of learners on the subject matter. According to Kellett (2002), E-learning has few economic benefits over traditional classroom based training. He notes that in the current recession driven economy, 50per cent of traditional training costs include travel, food and accommodation

expenses. Similar outlays are not incurred in an E-learning program.

The problems and issues include the following:

- All employees cannot be engaged for training at the same time e.g. in an organization where every employee needs training, they all cannot be allowed at once or even in slots for a traditional classroom training program.
- Lodging and boarding costs, if learners are come from different locations to get training.
- Participants may have different levels of grasping; hence even being a part of the same course, understanding capacity of each learner may vary.
- The course has desired and allocated time to get completed by the instructor.
- Such limitations offer no opportunity to learners to revise the course concepts or to participate in the course again unless the company has a policy of regular refresher training. However, typically it has been observed only in essential training like mandatory safety training, fire-fighting, etc.
- Instructor Led Training (ILT) makes it a one shot event instead of continuous learning.

### **1.6 IMPACT OF E-LEARNING**

E-learning has become a central academic and teaching technique in current business environment because many organizations have adopted it as part of their business operations. There are benefits as well as drawbacks of corporate E-learning as a training and educational tool. Investments in training and learning have a significant impact on productivity and employability of employees. Dardar, Jusoh, and Rasli (2011) found impact of employee training

on job satisfaction and employee turnover. According to them, trained employees work harder which leads to better productivity and further, they will continue in one organization for a longer duration. With lower turnover, they are expected to improve productivity and profitability. The reverse is true where lack of employee training have negative influence on both productivity and satisfaction. According to Clarke and Hermens (2001), extensive development in corporate E-learning is the result of various factors which includes growing demand for education and training, the need for higher bandwidth to access advanced technologies, and the use of digital convergence and adaptive technology. E-learning is becoming an alternative form of education and training for organizations because of the latest technological advancement, the establishment of sophisticated technology and communication systems, and industry dissatisfaction on traditional tools of learning. Rapid usage of E-learning by corporate leaders affects the work environment, as corporate leaders have to make sure that e-learning implementation is appropriate in terms of scalability, access, and timeliness.

E-learning also has challenges. Organizations implementing E-learning must overcome three challenges before using it : the cost of developing (or purchasing) software applications at the onset, compounded by learning costs once e-learning interventions are running (Harun 2002); lack of social presence usually associated with physical classroom, as learner miss the real-life interactions with their colleagues and instructor as e-learning is self-directed; perceived lack of time to devote to workplace learning and to formulate and support e-learning solutions; and content issues-as quality content is not available in the market or is not suited or relevant for e-learning and must therefore be developed (Serrate 2010; Unwin 2008).

The American Society of Training and Development publishes a compilation of corporate learning data each year. As mentioned in a 2015 report, around 46 per

cent of training hours were imparted entirely through ILT programs. Today, E-learning is a preferred mode to conduct pre-assessment quizzes to get quick and accurate results. With results of such pre-assessment, classroom training can be transformed into tailored learning and can be made more aligned to the specific learning needs of trainees. E-learning is also preferred to deliver prerequisite training to enable learners to be more prepared for the class. This preparation reduces the duration of the classroom training significantly.

### **1.7 RATIONALE FOR E-LEARNING**

As we look back to the world of training before the inception of mobile devices and learning through internet, there was only ONE of each: One right place, one right time, and one right format. Training was conducted in a classroom by an instructor and learners at a predetermined time with paper guides created for the instructor and handouts for learners. Despite the fact that learning has taken various forms and formats over years, the classroom teaching has been de facto standard for corporate learning. And in many cases it still is. But with advancement in technology and availability of easy and affordable resources organizations are now adopting more advanced and technology driven methods of learning, primarily E-learning.

The transition from traditional learning practices to E-learning may be a forgone opportunity for companies. If leaders simply change their systems without actually changing the way they deliver learning to employees, they will be failed to see the full advantages of today's cutting-edge technologies. The best way to avoid disappointment and become a leading business is to commit to the fact that E-learning solutions enable a fully developed approach to learning.

Teaching and training in their traditional senses are ways of delivering knowledge, just like a proverbial one-way street. E-learning ensures the

possibility of better interaction and direct engagement, thus offers real chances to improve information standards and learner's morale.

The justification for adopting E-learning can be understood as:

- There is no need to engage all employees for training at the same time. They can choose their own respective time and place of learning as per their convenience.
- It is self-paced and if required, the content is recorded and provided as and when needed by the employee.
- No time limitations. It can be delivered in parts or all at once wholly as per the learner's requirements instead of the trainer's comfort.
- A variety of courses can be conducted and managed through suitable LMS (Learning Management Systems) by a small number of experienced training administrators. LMS can also maintain records of participation in number of courses, test scores, time taken, etc for each learner which can provide intelligent data to enhance employee's skills.
- Measurement of learning becomes possible as performance of each participant can be measured with the help of various ways like score tracking, progress tracking and time tracking. In earlier days this was typically not possible with traditional training practices.

Although most of the organizations have similar reasons to adopt E-learning, but some of them have their own agenda for using it. One of the major reasons that draw their attention towards E-learning (Clarke & Hermens, 2001) is its ability to align E-learning program with high-level business strategies, and its capacity to train entire workforce simultaneously to support these strategies. Use of technology to impart learning such as CD-ROM, DVD, Internet and Intranets enables an organization to train its employees and potentially reduce the costs.

There are many reasons which attract organizations to implement E-learning for training such as, cost-effectiveness, free-format, flexibility that allows it to be adopted across multiple channels, learning as per the convenience of the learner and its ability to be tailored according to the organizational needs.

The key reasons that drive most companies to adopt E-learning are mentioned here under (Ettinger, Holton & Blass, 2006):

- Creating competitive advantage, by aligning workforce with organization's strategy.
- Globalization - facilitated potential to reach anywhere in the world.
- Information age - using highly advanced tools to communicate.
- Demand for continuous and flexible learning.
- Financial limitations for both internal and external education.

When a company launches a new product, despite it being an exciting time, there is a challenge to train employees on product's features due to time and cost involved, particularly in face-to-face training scenario. Employee productivity reduces when employees spend many hours in training classrooms during working hours - and when the outcomes of that training are not traceable the efforts hardly seem worthy. Online training offers a solution to these problems by being accessible to the employees in their own suitable time, and save the costs of hiring a trainer, renting spaces for training, travelling and cost of lost productivity.

### **1.8 OUTCOMES OF E- LEARNING**

The important benefits of E-learning are shown in Table 1.2 and a thorough review of literature confirmed these benefits. For instance, most of the firms

believe that there are two important benefits of E-learning, firstly-its ability to assist access to training from the workplace, thus saving time spent outside the work area and secondly- its capacity to structure the training in small modules that can better meet the training needs of employees (Industrial and Commercial Training 2001). For employees, the major benefits of E-learning include its convenience and the opportunity to learn at learner's pace. Further it was found that a majority of firms perceived e-learning as being cost-effective, efficient, flexible, practical and time saving method of training (Journal of European Industrial Training 2002).

**Table 1.2: Outcomes of E-learning as a function of its characteristics**

<b>Characteristics</b>	<b>Explanation</b>
Flexibility and accessibility (availability)	Opportunity to learners and firms to choose a course's time (any time –24 hours a day / 7 days a week) and place (location) (Bélanger and Jordan2000; Britt 2004; Cutshall 2002; Kenyon 2002; Melymuka 2002; Nonprofit World 2002; Perez and Foshay 2002; Phillips 1998; Rosenberg 2002; Sloman 2001).
Modularity	Flexibility to complete only the part of the course that meets learner's needs and not the entire course (Britt 2004; Emmond 2005; Melymuka 2002), along with the possibility of working on the course sections that are not as well understood (Youngers 2002).
Speed	Opportunity to each employee to learn at their own speed (Davis 2001; Nonprofit World 2002; Perez and Foshay 2002; Phillips 1998).
Privacy	Opportunity to complete the course alone at home (privacy) without suffering the discomforts (shyness, feeling of lack of knowledge, etc.) that some employees

## CONCEPTUAL FRAMEWORK

---

	experience from time to time (Perez and Foshay 2002).
Interactive feedback	Opportunity to have an instructor and get personalized support by this instructor and of collecting feedback by various means (telephone, fax, email, camera, etc.)(Bélanger and Jordan 2000; Melymuka 2002; Perez and Foshay 2002).
Cost	Reduced training costs (course fees, transportation, food, lodging, time away from work). There are a plenty of e-learning courses already developed that are free of cost or available at reasonable prices. Apart from being cost effective, these courses reduce the loss of employees' production time or the need to replace employees (Bélanger and Jordan 2000; Britt 2004; Kenyon 2002; Kolbasuk McGee 2003; Masie 2000;Melymuka 2002; Pantazis 2002; Phillips 1998; Rosenberg 2002; Terry 2000;Youngers 2002).
Learning style	Possibility of delivering course content in various formats and meeting various learning styles of employees (Bélanger and Jordan 2000; Melymuka 2002; Young 2002).
Customization	Possibility of customizing training according to each participant's requirements (Sloman 2001; Youngers 2002; Zahner 2002).
Evaluation	Possibility of evaluating employees' progress on a regular basis (Britt 2004; Emmond 2005; Kenyon 2002; Youngers 2002).
Distribution of training material	Distribution of the training material without delays (Rosenberg 2002).

Consistent delivery	Consistent delivery of course content, from one time to another (EIU 2004; Halkett 2002; Rosenberg 2002).
---------------------	---

## 1.9 SIGNIFICANCE OF E-LEARNING

### 1.9.1 For Trainer and the Organization

Organizations are constantly putting efforts to enhance their efficiency and effectiveness. Educating employees on work place is treated as extremely desirable and valuable by every organization. Due to technological advancement, the boundaries of E-learning are extending.

Some of the exceptional advantages to the instructor or organization are:

- **Reduction in total cost** is one of the most influential factors in adopting E-learning. The various costs coupled with instructor's salaries, like, meeting room, travelling, lodging, and food are eliminated. The reduction of time spent away from the work place may prove to be the greatest cost saving for organizations.
- **Less Learning time** - on an average 40-60 percent lower than classroom teaching, as found by Brandon Hall (Web-based Training Cookbook, 1997, p. 108).
- **Better retention and application to the job** - on an average increased 25 percent over traditional methods, according to an independent study by J.D. Fletcher (Multimedia Review, Spring 1991, pp.33-42).
- **Consistent delivery** of training material is assured by using asynchronous, self-paced E-learning.
- **Expert knowledge** is delivered with an effective E-learning and

knowledge management system.

- **Proof of completion and certification** are vital elements of training program and this can be automated.
- **Return on investment** represents overall benefits in comparison to costs involved.

The research paper, “How E-learning Can Increase ROI from Training by Thing's Research Department” gave following 10 points about benefits of E-learning and increased ROI for training. These are as under:

- 1) E-learning consumes less time without affecting effectiveness of training and its benefits.
- 2) Minimizes travel costs.
- 3) It can be delivered away from work, at a convenient time and place.
- 4) It saves costs and can be designed based on training budget and timeframe.
- 5) It meets the needs of employees located anywhere with varied level of expertise and skills.
- 6) More consistent course delivery through all media of distribution.
- 7) More individual training based upon interests and needs.
- 8) Better learning result than traditional learning.
- 9) Less employee turnover.
- 10) Increased Customer satisfaction.

### **1.9.2 Significance for the Learner**

Providing direct access to training materials to employees on the job has also increased job satisfaction enormously. This in turn boosts their motivation and results in increased work performance.

Along with better retention, less learning time, and other abovementioned benefits to employees, particular benefits of E-learning include:

- **On-demand accessibility** enables employees to get training conveniently

as per their ease.

- **Self-pace learning** helps to reduce stress and increase satisfaction.
- **Interaction among members** helps in better peer engagement, pushing them rather than pulling them through training.
- **Confidence** that updated or ready reference materials are available on demand lessens burden of the master.

### 1.10 LIMITATIONS OF E-LEARNING

E-learning despite predictions, cannot kill traditional training and education. Many senior executives hesitate to adopt E-learning as a mode to train their employees. Some of the reasons that pose resistance in using it are its novelty, lack of knowledge, insufficient budget, lack of IT infrastructure, and employee resistance to the idea (Ettingeretal.2006a).

E-learning too requires time for attending sessions and completing assignments like any traditional learning course. For implementing a successful E-learning program, companies need to understand its limitations and develop a well thought out plan to implement it in order to succeed. In addition to the lack of understanding, budget limitations, technology infrastructure, and reactions of employees, E-learning standards are posing challenges. The limitations of these standards include the portability of content from one system to another that can create trouble.

#### 1.10.1 Disadvantages to the Trainer or Organization

E-learning is not, however, the only solution to all training needs. It surely has some limitations, some of them are:

- Initial investment requirement for E-learning solution is larger due to content and program development costs. Budgets and cash flows are needed to be negotiated.

- Technology related issues like whether the existing hardware and software setup can help to achieve the training goals or additional technological expenditures will be required and whether all software and hardware setups are compatible.
- Improper content of E-learning may pose a challenge in view of some experts, though they are limited in number.
- Organization's Culture can be an issue where learner's demographics and psychographics may influence them against using computerization for E-learning programs.

### 1.10.2 Disadvantages to the Learner

The features in which E-learning may not stand out to other training methods include:

- **Technology related issues** like technophobia among learners and inaccessibility of the required technologies.
- **Portability of learning**, which has proved the strength of E-learning because of more network linking points, notebook computers, PDAs, and mobile phones, but still does not offer benefits equivalent to printed learning content or reference material.
- **Less social and cultural interaction** can be a negative aspect. The exclusion of peer-to-peer learning, negligible use of communication mechanisms such as body language, gestures etc. However, these disadvantages are reducing with development in communications technologies.

### 1.11 E-LEARNING ISSUES AND CHALLENGES

For an organization, E-learning is considered as a new training possibility and

as an opportunity to save time and money. However, most of the time, poor quality learning experiences and a high percentage of losses are observed. The common challenges that an organization may face are:

- **Lack of learner's motivation-** It is one of the most common E-learning challenges that E-learning experts must work on. Learners often have the preconception that traditional methods are more effective because they believe they can learn better in a familiar environment.
- **Busy schedule of the learners-** Many employees resist joining an E-learning program because they believe that it will disturb their peace at work or it will demand more time. Also, trying to keep track of learner's progress could be the most difficult challenge to address.
- **It offers no support-** It is a myth that E-learning programs offer no support to the learners.

### 1.12 PRESENT SCENARIO

The result of several independent surveys of training practices followed by several companies reveal the growing popularity of new technology based learning. Based on “2008 Industry Report: Gauges & Drivers,” Training (November/December): 16-34.

- 10 percent of training is delivered in virtual classrooms and 18 percent is delivered online.
- 32.1 percent of learning time includes technology-based training methods.
- 38 percent of companies use LMS. Broken down by size, 79 percent of large (10,000 or more employees), 57 percent of midsize (1,000-9,999 employees), and 36 percent of small companies (100-999 employees) use LMS.
- 21 percent of large companies use E-learning for training as compared to 17 percent of midsize and small companies.

New technologies have enabled organizations to cut training costs, increase the effectiveness of learning environment, and to help training contribute to business goals. New methods of training and instructions include E-learning, distance learning, simulations, virtual reality, expert systems, electronic support systems, and learning management systems. New technologies have influenced delivery of training, training administration, and training support.

Several outcomes have become possible because of technology:

- Employees have control over accessibility of training.
- Availability of knowledge and subject experts as and when required has become possible.
- Use of various tools like avatars, virtual reality, and simulations have made learning environment look, feel, and sound exactly as the work environment.
- Employees are allowed to choose media options such as print, sound, and video in a training program.
- Online course enrollment, live tests, and all records related to training can be handled electronically, which reduce the formalities and time required for administrative activities.
- Employee's assessments during training can be monitored.
- Traditional learning methods such as classroom learning and behavior modeling can also be delivered to learners at their place rather than forcing them to come to a central training location. Nowadays, organizations are laying emphasis on enhancing employee's knowledge and skills.

If learners feel that the training and skills will enhance their knowledge and ability which in turn improve their performance in their work, they would feel more motivated and committed towards the organization. This helps an

organization achieve its goals while retaining its competitiveness. Though training is extremely important for every business, it is often time-consuming and expensive. Face-to-face training like workshops or seminars is not only more costly and time consuming, but their overall effectiveness can also be difficult to measure. E-learning is growing as a tool to train and enhance employee value by integrating various learning styles and delivery systems to deliver the best learning experience possible.

Corporate leaders have started recognizing E-learning as a prerequisite in their efforts to fulfill the learning needs of their stakeholders and organizational strategies. E-learning assists in keeping employees skills updated to help bottom-line performance and many organizations are looking forward to hold E-learning as a means to ensure regular training. The cost of E-learning is considered as the most important element for large, small and medium size organizations (Brown et al., 2006).

### **1.13 E-LEARNING: A BREAKTHROUGH IN ENERGY AND POWER SECTOR**

21st century marks the beginning of a difficult transition for the energy industry. Global power demands continue to rise, driving the construction of power plants worldwide. At the same time, the industry is experiencing that a large number of knowledgeable and skilled engineers and plant operators are leaving the industry. Replacing such an experienced workforce is extremely difficult so, the Energy sector needs to identify and implement training tools that will enhance the training effectiveness of new workers while reducing the time required in making them competent.

In addition, Power and Energy companies are facing challenges to generate better and improved results, at an exponentially quicker pace. To achieve this,

talented and efficient employees with required knowledge, resources, and appropriate skills are needed. Energy company employees engaged in the power markets are facing challenges regarding continuous learning process. On-site energy workforce, field workers and contractors are required to undergo thorough training sessions to minimize or prevent any accidents and to maximize organizational output. Organizations have started considering E-learning as a competitive weapon rather than a cost consuming factor because success of a business depends on high-quality employee performance, which in turn demands high-quality training. Corporate executives are now realizing that sustainable competitive advantage relies on enhancing employee skills. To remain competitive in today's labor-tight market, companies are using advance technology tools to train employees more rapidly, more effectively, and at reduced costs than in the past.

Despite the significance of continuous learning in present scenario, no research has examined the viability of E-learning as compared to traditional methods. Kuznia, Kerno, & Gilley (2010), examined the use of E-learning and how it impacted various aspects of employees attitude and performance in power and energy sector organizations. They collected and analyzed data on E-learning from five companies who were leaders in power and energy sector in India. The results showed tangible evidence that E-learning was not only an effective and viable method of information transference, also influenced employee's attitude towards the organization.

### **1.14 RESEARCH OBJECTIVES**

“Social, technological, and economic drivers are transforming education around the world. As globalization has taken shape like never before, the development of skilled workforce has become a genuine concern all around the world. Since

human capital becomes the main source of economic value, education and training to the majority of the workers become lifelong endeavors.” Peter J. Stokes, Eduventures.com, 1999.

Within the framework using E-learning for employee training and development, the goal of this research is to determine effectiveness of E-learning program in selected organizations to enhance core competencies of employees to support business operations. Further, the main purpose of this research is to understand the role of E-learning process in skill enhancement of employees in the Power sector. The aim is to identify how E-learning enables organizations to save costs in employee training and simultaneously adopt processes to improve their overall competitiveness.

### **1.15 SIGNIFICANCE OF THE STUDY**

According to some published reports, surveys, and studies E-learning industry isn't showing any sign of slowing down. In fact, there is a sharp rise in the number of individuals, corporations, and institutions adopting E-learning as they have recognized its effectiveness and its convenience. With a growing number of Indian companies marking their footprints globally, around 90 per cent of organizations in India are expected to increase their time and efforts spend on learning and development. While India is on the edge of becoming the 3rd largest economy globally by 2028, one of the key challenges in maintaining the growth pace of the economy is how to develop learning and development in an increasingly competitive business environment. However, many Indian companies are still dependent on the traditional training methods. Indian E-learning technology market has increased from USD 88 million in FY'2008 to USD 173 million in FY'2013 at a CAGR of 14.4 per cent. Indian E-learning content market is also expected to grow at a CAGR of 18.4 per cent from

FY'2014-FY'2018. The total Indian E-learning market is anticipated to touch USD 1.3 billion by FY'2018. India's online education market size is set to grow to \$40 billion by 2017 from the current \$20 billion.

Indian Power industry is a multi-disciplinary and capital intensive industry. Human element is the chief input of the Power Sector. Power Generating Stations require technically trained manpower for project planning, implementation, erection, commissioning, testing, O&M including transmission and distribution of power. For such high-level working, on-site energy workers, field staff and contractors require rigorous training sessions to minimize or prevent any accidents and to maximize organizational output. No formal courses are available in educational institutions that can equip a person with knowledge and different skills required for the job performance in Power Sector. It has made special training necessary for workers at every level in the industry to keep abreast with rapidly advancing state of the art in power industry.

Power is fundamental to national development and industrialization, thus making it essential to have optimum efficiency. The use of electronic learning is on the rise as power corporations have adopted E-learning for employee training and learning to create a two-way learning environment. This training covers various dimensions like technologies, products, services, culture and policies.

Due to fast pace of development, enterprises and its workforce needs be updated with routine changes. The aim of corporate E-learning is to deliver employees with an up-to-date and cost-effective program that yields motivated, skilled, and loyal workers. Today's power and energy industries rely heavily on employees who are trained with right skills as they have to operate the plants. Due to competitive pressures like downsizing and outsourcing, it is highly critical for any industry with shortage of workforce to ensure that all of its employees get training at regular intervals. This is especially so, for businesses like Power and

Energy sectors which are highly involved in engineering and technology, because of rapid technological advancements and equally rapid obsolescence.

With the growth of World Wide Web, high-capacity corporate networks, and high-speed desktop computers, it has become possible to make learning available to people 24 hours a day, seven days a week around the globe. This enables companies to deliver training and critical information to employees at multiple locations easily and expediently. Employees can then access training whenever and wherever it is convenient to them, at home or in the office.

### **1.16 FUTURE IMPLICATIONS**

E-learning has been gaining wide acceptance in today's organizations and will continue to rise. Because of its widespread benefits, companies are eager to spend the money to implement and deliver it to their employees. The new generation employees, stemming from Generation X and the Millennium Generation will be more adapted to E-learning in the workplace and they will expect it to be part of their ongoing employee development. The rationale behind this is that the millennium generation is a digital generation who is already used to get learning in this way (Ettinger et al., 2006B). The companies need to engage these new employees in training via E-learning and the mode they are comfortable with such as digital media.

The challenge is to transform what can be a simple mechanical process into an exciting online classroom with powerful interactive features, such as streaming media, personalized skill assessment, application and simulation exercises, case studies, video-clips, knowledge based access, expert communities, online mentoring and discussion groups (Clarke & Hermens, 2001). This would provide a complete E-learning solution to the employees that will capture and

hold their attention.

Now and in future, complete E-learning solutions will need to be developed within organizations to impart training to the new generation of employees. Key characteristics of a complete E-learning solution should include rich multimedia such as video, audio, interactive features, personalization, collaboration and scalability.

### 1.17 CONCLUSION

Corporate training is a method through which businesses can expand the knowledge base of their employees. Through regular and worthy training, employees can be made more productive, more focused on the core competencies of their business which in turn can raise the success level to gain a competitive edge over others in the industry. Face-to-face training has become impractical due to scheduling and travelling issues, and often due to the costs issues too. In fact, this method requires more manpower and resources which would lead to slower business activities. With the introduction of E-learning system, businesses can expect to deliver successful training programs to their employees and ensure that they get benefited from it. Giant companies in India are also running their corporate training sessions through online LMS.

The idea of E-learning is gaining importance within organizations. They are utilizing it to improve job performance and satisfaction among their employees and help the company to create a competitive work force. Companies need to train and educate their employees in a cost effective, efficient and thorough manner. E-learning is providing solutions to companies to achieve these goals. Aligning employees with company strategy and creating competitive advantage

are among the most important goals of E-learning. There are benefits as well as limitations of E-learning and companies need to consider both. They should formulate a plan to utilize E-learning to reach their strategic goals before embarking on the actual technological advancement. Return on investment is a decisive factor when organizations look to implement E-learning. There are both tangible and intangible reasons which E-learning provides including return on investment that companies are looking for. As new generation employees enter the workforce, it is needed for companies to offer E-learning as a solution to educate and maintain employees life-long learning objectives.

### 1.18 DEFINITION OF TERMS

**Asynchronous learning:** In Asynchronous learning, employees learn the same content at different times and locations. It is also called Location Independent Learning as it enables learners to communicate without meeting at the same place or at the same time e.g. self-paced courses using Internet or CD-ROM, online presentations, prerecorded classes, sequential audio/video presentations, Q&A mentoring, online chats and discussion groups, and e-mail.

**Computer-based training (CBT):** Course or learning material accessible through a computer, primarily via CD-ROM or floppy disk. Contrary to internet-based training, CBT does not require connectivity to a network and does not typically provide links to learning resources outside the course.

**Content:** The intellectual property and knowledge to be imparted. It consists of the course outline, text-based knowledge modules for learning, and multimedia. Content is the most important investment and asset of E-learning. The content can be made available in various forms such as On screen Text, Audio-Visual effects, and simulation.

**E-learning:** It includes an extensive set of applications and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes delivering contents using internet, intranet/extranet (LAN/WAN), audio/video tape, satellite broadcast, interactive TV, and CD-ROM. Here, the term E-learning has been used synonymously with technology-based learning.

**Synchronous learning:** A real-time, instructor-led online learning in which all learners log in at the same time and interact directly with each other. Synchronous learning is led by an instructor who integrates and controls the virtual classroom, “calling on” participants who raise their electronic hands from a remote location.

**Training:** The act of teaching or learning new information, behavior, skills, or actions that can be used to perform job-specific tasks or improve performance.

### REFERENCES:

1. Allen, I.E. & Seaman, J. (2010). Learning on Demand. Online Education in the United States, 2009. Babson Park, MA: Babson Research Group.
2. Bielawski, L. and Metcalf, D. (2003). “Blended learning: integrated knowledge, performance support and online learning,” Amherst, MA: HRD press.
3. Clark, David James (2002, January). Big Bang or steady evolution?. Retrieved April 21, 2006 from [http://www.learningtechnologies.co.uk/magazine/article\\_full.cfm?articleid=6&issued=7&session=1](http://www.learningtechnologies.co.uk/magazine/article_full.cfm?articleid=6&issued=7&session=1)

4. Chen, R. and Hsiang, C. (2007). “A study on the critical success factors for corporations embarking on knowledge community-based e-learning”, *Information Sciences*, Vol. 77, 570-586.
5. De Freitas, S. (2007). “Post-16 e-learning content production: a synthesis of the literature”, *British Journal of Educational Technology*, Vol. 38, No. 1, 349-364.
6. Harun, M.H. (2002). “Integrating e-learning into the workplace”, *Internet and Higher Education*, Vol.4, 301-310.
7. Moolman, H. B. and Blignaut, S. (2008). “Get set! E-Ready,e-Learn! The e-Readiness of warehouse workers”, *Educational Technology and Society*, Vol. 11,No. 1, 168-182.
8. Serrat, O. (2010).”E-learning and the workplace”, knowledge solutions, Asian Development Bank, Philippines.

**CHAPTER 2**  
**REVIEW OF LITERATURE**

### 2.1 INTRODUCTION

This chapter reviews the related literature about the research study as a foundation for developing a theoretical framework to be tested in this research. With the brief provided on prevalence of E-learning practice in corporate sector in India and abroad especially in the Power and Energy sector. The chapter further deals with the description of the perspective of E-learning potential in training and development, the kind of E-learning used and how the E-learning courses allow participants to pick their own time and place for training.

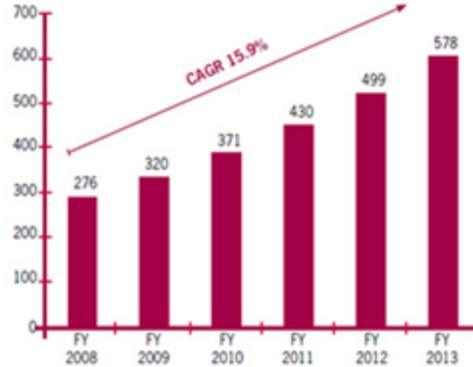
Today, a lot of companies have started adopting E-learning to ensure effective training of their employees. The demand for E-learning has grown exponentially. According to recent publication by CertifyMe.net on the status of E-learning in corporate education, 72 per cent of the organizations interviewed believed that E-learning provide them competitive advantage by continuing to maintain them on top of changes in their particular market.

### 2.2 RESEARCH CONDUCTED ON E-LEARNING IN INDIA

Over the last decade, learning has experienced a huge change in India. The conventional mode of learning has become outdated and as learning is all about self-development, online learning is on demand. There has been a revolution in Indian learning and development process over the years and the evolution of E-learning has appeared as the most prominent landmark.

With the growing impetus and proliferation in the field of internet commercialization has directed to the rise of E-learning. This unprecedented inroads in internet penetration, led online training pave its way within the country's learning ecosystem. Not just limited to the educational industry E-learning is also adopted by the corporate sector as continuous employee training has become essential in keeping up with the industry's growth.

India E-learning Market Size(US\$ million)



According to a published report, “India E-Learning Market Outlook to FY'2018 - Increasing Technology Adoption to Drive Future Growth”, the E-learning market is projected to grow at a CAGR of 17.4 per cent over the financial years 2013-18 driven by many factors such as growing government initiatives to promote E-learning, increasing adoption of technology, lack of quality education, ease and reduced costs and others. With an inclination towards using E-learning mode to facilitate talent management in organizations, the demand of appropriate E-learning content and technology would increase and result into a sharp increase in overall growth of India's E-learning market in future.

The report, Learning & Development (L&D) at Workplace: Changing Paradigms, Emerging Trends - prepared jointly by 24x7 Learning and Grant Thornton, in association with IIM-Kozhikode mentioned that the effort companies put on Learning & Development (L&D) of their critical workforces to enable them to adjust to the global work environment. The report is based on the study of top 150 companies and shows a thorough analysis of the Learning and Development industry in India focusing on the corporate training market and the practices of learning and development being followed in these companies. The report says that while India is on the edge of becoming the 3rd

largest economy globally by 2028, one of the key challenges in maintaining the growth phase of the economy is how to accelerate T&D in a rapidly competitive business environment. The study reveals that while 84 per cent companies consider E-learning an efficient and cost effective tool for organizational learning, only 27 per cent use it as a Learning & Development tool.

**Naresh B, Dr. Bhanu Sree Reddy (June 2015)**, in the paper titled “Challenges and Opportunity of E-Learning in Developed and Developing Countries-A Review” compares the E-learning environment and its difference between the developing countries. This paper identifies the problems faced by those countries. The developing country faces more challenges like lack of infrastructure, trained instructors, lack of financial support, Government policies and less student readiness. But E-learning provides more opportunity since it is in developing stage. The things that are to be learned from developed countries are support from the government, proper training regarding technology and awareness of E-learning and user's readiness to learn new technology. If the developing countries could adopt the success factors of developed countries in terms of E-learning implementation, there is a huge potential for the growth of E-learning in developing countries since it has a large population and huge difference in student and faculty enrollment ratio. In developed countries, government provides financial support for developing E-learning with clear action plans for future proceedings. They have uninterrupted electricity supply and internet facility. Even though developed countries are strong in infrastructure, the challenges faced are found related to student engagement, student motivation, and high student drop out ratio. Opportunity for the developed countries is to implement successful E-learning models, which in turn improves the economic growth of the country. They increase productivity to maximum level with minimum effect by using ICT through which knowledge can be shared across the world. If proper steps are taken, challenges and the differences between the developed and developing countries can be minimized

to a greater extent by implementing E-learning in higher education. Developing countries like India the premium institution (IIT's) taking some initiation towards implementing E-learning in an Indian context. NPTEL is the portal created by IIT's and they have started offering online courses across the world.

**R. Suhasini, Dr. T. Suganthalakshmi (March 2015)** developed a paper titled “Emerging Trends in Training and Development”. The article draws attention towards the growth of training and its significance to present time. It also describes the current technological trends in training. Organizations are focusing on the proper governance of the Employee Training & Development function, in line with corporate governance principles. Employee Training & Development is being integrated into talent management strategies, in which talented employees are given opportunities to develop their talents further so that their potential can be optimized in the workplace. The training and development (T&D) sector is expected to shape in the year ahead by some current trends, according to AMA Enterprise. Organizations will become more acceptable to modify T&D policies and practices. Employees will expect better transparency from executives about criteria for performance review, changes in corporate strategy, career advancement opportunities, high potential program selection and even succession planning by management. The demand for training programs which are designed to build communication skills, critical thinking and creativity is increasing rapidly to improve employee productivity.

**Arun Gaikwad, Vrishali Surndra Randhir (December 2015)** conducted a study “E-Learning in India: Wheel of Change” to understand concept of E-learning and to examine the type of E-learning. It also reveals opinions of many people pertaining to comparison between traditional learning and modern learning techniques. As per the research findings, the tremendous increase in internet connectivity is a significant vehicle for the growth of E-learning in India. A strong internet network, with a large number of national and

international players, will help online learning to spread widely. E-learning has supported in raising the level of education, literacy and economic development in underdeveloped and developing countries.

**A.Bindhu, Dr. Hansa Lysander Manohar (2015)** in article titled “Dimensions of E-learning effectiveness: a theoretical perspective” stated that corporates and educational institutions are increasingly adopting E-learning as an effective alternative to conventional methods of learning and training. E-learning is supposed to provide significant economic benefits apart from offering a sophisticated learner-centric asynchronous learning environment. These benefits offered by an effective E-learning system make it more attractive for all the stakeholders. On the other side, adopting an E-learning system faces challenges at various stages of its development, implementation and usage. The heavy investment requirement needs to be justified by highlighting the benefits offered. The article explores the various dimensions of E-learning effectiveness - System quality, Content quality, Service quality, learner characteristics, organizational characteristics, system use, learner satisfaction, learning outcomes and economic benefits. The proposed model has been adapted from the widely accepted and reviewed DeLone &McLean Information System success model.

**Priyanka Chauhan Indora (September 2014)** highlighted in her paper titled “Training, E-Training and Technological Advancements in Cement Industry” the significance of training programme and technological advancement to sustain in corporate world. With growing competition at every level, organizations have to become more adaptable, flexible, responsive, and customer focused to succeed. The managers today are facing a complete new array of changes in technology. E-Training is a part of training programme. E-Training programme is easy to conduct but successful program is a challenge for management too. With the ongoing changes in technology, it's important that

organizations need to be aware of the technological advancements and changes in Information technology and provide training according to that. But E-Training cannot train technical aspects fully as equipments and machinery need physical presence for practical knowledge. It has guided a new path in cement industry also. These challenges can be defeated through technical, technological and informational training and E-learning of employees through various innovative ways and self-development practices too. This paper focuses on the technological advancement and how these advancements can be managed by training program. Technology is changing in a rapid way and it has become hard to manage too. It is not an easy task to train employees again and again by E-training. Training and development department have to be more focused over technical updates and make the employees to get updated on regular basis. Knowing in advance what type of situation might arise will help us to be better equipped for technological advancement via E-training or training. And so employees, trainers and management all have to be proactive for technical aspects .E-training is very useful but it has also its limits. As per the survey, technical aspects should be dealt with training and E-training both as per the need.

**Vasudha Dhingra and Kamlesh Gakhar (August 2014)** conducted a study titled “Employee Development Practices in Telecom Industry in India -A case study of Public Sector”. The study portrays the existing status of employee development efforts in Public sector companies of telecom Industry in India and extends suggestions to revamp the implementation of such practices wherever they need improvement. The results from this paper indicates high mean score value for high visibility assessment of 2.89 which is the most commonly used employee development practice and thereafter second comes E-learning with mean score of 2.72 out of other 13 practices. This indicates the use and growing acceptances of E-learning as employee development practice.

**Renju Mathai (July 2014)** in the research paper titled “Impact of Robust Technology Training through E-Learning in Corporate Hotels in India” reveals the impact of E- learning in the corporate training process in hospitality Industry. Indian hotel industry is composed of a large international hotel chain as well as Indian-owned hotel chains. All the business functions are done to ensure how it plays an important role in the company's success. Knowledgeable employees are asset for an organization as they can provide real value to customers. Historically, training was considered as an add-on task of a department but now it has been assigned to a separate department to meet the competitive business needs. It is a business requirement to be in the success row of the competitive industry. Corporate managers are constantly seeking for a better economic way to deliver training to their employees. Management can use it for rapid delivery of information as well as for providing more reliable and better learning opportunities to employees. Training managers and directors should maximize the level of support and involvement in the E-learning process in the organization. There are several factors that can affect implementation of E-learning in an organization such as economic factors, environmental factors, individual factors, technological factors and industrial factors. Considering these factors, various sections of an organization can be dealt like, economy in operations, positive personal outcomes, gender based scenarios, and changes can be reached out to the employees in well updated manner. E-learning system is generally defined by quality attributes. It's being analyzed that system quality can be defined by attributes such as adaptability, usability, reliability and response time of the system. E-learning system excels to track learner activities and mastery of any material. It can also manage growth in the amount of information that employees need in a hotel industry. Most of employees do not prefer to accept any drawbacks in them, thus E-learning system helps to overcome any such psychological problems in them, rapid growth of industries is in need of such technologies to overcome any scenario in the company. Such software's help to increase employee performance and also helps employees to

adapt changes according to the industry needs. Through constant use of E-learning system, employees can easily transfer what they have acquired from the training to their job which eventually leads to enhance their productivity. Thus it requires less time, cost saving and provide efficient and skilled employees.

**S. M. Imran Naushad Ali P.M (June 2014)** developed a paper titled “E-learning Strategies for Imparting LIS Education in India: A Pragmatic Perspective of Faculty Members”. In current age, information needs are constantly changing and demands of this profession are also varying. The change is enforced by many forces such as technology, demographic features, economic characters, etc. E-learning is now the global scenario and we must avoid confrontation. The LIS education is responding to these changes by making appropriate changes in its teaching-learning strategies. Implementation of E-learning in LIS is robust indicator of this response. For a developing country like India, to design new courses and new E-learning LIS-education is very challenging. Lots of issues and challenges are involved with this task but as soon as it is implemented, all those problems can be tackled. The Indian LIS education too is slowly but steadily progressing in this direction. To add momentum to LIS E-learning in India an appropriate and adequate infrastructure is desirable. Web-based or electronic mode of teaching has become an important component of LIS Education in India. To produce professionals for managing knowledge resources in the electronic learning environment, the use of new ICT by the Indian LIS Schools should be encouraged.

**Y.Vijaya Lakshmi (March 2014)**, attempted in her paper titled “E-Learning - An Emerging Trend in Education and Training” to examine the need, concept and importance of E-learning. The tripod of Content, Services, and Technology determine the success of an E-learning programme. E-learning is broadly divided into forms like Computer Based Training, Web Based Training and Virtual Classrooms. Whether one accepts or not E-learning has entered into the

Indian education system. E-learning is now used in various corporate like TCS, Wipro, Patni Software Developers, General Motors, call centers like Emphasis etc, in Gujarat. Many other educational institutions like ICFAI, Company Secretaries, MICA, IIM-A, NIIT, Aptech etc. too have started using E-learning in their teaching learning process. Thus, E-learning has opened a new door for those who find it inconvenient to attend the conventional classrooms. It poses a classroom like environment in home itself. The quality of higher education is constantly improving in our country. We have established our superiority in the Silicon Valley. Implementation of E-learning has been the most successful in the corporate sector in India where it is used as a tool of meeting business goals and motivating employees. E-learning is now showing its presence in various service sectors like software developing companies, BPO's, call centers, banking sector, insurance sectors etc. Banks and institutions like ICICI, HDFC, Intel, Aptech, NIIT have already taken the initiative to enter into collaboration with various universities to provide various courses related to IT, Banking etc. According to the experts, the best place to E-learning service providers in the world is India because of the availability of experienced E-learning services providers, cost-effectiveness and better quality system. The study concluded, "E-learning is not just about technology, tools, content, etc., it is about providing training to employees and the giving desired results to the organization." Simply putting courses online is not a sure shot formula for success. Before measuring the effectiveness of an E-learning initiative, one must understand what it intends to measure.

Over the past few years Ministry of HRD is constantly looking for ways to increase the accessibility of education and training which has shown an increase in adoption of E-learning programs. This has led to significant development in education sector in the country and also affected corporate sector to avail the benefits of technology innovation. E-learning has broadened the scope of education and training from conventional classroom training to deliver learning

at trainee's location and pace as per their convenience. Although E-learning can never replace conventional classroom training but can be blended to use both the methods for the ease of trainee (Sheikh Mohd Imran, 2012).

**Ekta Srivastava and Dr Nisha Agarwal (October 2013)** in their research article “E-learning: New trend in Education and Training” deals with the concept of E-learning, its history, its impact on employee and student performance, its difference with traditional learning, and its future. E-learning is growing in training and education sector. More and more companies are using E-learning to provide training to their employees and also various Universities are providing education through E-learning. It has more advantages than disadvantages like it is cost effective, saves time, 24x7 access facilities, learn your own speed, quick answer of any problem etc.

**Amita Maxwell (July 2012)** conducted a study titled “Technological advancements in methods of training with reference to Online Training: Impact and Issues for Organizations”. The paper considers the increasing impact of information and communication technologies (ICT) and the associated rise in E-learning which is now recognized worldwide for transforming training and learning. With the revolutionary changes taking place in the areas of technology and by some of the new developments, training market too is getting affected with other segments in IT industry. Advances in technology have altered the training delivery. On-line learning is the next generation tool that has already started spreading its roots in India. It is expected that both corporate sector and Government should deliver state-of-the-art training to employees, students, academicians, researchers and home workers, and enable them to create the kind of skilled workforce which is required for the upcoming millennium. Consequently, learning with technology has been realized by organizations as an innovative way of training. Online training is also not free from certain limitations; it has some issues and challenges to be dealt. Organizations need to

weigh the cost and benefits in order to make use of the latest form of training. Research implications for policy formulation on part of the government, planners, academicians, technocrats and other stakeholders need to be considered.

**Anand Rimmi, Saxena Sharad, Saxena Shilpi (June 2012)** in their research paper titled “E-Learning and its impact on rural areas” study about the awareness and impact of E-learning in selected rural areas in India. The result indicates that E-learning is found to be highly emerging knowledge tool today. In developed as well as in developing countries E-learning can bring lot of benefits. E-learning has much wider scope in the areas which are undeveloped and are not so educated. E-learning provides knowledgeable contents through CD, DVD, multimedia and other tools. The main limitation of this method is the availability of proper bandwidth, readiness of E-learners and a set of skills to deliver the content to learners. Overall, almost 48 per cent providers reported that E-learning is beneficial to rural gentry for advance knowledge, promotions and better job opportunities, and to learn new developing technologies in the market.

**Pramila Rao, (2011)** conducted a study "E-learning in India: the role of national culture and strategic implications". The main objective of this study is to understand the impact of national cultural dimensions on E-learning practices in India. India is considered as a significant player in the world economy today. US multinationals are constantly increasing their presence in India and understanding cultural preferences are helping global companies transition better. This research indicates that national cultural dimensions of power distance, uncertainty avoidance, group collectivism, and future orientation influence E-learning practices. This study distinguishes between synchronous and asynchronous methods of E-learning and the role of culture on the same. Future research can definitely test the proposed hypotheses empirically. This

study provides strategic implications for MNCs with a guide sheet identifying the role of the various cultural dimensions on E-learning. In other countries these suggested strategies can be implemented by multinationals with similar national cultural dimensions also.

This study further suggests a theoretical E-learning model identifying the impact of national cultural dimensions on E-learning practices. This research is also helpful to practitioners as it suggests implementation of a strategic model for E-learning initiatives in multinationals.

**Nishikant Waikar** in the report “Healthcare: E-learning in India”, aimed to provide an effective and efficient system to introduce a premium quality based E-education in health sector. Demand for professional and technical education is rising with advent of the society to be prepared for the next century challenges of the universe. Evolution through adaptation or adoption of technology is the only successful answer for this preparation. Teaching methodology and technology always maintains a closed cycle between them. Sometimes pedagogy involves technology and sometimes invents it. Whatever the relation is, highly personalized and efficient education system needs technology much more than anything else. This study reveals that online learning experiences can be highly engaging and thus highly conducive to learning. In short, global investigation into any area of knowledge is quite possible with the help of a computer with Internet communication. It has made professional and technical education more comfortable and uniform all over the world.

**Deepshikha Aggarwal (2009)** conducted a study titled “Role of E-learning in a developing country like India” that concentrated on the education scenario in India, tools used for E-learning content preparation and presentation, use of E-learning to spread education to the remote areas, pros and cons of E-learning and its future in India. The scope of E-learning in India can be examined at two

levels. The first one is education and another one is training. For education, it can be used at both elementary and higher levels. In training, it can be used by companies to both upgrade and train their employees. E-learning allows the delivery of knowledge and information to learners at a faster pace, opening up new way of transferring knowledge. Early adopters are the companies that have tried E-learning to supplement face-to-face meetings, demonstrations, training classes and lectures.

The result indicates that the Indian market is not substantial when compared to the international market. E-learning in India has been most successful in the corporate segment where it is seen as a means of achieving business goals and encouraging employees. Tata group started Tata Management Training Centre long back in 2009 which provided E-learning platform for its employees in different modules such as leadership programmes for all executive levels including live E-classroom, live video broadcast and self-paced E-learning earning programmes. This self-paced E-learning programme provides 44 different courses for Tata employees.

**Training & Development Programs by GE capital India:** GE Capital is an expert providing a variety of training programs to help executives at all levels to develop their leadership and general business skills including E-training, soft-skills training and program-based training. Programs include executive courses in leadership, innovation, and strategy and managerial development. The Leadership Essentials courses are organized by the type of leadership skill one want to develop. Customer programs include executive briefings, change management and integration. GE's functional leadership programs are intended to build expertise in ones chosen discipline. Whether he/she is at beginning of the career, about to move to the next stage, or just need to develop some new skills along the way, these programs offer a variety of ways to help build the technical capabilities. The Information Management Leadership Program

(IMLP) and Internship Program put information technology careers on the fast track. Program experience is in tremendous demand throughout GE. E-learning Access to variety of E-learning courses in multiple languages and topics in an interactive format blended with activities, videos, audio clips, articles, tools help you learn at your own pace. GE employees can access several third party online resources that give you access to the latest books, research and deliberation that can help in enhancing the professional and management skills.

**Rohini Sharma& Pallavi Banjare** in the research paper titled “E-learning: An effective tool of training employees for learning organizations” advocates the implementation of the technology driven learning and training methodologies in the workplaces. With the help of E-training in an organization, the workforce is being tuned into a tangible return on investment by attaining higher quality output, even with fewer resources and lower budgets. However, instructor-led training is still the choice for delivering both soft skills and IT training, trainings is now being imparted with the help of diverse technologies including internet, intranets, CD-ROM, satellite broadcast, and audio/video and plain text. These multimedia rich, interactive cyber classrooms are viable alternative to face-to-face training. As of now organizations are identifying the performance gaps in the current role and preparing individuals for future roles by creating learning infrastructure. E-training has enabled organizations to deliver just-in-time tools, learning-on-demand, and self-paced online learning to ensure learning events immediately relevant, with a bonus of cost savings and flexibility due to reduced travel and allowing people to be on the job. Moreover, the organizations are joining with well-known institutions to provide online training to the employees and are helping them to rediscover themselves and their potentials. These employees can then apply the newly acquired skill for moving the organization forward without hurdles.

A case of corporate E-learning in IBM was taken to stress upon the fact that it can be adopted as an excellent alternative to traditional and conventional training practices which would then be instrumental in making of progressive, harmonious, vibrant and learning organizations. In 1999, IBM launched the pilot Basic Blue management training program. It was based on a '4- Tier' blended learning model'. In the first tier, the managers were provided access to details including a database of questions, answers and sample scenarios called Manager Quick Views. This information addressed the issues like evaluation, retention, and conflict resolution and so on, which managers came across.

In the second tier, the managers faced the simulated situations. Senior managers trained the managers online. The managers learned about employee skill enhancement, compensation and benefits, multicultural issues, work/life balance & similar issues in an interactive mode.

In the third tier, the group members started interacting with each other online.

This tier used IBM's learning practices such as chats, and team rooms including IBM E-Learning products like the Team-Room, Customer-Room and Lotus Learning Space. Though E-Learning proved very successful, IBM believed that classroom training was equally important for developing employees. Consequently, the fourth tier was designed to comprise a classroom training program, known as 'Learning Lab'. By the time the managers reached this tier, they all acquired a similar level of knowledge by being expert of the content in all the three tiers. To qualify for the fourth tier, managers had to qualify an online test on the content provided in the above three tiers. In the fourth tier, the managers had to master the information acquired in the above three tiers and develop a deeper understanding and a broader skills set. There were no teachings in these sessions, and the managers learned themselves by doing and by coordinating directly with others in the classroom. The tremendous success

of the Basic Blue initiative encouraged IBM to extend E-learning to its-sales staff and experienced managers as well. The program designed for the sales staff was termed as 'Sales Compass' and for the experienced managers, as 'Managing@ IBM.'

The outcomes of the above mentioned programs were

- IBM reduced its training budget as well as improved employee productivity significantly.
- Basic Blue could save \$16 million while Sales Compass saved \$21 million in the year 2000.
- In 2001, cost of training per-employee at IBM reduced significantly i.e. from \$400 to \$135.
- IBM reported a ROI of 22.84 percent from its Basic Blue E-Learning program.
- According to provided data, the company could save approximately \$166 million within one year of implementing the E-learning program designed for its employees across the world. The amount increased to \$350million in 2001.
- E-learning also helped deeper understanding of the learning content by the managers.
- It supported the managers to reduce their classroom training modules completion time in comparison to the traditional training methods used previously.
- The simulation modules and collaboration techniques formed a better learning environment.
- The E-learning programs also allowed the company to deliver corporate internal knowledge as most of the content they took came from the internal content experts.

- The employees were able to learn different benefits and the criteria for availing these benefits, like cost, coverage, customer service or performance using an Intranet tool called 'Path Finder.'
- This tool helped the employees to easily access to the knowledge regarding the HR initiatives and their benefits, such as, various health plans offered by IBM.
- IBM also designs the courses for its customers and to the general public. The learning and progressive organizations are focusing on ongoing education, just in time training and enhancing employee skills to create a sustainable competitive advantage. By reducing knowledge gap and overcoming educational deficiencies through E-learning, the organizations are providing the workforce with right knowledge mix to lead the competitive world.

**Shangeerthana G V and Chandrasekhar K** in the paper titled “Re-Think on Critical Successful Factors of E-Learning implementation in India based Corporates” provides an insight about the key factors that can be re-considered for implementing E-Learning in any of the India based corporates towards improving its performance by overcoming the failures, which can be accomplished by implementing Employee's Learning strategy. E-Learning has become an integral component in imparting both training and learning especially at educational institutions and corporates due to the influence of technological advancement. Though imparting E-learning by majority of the India based IT companies has shown a significant growth in order to train and update the skills of the employees but when you enquire about the success rate it's not as expected when compare to the other countries. Keeping in view the wide usage of E-learning by corporates, one needs to assess and evaluate the critical factors related to the system design and implementation according to the organizational requirement to achieve the success.

Key drivers for implementing successful E-learning system:

- Identify the business problem, gather requirements from the goals, set clear and measurable objectives and define the target.
- Proper plan is an imperative thing in order to align the training strategy with business case objectives to achieve the defined target.
- Check the organizational readiness which is nothing but understanding the target users about their present knowledge, job, grasping ability and learning expectations over the E-learning system.
- Ensure all the required infrastructures are in place or anything needed to have all the necessary facilities in place before run through implementation such as IT readiness, tools and technology, internet bandwidth to deliver the content, etc.,
- Involve all the key stakeholders like HR, Learning and development staffs, IT, Managers from all the department along with their respective highly skilled employees or SME from each team or group, learners/employees opinions by means of survey or some other preferred techniques to make decisions together on “what is wanted?”, “how are we right now?” and “where we want to go?”; in order to accomplish the business goals.
- Identify the exact tools or system that needs to integrated the E-Learning system like People soft, CRM, ERP, etc., to store the details of the employees, course results, reporting tool, etc.,
- Define the E-learning trends on how the tutorials or course content can be accessed from either via Massive Open Online Courses (MOOCs), Mobile learning, Cloud Learning, Gamified Learning, Social Learning, Learning Management System (LMS), Company intranets via desktop/laptop, etc.
- Evaluate the change in behavior of the employees.
- Organizational change by identifying the necessary outcomes like learners satisfaction, performance improvement by applying learned thoughts and skills into work, business impact along with return on investment.

- Ensure the success by means of continuous review and upgrade the existing system to meet the business change and its requirements.

Corporate E-Learning is the first and foremost step which has initiated the blueprint for the digitalization of India. More than 89 per cent of the Indian IT companies have already implemented E-learning as a medium for training employees due its tremendous benefits in order to update the skills and knowledge according to their client requirements and to meet the business objectives. But for some reasons, E-learning projects are often getting failed in India based corporates by not meeting the expected results, because of its improper planning, design, implementation and its execution. Out of which design and implementation plays a crucial role in E-learning system, poor implementation will definitely make E-learning system not to achieve the intended objectives of the organization. It's a known fact that success of one will not necessarily be same as others, so these critical success factors need to be reviewed frequently to formulate the conceptual framework and provide remedial measures to corporate E-learning system based in India for the improvisation to ensure good return on investment by its success.

### 2.3 RESEARCH UNDERTAKEN ON E-LEARNING ABROAD

**Prince F. Ellis and Kevin D. Kuznia (2014)** conducted a research on “Corporate E-learning Impact on Employees” the research explored how employees' productivity, job performance, and job satisfaction were impacted by using E-learning. Corporates use various forms of E-learning processes and applications, such as computer based training (CBT), Internet-based training (IBT), web-based training (WBT), and many others. The results showed that E-learning had varying correlations with employee productivity, job performance, job satisfaction and organizational commitment. It was concluded that the use of

technology alone would not produce desired results; corporations need to balance between E-learning strategies and managerial support.

**Josephine Nyokabi Mwangi (2014)** conducted a study titled “An Investigation towards E-Learning at the Workplace: A Case Study of Unep Staff at Gigiri”. The aim of the study was to investigate the adoption and use of E-learning at the workplace with a focus on UNEP staff members working in Gigiri. The study was done to establish the effectiveness of E-learning. Findings revealed that 56 per cent of the employees indicated that they somewhat agreed that the most effective training tool for an organization is E-learning, 34 per cent of them reported that they strongly agreed while 5 per cent of them were neither agreed nor disagreed while remaining 5 per cent were somewhat disagreed that E-learning is not effective. The study tried to establish some of the organizational challenges faced in adopting and using E-learning. Further, the study shows that 65 per cent of the employees indicated that they agreed that E-learning practices are a common phenomenon at their office while 35 per cent said they were not. Looking across the groups, female (68 per cent) employees said that they agreed compared to their male (61 per cent) counterparts. On the basis of experience, 82 per cent of employees who had worked for 2-3 years said that they were in agreement followed by 4-5 years' service (73 per cent), while 50 per cent of the employees who had worked for 6-8 years said that they least agreed that E-learning practices are a common phenomenon at their office. The study aimed to find whether technology had an impact on E-learning practices. Findings displayed that 45 per cent of the respondents agreed that dominance of technology-oriented approaches made E-learning practices less user-friendly. Further findings showed that 31 per cent of them were disagreed while 19 per cent said that they were neutral and neither agreed or disagreed as to whether technology influenced E-learning programs, while remaining 5 per cent were totally disagreed. The researcher also tried to identify the impact of E-learning on technical knowledge and organizational issues. The findings indicate that 58

per cent of the respondents felt that E-learning practices are not just geared towards impacting technical knowledge. While ignoring organizational issues but that they are also necessary for effective E-learning programs to address, while 42 per cent of them were disagreed. The study also found whether e-learning had an impact on staff personal career progression or work environment. Most of the respondents (77 per cent) were of the view that e-learning programs should not be tailor-made for staffs' personal career progression but rather they should be designed for the work environment and as per the use and application. However on the flip-side, 23 per cent of them were agreed with this notion.

The researcher also sought the significance of E-learning tools at the place of work. Finding indicated that 44 per cent of the respondents rated E-learning programs as very important in the day-to-day work activities of the organization, 39 per cent indicated that they felt that it was moderately important, 10 per cent said that they felt it was strongly important while 5 per cent reported that it was not important while 3 per cent had no idea. The study meant to investigate the respondents' most preferred method of learning and training at UNEP. Findings established that 60 per cent of the respondents indicated that they preferred classroom training as opposed to on-line training while 40 per cent said that they preferred on-line training. The researcher wanted to establish the advantages and disadvantages of E-learning so as to gauge their perception of the e-learning programs currently been offered at UNEP. The study establishes that 76 per cent of the respondents felt that e-learning cuts on the social and cultural interaction of people while 81 per cent indicated that they did not agree that e-learning should be replaced by human instructors. The findings also indicated that a majority of the E-learning programs should not be tailor-made for staffs' personal career progression but rather for the work environment perspective of use and application. In addition, learning in the workplace takes place in perspective of use and application,

therefore is often embedded in work practices. The study acknowledges the importance of practicing E-learning in the workplace as such it recommends the following to the organization on the perceptions of E-learning initiatives; future development of E-learning programs should focus not only on technical issues of design but also on organizational issues.

The study also recommends that the E-learning research should be based on the perspective of use and application at workplace instead of running formal courses in educational institutions. Resistance from the employees, technological incompatibility and lack of motivation for implementing new work practices by management are identified as the most important barriers in the implementation of e-learning practices.

**Kimiloglu, H., Ozturan, M. and Kutlu, B. (September 2013)** in the study titled “E-learning for corporate trainings in Turkey: An exploratory study” aimed to identify the amount of E-learning used for organizational training projects, ICT tools used for E-learning and the outcome attained and obstacles experienced by companies using E-learning in Turkey. The study involved data collected from 106 companies out of the top 500 companies in Turkey and results revealed that the use of E-learning is still at ground level. Companies that use E-learning prefer it mainly for developing specific skills such as foreign language or advanced information technologies rather than the areas requiring managerial skills or customized programs. Besides, most of the ICT tools utilized for E-learning are less complex such as portals, multimedia or text-based content as compared to the complicated tools like content management or virtual classrooms. The most common outcome of adoption of E-learning experienced by companies are found to be less in training costs, easy reach and access to education. Contrary to these, the major obstacles in adopting E-learning are inadequacy of content, deficiency in understanding the benefits of E-learning on a company-wide basis, past negative experiences and reluctance of users in

adapting new technologies. This exploratory research has examined the status of E-learning practice in corporate learning in the leading 500 companies of Turkey. Findings of the study have shown that E-learning is still adopted at a quite basic level. Although almost all of these organizations have a separate Learning and Education Department, most of them have either not applied E-learning or are at the phase of experimenting and using pilot applications. Only a minor group of companies state that they use E-learning on a common basis for training. In these companies corporate training can be assumed to be a very established practice, thus it can be expected that the organizational change in terms of the adoption and diffusion of novel technologies in performing this business activity will take some time. It implies that there is a large market and a high potential for the growth of corporate E-learning market in Turkey. This study has also tried to identify the level of E-learning usage in various subject areas for corporate training. Results of the study have revealed that E-learning is relatively more preferred for areas that intend to expand specific skills like foreign language or advanced information technologies or areas that require the direct transmission of information such as law. The preference regarding using E-learning for skill development can be attributed to the fact that most existing E-learning applications mainly focus on these areas. Contrary to this, E-learning is least preferred in the companies that require managerial skills and company or sector-specific programs. This shows that companies prefer to convey more sophisticated and strategically more important content through hands-on and direct training. Furthermore, company-specific programs are comparatively costly for companies e.g. orientation or occupational safety and health programs require customized content development for E-learning. It is one of the exceptions of showing an inclination for E-learning for organizational and social responsibility trainings which is desirable and extends scope for further investigation and gateway to future studies. Moreover findings of this study have shown that, as the managerial level increases, the preference towards E-learning tends to decline relatively. E-learning is generally more used by base

line employees such as office workers or the sales staff and middle-level managers.

**Pi-Tzong Jan, Hsi-Peng Lu, Tzu-Chuan Chou (July 2012)** in the paper titled “The Adoption of E-Learning: An Institutional Theory Perspective” aimed to investigate the social forces that may influence employee's attitude and intention to adopt E-learning with an organizational perspective. As per the institutional theory, the study suggests a model to assess three social environmental factors — normative, coercive and mimetic pressures within an organization adopting E-learning. To experiment this model, an empirical study was conducted which involved 172 subjects with application of partial least square method. The results indicate that normative and mimetic pressures have significant impact on the attitude and intention of adopting E-learning, while coercive pressures have no impact. Attitude acts as an intermediary between normative and mimetic institutional pressures and adoption of E-learning. The outcome of the study shows that E-learning can get benefitted from social influences that could result in employees' preference to adopt E-learning in an organization. When growing number of employees agree to adopt that, organizational investments in human capital could be more efficient.

For organizations, the study suggests that training managers may be required to work on improving normative and mimetic forces. They may develop an E-learning community to create normative expectations and spread success stories of high profile employee's E-learning experience to encourage the adoption of E-learning. Regarding the mimetic forces, it appears that the high-profiles of E-learning adopters may influence E-learning adoption of others with lower profiles. Training managers may disseminate success stories of the employee adopting E-learning among high-profile employees and enhance word of mouth marketing to promote E-learning. The finding clearly shows a system in which the institutional forces, particularly normative and mimetic, influence

employee's attitudes toward using E-learning, which in turn determine the intention of using E-learning.

**Ying Chieh Liu, Yu-An Huang, Chad Lin** in the paper titled **“Organizational Factors' effects on the success of E-learning Systems and Organizational Benefits: An Empirical Study in Taiwan”** develops a framework to assess the organizational factors that affect the quality and service of E-learning systems and to know how these factors affect organizational benefits considering IS success model and resource-based theory. A survey of 120 Taiwanese companies was conducted using questionnaire to validate the framework. The outcome shows that top management support, information security policy, and institutional policy are positively related to system quality, while organizational learning culture is equally important for system service. Furthermore, system service leads to organizational benefits.

**Julie Y. Tausend (2012)** developed the report titled “Effects of Interactive Multimedia in E-Learning”. The study analyzes recent developments took place in the E-learning industry considering the application of interactive multimedia as a learning tool. The report looks at the impact of the tool on the learners (end-users) and developers (instructional designers). The purpose was to know about the positive as well as negative effects of using interactive multimedia in E-learning because they have an impact on learners and developers.

Positive Implications on the Learner: Interactive multimedia offers a lot of benefits to learners in E-learning. Interaction helps in improving retention because it affects both visual and audio senses which in turn stimulate both learning and recall. Further, interactive multimedia in E-learning provides learners a chance to manipulate experiences. Using animation as an interactive multimedia tool accelerates how people learn because learning occurs in context, activity, and reflection. E-learning ensures development of knowledge

management because it allows quick access to information, easy sharing and reusability. E-learning allows sharing experiences in its collaborative programs as learners jointly swap over queries and views regarding nature of a problem. E-learning discourages inhibition because those who are normally shy in training can become more extroverted. This is because E-learning does not need identity or physical visibility. There is no age, culture, or gender present in E-learning. It results in an equal opportunity for learners to voice themselves. Asynchronous communication that allows communication across space and time encourages naturally reserved people to interact through e-learning it becomes easy for them when they have enough space and time for contemplation before engagement. Another positive effect of E-learning is its accessibility as there is no waiting or traveling. Learners can begin training the moment they need it without having to wait for a training seminar. E-learning can be equally considered as just-in-time learning, which enables learners to access the learning at their own convenience. Accessible learning results in making learning more widely available to a broader range of people that would normally be unavailable to participate in traditional training. Another advantage is that learners can pace the training at their own needs, those that work faster are not held up by slower participants.

Negative Implications on Learners: It includes the problems arising from self-direction, weakened media richness, and issues regarding technology compatibility. The basis of E-learning is that learners direct themselves through the training. This is not suitable for those who are not self-directed and feel uncomfortable in the absence of an instructor or are not comfortable and rely on objectives of E-learning. These variations on learner's choice may result in indecision and unwillingness to learn. Those whose learning style needs to be more structured and instructive program may get discouraged. Some less-experienced or less well-disciplined learners may also get confused about how much information they require, leads to information overload.

Negative effects of E-learning includes media richness coupled with face-to-face communication weakens when learners communicate electronically. Further, technical issues involved in E-learning also affect negatively. Learners need to be able to access computers with exact software capabilities to view and play the multimedia. Computer capabilities including bandwidth that affect online speeds may prevent many learners from accessing multimedia efficiently or reliably. Providing adequate computer facilities as well as the initial purchase of E-learning tools can be very costly.

Positive implications on Developers: It include, interactive multimedia created by animation software that benefits developers from a marketing viewpoint. Once a developer develops an E-learning course, it is beneficial to use the same process through all courses to assure consistency in design and framework. The systematic approach to instructional design is also a way to organize instructional experience so that learning is optimal. Another push in E-learning is the content quality that is now being produced due to industry standards. National standards associations have emphasized the overall dimensions of quality of the educational experience through regulations of the industry. Interactive multimedia can provide better ways to measure performance and assessment in E-learning. Animation software and server connections allow for changes to content in only a few minutes as opposed to other multimedia vehicles, which require hours or days to change. This is advantageous to developers, because time is a valuable asset and for knowledge-based workplaces, success relies heavily on the continual upgrading of skills.

Negative Implications on Developers: There are several negative effects that interactive multimedia have on developers. Social implications including generation differences and learning differences among the workforce must be highly considered. Technical issues also affect developers negatively like technology advances demands continuous training, technology compatibility,

and system maintenance. The ever-changing progress in technology has led to a need for constant upgrades and training. There is also the possibility of software malfunctions and maintenance costs. Not only developers are required to be aware of how software affects their design process, but they must also take into account that the learner must have compatible software to view interactive multimedia. Another technical issue having negative implications for the developer is administering evaluation tools for e-learning courses. This is because it is difficult to ensure that those being assessed are who they say they are. Developers must understand the dynamic of today's workforce when developing training. This is because each group brings its own influences and preferences to the workplace.

**Juha P. Lahti and Taminee Shinasharkey (February 2012)** in the research paper titled “Corporate eLearning Position in Finnish Energy Business - Power Market Perspective” The paper aimed to assess position of e-learning as used in Finnish energy companies, particularly from power market perspective. Both technical and attitude aspects are approached. As a result, the study focuses on several areas of E-learning and poses the current position of corporate E-learning in Finland. It also reviews the relevant challenges faced by the companies under study and presents future scope of E-learning in the energy sector. Results show that in the companies under study average 7 per cent of the total training and learning is done through E-learning.

As a part of research, the study aims to know how well E-learning is accepted in this specified field. The results show that in general the participants estimated their acceptance slightly more positive than average. Majority of the interviewees opines that traditional learning less risky to the core business as compared to E-learning. This is mainly for quality reasons. That's why E-learning is not seen as trustworthy in comparison to traditional approach. Statistically operational and technical personnel see E-learning less risky. Used

platforms vary in significant scale and in practice almost every case company used different products or combinations of those in e-learning. In the case e-learning platform that companies commonly used was combination of commercial collaboration platform and intranet solutions. All interviewed groups saw E-learning role rising within coming 5 years. The highest expectations were in technical personnel and management groups, lowest in operational personnel. Again, the results were relatively similar and no exceptionally high variation noticed in groups or companies.

**Kristal Teresa Reynolds (2012)** in the thesis titled “Critical Success Elements for the Design and Implementation of Organisational E-learning” reported that in the context of organisational E-learning how existing evaluation models apply, and leads to develop Organisational E-learning success framework, which defines the vital elements for success in an E-learning environment. This study focuses on the critical importance of three elements of an E-learning success framework; system quality, information quality, and support quality. In addition, two further integral elements were identified; learner preferences and change management. The researcher has identified the need for a holistic approach to E-learning evaluation. It was found that the application of both traditional training evaluation approaches and the D&M IS Success Model are appropriate to the organisational E-learning context, and when combined can provide this holistic approach. This study concluded the need for organisations to evaluate the outcome at all stages of E-learning from design through to implementation.

It also revealed that the processes surrounding the development of E-learning are just as important as the E-learning modules themselves. This thesis has also highlighted that adult learning principles remain critical considerations in the design of successful E-learning regardless of the different delivery platform, and that new technology still requires thoughtful consideration of the learner's

needs. Ultimately, a sophisticated system with many attractive features is no substitute for a learning approach with a strong foundation in the core adult learning principles.

**Yap, Holmes, Hannan, and Cukier (2010)** attempted to investigate the relationship between effectiveness of training and organizational commitment and satisfaction and they revealed that employees who perceived training to be effective were more committed to their organizations than those who saw training as ineffective. The contributing factors of employees' satisfaction and commitment include physical environment, internal support, job level, training level, organizational support, and learning flow. Therefore, management should be privy to these factors and ensure that they are considered carefully so that the full benefits of eLearning and E-training are realized.

**Ozturan, M., & Kutlu, B. (January 2010)** in the paper “Employee satisfaction of corporate E-training programs” examined the effectiveness of E-learning as a corporate training tool and its impact on employee satisfaction. The paper reported that end-user survey can be used to measure trainee reaction-based satisfaction as the model used for this is significant. However, the aforesaid model details only 2.1 per cent of the satisfaction. This may be because of inadequacy of the questions of the survey that measure the reaction level and the irrelevancy of independent variables. Another model, learning-based satisfaction model, seems also significant but explains only 0.4 per cent of the satisfaction. This may be because of lack of distinctive feature of the posttest, lack of pretest and again the irrelevancy of the independent variables.

**According to 2010 E-learning Benchmarking SurveyReport**-E-learning has become an integral element of training for Australian businesses. The flexibility of E-learning to provide timely and efficient access is benefitting employers to enable their employees to acquire and develop a wide range of skills and work

related knowledge. The survey involving 800 employers from all states and territories, from all industry sectors and of all sizes reveals that E-learning is spreading at workplaces at a faster rate.

- About 50 per cent of Australian businesses are using E-learning as a part of their structured or unstructured training they impart to their employees (40 per cent in 2009).
- The knowledge of E-learning was rated as 4 or 5 out of 5 by 40 per cent of employers, with an average score of 3.2 out of 5 (3.0 in 2009). Ratings are even higher for employers who have had employees undertake VET through a RTO) in the past 12 months.
- Of them 60 per cent employers said that organisation's use of e-learning is expected to increase in the next two years (49 per cent in 2009) in provision of training to employees. Moreover, the response was higher among organisations in which employees were undertaking accredited training.
- 85 per cent of them said that they would encourage their employees to adopt E-learning if it was available (81 per cent in 2009).
- Employers who were engaged with the training system became more aware of and more satisfied with the E-learning services offered by training providers.

Employers' attitude to E-learning was broadly consistent with findings from previous years, with a majority having faith that e-learning enhances people's access to training (88 per cent), provided flexible training for employees (85 per cent), and was an efficient way for learners to undertake training (75 per cent). Many employers gave practical examples of the benefits of e-learning to their organisation and employees. The 2010 survey asked employers for the first time about their attitudes to the Australian training system. Around two-thirds of employers believe that the training system provides flexible training for employees, that it is responsive to employer demand for skills, and is meeting their industry's and their organisation's skill needs. Feedback from the health

care and education sectors was more positive than that from manufacturers. The 2010 survey also found that employers are satisfied that their employee's ' current skill levels meet existing skill requirements. Training demand is driven by the need to develop and acquire skills for future operations and business growth.

**Wilfried Admiraal, Ditte Lockhorst (2009)** found in their study titled “E-learning in Small and Medium-sized Enterprises across Europe: Attitudes towards Technology, Learning and Training” that the -learning has had a major impact in large companies, both in allowing the extension of training provision and in facilitating professional development activities. However, the picture is not well clear when it comes to Small and Medium Enterprises (SMEs). The overall picture of the context of E-learning in small firms is fairly negative: owner-managers generally do not reflect positive attitude towards aspects of E-learning in their company. Professional development in SMEs seems to have a low priority, despite the increasing perceived strategic value in the economy of a company. This is not only due to daily work pressure but also due to a conservative attitude towards technology and learning of most owner-managers. In many companies, spread over the seven countries, informal learning in the workplace is not regarded as learning; skills and knowledge should be developed in training and courses. However, many interviewees also report that both individual and organizational knowledge is not recognized as important input in training and workshops, and that the material of the course does not match the specific needs of the employees who attend the programme or workshops. The findings suggest that the technology infrastructure is the main factor which is related to the attitudes towards E-learning of small firms. This infrastructure includes the presence of software and hardware. It was also found some relations between the size of companies and owner-managers attitudes. Owner-managers of the larger companies show more positive attitudes towards using technology for communication and formal learning in their company,

compared to smaller firms. Moreover, companies from the production sector generally refer to less positive attitudes towards both formal and informal learning.

Generally, both owner-managers and employees show negative attitudes towards the use of technology, training and learning in their companies. But the current study suggests that technology could be used beneficially if tailored to individual needs. The learning culture in SMEs is primarily one of an informal knowledge-sharing community. Traditional E-learning would not be of use in this environment due to its cost, generalized subject matter and inaccessibility. Flexible technology, supporting communication and collation of knowledge could be beneficial to the companies and their wider community.

**Prodromos D. Chatzoglou, Lazaros Sarigiannidis, Eftichia Vraimaki, Anastasios Diamantidis (April 2009)** carried out the study titled “Investigating Greek employees' intention to use web-based training”. The paper examined the employee's intention to accept a web-based training program. The outcome of the study covering 287 employees indicated that trainees' enjoyment, perceived usefulness and perceived ease of use directly affects their intention to use a web-training platform. For a successful web-training program, managers should design and create an environment where the trained employees will be convinced of their personal knowledge and abilities, they will feel free to overcome challenging on-the-job problems and they will learn how to use their mistakes in order to improve their job capabilities.

Conclusively, a well-designed web-training program must ensure and improve trainees' enjoyment, self-efficiency, reduce their unease in order to successfully accept and use the training program.

**Allison Hodges (2009)** in the case study titled “Corporate E-Learning: How Three Healthcare Companies Implement and Measure the Effectiveness of E-

Learning” examined how E-learning was developed, implemented, and evaluated in three different healthcare-related companies. The ultimate objective was to find out how corporations determine the effectiveness of their programs and the knowledge transfer to the job. The results of the study reveal that in order to improve individual and organizational performance, evaluation and measurement must be vital components of the training process. There is a need for the development of uniform measurements to track the connections between learning, employee performance, and profitability.

**A 2008 survey by the American Society of Training and Development** found that about one-third of all training content is now delivered electronically. As per the overall satisfaction rates pertaining to quality of online learning versus traditional learning, it is highly expected that this figure will continue to grow (Allen & Seaman, 2010).

**Edward T. Chen (2008)** in paper “Successful E-Learning in Corporations” explores the idea and best practices of successful E-learning in corporations. It describes the concept of E-learning as well as its history in relation to educational models. The study covers the variety of E-learning tools. Further it deals with various limitations of E-learning such as different standards, lack of infrastructure and architecture, and discusses in detail about employee motivation and cultural resistance to E-learning. It also summarizes organizational advantages and benefits of E-learning. Some of them include reduced cost on travel, globalization, improved value-chain activities, and return on investment. Return on investment is a key factor when organizations decide to implement E-learning. There are both tangible and intangible benefits that E-learning provides to the companies. As new generation of employees enter the workforce it will be increasingly important for companies to offer E-learning as a solution to educate and maintain employees' life-long learning objectives.

**Newton, Robert and Doonga, Nitin (February 2007)**, in the research article “Corporate E-learning: Justification for implementation and evaluation of benefits. A study examining the views of training managers and training providers” explores experiences and perceptions of training managers and training providers in order to impart E-training to corporate clients - a rapidly growing area of commercial activity. In particular, the study deals with the justification for implementing E-training and the positive outcomes which are anticipated by training managers. Two questionnaire surveys were conducted to collect opinions of both providers and users of e-training and these were followed by interviews with both training managers and training providers. The results reveal that the market for E-training services is growing rapidly but to justify its implementation in a particular business is often not clearly articulated. Moreover, the outcomes of the questionnaire survey and interviews demonstrate a significant difference between training managers and training providers with respect to the relative importance of various potential benefits of E-training. The measurement and evaluation of benefits by training managers is often not well considered and robust evaluation methods require more critical investigation. They provided employers' viewpoints and justifications for corporate involvement in E-learning. These include increases in knowledge, efficiency and productivity of employees, ease of implementation, time-flexible savings, and cost savings. Other benefits of E-training are the ease to deliver it anywhere, anytime, and to anyone; just-in-time training; customized training leading to higher content retention by learners, effective delivery compliance training, higher collaboration and interactivity, better check on employee's performance and progress and customized and personalized training options.

**Liam Brown, Eamonn Murphy, Vincent Wade (2006)** “Corporate E-learning: Human Resource Development Implications for Large and Small Organizations”. The study compares and contrasts the current attitudes towards, awareness of and take-up of E-learning in large and small organizations and

summarizes the implications for Human Resource Development (HRD) Professionals. A detailed study was conducted in Ireland with some large multinational organizations and some Small and Medium sized Enterprises (SMEs) in engineering, electronics, aerospace, pharmaceutical and medical device sectors. The study stressed upon awareness, perceptions, technology support infrastructure, current and planned involvement, most frequent and most preferred mode of delivery, advantages, barriers, the motivational factors and overall attitudes to E-learning. The comparison describes similarities and differences both within the large organization sector and within the SME sector and between the two sectors. In terms of involvement in and experience of E-learning it is quite clear that the large organizations are significantly ahead of the small and medium enterprises. Experience and usage of E-learning technologies and content is significantly higher in the large organizations (Usage = 67 per cent > 5Years) than the SMEs (Usage = 20 per cent total). Both groups agree that E-learning courses are more effective when undertaken in a dedicated learning centre as opposed to being delivered to the desktop primarily due to a lack of motivation when left to undertake the course on their own. Cost is always an issue for the SME. The harmony among both the large organizations and the SMEs is that to make E-learning more effective, it can be combined with traditional forms of learning and the result is some form of “blended learning” solution.

**Aydin, C. H., Tasci, D. (2005)** “Measuring Readiness for E-learning: Reflections from an Emerging Country”, the paper describes a survey instrument that has been used to assess companies desire to implement E-learning in these kinds of countries and the outcomes of a study that examines organizational readiness of companies for E-learning in Turkey. The study shows that companies surveyed are overall set to implement E-learning but they need improvement, particularly in the area of human resources, in order to apply E-learning in their company successfully.

**Lori K. Long and Robert D. Smith (August 2003)** cited in their research article titled “The role of Web-based distance learning in HR development” examines principles of WBDL design and measures the effectiveness of training delivered through that design. The article recommends WBDL should be tied to specific business objectives. The development of WBDL can be time consuming and costly, therefore, organizations should articulate specific objectives when designing WBDL to ensure that their initiative stays on track. WBDL should not be considered as an alternative for traditional classroom training delivered by an organization. WBDL should be used as an alternative or complement to other training programmes an organization provides. However, Organizations should evaluate their WBDL efforts. WBDL should be examined to determine if it is meeting the objectives specified in the planning stages of the training.

**Rodger Faherty (2003)** in the paper titled “Corporate E-learning” reports a number of issues associated with aspects of corporate E-learning. E-learning uses Internet technology to impart training material to learners in a cost-effective, result oriented and sustainable manner. E-learning has emerged as an innovative training option for corporates that need to satisfy quickly the constantly changing training needs. The dynamic nature of technology and the skills required to fully exploit, and manage it, have determined the demand for project wide E-learning solutions. A variety of E-learning products and services are available to respond to most of the organizational training needs. In this paper, evolution of E-learning, its drivers, target market, benefits, limitations and future trends are examined. This paper also discusses the concept of the learning organization and corporate university. Corporations can utilize these concepts to continually improve their staff skill set. Corporations need to continuously retrain their staff for retaining or improving competitive advantage. The continuing evolution of technology and management theory has

driven the corporate training market. The philosophy of continuous learning across an organization is encouraged in a learning organization.

E-learning is a technology based learning tool which can be used to provide ubiquitous learning to corporate employees. Based on several Internet based technologies, corporate E-learning is driven by the need to provide a cost saving, flexible and scalable to training requirements. E-learning encompasses three distinct areas. Content refers to the actual training material, technology refers to the tools used to create and deliver the content and services refer to the E-learning facilities offered by vendors or third parties. When combined, the three areas work together as the basis of a complete E-learning solution. The impact of an E-learning solution in the organization and its employees is needed to be considered. Models such as McClean and Sodens, generic strategic management framework and McFarlans, strategic importance framework can be used to design strategy and to strategically apply E-learning within an organization respectively. To make an E-learning initiative success, acceptance of employees is desirable. For an E-learning project to succeed, it is desirable to accurately assess employee training needs, promote the E-learning programs internally with employees' adequate cooperation and to offer incentives for participation in an E-learning initiative.

The paper has identified few key trends in E-learning, of these, the areas of standards; Learning Content Management Systems (LCMS) and Mobile learning are focused. The author argues that E-learning can provide a successful, cost saving, accessible solution to rapidly changing corporate training needs. In order to ensure success it is required to accurately identify training needs and determine if the corporate infrastructure and culture is appropriate to an E-learning initiative. The correct combination of content, technology and services must then be applied, assessed and evaluated. The creation, deployment and management of courses consisting of tailor made-content and suitable third party courses can be achieved through the use of a LCMS. In this way E-

learning can be a promising tool to the most challenging corporate training needs.

**Judith Strother (April, 2002)** carried out a study titled “An Assessment of the Effectiveness of E-learning in Corporate Training Programs”, this research examines mainly qualitative feedback from corporations using E-learning to impart training. Firms regard online training as a cost-effective, convenient, and effective way to impart corporate education. While few people question the evident benefits of E-learning, a systematic research is required to assure that learners are actually acquiring and applying the skills that they learned online, and that E-learning is the best tool to achieve the results in a corporate environment.

**Forrester**, an independent research firm that aids companies to examine the impact of technology change on their operations, interviewed training managers at 40 Global 2500 companies and revealed that all but one of them already had online initiatives in place (Dalton 2000). A survey of 500 training directors (Online Learning News, 2001a) clearly shows the new priorities:

- Sixty percent had an E-learning initiative.
- 86 per cent had a priority of converting current instructor-led sessions to E-learning.
- 80 per cent will set up or expand knowledge-management programs.
- 78 per cent were developing or enhancing electronic performance support.

Most Organizations prioritize the need for effective training and development of employees. The main aim of an organization is growth and maximization of profit. This is done by equipping the employees with the necessary knowledge and skills. This typically includes identifying training needs, setting goals, and creating training material, imparting training, evaluating and follow up.

**According to Driscoll (2002)**, organizations adopting E-learning are able to deliver standardized training to a large number of employees at different locations in a lesser time. With accelerated product cycles, a business cannot wait to roll out training over a matter of months. Henderson (2003) indicated that E-learning can achieve quick results by delivering programs across the organization so that all the employees who need training can get it in the shortened timeframe. Organizations are becoming more cost conscious and are minutely monitoring training budgets as they want the best returns for their investments in employee training (Driscoll, 2002).

**Redmon and Salopek (2000)** identified that using traditional training methods is rapidly arising as a financial and logistical dilemma. One solution to this growing dilemma can be e-learning, imparted either through the Internet or the company's intranet. The question for most organizations is no longer whether they will implement e-learning, but how to do so with quality and in a cost effective manner. Although existing research by the Forum Group and ASTD firmly establishes the importance of employee training, the issue being debated is what form of training and delivery is more effective (Simmons, 2002). Most common argument in this debate was over choosing between traditional face-to-face training and e-learning methods. Supporters of e-learning claim that it is an effective means of delivering training at substantially reduced costs, enables increased access to learning, available on-demand, anytime and anywhere, according to Simmons (2002).

**“E-Learning: The future of learning” White Paper**-According to this study, corporate E-learning is currently a small part of training and education. Only 66 per cent of respondents reported that they were using or were intended to use online learning in the near future. The online training market is forecasted to double in size for each of the next 3 years, touching approximately \$11.5 billion

by 2003. The study details about advantages of E-learning like increased reach and flexibility enabling learners to engage in the learning process anytime, anyplace and on a just-in-time basis, decreased cost of learning , and reduced travel, subsistence costs and time away from the job.

**How E-Learning Can Increase ROI for Training By Thing's Research Department:** This study describes how E-learning can increase ROI for training. It gave 10 points about E-learning benefits and increased ROI for training 1) E-learning saves time without destroying learning benefits 2) minimizes travel costs 3) learning is possible anytime at anyplace 4) it is cost effective 5) meet the need of geographically diverse employees 6) more consistent course delivery 7) more individual instructions 8) better learning result than traditional learning 9) Less employees turnover 10) increased customer satisfaction

**Thomas P. Burke** states that many companies use E-learning to reduce cost, and to approach a scattered audience, in many ways, E-learning has made it quite easier to cope with the delivery and management of employee training. They can take courses independently, and in some cases, on their own time. Web-based training has become more effective due to the emergence of inexpensive learning management software that enables employers to deliver and manage training courses from their own web sites. These LMS applications are used to register students' data and report on their progress, indicate when employees should be given refresher training, and even deliver certificates of completion. E-learning reduces costs and is even more effective than traditional learning and it better improves employee performance. The success of developing a learning environment depends on training professionals skills to design and implement the training. However, it's up to management to identify and target specific training needs that will measurably benefit the business.

According to David oye, Salleh Mazleena, Iahad Noorminshah in the research paper “The impact of E-learning in workplace: focus on organizations and healthcare environments” cited E-learning as the answer for global changes, labour market and productivity .This paper shows that the employers can integrate individual learning with organizational needs and provide employees with knowledge and skills they need. In medical and healthcare environment constant training is needed so E-learning is the better option of training of workforce in medical and healthcare as it saves time and costs too. The paper also looked benefits and barrier of E-learning.

**John Berry** in the paper titled “CORPORATE TRAINING -- THE E-LEARNING CENTER --” concluded that the Companies are using metrics to justify E-learning's impact on strategic business goals. Many businesses have started realizing the dramatic cost savings in switching from traditional training methods to E-learning, yet some advanced companies already know its benefits. They are now running ambitious measurement programs to demonstrate E-learning's positive impact on customer service, productivity and sales. Results can show such proof that is why as per the estimation by Gartner Group about 30 per cent of its E-learning clients use metrics to chart E-learning's impact on the company's performance.

E-learning is delivering education and training to the desktop live by an instructor, or self-paced from a set of courses database stored on the enterprise LAN or via an ASP. Curriculum is developed either by a content provider or in-house and can also be delivered on a CD-ROM. Gartner Group identified four main reasons why companies opt for E-learning, as well as the metrics used to define a program's success:

- Enterprise transformation: E-learning will only grow in importance once companies view this method of training as a tool to foster enterprise transformation. Transformation includes gaining new competencies and

launching new products and services at the same time as evolving into an E-business.

- The metric to track: The additional revenue or market share the company generates because of a new competency acquired through E-learning.
- Acquisitions: If companies merge, an important metric is how many products from the acquired company are sold in a certain time frame by the sales force of the acquiring company after an E-learning project requires speeding on the acquired company's products. E-learning suits perfectly for this, given how quickly a curriculum can be distributed vs. going off to a classroom.
- Constant innovation: In industries with constant innovation, like pharmaceuticals and financial services-where new products are rolled out many times during the year-time to market with sales of new products based upon the new competencies of the sales force becomes an important E-learning measure.
- The sooner employees grasp the new knowledge, the sooner the new expertise can be implemented to a revenue growth strategy. This "time-to-understanding" metric is important for capturing the downtime and opportunity costs incurred during training, especially as more companies consider constant learning as an integral part of an employee's job.
- Supply chain: Manufacturers need to train strategic audiences other than their own employees. Aldrich says salespeople at a car dealership are a good example. Auto manufacturers could provide technical product information and updates to dealer, salespeople and even mechanics. A host of circumstances are motivating companies to develop measurement programs far beyond determining whether an employee got an "A" on the final exam.

The cost of E-learning packages and the explicit acknowledgement that employee expertise are critical to success demand that companies actually

quantify the dollar value of improved employee performance based on E-learning. This kind of inquiry is no different from that conducted in the industrial age after a capital investment. But now the capital is defined in people, not machines. Measurement frameworks will need to adjust accordingly to the E-learning factor.

**Dylan Tweney (January 2001)** developed paper titled “Want Smarter Employees? Get on the E-train.” Companies have been caught in a bind when it is a matter related to training. Teaching new skills is critical to keep employees motivated and productive. But classroom instruction is often expensive, slow, and ineffective. Besides, how to provide effective professional education without sticking people in mind-deadening classrooms for days at a time? E-training may be just the ticket. E-training provides better teaching tools by integrating audio, video, animation, text, and interactive material to help each student learn at their optimum pace. But the real argument for online training is that it can eliminate one of the biggest costs of real-world training i.e. travel.

**According to Brandon Hall of online-learning research firm Brandon-Hall.com**, E-learning has produced training budget savings of 40 to 60 per cent for large organizations such as Ernst & Young, IBM, the Internal Revenue Service, and Rockwell Collins. IBM, for instance, claims that its E-training initiative, Basic Blue, which teaches basic management skills to new managers, saved the company's \$200 million in 1999. Eliminating travel expenses formerly required bringing employees and instructors to a central classroom accounts for much of the savings. With an online course, employees can learn from any Internet-connected PC, right from their desks at the home or in the office. Attracted by such potentially huge savings, companies are investing their funds in online training.

### **Findings:**

Following data has been gathered from survey and analysis done for corporate India and Abroad:

- Almost half of the companies prefer E-learning as their Training Method.
- 85 per cent of the companies believe E-learning as the most efficient way to train employees.
- 79 per cent of the companies are turning to invest more funds to modernize their current LMS System.
- 86 per cent of the employees prefer E-learning for corporate training requirements.
- As few Indian companies are rapidly showing their presence globally, around 90 per cent of organizations in India are about to spend more efforts and time on L&D preference given to E-learning.
- By 2028, India is about to turn into the 3rd largest economy globally. Therefore, it is a big challenge to maintain the growth momentum of the economy and to keep the pace with L&D practices in an intense competitive business environment.
- The number of skilled professionals are not enough especially in the frontline positions. Due to a growing demand for experienced professionals, this challenge emerges as an opportunity for Indian L&D industry which is estimated to triple by 2015.
- Amongst the various sectors which are making extensive use E-learning for L&D and also spending considerable amount on it are IT, BPO, technology, banking and the financial sector.
- Though a majority of Indian companies are dependent on the traditional learning methods, still an opportunity lies to increase the contribution of e-learning by delivering customized content to the companies.
- With organizations keen to adopt E-learning programs to assist talent management, the demand for customized e-learning content and technology is expected to rise. · In the world most of the companies using

E-learning to train their employees. According to Cross knowledge (distance learning solutions).

- In UK, Spain and Benelux about 40 per cent of companies use e-learning to train more than half of their employees. France uses E-learning only for 17 per cent of its employees. In the services sector, 43 per cent of the companies train more than half of their employees via E-learning.
- E-learning usage has been increasing rapidly since 2012. To be economical, many organizations are seeking to maintain or reduce their overall training budget; moreover they are looking to reduce training cost per learner in order to train a greater number of employees without increasing their budget on training.
- The results of the barometer verify that E-learning has proved itself as a credible delivery tool for all sizes of enterprise. Whether the enterprise has limited number of employees or a very large number, the number of users is on the up. Many companies like Franklin Covey, Toshiba, Michigan Office of Public Health Preparedness Sales Readiness Groups, and Xerox are implementing e-learning to increase efficiency and effectiveness of their employee. E-learning enhances performance of employee and it reduces the training cost.
- According to New Ambient Insight Report, the Asian E-learning market is expected to touch \$11.5 billion by 2016. It is revealed that Vietnam and Malaysia are the 2 countries with the highest growth rates in the world, with 44.3 per cent and 39.4 per cent respectively. Following closely behind these countries are Thailand, Philippines, India and China, with 30-35 per cent growth rate.
- Corporations save about 50-70 per cent when they use E-learning instead of instructor-based training with (IOMA 2002). Training via E-learning involves courses that can be delivered into shorter sessions and spread out over different days so that the business would not lose an employee for

entire days at a time. Moreover, it enhances productivity as employees save travelling time.

- It is not to surprise that the larger firms and companies that are technology-savvy are using more advanced forms of E-learning as compared to small firms. At fortune 500 firms, 73.6 per cent of technology-delivered learning is done using networked, online methods.

### References:

- A. Hodges, “Corporate E-learning: how three healthcare companies implement and measure the effectiveness of E-learning,” University of Alabama, 2009.
- Admiraal, W., & Lockhorst, D. (2009). E-learning in small and medium-sized enterprises across Europe-Attitudes towards technology, learning and training. *International Small Business Journal*, 27(6), 743-767.
- Bindhu, A. and Manohar, Hansa Lysander (2015), “Dimensions of e-learning effectiveness: a theoretical perspective”, *International journal of economic research*.- New Delhi : Serials Publ., ISSN 0972-9380, ZDB-ID 24673687. - Vol. 12.2015, 2, p. 411-416
- Chen, E. T. (2008) “Successful ELearning in corporations”. *Communications of the IIMA*, 8(2), 45-II
- Driscoll, M. (2002). *Web-based training; creating e-learning experiences* (2<sup>nd</sup> ed.). San Francisco: Jossey-Bass/Pfeiffer.

- Ekta Srivastava and Dr Nisha Agarwal (2013); E-learning: New trend in Education and Training *Int. J. of Adv. Res.* (10). 0] (ISSN 2320-5407).
- Faherty, R. (2003). "Corporate E-learning". Retrieved August 2013 from: [http://www.comp.dit.ie/rfitzpatrick/MSc\\_Publications/2003\\_Rodger\\_Faherty.pdf](http://www.comp.dit.ie/rfitzpatrick/MSc_Publications/2003_Rodger_Faherty.pdf)
- G V Shangeerthana, K Chandrasekar, International Journal of Advance
- How E-Learning Can Increase ROI for Training By Thing's Research Department: Thomas P. Burke The Impact of E-learning on Workforce Training”
- Juha P. Lahti, Taminee Shinasharkey, "Corporate E-learning Position in Finnish Energy Business - Power Market Perspective", The Eighth International Conference on eLearning for Knowledge-Based Society, 23-24 February 2012, Thailand
- Kimiloglu, H., Ozturan, M., Kutlu, B. (2013), "E-learning for Corporate Trainings in Turkey: An Exploratory Study", *Business Management Dynamics*, Vol: 3, No: 3, pp. 27-38.
- Kristal Teresa Reynolds., 2012, "Critical Success Elements for the Design and Implementation of Organizational E-Learning", Available at: [http://eprints.qut.edu.au/60240/1/Kristal\\_Reynolds\\_Thesis.pdf](http://eprints.qut.edu.au/60240/1/Kristal_Reynolds_Thesis.pdf)
- L Brown, E Murphy, V Wade, "Human Resource Development Implications for Large and Small Organisations" *Human Resource Development International* 9 (3), 415-427
- Maxwell, Amita (July 2012) Technological Advancements in Methods of Training with Reference to Online Training: Impact and Issues for Organizations. *Researchers World: Journal of Arts, Science & Commerce*; Jul 2012, Vol. 3 Issue 2, p87
- Mwangi, Josephine Nyokabi, "An Investigation towards E-Learning at the Workplace: A Case Study of UNEP Staff at Gigiri ”
- Naresh B, Dr. Bhanu Sree Reddy (June 2015), Challenges and opportunity of E-Learning in Developed and Developing Countries-A Review,

International Journal of Emerging Research in Management & Technology  
ISSN: 2278-9359 (Volume-4, Issue-6)

- Nishikant Waikar —Healthcare: E-learning in India-A time for booster dose, [www.themanager.org](http://www.themanager.org)
- Ozturan, M., & Kutlu, B. (2010). Employee satisfaction of corporate e-learning
- Pramila Rao, (2011) "E-learning in India: the role of national culture and strategic implications", *Multicultural Education & Technology Journal*, Vol. 5 Iss: 2, pp.129 — 150
- Prince F. Ellis & Kevin D. Kuznia, “corporate elearning impact on employees”, *Global Journal of Business Research*, Volume 8, Number 4, 2014, ISSN : 1931-0277 (print) and ISSN: 2157-0191 (online)
- Priyanka Chauhan Indora( September, 2014), Training, E-Training and Technological Advancements in Cement Industry, *International Journal of Innovative Research & Development*, ISSN 2278 — 0211 (Online), [www.ijird.com](http://www.ijird.com), Vol 3 Issue 9,pg 344
- Renju Mathai, Impact of Robust Technology Training through E-Learning in Corporate Hotels in India, *Journal of Management Research*, ISSN 1941-899X, 2014, Vol. 6, No. 3  
Research, Ideas and Innovations in Technology. ISSN: 2454, (Volume2, Issue6)
- Rohini Sharma & Pallavi Banjare, E-learning: An effective tool of training employees for learning organizations
- S. M. Imran, Naushad Ali P.M(2014), *Trends in Information Management (TRIM)*, ISSN: 0973-4163 10 (1), pp. 23-38
- Salleh, Mazleena and David, Oye and Iahad, Noorminshah (2012) *The impact of e-learning in workplace: focus on organizations and healthcare environments*. *International Arab Journal of e-Technology*, 2 (4). pp. 203-209. ISSN 1997-6364

- Sheikh Mohd Imran, “Trends and Issues of E-Learning in Lis-Education in India: A Pragmatic Perspective” BJIS, Marília (SP), v.6, n.2, p.26-45, Jul./Dec. 2012. Available in: <<http://www2.marilia.Unesp.br/revistas/index.php/bjis/index>>. ISSN: 1981-1640
- -training programs. Procedia -Social and Behavioral Sciences, 2(2), 5561-5565. doi:10.1016/j.sbspro.2010.03.907
- Vasudha Dhingra, Kamlesh Gakhar, “Employee Development Practices in Telecom Industry in India-A case study of Public Sector” IOSR Journal of Business and Management (IOSR-JBM) e-SN: 2278-487X, p-ISSN: 2319-7668. Volume 16, Issue 8. Ver. III (Aug. 2014), PP 05-12 [www.iosrjournals.org](http://www.iosrjournals.org)
- Ying Chieh Liu, Yu-A Huang, & Chad Lin. (2012). Organizational Factors Effects on the Success of E-Learning Systems and Organizational Benefits: An Empirical Study in Taiwan.13(4)

### Notes:

- [http://www.wsu.ac.za/academic/allppt/gangata.pptx/future of E-learning](http://www.wsu.ac.za/academic/allppt/gangata.pptx/future%20of%20E-learning).
- [https://en.wikipedia.org/wiki/Tata\\_Management\\_Training\\_Centre](https://en.wikipedia.org/wiki/Tata_Management_Training_Centre)
- <http://www.kenwong.8m.com/e-learning.htm#CORPORATE%20TRAINING>
- <http://www.gecapital.in/careers-training-development.html>
- [http://www.damits.ac.in/ejournal\\_doc/E-learning.pdf](http://www.damits.ac.in/ejournal_doc/E-learning.pdf)
- <https://julietausend.files.wordpress.com/2012/02/effects-of-multimedia-on-elearning.pdf>
- Australian Flexible Learning Framework. (2011). 2011 E-learning benchmarking survey: Final report. Canberra, ACT.

**CHAPTER 3**

**A BRIEF PROFILE OF THE COVERED  
UNDERTAKINGS**

This chapter presents a monograph of the selected leading power sector companies in India. The profile includes the past records of covered undertakings, their operations, broad area of activities, introduction to their subsidiaries, organizational structures, manpower, turnover and most importantly learning and development practices followed by them.

### **3.1 Adani Power Limited**

#### **3.1.1 Introduction**

Adani Power Limited is the power business tycoon of Indian businesses conglomerate Adani Group, the head office of which is located at Ahmedabad, Gujarat. It is India's largest thermal private power producer with capacity of 5280 MW and also is the largest solar power producer of India with capacity 40MW. Five supercritical boilers of 660MW each is presently operated by the company at Mundra, Gujrat and one 660MW out of them is at Tirora, Maharashtra.

It also manages a mega solar plant with the capacity of 40MW at Surendra Nagar, Gujrat. It is first Indian company to achieve the supercritical technology. This is the single thermal power plant in India which is certified by UN under CDM. The company is now about to implement 16500 MW at different stages of construction. Its motive is to achieve 20000 MW by 2020. It produces the electricity using coal only. 100MW of solar power station is also under a progressive stage of implementation at Surendra Nagar in Gujarat out of which 40MW is already commissioned. The company, with the government of Gujarat, Maharashtra, Haryana and Rajasthan has undergone a long term PPAs of about 7200MW of its 9280MW.

### 3.1.2 Historical Backdrop

On August 22, 1996, the Company was co-opted as Adani Power Limited as a power trading company. It transformed into a private entity on June 3, 2002 and converted thereafter into a public limited company on April 12, 2007 and altered its name to Adani Power Limited. Adani Power started generation in July 2009 by implementation of its first 330 MW of 4620 MW at Mundra. It enrolled another three 330 MW in November 2010 and country's first supercritical unit of 660 MW on 22 December 2010 with the capacity of 1980 MW. It synchronised its second unit of 660 MW on 6th June 2011 bringing the total generating capacity to 2640 MW and on 2 October 2011, third super critical unit with national grid was also synchronised. With this, Adani Power in the private sector, became a giant thermal power generating company and the Mundra plant became India's leading power plant with potential of 3300 MW. It commissioned the last unit of Mundra Project in February 2012, to undertake its capacity to 4620 MW making Mundra TPP the largest privately held thermal power plant in the world and fifth largest on an overall basis, as of March 2012. It turned into the largest thermal power plant in Asia after its completion.

In February 2012, the last unit of Mundra Project was commissioned to take its capacity to 4620 MW making the Mundra TPP to be the king-sized privately owned thermal power plant in the world and fifth largest on an overall basis, as of March 2012. This plant has become the giant-sized thermal power plant in Asia after its completion on April 3, 2014, Adani Power Ltd. announced the commissioning of the fourth unit of 660 MW at its power plant at Tiroda in Maharashtra, India, with an overall installed capacity of 9,280 MW. The fifth unit was commissioned later in 2014.

### 3.1.3 Subsidiaries of the company

The company owns five subsidiaries:

#### **Adani Power Maharashtra Limited:**

On April 11, 2007 Adani Power Maharashtra Private Limited was incorporated under the Companies Act in Ahmedabad. It then transformed into a public company on May 16, 2008 and its name was subsequently changed to APML. APML is enrolled in generating, accumulating, distributing and supplying of the electricity. APML executed the Tiroda Power Project.

#### **Adani Power Rajasthan Limited:**

On January 25, 2008 Adani Power Rajasthan Private Limited was incorporated under the Companies Act in Ahmedabad. On April 29, 2008 Adani Power Rajasthan Private Limited became a public company and the name was altered to APRL.

#### **Adani Power Dahej Limited:**

Dahej Power Private Limited was incorporated under the Companies Act on February 6, 2006. On December 15, 2007 APDL became the subsidiary and on May 16, 2008 its name was transformed to Adani Power Dahej Limited. APDL generates, accumulates, distributes and supplies electricity. Mundra Power SEZ Limited: on October 27, 2008 it was incorporated under the Companies Act in Ahmedabad. The business of the company is to develop a Special Economic Zone to establish electric and power distribution, industrial and commercial undertaking by construction of roads, buildings, structures, arranging water supply, electricity supply and other energy sources, developing proper sewage systems, effluent treatment systems, social infrastructure and provide all other amenities and facilities as and when required.

#### **Adani Power Overseas Limited:**

It was incorporated in accordance with the offshore companies with a limited liability.

## **A BRIEF PROFILE OF THE COVERED UNDERTAKINGS**

---

General trading, investment, investments in properties worldwide, property development and investment in properties in Dubai World, Nakeel, Emaar, or any other approved projects by Jebel Ali Free Zone and investment in development or acquisition of assets in regards to power generation, mining shipping etc. and to support various activities of the parent company and its other subsidiaries that are engaged in business of generation and distribution of power are the core activities for which the offshore company is established.

### **3.1.4 Mergers &Acquisitions**

On May 11, 2015 Adani Power Ltd. announced the completion of acquisition of Udupi Power Corporation Limited. The company became the largest private power producer in India because its total commissioned capacity touched 10,440 MW.

### **3.1.5 Services**

To carry on the business of generation, accumulation, distribution and supply of power and to explore, develop, produce, supply and distribute or to deal in other forms of energy from any source are the main services provided by the company.

### **3.1.6 Projects**

Under different stages of development stage, it has four thermal power projects having combined installed capacity of 6,600 MW. Also, two power projects with a combined installed capacity of 3,300 MW is planned to be developed. The company aims to sell out the power generators from these projects with a combination of long-term power purchase agreements to industrial and state-owned consumers and on commercial basis.

### **3.1.7 Turnover**

With an installed capacity of 10,480 MW including a 40 MW solar plant at Bitta, Gujarat, Adani is the largest thermal power producer in India's private sector. Four of

## **A BRIEF PROFILE OF THE COVERED UNDERTAKINGS**

---

the power projects which provide reliable and eco-friendly energy solutions in the form of CNG and PNG are spread across Gujarat, Maharashtra, Karnataka and Rajasthan.

At 10,440 MW in the private sector, Adani Power Limited owns and runs India's largest thermal power plant. The 4,620 MW power plant in Mundra, which is the largest single-location private coal-based power plant in the world, the 3,300 MW Tiroda power plant, the 1,320 MW Kawai power plant and the 1,200 MW Udupi power plant are some of the Company's modern power plant assets .

Adani Power has a well maintained growth plan to boost power capacity to 20,000 MW by 2020 and assist to the country's growth and progress. During financial year 2016-17, the company continued to see the outcome of the overcapacity situation in the form of low demand for short-term contracts, diminished merchant prices and reduced off take by some long term customers.

However, with a major portion of the capacity tied under long-term PPAs, and with the ability to keep high availability of their plants, they have been able to live through the vagaries of the market. During FY 2016-17, the company sold 60.2 billion units on a consolidated basis, and recorded total revenues of 23,203 crores. Of this, the Standalone business accounted for sales of 27.6 billion units and 11,753 crores of revenues. Among the subsidiaries, the Tiroda plant sold 17.3 billion units, the Kawai plant sold 7.9 billion units, and the Udupi plant sold 7.4 billion units. The unavailability of fuel cost pass through for imported coal was a key challenge that the company faced, especially at the Mundra plant. This has resulted into an under-recovery of costs at the plant.

### **3.1.8 Team**

The Company is promoted by Gautam S. Adani, Rajesh S. Adani and Adani Enterprises Limited.

The company employs 10,400 employees in total (As of march 2015). With an average of 33 years, it has a young work force which gives them the opportunity to spot and nurture talent, and to build leaders for the next phase of growth. At the same time, it ensures health and safety of the workforce as a key priority. It was ranked among the top 100 workplaces in India in the financial year 2015-16. They aim to live up to the standards of employee's expectations, and improve their standing even further.

### **3.1.9 Learning and Development Practice**

Adani Power encountered severe crisis of skilled and knowledgeable professionals with experience in Supercritical Technology. The team was constituted with members from different backgrounds and several proficiency levels and functional areas. The challenge therefore was in creating a healthy environment and culture of learning and re-learning.

Adani Power strongly believes that for business excellence the human resource is the most important and valuable asset that must be nurtured by creating an engaging environment and culture of innovation, modification, learning as well as development. In the ever changing business environment, continuous learning and development of the professionals is the only way to move across through the prevailing VUCA - volatile, uncertain, complex and ambiguous environment.

Adani Power has established a training and development center and has made a remarkable effort in training of 3000 plus strong workforce. The endeavor objects to cover all employee levels as well as all business functions involved in construction and O&M of thermal power plants, HVDC and EHVAC transmission line, sub-stations and distribution spread across India.

Adani Power Training & Research Institute (APTRI) is the Research and Performance Consulting Center of Adani Power Ltd. The programs and activities aims to improve performance and efficiency and enhancement of delivery of electricity. APTRI

## **A BRIEF PROFILE OF THE COVERED UNDERTAKINGS**

---

operates for focused programs having great results and outcomes through its four centers of excellence (CoEs). The four CoEs act as the levers and enablers for APTRI to be updated with the latest tools and techniques for performance and efficiency improvements through potential for backward and forward integration. The CoEs Track - Update - Connect - Innovate - Invigorate - Reinforce Learning and Unlearning amongst each other by equipping with the latest developments and technological advancements across the globe.

APTRI lecture halls, conference rooms and auditoriums, Hostel and Guest House are equipped with state of the art Video Conferencing facility. Inter-site knowledge exchange and experience sharing programs are regulated regularly amongst the centers across India as well as in abroad. The scope of the programs expanded to Engineering, Business Transformation and Change Management, Business Development, Techno-commercial, Finance, HRD and allied departments and services of the Adani Power Business is dispersed across the country.

APTRI has thus emerged from the intensive scientific analysis and efforts undertaken by team of highly experienced National and International professionals from top utilities and organization like Babcock & Wilcox, GE, ABB, Alstom, NTPC, SEBs, IPPs, other Industry clusters and Subject Matter Experts to understand and analyze the competencies and need for training for the new technologies and operational skill across all the segments of power business throughout the entire value chain.

APTRI has organized several training programs for highly experienced professionals from country's oldest utilities to ensure dissemination of best practices across the energy industry.

APTRI expertise in enabling transformation, managing change and enhancing competence of the professionals at all levels has been well recognized and has been extended to other utilities too. APTRI also conducts GET, MT and ET level programs of up-to 26 weeks for not only the professionals recruited by the Adani Group, but also

to the recruits of other companies who get trained at APTRI facilities under these courses.

APTRI contributes to Group Level Common Technical Training Programs. APTRI keeping in mind the close relevance to all the businesses, declared Ten Pilot Programs, Six common technical training programs were organized recently at APL-Mundra with the help of internal faculties. Participants from various businesses participated and appreciated the programs in terms of content and application in to their work areas. APTRI Center is dedicated to research and development in technical and policy relevant studies in all the sectors of energy and power. The Center for R&D (CR&D) has initiated its R&D activities to look beyond typical operational and project management aspects and instead focus on creating organizational ability for innovation, collaboration and building a network of partners for Research & Development. APTRI, for better dissemination of knowledge and solutions for critical problems faced by the power industry has established linkages with other training and research institutes for knowledge sharing, faculty exchange and optimum resource utilization leading to Adani Power uses eVidyalaya to support and reinforce learning within diverse businesses and locations of the Group. eVidyalaya ensures that learning at Adani is not time or place bound, and it is an effective and easily accessible learning experience for learner. eVidyalaya combines a variety of rich media and interactivity - audio, video, quizzes, and simulations along with follow through exercises for on the job application - that will enhance learning; and will ensure a stronger grasp of the topics; and strengthen employee capabilities.

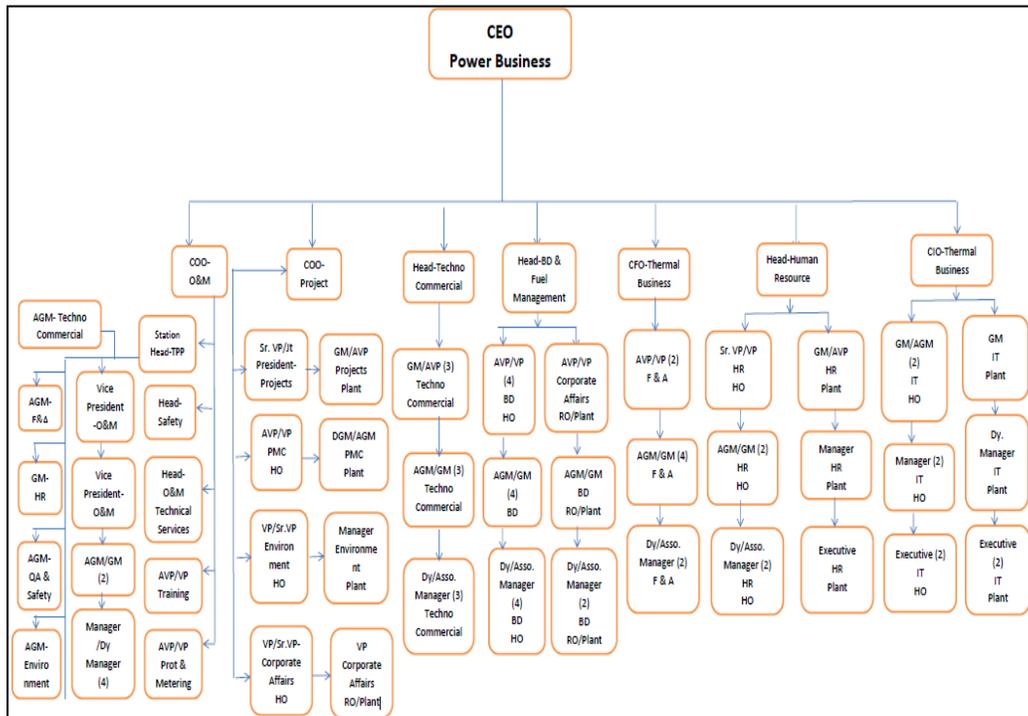
### **3.1.10 Organizational Structure**

Adani Power has a Centralized Structure of the hierarchical arrangement of authority, communications, rights and duties of an organization. It helps to analyze the manner in which the roles, power and responsibilities are assigned, controlled, and coordinated, and the way information is exchanged among the various levels of management. The top layer of management mainly has the decision making power and has tight control

## A BRIEF PROFILE OF THE COVERED UNDERTAKINGS

over departments and divisions. The departments and divisions may have different degrees of independence and the decision making power is delegated.

**Chart 3.1**  
**Organization Structure of Adani Ltd.**



## 3.2 Torrent Power Limited

### 3.2.1 Introduction

Torrent Power Limited is an Indian company engaged in the generating, transmitting and distributing electricity. It is one of the largest private sector players in India. It is also an integrated power utility having current operations running in the states of Gujarat and Maharashtra and Uttar Pradesh. It is one of the leading brands in the Indian power sector and ranks amongst the best running power utilities in the country

with highly efficient assets committed to its mission of transforming life by serving two of the most critical needs i.e. healthcare and power. It has a portfolio of coal based, gas based and renewable power plants with an aggregate generation capacity of 3334 MW.

### **3.2.2 Historical Backdrop**

Torrent Power Limited was formerly incorporated on April 29, 2004 under the Companies Act, 1956 as Torrent Power Trading Private Limited. In January 25, 2006, the name of the company was subsequently changed to Torrent Power Private Ltd. Pursuant to the Composite Scheme of Arrangement including Amalgamation sanctioned by the order of the Hon'ble High Court of Gujarat at Ahmedabad dated July 12, 2006, the undertakings of Torrent Power AEC Limited, Torrent Power SEC Limited and Torrent Power Generation Limited as a going concern are transferred to and vested in TPL on and from the Appointed date, i.e., April 1, 2005.

The main objective for which the Company has been established is set out in its Memorandum of Association. These are mentioned here under: To purchase generate, transmit, distribute, procure, sell, trade, import- export or otherwise deal in all forms of electrical power in all aspects, to own, promote, set up, establish, develop, maintain, run, operate, manage and acquire generating company, generating station or stations of every kind and description, and to own, promote, set up, establish, develop, maintain, run, operate and manage transmission and distribution networks or systems and to acquire, in any manner, these networks or systems and to act as agent or representative of any person engaged in the planning, development, generation, transmission, distribution, supply, trading or financing of power and to investigate, research, design and prepare feasibility, appraisal or project reports and to build and execute projects for generation, transmission, distribution, supply, purchase, sale, trading, import, export, storage and accumulation of all forms of electrical power and to engage in all activities incidental thereto.

### **3.2.3 Subsidiaries**

Company's subsidiaries include Torrent Power Grid Ltd, Torrent Energy Ltd, Torrent Pipavav Generation Ltd and Torrent Power Bhiwandi Ltd.

#### **Torrent Power Grid Ltd**

In July 28, 2006, the company divested their stake partially in AEC Cements & Constructions Ltd, a non-material and non-listed subsidiary and hence AEC Cements & Constructions Ltd closed down to be a subsidiary company. On October 19, 2006, Torrent Power Grid Ltd (erstwhile Torrent Power Transmission PVT Ltd), a joint venture company with Power Grid Corporation of India Ltd reformed a subsidiary of the company. It commissioned the first phase of evacuation arrangement by constructing 26 km Jhanor-Vapi LILO line. To connect SUGEN plant with 220 km sub-station of GETCO, the company has installed and commissioned transmission lines.

#### **Torrent Energy Ltd.**

In August 15, 2009, the company fully commissioned their ambitious SUGEN Mega Power Project. The company commissioned 1147.5 MW SUGEN Mega Power Project on September 30, 2009. The company was awarded the distribution franchise for Agra and Kanpur distribution circles for a period of 20 years. They commenced distribution operations at Agra from April 1, 2010. Torrent Energy Limited (TEL) became the Distribution Licensee for Dahej SEZ and in April 4, 2010, they commenced the distribution of power.

#### **Torrent Pipavav Generation Ltd**

In May 2007, the company signed a memorandum of understanding (MoU) with Gujarat Power Corporation for setting up over 1000-MW coal based power project at Pipavav, Amreli Dist. in Gujarat. During the year 2008-09, the company added 352 Distribution Transformers of 11 km at Ahmedabad, Gandhinagar and Surat.

### **Torrent Power Bhiwandi Ltd**

In December 20, 2006, the company signed a distribution franchise agreement with Maharashtra State Electricity Distribution Company Ltd for the Bhiwandi circle in Maharashtra for a period of ten years. In January 26, 2007, the company started Distribution Franchise for Bhiwandi circle of Maharashtra State Electricity Distribution Company Ltd serving to 1.4 lakh customers with an unrestricted demand of about 700 MW. In September 2008, the company formed Torrent Power Bhiwandi Ltd as a subsidiary company to provide infrastructural and manpower support for Bhiwandi operations. In October 2008, the company entered into a Power Purchase Agreement with Gujarat Paguthan Energy Corporation PVT Ltd to supply 49.6 MW wind power.

### **3.2.4 Mergers & Acquisitions**

On February 8, 2006, the company was transformed into public limited company and the name was changed to Torrent Power Ltd. In the year 2006, as per the amalgamation scheme, Torrent Power AEC Ltd, Torrent Power SEC Ltd and Torrent Power Generation Ltd and Torrent Power Generation Ltd were amalgamated with the company with effect from April 1, 2005.

### **3.2.5 Services**

Torrent Power is indulged in power generation, transmission, distribution and manufacturing and supply of power cables. Its highly efficient assets and reliable distribution network are amongst the best in the country.

The company is the sole distributor of electricity to consumers in the cities like Agra, Ahmedabad, Gandhinagar and Surat. From establishing a prominent presence in the generation sector through thermal and renewable generation to creating a channel to the distribution utilities through an effective transmission network to reaching the final consumer with uninterrupted power supply and 24X7 customer care services through its distribution network, Torrent Power has proved itself to be worthy of being an

## **A BRIEF PROFILE OF THE COVERED UNDERTAKINGS**

---

integrated power utility. It transmits and supplies more than 12 billion units of power to around 2.2 million consumers in the cities of Ahmedabad, Gandhinagar, Surat and Bhiwandi, the area span of which 408Sq. Km. and franchise area of 721 sq. km. These cities are major industrial and commercial hubs.

### **3.2.6 Projects**

It also has wind power plants under-construction aggregate to 338 MW. The gas based plants of the Company possess greater environmental value with state of the art and technology and in-built efficiency enhancing features. Torrent Power has an aggregate generating capacity of approximately 3,334 megawatts (MW) and it distributes power to over 3 million customers annually in its distribution areas of Ahmedabad, Gandhinagar, Surat and in Bhiwandi (Maharashtra) and in Agra (Uttar Pradesh).

The Company's generation facilities include an approximately 1,147.5 MW SUGEN Mega Power Plant near Surat; an over 382.5 MW UNOSUGEN Power Plant near Surat; an approximately 1,200 MW DGEN Power Plant at Dahej SEZ near Bharuch; an approximately 422 MW AMGEN Power Plant at Ahmedabad; an approximately 49.6 MW Wind Power Plant at Lalpur, Jamnagar; an approximately 51 MW Solar Power Plant at Charanka, Patan, and an approximately 81 MW GENSU Solar Power Plant near Surat. The Company distributes power to over 2.2 million customers and approximately 10 billion units of power.

### **3.2.7 Team**

The Torrent Group is a group of companies founded by late Uttam bhai Nathalal Mehta, and runned by his sons, Sudhir and Samir Mehta. The core business of the group is pharmaceuticals and power. Number of employees in Torrent Power Ltd. are 7,296 (As on March 2016).

The Group values its employees and feels that its success is the outcome of the collective contribution of all its employees. Attracting and retaining skilled employees,

stabilizing the work force in the dynamic market, enhancing their productivity, a credible and competent leadership, building an orientation that is consistent and accommodating local differences are now increasingly becoming important.

To accomplish this, the Group focused on redefining employee welfare policies to refine their personal, professional and social life. Its gender diversity initiatives, focus towards ensuring that every employee gets the chance to effectively balance both work and social life were some of the key endeavors which helped to strengthen the work culture.

### **3.2.8 Learning and Development Practice**

Torrent realizes the importance each individual holds for them. Hence, the major HR activities taken up include the Torrentian awards, through which the company recognize exemplary performance by their employees. They also organize a workshop annually for the senior executives of the group.

Torrent has a transparent performance evaluation system which examines the performance of each employee annually. With a technical and business expertise and a proven track record, Torrent Power combines the right people, skills, and technologies to help deliver high-ranking performance. Being an established progressive employer, it continuously strives to integrate employee skills and experience to create high value services for the customers. The organization thus nurtures its key asset - its people through structured training interventions directed towards on-the-job skill enhancement and self-improvement.

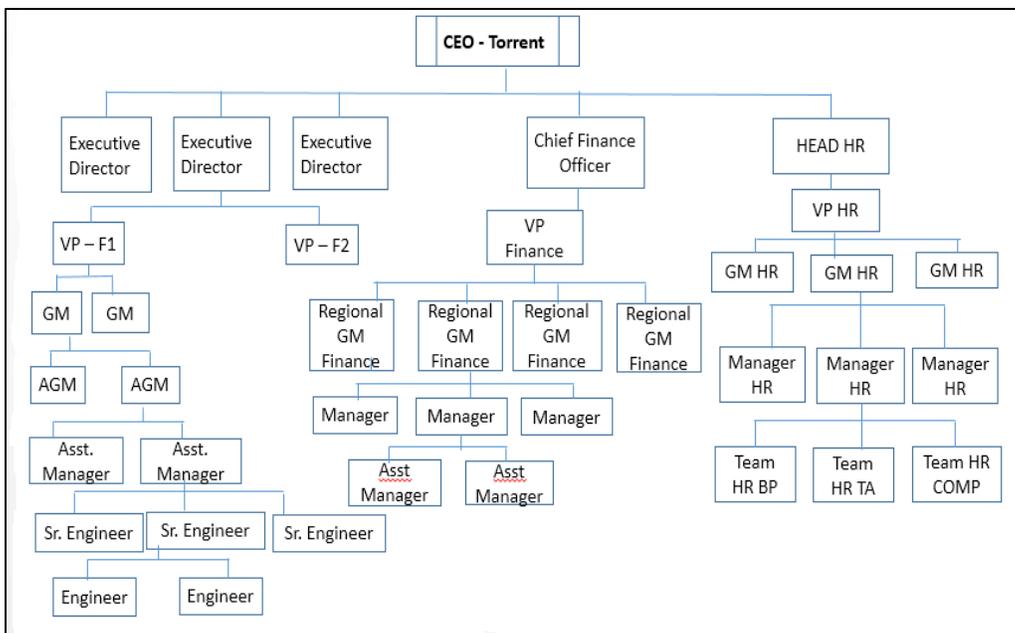
The goal of human resource development is to foster human resourcefulness through enlightened and adhesive policies in education, health and employment training, right from corporate to national level. The HR wing of the group is keen on sending employees for trainings held at premier institutes each year. It takes the initiative of sponsoring employees at all levels by nominating the deserving individuals for these training programs.

Torrent also directs members of its senior management teams for overseas training. Apart from the incentives and training programs they initiate for the field staff, there are new ways being introduced in the system to. This includes a new scheme where the company encourages a field staff to forward the name a person he considers worthy of recruitment.

**3.2.9 Organizational Structure**

Torrent Power Ltd. has divisional Structure of the hierarchical arrangement of authority, communications, rights and responsibilities. It helps to determine how information exchanges between the different levels of management and how the roles, power and responsibilities are assigned, controlled, and coordinated. The top management mainly has the decision making power and it delegates authority and responsibilities to different divisions.

**Chart 3.2  
Organization Structure of Torrent Power Ltd.**



### **3.3 KEC International Limited**

#### **3.3.1 Introduction**

KEC International Limited, the Captain Company of RPG Group is a global infrastructure Engineering, Procurement and Construction (EPC) major. It has presence in the verticals of Power Transmission & Distribution, Cables, Railways, Civil and Renewable.

It is India's largest Power Transmission Engineering, Procurement & Construction (EPC) companies in the world and second largest processor of electric power transmission towers in the world. It is headquartered in Mumbai.

The Company has superb infrastructure development in 63 countries across Africa, Americas, Central Asia, Middle East, South Asia and South East Asia. It also has operations in Algeria, Afghanistan, Egypt, Ethiopia, Ghana, Kazakhstan, Kenya, Mali, Mozambique, Namibia, Nigeria, Saudi Arabia, South Africa, Tajikistan, and the United Arab Emirates.

#### **3.3.2 Historical Backdrop**

Ramjibhai Kamani discovered Kamani Engineering Corporation (KEC) in 1945 which emerged as the first electric power transmission and a leader in the field of railway electrification and electric power transmission.

The company received an order from the Indian government to supply transmission towers for the renowned Bhakra Nangal Dam project and a steel tower fabrication plant was set up in Bombay in partnership with R. Foures, France in the year 1950. A second unit in Jaipur, Rajasthan accelerated this and by 1967, three-fifth of India's demand for transmission towers was supplied by KEC.

Heavy financial debt were bagged by KEC during the 1973 oil crisis and the 1979 energy crisis both affected international transactions adversely which was conducted in US Dollars as the world crude oil prices quadrupled. The company was bound to complete its project commitments. This resulted in the heavy losses which the company confronted. Approximately 230 million (US\$3.6 million) were invested in KEC by the financial institutions like IDBI (Industrial Development Bank of India) and started worrying when the financial reports KEC recorded a loss of 44 million (US\$690,000). They began to emphasis on "professional management". By this time, Texmaco, a K.K. Birla company started showing interest in KEC, but their bid to control the company was frustrated and they backed out. Financial institutions intervene and authorised their nominees to take over charge from the Kamani family.

Profitability of the company soon began to jump back as KEC's sales rised from 200 million (US\$3.1 million) in 1972 to 550 million (US\$8.6 million) in 1982. R.P. Goenka, chairman of the RPG Group had been struggling for KEC shares for a long time. Even after intervention of the financial institutions, some members of the Kamani family continued to keep a small number of shares in the company.

Goenka carefully purchased these shares, making sure that he did not get trapped in the same circumstances that had overthrown the Birla's attempts to take over KEC and approvals from financial institutions and shareholding negotiations were sorted out before the company was put up for court auction by the government.

### **3.3.3 Services**

The group is engaged in laying of power transmission lines on EPC globally. It also provides services like telecom infrastructure, tower testing, satellite, GPRS surveys, and hotline stringing. The company majorly deals in the following business areas: Power Transmission and & Distribution: KEC has maintained a global leadership position in the Power Transmission EPC space. Of about 7 decades of experience, it is now capable to design, manufacture, test, supply and erect transmission lines on turn-

key basis up to 1,200 kV.

KEC offers complete solutions from concept to commissioning on turnkey basis for High Voltage Air Insulated Substations (AIS) and Gas Insulated Substations (GIS) from 33kV up to 1150kV level as per IEC or other International Standards. The services under the vertical include: Design & Engineering, Project Execution, Project Management, Bid Management, and Project Feasibility Analysis across large-scale Solar Photovoltaic Power Plants for both land-mounted as well as roof-top Solar PV projects Civil. According to the vision of the company, KEC has now enlarged its business portfolio is set to include Civil Construction with its focus on Residential buildings, Industrial plants and Commercial complexes.

### **3.3.4 Merger & Acquisition**

KEC captured 100 per cent stake in SAE Towers Holdings LLC (SAE Towers) in September 2010 at an enterprise value of USD 95 million. Currently, SAE Towers is a 100 per cent completely owned subsidiary of KEC. SAE Towers' acquisition strengthened KEC's global leadership in Power Transmission space. This acquisition marked KEC's entry into huge markets of North and South America - United States, Canada, Mexico, Brazil and other native countries. America has become one of the largest markets for the Company abroad India post acquisition.

### **3.3.5 Projects**

KEC has a remarkable track record of executing transmission line projects in hospitable terrains such as seas, rivers, mountains, hills, deserts, water logged areas and forests etc.

It has the ability to outlive challenges of difficult climatic conditions and has executed projects in +40° temperature in the Middle East region to -40° temperature in the CIS region. Further, the Company has set up some of the weighty and tallest transmission towers globally.

## A BRIEF PROFILE OF THE COVERED UNDERTAKINGS

---

The company has implemented several EPC substation projects comprising design & engineering, procurement, supply, installation, testing & commissioning in multiple countries across the globe, including India as well. Currently, the Company is launching several substation projects in several countries including up to 1150 kV multiple substations at Kazakhstan, 115kV GIS twin substation projects at Saudi Arabia and 765 kV GIS Substation in India, to name some of them.

**Railway Infrastructure** KEC is a complete turnkey solutions provider in the Railways Infrastructure EPC space. In the Railway electrification space, it is one of the early entrants, having more than 12,000 km of Indian Railways electrified. The Company further started a new vertical to make in-roads into the Railway business in 2009. The Company since then enhanced its capabilities and diversified in all the functional sectors of railway construction such as Civil & Track works, Electrification and Signaling. The Company also shoulders Railway Infrastructure jobs for private customers and has developed competencies and expertise to undertake Railway projects including composite jobs in any challenging environment.

**Cables Manufacturing** KEC is one of the dominant manufacturers of power cables and telecom cables in India. It has three state-of-the-art manufacturing facilities situated in Vadodara (Gujarat), Mysore (Karnataka) and Silvassa (Union Territory). The manufacturing facilities are authorised with ISO 9001 (All 3 facilities), ISO 14001 (Mysore and Silvassa) and OHSAS 18001 (Mysore) certifications. KEC gain access into the cables business by acquiring RPG Cables in 2010. RPG Cables with a rich experience of over 5 decades is one of the veteran and largest, fully integrated cable manufacturers in India.

It pioneered the production of XLPE cables in India. It has a distinct clientele across industries which include power, engineering, electricity supply, oil & gas, steel, etc.

## A BRIEF PROFILE OF THE COVERED UNDERTAKINGS

---

The company is one of the supreme Indian exporters of cables. It has a strong Indian marketing and distribution network comprising dealers and sales offices. The company is well equipped with all the testing facilities as per various national and international specifications. With its constant focus on the growth, the company has established a World Class facility at Vadodara (Gujarat, India) to manufacture HT and EHV cables of up to 220 kV.

The new plant is flourished with state-of-the-art manufacturing and testing facilities sourced from international domain experts to maintain high standards of quality and safety. The plant has the capacity of manufacturing corrugated Aluminum sheath and Milliken conductor with conductor cross-sections up to 2000 sq. mm with a triple-extrusion insulation line. The plant has an installed capacity of 3,600 cable kilometers annually and is designed for capacity expansion in the future. The 'Platinum' rated Green Facility certification from the Indian Green Building Council has been awarded to the Vadodara facility for its sustainable initiatives. It is India's prime Cable manufacturing plant to receive this honour.

RPG Cables has an extensive sales network across the country with sales offices and licensed dealers to cater to its customers' needs. It has a strong and dedicated team for exports which has covered over 50 countries through power and telecom cables supply. RPG Cables' brand is approved by EPC companies and electrical consultants in India. The Company is capable to manufacture over 36,000 kilometers of power cables, 0.6 million core kilometers of jelly filled telecom cables and 0.365 million fiber kilometers of optical fiber cables.

**Solar In Line** With the Government's increased focus on Renewable Energy sector, KEC has made a significant presence in the sector by providing Solar EPC services for large solar PV projects prepared by private players and roof-top PV solutions for Industrial and Commercial consumers. Further, we are empanelled with the Ministry of New and Renewable Energy (MNRE) under their Solar On-grid program

contributing to the National roof-top mission.

With a comprehensive expertise and capabilities developed in the **civil construction arena** over the years, KEC bounds the business by adopting latest and advanced technologies for construction. The aim is to provide best safety and quality practices, follow upgraded technologies in the construction and prepare a project management team led by industry veterans to provide best services to the esteemed customers. KEC's Water Business has a remarkable component of Civil and Structural Engineering which is merged with the Civil Business with the object of driving further collaborations and manage efficiencies.

The Company owns a complete integrated water and **Waste Water management projects** which includes Embankment & Flood Control, Sewage & Industrial Effluent Treatment and Potable Water Treatment & Distribution. The Company is capable to bring about a world class technologies in water & waste water management as per customer requirements.

### 3.3.6 Turnover

KEC International consolidated revenue for the quarter came in at Rs. 2849 crore, registering 11.3 per cent year on year increase. EBITDA for the quarter got raised by 29.2 per cent yoy(year over year) to Rs. 301 crore with a corresponding margin expansion of 146 bps. EBITDA margin for the quarter stood at 10.6 per cent. The PAT for the quarter came in at Rs. 146 crore, yoy increase of 90.6 per cent. This was mainly due to a hike in other income to Rs. 11.38 crore vs Rs. 1.1 crore in corresponding quarter of last year. Also, 9.7 per cent yoy dip in finance cost aided PAT growth. The revenue for the FY17 remained constant at Rs. 8584 crore compared to Rs. 8518 crore in Q4FY16 while EBITDA for the period raised 18.1 per cent yoy to Rs. 818 crore. Company gained a net profit of Rs.305 crore, raised by 106.1 per cent yoy. KEC International Ltd is presently trading at Rs. 245.3, up by 8.9 points or 3.76 per cent from its previous closing of Rs. 236.4 on the BSE. The scrip opened at Rs. 239 and has

touched a high and low of Rs. 249.3 and Rs. 232.2 respectively. So far 2863286(NSE+BSE) shares were traded on the counter.

The stock is at present trading below its 50 DMA.

### **3.3.7 Team**

Number of employees was 5,600 (As of March 2016). The company was ranked among the top 50 workplaces in India in the financial year15-16. They motive is to live up to the employees expectations and improve the standing even further.

The company has a young and enthusiastic work force, with an average age of 32 years, which gives them the scope to identify and nurture talent, and to cultivate leaders for the further stage growth stage. At the same time, it also ensures health and safety of the employees at the workplace.

The company has also set about on a safety culture transformation journey to attain supremacy in all the prospects regarding safety. KEC International offers challenging assignments, independence at work and the opportunity to progress along with the organization. They prepare high performing mangers through global exposure and empowerment.

### **3.3.8 Learning and Development Practice**

KEC believes in building leadership by supporting and empowering the internal talent. The resource philosophy of RPG is "Talent First" which ensures that the internal talent is given the preference to avail the opportunities first within RPG Group companies. This makes their Learning and OD practices, of prime importance.

The learning strategy of KEC is hinge on the principle of providing personalized

learning experience to every employee by the method of creating a customized Development Action Plan, implemented through a multifaceted learning intercessions in a form of · Classroom learning programs, · Action Learning Plans, · E-Learning Resources for self-paced learning, · On-the job learning and · Blended Learning programs, which aroused as part of the KEC University.

The company has over 5000 digital learning resources, which are accessible to 5600+ employees, as and when needed. Besides creation and actioning of customized DAPs, job rotation, potential assessment, 360 degree feedback, assessment and development centers are additional initiatives that the company undertakes to prepare their internal talent for current and future tasks.

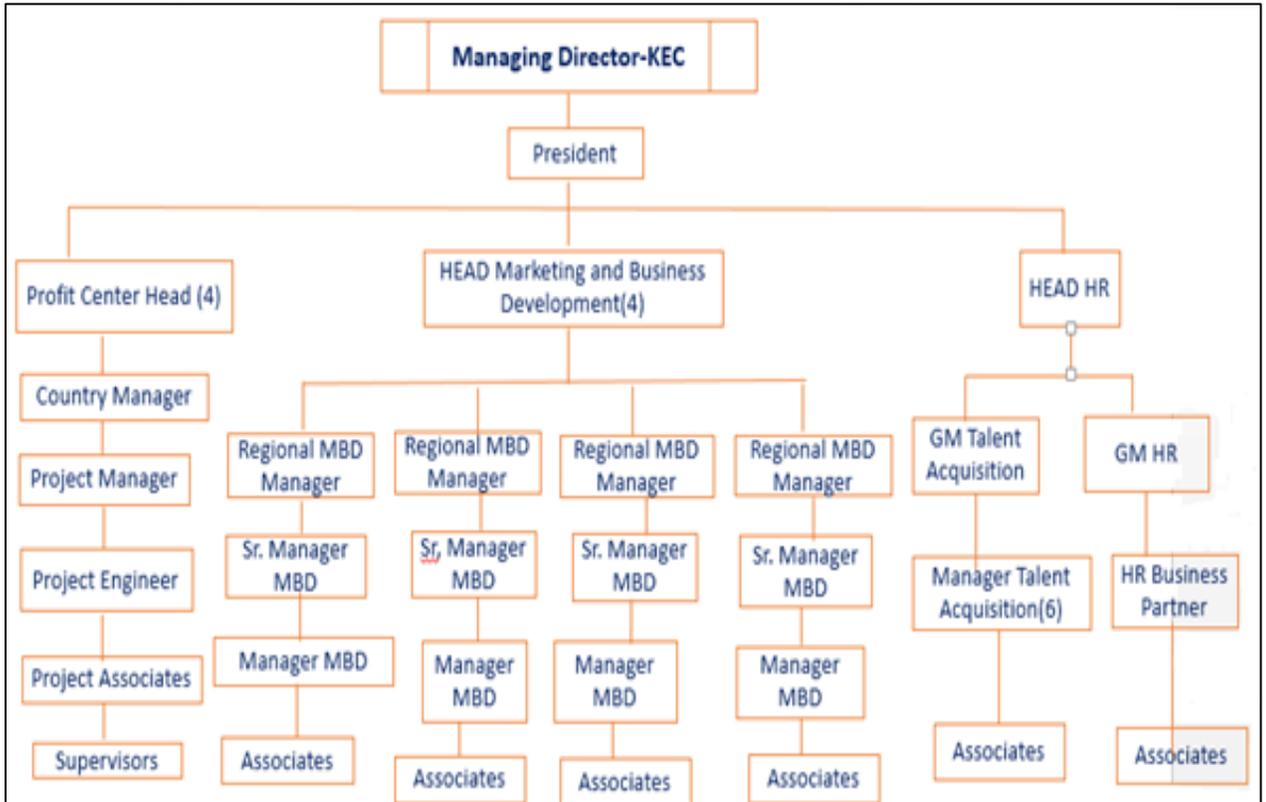
Their Leadership Development Programs are formulated and settled down in partnership with academic institutions such as Indian Institute of Management, Ahmedabad and Indian School of Business. These are targeted at focused development of the Top Talent and senior leadership. At KEC keen interest is taken in the development of their employees, for they believe that the growth of their people is imperative for the growth of the organization.

### **3.3.9 Organizational structure**

KEC has the hierarchical arrangement of the divisional Structure of authority, communications, rights and duties of an organization. It helps to determine the manner in which the roles, authority and responsibilities are assigned, controlled, and coordinated, and how communication takes place among the different levels of management.

Chart 3.3

Organization Structure of KEC International



### **3.4 ABB Limited**

#### **3.4.1 Introduction**

ABB is the prime leader in technology that works closely with utility, industry, transport and infrastructure customers in approximately 100 countries. With over more than four decades as the spread head of digital technologies, it is the pioneer of digitally connected and enabled industrial equipment and systems connecting 70 million devices with an installed base of more than 70,000 control systems.

ABB being the leader in the power and electronic components enables the utility and industry customers to enhance their performance while lowering down the environmental impact.

The ABB Group comprises of several divisions which includes Power Products, Power Systems, Discrete Automation and Motion, Low Voltage Products, and Process Automation. Technology plays a supreme role in the prosperity of the Group.

ABB has its functioning across the world working to develop distinct technologies that make ABB customers more combative while minimizing environmental impact. Like technology is integral to all aspects of ABB's business. The ABB Group attempts to balance economic, environmental and social objectives and incorporates them into day to day business decisions.

The ABB Group is a public listed company which functions in approximately 100 countries and employs around 135,000 people. Its Headquarter is in Zurich, Switzerland, Shares of ABB are traded on the stock exchanges of Zurich, Stockholm and New York. ABB has been engaged in the energy business for about 120 years and has introduced many innovations that define the industrial and utility landscape, such as ABB variable speed drives, and ABB industrial robots.

### **3.4.2 Services**

ABB creates and supports a mass of products, systems and services that accelerates energy efficiency, reliability and productivity for their industrial and utility customers. ABB provides comprehensive services under long-time service agreements (LTSA) for maintenance of the link and technical support for the operator to maintain accessibility and reliability of the HVDC installation.

ABB is ever ready to provide preventive and corrective maintenance, technical support on-line and on-site, manage spare part inventory and assist in the efforts to maintain high availability and reliability. ABB technologies are used along with the complete energy value chain right from extraction of the resources and their transformation into electricity, liquefied natural gas or refined petroleum products, to its optimal use in industry, transportation and buildings. A comprehensive worldwide network of skilled and efficient staff and ABB Partners offer excellent service, for beverage manufactures, distillers, brewers and the food industry.

ABB offers a wide range of solutions to automotive manufacturers throughout the world as a supreme supplier of industrial robots, modular manufacturing systems and services. A strong solutions focus helps the manufacturers to improve their productivity, quality of products and safety of workers ABB has prepared and installed more than 190,000 robots worldwide.

### **3.4.3 Historical Backdrop**

The history of The ABB Group from the late nineteenth century can be traced back to, and has a wide illustrious record of innovation and technological leadership in several industries. The ABB Group was discovered by Ludvig Fredholm (of ASEA) and Charles E.L. Brown and Walter Boveri (of BBC) in the late 1800's. In 1988, automation moguls ASEA, and the mainstream energy and power company BBC through a merger, labeled the new company ABB which was headquartered in Zurich, Switzerland. On Jan. 5, 1988, the new group which started its operations, employed

## **A BRIEF PROFILE OF THE COVERED UNDERTAKINGS**

---

160,000 people across the world and had revenues of \$17 billion.

In 1990, ABB launches Azipod, a family of electric propulsion systems that are fixed to the outer most part of the ships providing both thrust and steering functions.

In 2000, ABB delivers world's first commercial high-voltage shore-to-ship electric power, which helped in reducing greenhouse gas emissions from the ships berthed at the Swedish port of Gothenburg.

2002: ABB links the AC (alternating current) networks of South Australia and Victoria with the world's longest underground transmission, a 177 km HVDC Light cable with a capacity of 220 MW. Connecticut and Long Island was also linked by ABB with the world's first extruded HVDC submarine transmission, a 40 km HVDC Light cable with a power rating of 330 MW. The power networks of Norway and the Netherlands with a transmission capacity of 700 MW were linked by NorNed, the longest submarine HVDC cable in the world at 580 km.

In 2008, Xiangjiaba hydropower plant in southwest China to Shanghai about 2,000 km away with an UHVDC connection was linked by ABB with a capacity of  $\pm 800$  kV and 7,200 MW of power.

2012: ABB successfully designs and develops a hybrid DC breaker which is suitable to create a large inter-regional DC grid.

By helping countries across the world in building, developing and maintaining their infrastructures, ABB has recently switched from large-scale solutions to alternative energy and the advanced products and technologies in power and automation that represents its Industrial IT offering.

### 3.4.4 Divisions

ABB's operations are organized into four global divisions, which are formed by specific business units emphasized on specific industries and product categories.

**Electrification Products:** ABB extends a range of technologies across the electrical value chain from substation to the point of consumption, which enables more reliable power flow. A range of digital and connected innovations for low and medium-voltage, including EV infrastructure, solar inverters, modular substations, distribution automation, power protection, wiring accessories, switchgear, enclosures, cabling, sensing and control.

**Robotics and Motion:** The Robotics and Motion division provides products, solutions and related services that increase the industrial productivity and energy efficiency. Its motors, generators, drives and robotics provide power, motion and control for a wide range of automation applications. The leading position in wind generators and traction converters complements the industrial focus, leveraging joint technology, channels and operations platforms. ABB tailor a service package in close cooperation with its partners - and thus is ready to help increase the performance, uptime and lifetime.

ABB offer their service across the globe with over 1,300 service specialists in more than 53 countries and over 100 locations. They provide world-class services wherever ABB robots and systems are installed and be one of the main reasons why customers continue to buy from ABB.

**Industrial Automation:** ABB aims to provide best products and solutions to the customers for instrumentation, automation and optimization of industrial processes. The industries which are served by the ABB group include oil and gas, power, chemicals and pharmaceuticals, pulp and paper, metals and minerals, marine and turbo charging. Core benefits for the customers include: enhanced asset productivity and energy savings.

**Power Grids:** The Power Grids division is a global pioneer in technology that helps to balance the growing need for electricity and minimize the environmental impact to enable a stronger, smarter and greener grid. The division serves utility, industry, transportation, infrastructure, customers and is focused on addressing highlighted areas such as the integration of renewable energies, growing network complexity, grid automation, and micro grids. It also provides consultancy services and asset management solutions based on a lifecycle approach.

ABB is highly experienced in providing maintenance service and delivering upgrades for HVDC links across the world. ABB is the supreme supplier of upgrades and refurbishment of HVDC stations. Since 1990, more than 25 upgrade projects to ABB installations has been delivered by ABB. ABB is ever ready to provide their users with updated systems and functions.

**Micro grid solutions:** ABB has unparalleled expertise in designing and plotting off-grid and grid-connected micro grids. Micro grid solutions ensure power supply flexibility, power quality, well-grounded and economical in a wide range of applications.

**Solar power solutions:** ABB and Solar Impulse mutually believe: It's possible to upgrade the global economy without using the world's resources and polluting the atmosphere. By using the advanced technologies, it can drastically minimize global energy consumption, cut emissions and improve quality of life of the people.

What Solar Impulse is achieving in the air, ABB is doing on the ground, whether it is proving that renewable could be a part of a reliable and stable off-grid electricity supply, driving internet-enabled optimization and leading the way in sustainable transport solutions. In the air, Solar Impulse has proved that a reliable 24/7 electricity can be supplied using 100 per cent renewable sources.

## A BRIEF PROFILE OF THE COVERED UNDERTAKINGS

---

On the ground, ABB ensures that clean energy can power remote communities. ABB offers the industry most comprehensive portfolio of products, systems, solutions and services to optimize the performance, reliability and return on investment of any solar installation - from residential rooftops to commercial and industrial applications and utility-grade power plants.

**ABB innovations:** ABB has a long history and a rich heritage of technology innovation. ABB and its forerunners, ASEA and BBC, not only retained technology and market leadership but has also invented or pioneered many power and automation technologies, often for decades. The ABB Group manages their business based on a divisional structure.

The business plan is comprised of five divisions: Power Products, Power Systems, Discrete Automation and Motion, Low Voltage Products, and Process Automation. Power Products of ABB are the key components of transmission and distribution of electricity. The division incorporates ABB's manufacturing network for transformers, switchgear, circuit breakers, and cables and associated equipment. The services which are needed to ensure products' performance are also offered by it. The division is subdivided into three business units.

ABB Power Systems offers turnkey systems and services for power transmission, distribution grids, and for power plants. The key areas of it are the substations and substation automation systems. Additional highlights include flexible alternating current transmission systems (FACTS), high-voltage direct current (HVDC) systems and network management systems. ABB Power Systems operates the instrumentation, control and electrification of power plants in power generation.

ABB Discrete Automation and Motion provides products, solutions and related services which enhance industrial productivity and energy efficiency. Power, motion

and control over a wide range of automation applications are provided by ABB's motors, generators, drives, programmable logic controllers (PLCs), power electronics and robotics. The leading position in wind generators and a growing offering in solar complement ABB's industrial focus, leveraging joint technology, channels and operations platforms.

ABB Low Voltage Products manufactures low-voltage circuit breakers, switches, control products, wiring accessories, enclosures and cable systems to protect people, installations and electronic equipment from electrical overload. The division further makes KNX systems that integrate and automate a building's electrical installations, ventilation systems, and security and data communication networks.

ABB Process Automation provides customers with products and solutions for instrumentation, automation and optimization of industrial processes. The industries served include oil and gas, power, chemicals and pharmaceuticals, pulp and paper, metals and minerals, marine and turbo-charging. Core benefits to the customers include improved asset productivity and energy savings.

### **3.4.5 People and Culture**

A high standard of integrity is committed by ABB which is expected from every employee and in every country where it does business. ABB's top management at headquarters and across regions and divisions has witnessed the positive impact with hard work and a clear commitment.

### **3.4.6 Learning and Development Practice**

Driving motive for ABB's development is the Talent. Not only competitive payment and benefits to its employees are provided by ABB, but it also holds impact on personnel training and paves the way for development. Currently, ABB has an outstanding talent development system that ranges from the talent selection and talent evaluation to talent training. ABB offers a variety of learning, training, and

development opportunities through the China Learning and Development Center for its employees.

A learning model that enables its employees to obtain learning opportunities and to put what they've learned into practice has been established by ABB. Three categories of training has been provided by ABB to its employees: leadership skills, professional skills and interpersonal skills, in order to improve the competency of its employees.

Training offered is classified into the categories Products, Technology and Solutions, Business Processes and Tools as well as People and Leadership Development. ABB integrity program has, as one of its key components, a strong training and communications component. Here employees learn more about the E-learning, face-to-face training, communication activities, and the key messages in those communication. Additionally, they find the link to the ABB Integrity Culture and Risk Survey performed by KPMG.

Learners are allowed to take training according to their schedule in E-learning course. Over 100,000 employees around the world are made available with highly engaging and interactive E-learning which ensures delivering education through computer tracking and certification.

ABB, in one of its certified learning centers offers web-based E-learning courses and standard or customized classroom courses using experienced trainers. Engineers learn operating, maintaining and troubleshooting ABB's power electronics systems and qualify them to undertake first level support. Live question & answer session are held with Web-based maintenance training modules.

Web Tech Talks are live and interactive web sessions that focus on technical topics from basic to advanced knowledge presented live by specialists from R&D, tech support and consulting, plus access to a large archive of recorded sessions. As per the

## **A BRIEF PROFILE OF THE COVERED UNDERTAKINGS**

---

ABB Code of Conduct and anti-bribery, E-learning courses are also required by account holders worldwide (over 100,000 employees) for all email with completion tracked and certified. The current mandatory E-learning module on FCPA and anti-bribery is available in more than 30 languages.

Their E-learning is adjusted to terms used as part of ABB's business. For employees with responsibilities in specific risk areas including leadership, antitrust, and export credit agencies, targeted courses are mandatory. ABB's E-learning courses allow the E-learners to take training according to their own schedule. Also they are highly engaging and interactive.

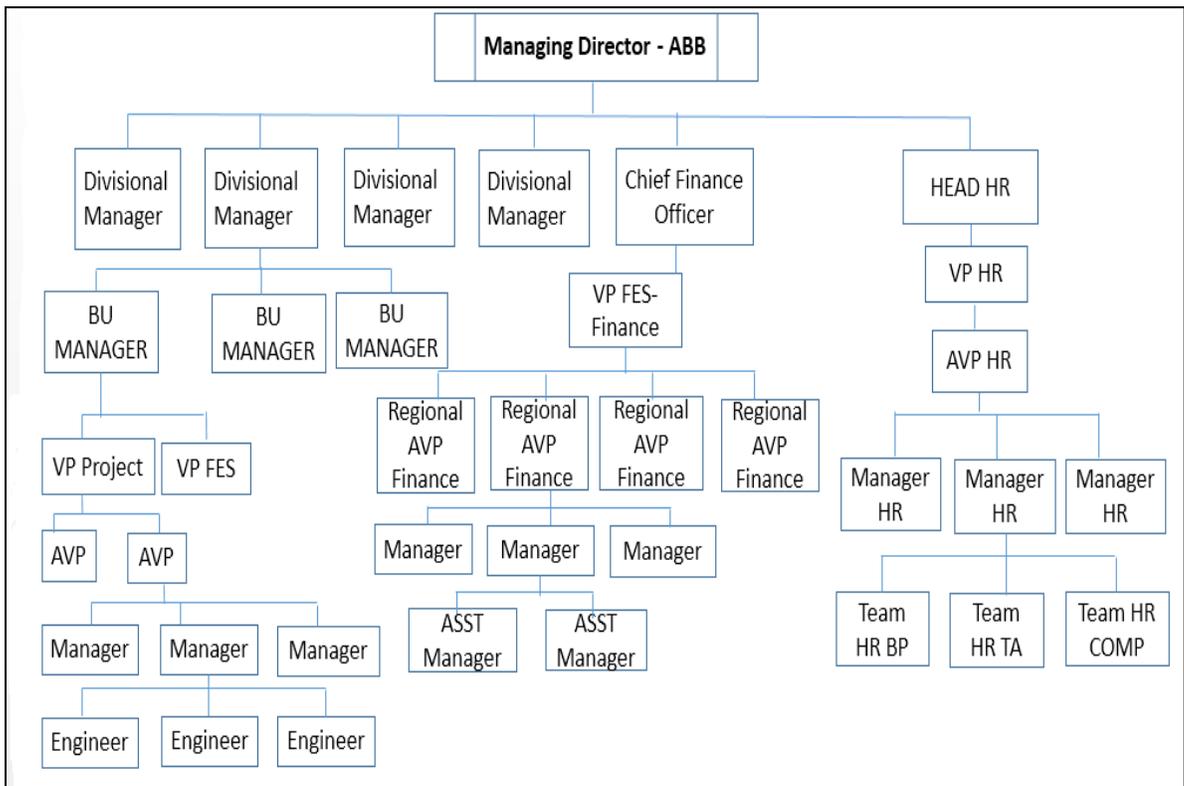
It allows offers the opportunity to the employees to analyze important information themselves. Face to face training is a two-way approach for every employee for personal accountability and responsibility. Face-to-face training sessions allow for real-time interaction and discussions of major and complicated issues, which provides every employee enough time to receive the guidance as needed.

According to ABB, face-to-face training holds great impact and every effort is made by the company to commit time and gather resources to educate and empower their employees. Face to face training courses are customized to different audiences at higher risk. Selected integrity topics such as antitrust and integrity leadership are provided to employees in appropriate functions. Face-to-face training sessions creates a constructive dialogue through the business and provides opportunity within ABB for employees to work through and learn from real examples. Expert Workshops are targeted for senior engineers, who wish to develop a measurable level of competencies.

**3.4.7 Organizational Structure**

ABB Ltd. has Matrix Structure of hierarchical arrangement of authority, responsibilities, rights and duties of an organization. It helps in analyzing how communication takes place among various management levels and how roles and responsibilities are delegated and coordinated.

**Chart 3.4  
Organization Structure of ABB Ltd.**



### **3.5 SIEMENS**

#### **3.5.1 Introduction**

Siemens is a global powerhouse positioned along the electrification value chain - from power generation, transmission and distribution to smart grid solutions and the efficient application of electrical energy - as well as in the areas of medical imaging and laboratory diagnostics.

In more than 200 countries/regions, Siemens had around 372,000 employees as of September 30, 2017. It operates in production and manufacturing plants across the globe. Also, it has office buildings, warehouses, research and development facilities or sales offices in almost every country/region in the world. In fiscal 2017, which ended on September 30, 2017, Siemens generated €83.0 billion revenue and net income of €6.2 billion.

#### **3.5.2 Historical Backdrop**

1847-1865: The foundation was laid by Werner von Siemens of today's Siemens AG in 1847 with his design for the pointer telegraph. A thirty year old inventor decided to substantially improve the electric telegraph developed by Charles Wheatstone and William Fothergill Cooke.

He established the telegraph construction company together with precision mechanic Johann Georg Halske. On October 12, 1847, the company began its operation in a back courtyard in Berlin. In 1848, the young company won a contract to build Europe's first long-distance telegraph line. Extending largely underground from Berlin to Frankfurt, the roughly 670-kilometer link went into operation in February 1849. In March, the Frankfurt Parliament elected Friedrich Wilhelm IV German Emperor. Due to new communications technology, the news from Frankfurt reached Berlin in just one hour.

## A BRIEF PROFILE OF THE COVERED UNDERTAKINGS

---

In 1853, the Russian government awarded Siemens & Halske a contract to construct a telegraph line from Warsaw to Russia's border with Prussia. After the line was built, further contracts followed. The company opened a construction office in St. Petersburg headed by Carl von Siemens and immediately began work on the roughly 9,000-kilometer Russian state telegraph network. Two years later, Siemens & Halske also won a contract to provide maintenance services for the Russian telegraph lines. In 1855, the construction office in St. Petersburg was transformed into an independent subsidiary. Younger brother of Werner von Siemens named Carl was appointed as the head of the company in recognition of his contribution to the business's positive development. Success in Russia generated tremendous momentum for the Berlin-based company. By 1856, Siemens & Halske had 330 employees, two-thirds of whom worked in Russia. At times, the export rate reached as high as 80 percent.

After 1858: The founding of an independent English subsidiary Siemens & Halske showed interest in tapping new foreign markets at an early stage. Only three years after the company was founded, a sales office was opened in England, where William Siemens, a younger brother of the company's founder, was employed as an agent. In 1858, the London office was transformed into an independent company - Siemens, Halske & Co. - headed by William Siemens.

For a long time, operations at Siemens & Halske's London subsidiary focused primarily on the market for submarine cables. To avoid dependence on the quality and prices of English cable suppliers, the English company opened its own cable plant in Woolwich near London in 1863.

1897 - Siemens & Halske becomes a stock corporation

1902 - "Central Office for Press Affairs" founded

1903 - The newly founded Siemens-Schuckertwerke commence operation

1903 - Founding of the Gesellschaft für drahtlose Telegraphie mbH - System Telefunken

(Telefunken)

1905 - Mexico's largest hydroelectric plant began its operation

1920 - Siemens joins OSRAM

1932 - Merger of healthcare businesses that created Siemens-Reiniger-Werke

1939 - Siemens begins training women to become technical assistants

1949 - Transfer of the company headquarters in the end of March 1949, in light of the uncertain political situation in postwar Berlin, the management transferred the headquarters of Siemens & Halske AG to Munich on April 1 and those of Siemens-Schuckertwerke AG to Erlangen

1959 - Premiere of company film, on October 16 1959, the award-winning Siemens company film "Impulse of our Time" was premiered in the Film-Casino Munich.

1965 - Siemens opens research city for power applications in Erlangen, Germany

1967 - Establishment of Bosch-Siemens Hausgeräte GmbH (BSHG)

2012 - Siemens history made audible: "Europe calling America" audio book released

2013 - Siemens and the Wittelsbach dynasty

2015 - 110 years of central research at Siemens

2017 - The Siemens Annual Shareholders' Meeting: A visual history held at the Olympiahalle in Munich on February 1, 2017

### **3.5.3 Divisions**

Electrification, automation and digitalization are the long-term growth fields of Siemens. Its businesses are bundled into eight divisions in order to take full advantage of the market potential in these fields.

#### **Building Technologies Division**

Headquartered in Zug, Switzerland, the Building Technologies Division is the leader in providing automation technologies and services for commercial, industrial and public buildings and infrastructures.

## A BRIEF PROFILE OF THE COVERED UNDERTAKINGS

---

It offers:

- A comprehensive portfolio of components, products and systems for demand-based, efficient control of heating, ventilation and air conditioning (HVAC) plants, with all components optimally matched and which covers all the technical applications in the HVAC sector.
- Consultancy services as well as products and technologies aimed at optimizing the performance, comfort and energy efficiency of buildings and infrastructures across their entire lifecycle.
- Comprehensive monitoring, maintenance, modernization and efficiency optimization services for buildings and infrastructures.
- Innovative, high-quality fire safety products, systems and solutions for early and reliable detection, quick and deception-proof alarming and evacuation processes as well as intelligent extinguishing based on current room conditions.
- Planning, design, setup, maintenance, monitoring, financing and operation of integrated security solutions, including command and control systems, security management systems, and intelligent video analysis systems.
- Integrated systems and solutions for specific markets and industries such as data centers, utility companies, airports, hospitals and hotels.
- Consulting, planning, development and financing of turnkey integrated automation, security and fire safety solutions for buildings and infrastructures (Total Building Solutions, TBS).

### **Digital Factory Division**

The Digital Factory Division provides its customers a comprehensive portfolio of

hardware and software products enabling the comprehensive integration of data from development, production and suppliers. The solution platform is called "Digital Enterprise". Under this term, the major parts of the product are connected by DF product portfolio and production life cycle. Powerful Product Lifecycle Management (PLM) software, develops and optimize new products on virtual basis.

With the proven worth for about 20 years, in the real manufacturing world, the Totally Integrated Automation (TIA) concept ensures the efficient interoperability of all automation components. The TIA Portal enables significant time and cost savings in engineering.

### **Energy Management Division**

The Energy Management Division, Erlangen, Germany, is one of the supreme global suppliers of products, systems, solutions, and services for the reliable transmission and distribution of electrical power.

As a trusted partner, the Energy Management Division, for the development and extension of an efficient power infrastructure offers utilities and the industry portfolio which they need. This includes facilities and systems for the low-voltage and distribution power grid level, smart grids and high-voltage transmission systems. The offer is completed by energy storage systems and solutions for decentralized energy systems.

This Division has approximately 52,000 employees represented in more than 90 countries and around 100 production sites worldwide.

### **Financial Services Division**

Aligning with the growth fields of electrification, automation and digitalization, the division supports customer investments with leasing solutions and equipment, project and structured financing. Siemens serve as an expert adviser for financial risks and

provides capital for customers as well as external businesses and within Siemens. The customer value and customer competitiveness is created and enhanced by the financial and industry know-how while building trust in new technologies and facilitating the market launch. Siemens create value by supporting the implementation of new technologies through financial expertise. .

### **Mobility Division**

The core competency of Mobility's five business units is modern, interconnected and IT-based mobility. The portfolio of the Mobility Division includes: The full range of vehicles for rail traffic: Regional, as well as intercity and high speed trains, metro cars, streetcars and light rail, passenger coaches, driverless vehicles and locomotives Signal and control technology for rail-based passenger and freight traffic Electrification solutions for rail and road traffic. Maintenance and service of vehicles and infrastructure Road traffic control and information systems, parking space management as well as electronic payment and toll systems for urban and interurban traffic Consulting, planning, financing, construction and operation of turnkey mobility systems Integrated mobility solutions for intermodal networking of different traffic systems.

### **Power and Gas Division**

The Power and Gas Division offers utilities, independent power producers, engineering, procurement and construction companies (EPCs), and oil and gas customers a broad spectrum of products and solutions for the environmentally-compatible and resource-saving generation of power from fossil fuels and renewable sources of energy and for the reliable transportation of oil and gas.

The portfolio matches up with the challenges of dynamic market and includes the following: Gas turbines have the capacity of approximately 400 to 500 MW. It offers highly efficient, reliable, and environment sustainable qualities which in return provides low lifecycle costs, making power plants highly profitable. Steam turbines in

the performance range from 45 KW to 1,900 MW with a long tradition in manufacturing process and as ongoing development.

Generators in the power range from 25 to 2,235 MVA. The expertise is based on experience of more than 100 years in the development and production of generators on an installed fleet of more than 3,500 machines. Integrated power plant solutions that offer concepts for gas-fired plants at highest quality from extended power train to full turnkey power plants.

### **Power Generation Services**

Due to extensive service network around the world, can quickly and comprehensively offer expert factory or field service support, maintenance, repairs, replacements, modernizations and upgrades of components, such as gas, steam and wind turbines as well as generators, in large-scale and industrial power plants, and compressors for the oil and gas industry.

Additional to it, factory- and field-based services, Siemens is also highly experienced in remote monitoring and diagnostics. Even the minute indicator can be detected by the experts that something may not be operating normally and follow up by recommending proactive solutions before the issue becomes serious. The data collected can also be analyzed for drawing inferences about individual turbines as well as the overall fleet.

### **Process Industries and Drives**

The Division continuously supports improving the reliability, safety, and efficiency of products, processes and plants. Around the world, it provides future-proof automation, drive technology, industrial software, and services based on best-in-class technology platforms like Totally Integrated Automation (TIA) or Integrated Drive Systems (IDS). For developing sustainable solutions across the entire lifecycle right from design and engineering to modernization, it works in a close partnership. They deal in

standardized components wherever possible, complementing these with industry-specific solutions to meet customers' specific needs in all industry segments. And with strong focus on resource efficiency, they contribute to environmental sustainability in every application.

### **3.5.4 Team**

Siemens is committed to a high standard of integrity which is expected of every employee and in every country where we do business. With hard work and a clear commitment from Siemens's top management at headquarters and across our regions and divisions, Siemens has seen the positive impact that a robust compliance and integrity program and a strong culture of integrity can have on the long-term success and sustainability of our company.

### **3.5.6 Learning and Development Practice**

A strong training and communications of the integrity program is one of its key component. Here, one can learn more about E-learning, face-to-face trainings, communications activities, and the core messages in those communications. In addition, the link to the Siemens Integrity Culture and Risk Survey conducted by KPMG can be found.

#### **E-learning**

Online courses allow learners to take training according to their schedule. Highly engaging and interactive E-learning is available to over 100,000 employees around the world, ensuring education delivery through computer tracking and certification. E-learning courses on the Siemens Code of Conduct and anti-bribery are also required for all email account holders worldwide (over 172,000 employees) with completion tracked and certified. The latest mandatory e-learning module on FCPA and anti-bribery is available in more than 30 languages.

The E-learning is tailored to terms used as part of Siemens's business. Targeted courses are mandatory for employees with responsibilities in specific risk areas including integrity leadership, antitrust, and export credit agencies. Siemens's E-learning courses are highly engaging and interactive, allowing all e-learners to take training according to their own schedule. It allows employees the opportunity to think about and digest important information at their own pace.

### **Face to face training**

An inclusive, two-way approach to personal accountability and responsibility for every employee. Face-to-face training sessions allow for real-time interaction and discussions of difficult issues, allowing every employee time to receive additional guidance as needed.

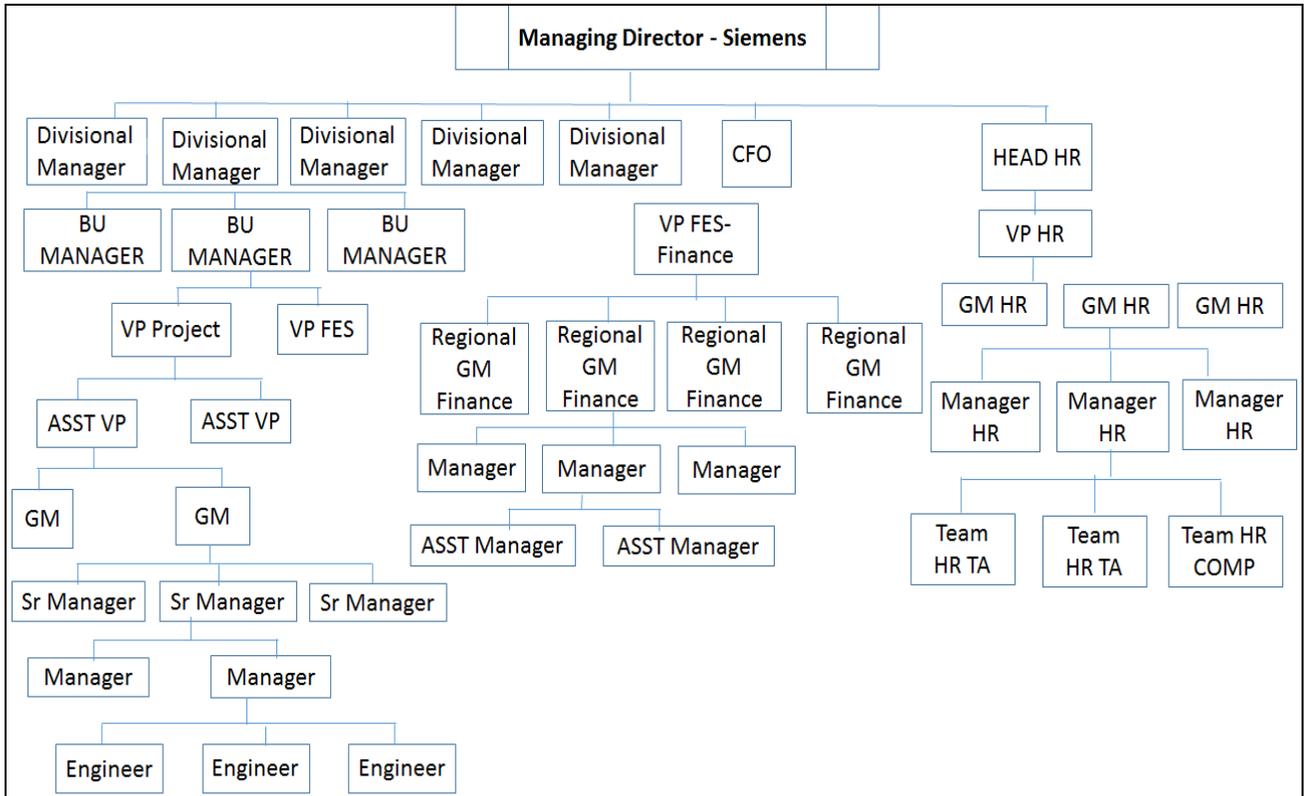
Face-to-face training is required for all of its employees worldwide on the Siemens Code of Conduct and anti-bribery. Siemens stands by the fact that face-to-face training has the highest impact and the company makes every effort to commit time and resources to educate and empower employees. Additional face-to-face training courses are tailored to different audiences at higher risk.

Selected integrity topics such as antitrust and integrity leadership are provided to employees in appropriate positions and functions. Face-to-face training sessions create constructive dialogue through the business and provide time for employees to work through and learn from real examples within.

### **3.5.7 Organizational Structure**

Siemens has Matrix Structure of hierarchical arrangement of authority, communications, rights and duties of an organization. It shows how the roles, power and responsibilities are assigned, controlled, and coordinated among different levels of management. The upper most layer of management mainly has the decision making power and has tight control over departments and divisions.

**Chart 3.5**  
**Organization Structure of Siemens**



**Conclusion**

The description of company profile given in preceding pages of the chapter reveals issues which enable readers of the thesis a bird's eye view about the historical back drop, company and their subsidiary operations, businesses, their manpower, organizational structure, training and e-learning activities etc. The researcher tried that parameters of the description across the companies should be identical, homogeneous and comparable.

**REFERENCES:**

- <http://www.adanipower.com/>
- <http://www.aptri.org/r-and-d>

## A BRIEF PROFILE OF THE COVERED UNDERTAKINGS

---

- <http://aptri.azurewebsites.net/rnd/>
- <https://www.adaniportal.com/irj/portal>
- <https://www.business-standard.com/company/torrent-power-18488/annual-report/director-report>
- [http://www.cea.nic.in/reports/hrd/trg\\_istitututes.pdf](http://www.cea.nic.in/reports/hrd/trg_istitututes.pdf)
- <https://economictimes.indiatimes.com/torrent-power-ltd/directorsreport/companyid-18767.cms>
- <https://economictimes.indiatimes.com/abb-india-ltd/infocompanyhistory/companyid-14040.cms>
- [http://hronline.kecrpg.com:9092/upload/applicationpara/18\\$employee\\_manual.pdf](http://hronline.kecrpg.com:9092/upload/applicationpara/18$employee_manual.pdf)
- <https://www.kecrpg.com/learning-and-organization-development>
- [https://www.leanmethods.com/wp-content/uploads/2017/11/siemens\\_case\\_study\\_iss\\_e-learning\\_lean\\_methods\\_case\\_study.pdf](https://www.leanmethods.com/wp-content/uploads/2017/11/siemens_case_study_iss_e-learning_lean_methods_case_study.pdf)
- [https://www.ndtv.com/business/stock/torrent-power-ltd\\_torntpower/reports-directors-report](https://www.ndtv.com/business/stock/torrent-power-ltd_torntpower/reports-directors-report)
- <https://npti.gov.in/induction-training>
- <https://new.abb.com/careers/opportunities/where-do-i-fit-in/r-d>
- [http://www.moneycontrol.com/bse\\_annualreports/5000021211.pdf](http://www.moneycontrol.com/bse_annualreports/5000021211.pdf)
- <https://new.abb.com/control-systems/service/offerings/training>
- <https://powermin.nic.in/en/content/national-power-training-institute>
- [https://www.plm.automation.siemens.com/zh\\_cn/Images/4099\\_tcm78-44221.pdf](https://www.plm.automation.siemens.com/zh_cn/Images/4099_tcm78-44221.pdf)
- <https://www.torrentpower.com/index.php/site/aboutBoard>
- [https://www.torrentpower.com/pdf/investors/05-07-2018\\_nm4xm\\_TPL.pdf](https://www.torrentpower.com/pdf/investors/05-07-2018_nm4xm_TPL.pdf)
- <https://w3.siemens.com/mcms/sensor-systems/en/process-instrumentation/>

**CHAPTER – 4**  
**RESEARCH METHODOLOGY**

### 4.1 INTRODUCTION

Research methodology is a systematic way to solve a problem. It is a science of knowing how research is to be done. Fundamentally, the procedure which researchers follow in their work of describing, explaining and predicting phenomena is called research methodology. Its subject matter includes the study of techniques by which knowledge is gained. Its main purpose is to give the work plan of research. To study and understand existing unrecognized problems of any field, figure out the suitable answers for those issues to illustrate new thoughts and produce scope of further research is the main reasons behind any research. Among the various fields of study, E-learning, as a tool to impart training to employees has risen up as a very important and attractive field of research which needs to study deeply and to search various issues related to it and then research and figure out suitable result from different aspects. This chapter deals with the research methodology used for the present study including research objectives and a suitable methodology to achieve those objectives. It also describes the process of data collection needed to empirically test the conceptual framework developed in the previous chapter.

The present research was conducted during the year 2017 in few selected companies of power sector. The study is largely empirical in approach in which scientific methodology was used to solve the research questions. This study was aimed to determine effectiveness of E-learning program in chosen organizations to enhance core competencies of employees to support business operations. Therefore, to ensure accuracy of results, it is necessary to choose an appropriate research methodology. The methodology used for the research has been presented under following sub headings:

### 4.2 RESEARCH PROBLEM

### 4.3 BRIEF OVERVIEW OF THE RESEARCH OBJECTIVES

### 4.4 HYPOTHESIS OF THE STUDY

- 4.5 RESEARCH DESIGN
- 4.6 RESEARCH METHODS AND JUSTIFICATION
- 4.7 OPERATIONAL DEFINITION OF VARIABLES
- 4.8 SAMPLING PROCESS
- 4.9 DATA COLLECTION
- 4.10 STATISTICAL TECHNIQUES
- 4.11 LIMITATIONS OF THE METHODOLOGY
- 4.12 ETHICAL CONSIDERATION

### **4.2 RESEARCH PROBLEM**

With the rapid changing work environment and digitalization in social life, it is easier and effective to use electronic learning (E-learning) systems to train resources. The fast pace of development, the enterprises and its manpower needs to keep updated with day to day changes. Rising costs and low recoveries has made organizations look forward to cost effective solutions to meet the above challenges. There are a variety of E-learning products and services designed to meet the majority of organizational training needs. The E-learning drastically saves costs of boarding and lodging, man-hours, and enjoys continuity of work process as this learning is done beyond working hours. Professional competence in the dynamic power sector demands not only cutting-edge technical skills, but also effective commercial and interpersonal skills. However, industry-specific skills are of vital importance, training for these skills can be extremely difficult to source

The proposed study, “EMPLOYEE TRAINING AND DEVELOPMENT THROUGH E-LEARNING: A STUDY OF SOME SELECTED UNITS IN POWER SECTOR” throws light on the effectiveness of E-learning program in the organizations to enhance core competencies of employees to carry business operations.

Above all, this study is an attempt to overcome the concerns and fears that exist in the adoption of E-learning initiatives across power sector organizations on one hand and make academicians, researchers and general masses realize the significance of e-learning by designing a framework so that they start promoting the E-learning process on the other hand.

### **4.3 BRIEF OVERVIEW OF THE RESEARCH OBJECTIVES**

The main objective of this study is to contribute to a superior understanding of effectiveness of E-learning to enhance employees' productivity and overall performance to support organization's growth. As per the literature review E-learning as a tool to impart training to employees has started receiving a lot of attention of researchers and writers, but its effect on employees' productivity has not been studied in the context of power sector organizations in India. This study, therefore, attempts to help fill this gap by providing empirical information that might be of interest to researcher and the stakeholders of Power sector. The objectives of this study are restated here more specifically, which are:

- To understand the role of E-learning in skill enhancement of employees in Power sector.
- To analyze the potential of E-learning implementation in an organization for enhancing general business skills, task-specific skills, and customer service training.
- To understand the effectiveness of E-learning with a blended-learning strategy.
- To identify the various factors important in designing effective training course, instructions, teaching strategies and assessment.
- To explore and overcome the current work environment and difficulties in implementation of E-learning in Power sector.

#### **4.4 HYPOTHESIS OF THE STUDY**

**H1:** The company E-learning courses allow participants pick their own time and place for the training.

**H2:** The employees with less workload spend more time on E-learning than employees with higher workload, thus making themselves capable to handle larger responsibilities.

**H3:** The trainings imparted through E-learning resulted in improved performance of the employees.

**H4:** E-learning provides better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.

**H5:** E-learning helps in quick resolution on technical issues.

**H6:** E-learning is ideal solution to meet the development needs for the future.

#### **4.5 RESEARCH DESIGN**

The aim of a research design is to provide an intended and prepared way of achieving the research objectives and to augment validity and reliability. The present study is an **exploratory research** to explore an area where little is known. The study is an attempt to explore and overcome the current work environment and difficulties in implementation of E-learning in the Power sector.

It is designed to obtain relevant and precise information pertaining to the current status of e-learning in India and, whenever possible to draw valid generalizations, conclusions from the facts discovered. Survey studies are accomplished to collect detailed explanation of existing phenomena with the intent of employing data to justify current scenario and practices or to make more result oriented plans to improve the phenomena. The objective is not only to analyze, interpret and report the current status of an organization, group or

area in order to guide, practice it in the immediate future, but also to assure the adequacy of status by comparing it with established standards. This type of study requires a research that does an in-depth investigation and description of phenomena, and systematically classifies the variables of a construct and describes the attributes as accurately and precisely as possible. In order to attain the aim of the research design, it should address the relevant questions including the unit of analysis and time frame of the study. All these components are therefore discussed in the following section.

### **4.5.1. Unit of Analysis**

The unit of analysis for the present study is employees of various cadres from different departments such as Operations, Maintenance, Turbine, Boiler, Coal handling and Distribution of covered organizations namely ABB Ltd, KEC International Ltd, SIEMENS Ltd, Torrent Power and Adani Group. A detailed profile of these organizations is discussed in Chapter-3 titled Company Profile.

Taking into account the impact of E-learning program on employee development, to determine effectiveness of E-learning program in selected organizations was a prime concern of this study. For this purpose respondents were asked to share their experiences they had with E-learning practices being followed in their organizations and to extend suggestions. Their feedback was considered important to help design effective and efficient course content for employee development. The participants' identities were kept confidential and their privacy was strictly maintained in the study.

### **4.5.2 Time Frame of the Study**

While the best alternative would be to follow a longitudinal study involving detailed records of experience with E-learning over an extended time period and

to observe the impact in as much detail as possible and for as long as possible, and to survey or interview different participants at a series of intervals but the limits of resources, organizations' privacy and time constraints preclude such an approach. However, the quantitative research method was adopted for this study as it aimed at maximizing the informative power of the data gathered to gain insight about the employees' development through e-learning and impact on overall organization's performance. The present research was conducted during the year 2017 in the selected companies of power sector. The following section provides a detailed justification for the research methodology used in this study.

### **4.6 RESEARCH METHODS AND JUSTIFICATION**

To make sure validity and reliability a research should make use of both quantitative and qualitative methods where it come into view appropriate (Allan, 1998). In the following sub-sections, both the qualitative and quantitative approaches are briefly evaluated:

#### **4.6.1 The Qualitative Approach**

Qualitative methods are more effective for seeking a thorough description within a limited area, but they are not appropriate for detection of co-variance between variables, as compared to quantitative methods (Thompson, 2003). The qualitative research method could be helpful for understanding the impact of e-learning on employees' development & overall competitiveness of the enterprise, if the purpose of the research was to study the impact on few individuals over a period of time in any one particular organization. Qualitative methods provide less clarification of variance than quantitative methods, they can give only data from which process theories and rich explanations of how and why procedure and outcome crop up can be developed (Marcus and Robey

1988). Taking all of the above into account it was decided to adopt an approach for this research which can be called the quantitative method.

### **4.6.2 The Quantitative Approach**

According to Garber (1999), “Quantitative research methods put importance on the making of detailed and generalized statistical conclusion. The data composed by using the quantitative techniques is likely to be numerical and are open to explanation by use of statistics: thus the data are said to be quantitative and there is certain impartiality about actuality, which is quantifiable”.

Quantitative methodologies, however, have been criticized for their lack of notice to procedural aspects, for frequently meeting data only from the top of an organization, and for their failure to find significant relationships (King, 1990). The quantitative research method was selected for this study for the following specific reasons:

Firstly, the researcher believed that quantitative methods would be more suitable to understand in detail the nature of dealings among major variables and to provide a rich relative basis for interpreting and validating the results.

Secondly, because quantitative research consists of techniques, methodologies and activities which permit the observation of organizational phenomena in such a way that the relationship among major variables can be identified and empirically documented;

Thirdly, collecting a large amount of data from structured questionnaire survey will provide a wide reporting that may result in a real picture of the entities and observable fact under study.

And finally, examination of the literature on E-learning and its impact also provides a strong support of empirical quantitative method as the most productive research approach in the studies of the present kind.

## **4.7 OPERATIONAL DEFINITION OF VARIABLES**

The main aim of this research was to explore the possibilities of development in employees as well as overall business operations through E-learning practices in covered organizations of power sector. The variables which have been identified in this study include E-learning, employee satisfaction, employee commitment, and job performance and organizational competitiveness. The interaction with the antecedence of employees' age, gender, occupation, income, and computer proficiency is hypothesized to be a cause-effect relationship. The operational definitions of the study variables, description and justification of the use of the measurement instruments are discussed below:

### **4.7.1 E-learning**

E-learning was viewed as independent variable. The term e-learning encompasses delivery of a learning, training or education program by electronic means. E-learning delivers content via a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material (Stockley 2003). It is a kind of training delivered on a computer that meets individual learning as well as organizational goals. The purpose of an organization using E-learning is to help the learner improve job performance and satisfaction, understand on the job skills and help the company create a competitive work force.

### **4.7.2 Job satisfaction**

Job satisfaction is defined as feeling or attitude about working success. The positive attitude in working success leads to the efficiency of working processes and results stated that perceived usefulness of training has effect on intending perceived satisfaction in working. The contributing factors of employees' satisfaction include increase in knowledge, efficiency and productivity of

employees, physical environment, internal support, job level, training level, organizational support, and learning flow.

### **4.7.3 Employee commitment**

Kuznia (2006) argues that employees who receive proper training tend to show higher levels of organizational commitment and are willing to go the extra mile to support their teams and accept group goals. Employees who perceived training to be effective were more committed to their organizations than those who saw training as ineffective.

### **4.7.4 Overall Competitiveness of the firm**

It allows a firm to produce a good or service of equal value at a lower price or in a more desirable fashion. These conditions allow the productive entity to generate more sales or superior margins compared to its market rivals. A variety of factors including cost structure, less complaints from customers, the quality of product offerings, timely delivery of orders, intellectual property and customer service.

## **4.8 SAMPLING PROCESS**

Sampling is a fundamental method of inferring information about an entire population instead of measuring every member of the population. Developing a proper sampling technique can greatly affect the authenticity of the results. The number of respondents from each organization was not pre-determined, a questionnaire was then distributed to the respondents and they were also given detailed instructions for completing the survey in the covering letter accompanying the questionnaire (Appendix 1).

### **4.8.1 Selection of sample**

The population of the study included employees working in power sector companies in India. Since it would be almost impossible to reach all employees working in above mentioned sector selected for the study, it was, therefore, necessary to sample the population. The technique of purposive random sampling was incidental or judgmental in nature. A random sample of 500 employees working in selected companies under power sector in India was collected. In the second phase Stratified Sampling Method was used to represent the population and strata were made on the basis of different managerial levels and functional areas. The chosen companies were named as follows: ABB Ltd, KEC International Ltd, SIEMENS Ltd, Torrent Power and Adani Group. As the results would be generalized, it is essential that the sample should be the representative of employees working in power sector.

### **4.8.2 Justification for selecting Units of Analysis**

The purpose of the study is to bring out the responses of employees working in power sector undertakings about E- learning and its impact on employees as well as on organization. The selected undertakings were presumed to represent the whole industry on the basis of following features-

- ABB Ltd. is global leader in power sector and operates in over100 countries and it has a long history and a rich heritage of technology innovation.
- Adani Power Ltd. is India's largest thermal private power producer and also the largest solar power producer of India.
- KEC International has a wide variety of products and services; and has international presence.
- Siemens has 13 companies in India and has a very long history of operating in international power sector.
- Torrent Power Ltd. has many power stations based in various states of India.

### 4.8.3 Justification for Sample size

For calculating sample size the researcher took the help of Sample Size Calculator and the result was 379 units for the population size 25000 employees with confidence interval of 95 per cent and expected error of 5 per cent. Hence, it was proposed to take 380 samples for the present study. During the survey a total of 500 employees were mailed the research questionnaires but out of them only the responses of 280 employees were worth considering. They were complete and received in due time. The selected undertakings were having different employee size but it was not possible to take out the responses in an equitable ratio. To represent the population, the researcher took into consideration mainly the responses of middle level managers working in operations department.

## 4.9 DATA COLLECTION

Inventories were selected on the basis of the objectives of the study. The study was based on primary and secondary data taken from designed questionnaires and published annual reports of the covered organizations.

Since the respondents belonged to different organizations, had different learning infrastructure, questionnaire was considered to be the most suitable instrument for the data collection. Data collection was carried out by contacting the employees one to one to get the responses. A web based link was sent to sample of employees in participating organizations. Further, the data was supplemented by review of documents and conducting participant's interview to gather additional information. The resources from Learning and Development department of these organizations were also been invited to participate in the interviews. They were approached in their leisure time and were briefed about the nature and purpose of the research. Good rapport with employees was established by giving introduction about the objectives of the study, importance

of their co-operation and their sincere responses before the distribution of the questionnaire. After their willingness, the questionnaires were sent over their emails to complete the scales in one session. The respondents were instructed very clearly about the pattern of answering the questionnaire. They were given enough time to answer all the statements.

The researcher prepared structured questionnaire to get their responses. The questionnaire used to carry out the present research included the following aspects:

### **Section- I      General information about E-learning in your organization**

It consists of questions regarding:

- 1) Practice used for learning & development in your organization
- 2) Effective method for learning & development
- 3) Effectiveness of E-learning in providing learning content to the employees as and when needed
- 4) Superiority of E-learning over traditional learning practices
- 5) Reasons behind emergence of E-learning
- 6) Objectives of E-learning implementation in your organization

### **Section –II      Outcomes of E-learning**

It consists of questions seeking opinions regarding

- 1) Influence of E-learning on your performance
- 2) Influence of E-learning on organizational performance
- 3) Shortcomings in E-learning practices followed by your organization
- 4) Challenges in implementing E-learning
- 5) Technique being used in your organization for measuring the effectiveness of T&D through E- learning

- 6) Gaining competitive advantage through e-learning program when comparing the same in competitive environment
- 7) E-learning a facilitating step for improving the speed of learning and reducing employee down-time thus enabling you to handle greater responsibilities
- 8) Your top management's enthusiasm in endorsing e-learning and its regular application to develop new skills at all levels in the organization

### **Section-III Personal Information**

It covers personal information such as gender, age, name of the organization, designation, computer proficiency, experience etc.

#### **4.10 STATISTICAL TECHNIQUES**

Various statistical techniques were employed to examine the data such as -

- Self-administered questionnaire includes both scale and open-ended questions. The questionnaire contains three sections with different questions regarding the need for e-learning, its impact on employees' performance and organizations betterment and, problems and challenges faced by the organizations in implementing e-learning.
- Five-point Likert type numerical scales ranging from Highly Agree to No Idea and No influence to very significant influence were used.

The duly filled in questionnaires were edited by the researcher and in accordance with the requirements of the objectives and hypothesis, univariate and bivariate tables were prepared.

- A variety of statistical analyses has been applied to the data, including Percentage analysis, weighted Averages, Chi- square test (goodness of fit and test of independence) & Kruskal Wallis or H test.
- Online statistical software was used for data analysis. One of the benefits of using statistical software is the ease of computing statistics which allows for analysis of large sets of data over multiple variables in a short amount of time (Polit & Beck, 2008). It allows for separation of the data by variable or by item so that the researcher will be able to determine if there are items that have greater differences between groups. Statistical significance was set at .05. An additional benefit of utilizing statistical software is that if a result is significant at the .01 or .001 level the software generated results at these levels of significance with appropriate notations. A statistical consultant was referred to confirm statistical analysis procedures after the researcher ran the data analysis. It was necessary for the data to be examined to ensure that underlying assumptions were met.

As these techniques are appropriate to test the internal consistency, construct validity, average, percentage, determination of cut off scores, and relationship among different variables.

The brief description of the test is as follows:

### **Chi- Square Test**

There are **two types of chi-square tests**. Both use the chi-square statistic and distribution for different purposes:

- A **chi-square goodness of fit test** determines if a sample data matches a population. In this study it was used to test whether there is any significant difference between distributions of a single variable into different

categories of responses. It was assumed that each category of response was distributed equally.

- A **chi-square test for independence** compares two categorical variables in a contingency table to see if they are related. In a more general sense, it tests to see whether there is any significant association between set of qualitative variables. The association between different groups and distribution of parameter into set of responses is tested.

This test enables to explain whether or not two attributes are associated. In this test, Chi Square i.e.  $X^2$  is calculated as below:

$$X^2 = \sum \frac{(O-E)^2}{E}$$

Where,

O= Observed frequency

E= Expected frequency

The calculated value of  $X^2$  is compared with the corresponding Table value at given level of significance for given degree of freedom and if the calculated value is more than table value, Null hypothesis is accepted.

### **Kruskal Wallis Test (or $H$ test)**

The Kruskal Wallis test or  $H$  test is applied to test the null hypothesis that 'k' independent random samples come from identical universe against the alternative hypothesis that the means of these universes are not equal. It is used to test if there is any significant difference found between the average ranks of different groups. Ranks are assigned to every available option by the respondents according to their preferences. In this test the average scores of all the samples are ranked jointly from low to high or high to low as if they constituted a single sample. The test statistics is  $H$  for this test which is calculated as under:

$$H = \frac{12}{n(n+1)} \left\{ \frac{R_1^2}{n_1} + \frac{R_2^2}{n_2} + \frac{R_3^2}{n_3} + \frac{R_4^2}{n_4} \right\} - 3(n+1)$$

Where,

n= no. of observations in the sample

R= sum of ranks

The value of H is compared with the  $X^2$  value at 5 per cent level of significance for (k-1) degrees of freedom. and if the calculated value of *H*- statistics is more than its corresponding table value of chi- square, Null hypothesis of 'no difference' between the paired data is rejected.

#### **4.11 LIMITATIONS OF THE METHODOLOGY**

The research methodology adopted for this research has certain limitations which should be taken into consideration if any generalizations or conclusions are to be drawn from the research findings. The data was collected through survey questionnaires using the quantitative approach. This approach has some limitations which can be described as follows-

- i. Standardized questionnaires impose restrictions on the depth of data, which can be collected about the phenomenon under investigation. Moreover, standardized questionnaires reflect the opinions and perceptions of only those who choose to respond.
- ii. Purposive Random Sampling approach has been used in this study, it may suffer from the limitations of the approach in general, though cross sections of chosen companies and their employees were included in the sample to ensure due representation of the population of the study.
- iii. The researcher has contacted employees working in selected five companies of power sector only. Hence the result of the study may not necessarily be representative of all the employees working in power sector in India.

- iv. The findings may suffer from the limitations of questionnaire method. The responses to the self-reported questionnaires may have been subject to social desirability, which may have occurred when participants responded to questions the way they thought the researchers wanted them to respond.

### **4.12 ETHICAL CONSIDERATIONS**

The ethical integrity is very important in any research because it is a probing process with the potential to infringe on participant's rights; therefore, this study has been conducted in conformity with the informed consent and concern for participant's anonymity. The participation in the study was purely on a voluntary, anonymous and confidential basis, and the privacy was strictly guarded because of the sensitivity of the nature of topic. The participants were explained about the confidentiality verbally and in writing through the survey questionnaire cover letter (Appendix II).

### **SUMMARY**

This chapter presented the research methodology used in this study and its justification. It illustrates research design of the study, the unit of analysis and operational definition of different variables included in the study, details about research instruments used for data collection, the procedure of data collection and data analysis, and ethical considerations. The next chapter presents results of the empirical research, results related to the research hypothesis and a summary of the results.

**CHAPTER 5**

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

## **5.1 INTRODUCTION**

The main objective of this chapter is to report the results of data analysis performed to examine the results of empirical research undertaken. The analysis was completely based on primary information collected from the employees of chosen companies according to the sampling design mentioned in the chapter-4 of this study.

The chapter covers the following-

1. Profile of the respondents

This section encompasses personal information such as gender, age, name of the organization, designation, computer proficiency, experience, functional area, working hours, and type of employee. These variables may help in finding association with other variables for future studies. However, for the purpose of the study only the association between the chosen organizations and other hypothesized and un-hypothesized variables was established.

2. Validation of Hypothesized Variables

In this section the variables pertaining to stated hypotheses were tested to accept or reject the hypotheses and an association was made between chosen organizations and these variables. In order to test hypotheses of the study various statistical analyses were carried out including Percentile analysis, averages, Chi- square test (goodness of fit and test of independence), and Kruskal Wallis H test.

3. Hypothesis viewed as per the analysis

This section summarizes the result of the analysis and concludes whether the stated hypotheses are accepted or rejected.

## 5.2 PROFILE OF THE RESPONDENTS

Though the researcher sent questionnaires to 500 employees but only 280 of them could respond. In this section the researcher presented the collected demographic data pertaining to the study in graphical manner.

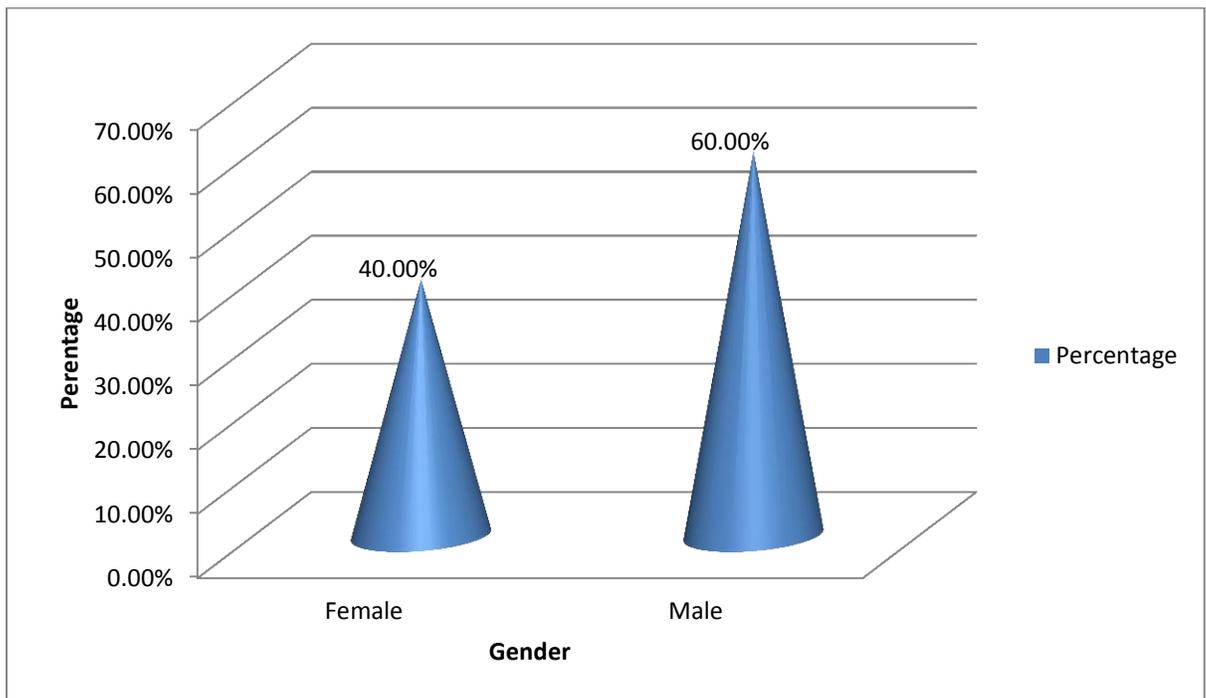
### 5.2.1 Gender

The total data of 280 respondents was segregated on the basis of Gender as per the table below:

**Table 5.2.1 Gender**

Gender	Frequency	Percent
Female	112	40
Male	168	60
Total	280	100

**Chart 5.2.1 Gender**



**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

The above graph shows the distribution of respondents on the basis of gender. Male participants accounted for 60 per cent, whereas female participants accounted for 40 per cent only.

**5.2.2 Age**

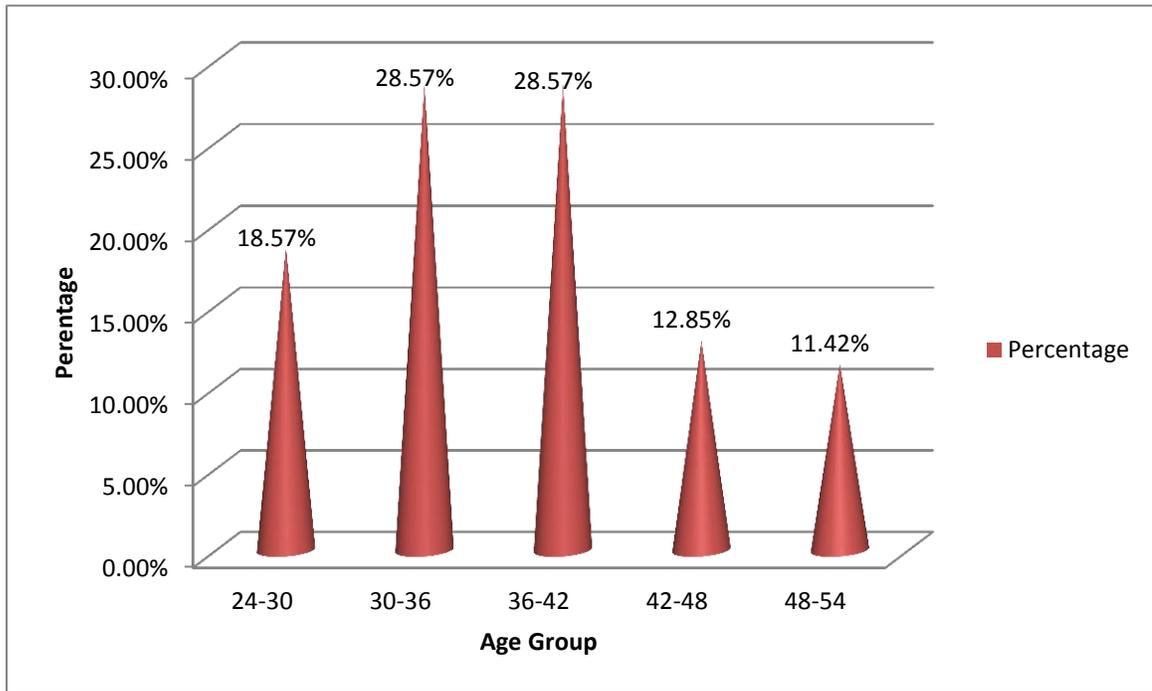
The total data of 280 respondents was segregated on the basis of Age as per the table below:

**Table 5.2.2 Age**

<b>Age Group</b>	<b>Frequency</b>	<b>Percent</b>
24-30	52	18.6
30-36	80	28.6
36-42	80	28.6
42-48	36	12.9
48-54	32	11.4
Total	280	100.0

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

**Chart 5.2.2 Age**



The above graph shows the distribution of respondents on the basis of age. An equal percentage of respondents belonged to 30-36 years and 36-42 years age groups that show almost 58 per cent of respondents belonged to 30-42 years of age, nearly 19 per cent belonged to 24-30 years age group while only 12 per cent were of more than 48 years of age.

**5.2.3 Organization**

The total data of 280 respondents was segregated on the basis of organization as per the table below:

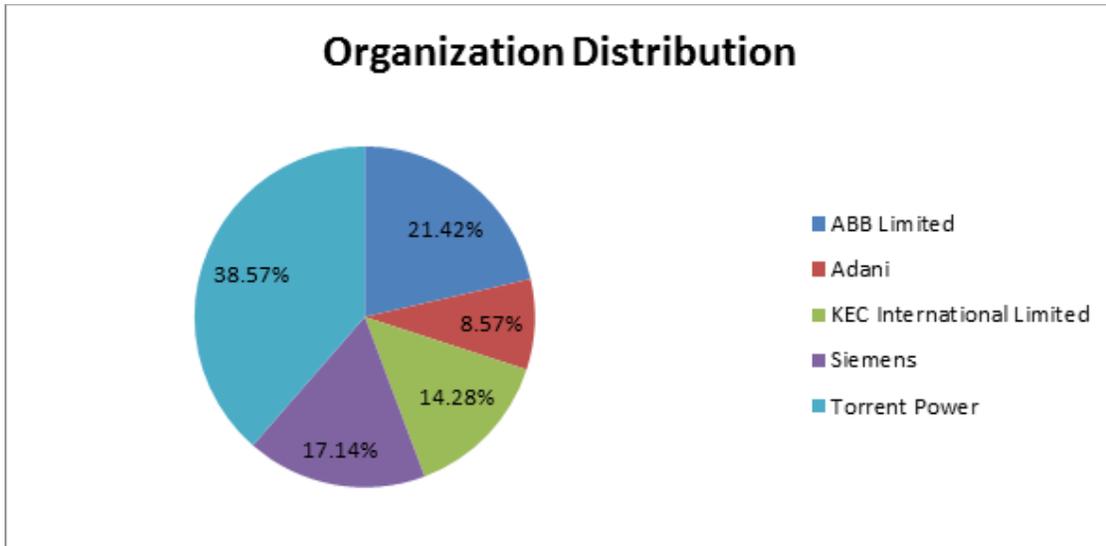
**Table 5.2.3 Organization**

Organization	Frequency	Percent
ABB Limited	60	21.4
Adani	24	8.6
KEC International Limited	40	14.3

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Siemens	48	17.1
Torrent Power	108	38.6
Total	280	100.0

**Chart 5.2.3 Organization**



The above graph shows the distribution of respondents on the basis of organization. Almost 39 per cent of respondents belonged to Torrent Power Ltd.; nearly 22 per cent to ABB Ltd., 17 per cent to Siemens, 14 per cent to KEC International Ltd., while the respondents from Adani Ltd. were only about 9 per cent.

**5.2.4 Computer Proficiency**

The total data of 280 respondents was segregated on the basis of computer proficiency as per the table below:

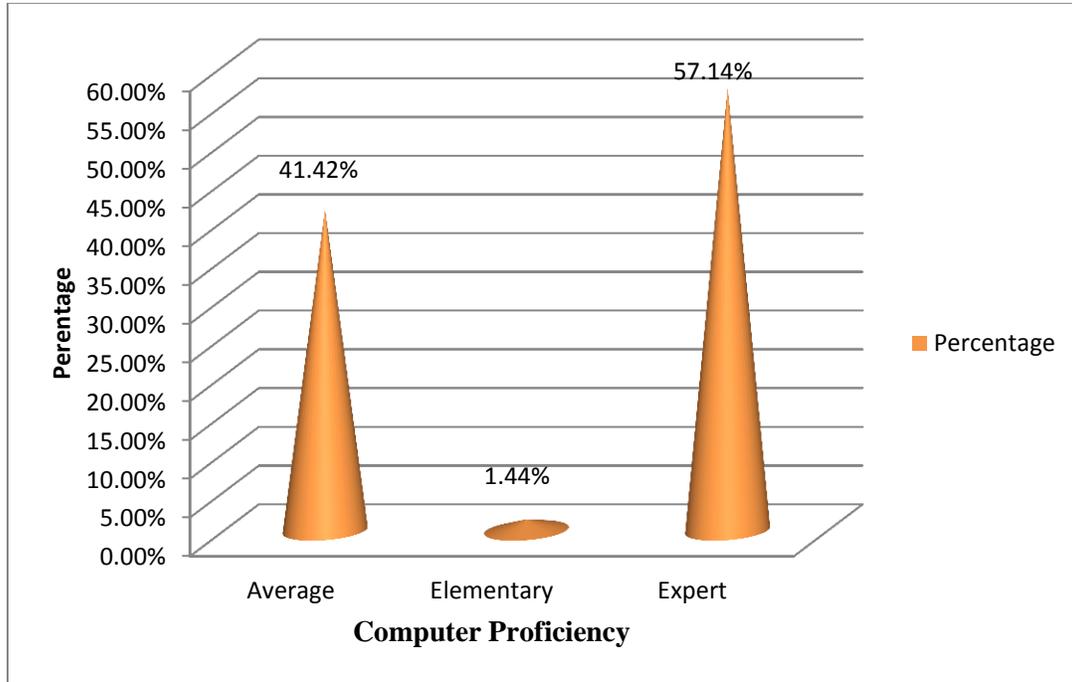
**Table 5.2.4 Computer Proficiency**

Computer Proficiency	Frequency	Percent
Average	116	41.4
Elementary	4	1.4
Expert	160	57.1

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Total	280	100.0
-------	-----	-------

**Chart 5.2.4 Computer Proficiency**



The above graph shows the distribution of respondents on the basis of computer proficiency. The respondents having expert knowledge of operating computer were more than 57 per cent, about 41 per cent had average knowledge, while the respondents having elementary level of knowledge were only about 2 per cent.

**5.2.5 Management Level**

The total data of 280 respondents was segregated on the basis of levels in management as per the table below:

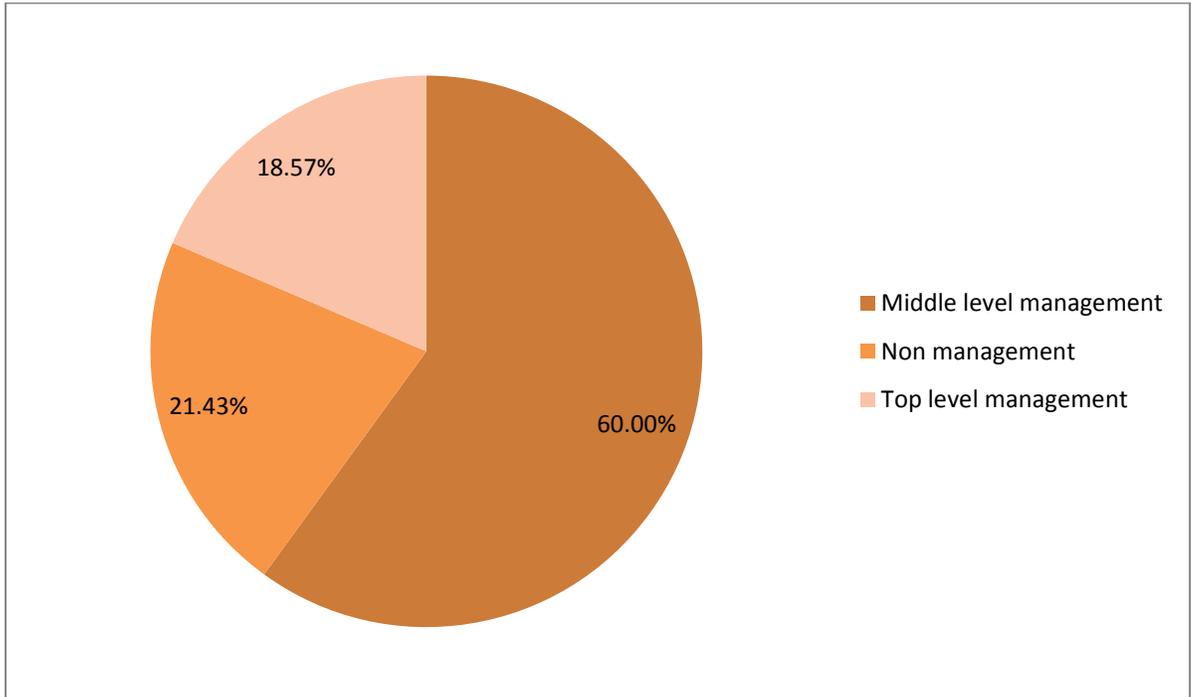
**Table 5.2.5 Levels of Management**

Designation	Frequency	Percent
Middle level management	168	60.0
Non-management	60	21.4

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Top level management	52	18.6
Total	280	100.0

**Chart 5.2.5 Levels of Management**



The above graph shows the distribution of respondents on the basis of levels in management. A majority i.e. 60 per cent of respondents belonged to middle level management; about 21 per cent were from non-management, while the respondents belonging to top management level were only about 19 per cent.

**5.2.6 Functional Area**

The total data of 280 respondents was segregated on the basis of functional area as per the table below:

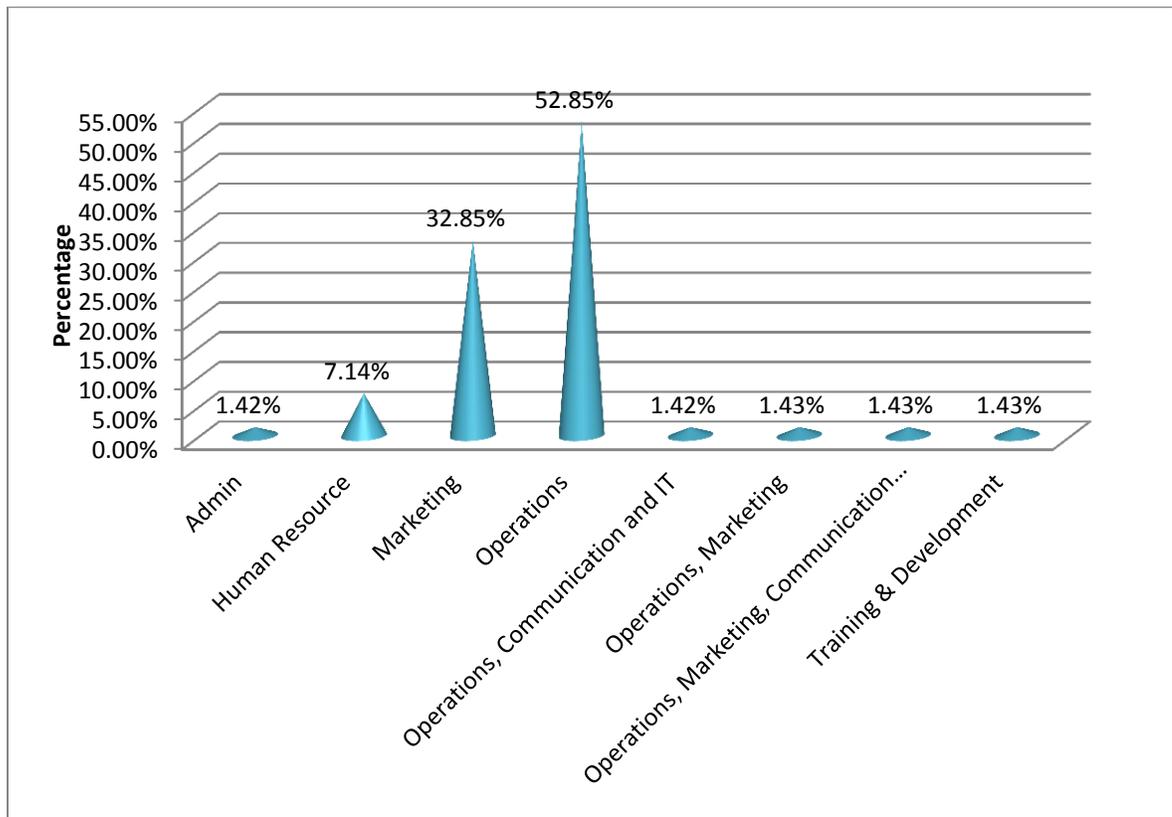
**Table 5.2.6 Functional Area**

Functional Area	Frequency	Percent
Admin	4	1.4
Human Resource	20	7.1

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Marketing	92	32.9
Operations	148	52.9
Operations, Communication and IT	4	1.4
Operations, Marketing	4	1.4
Operations, Marketing, Communication and IT	4	1.4
Training & Development	4	1.4
Total	280	100.0

**Chart 5.2.6 Functional Area**



The above graph shows the distribution of respondents on the basis of area in which they were working in their organizations. A majority i.e.53 per cent of respondents were working in operations; about 33 per cent were working in marketing area, while rests of the respondents were from other functional areas.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

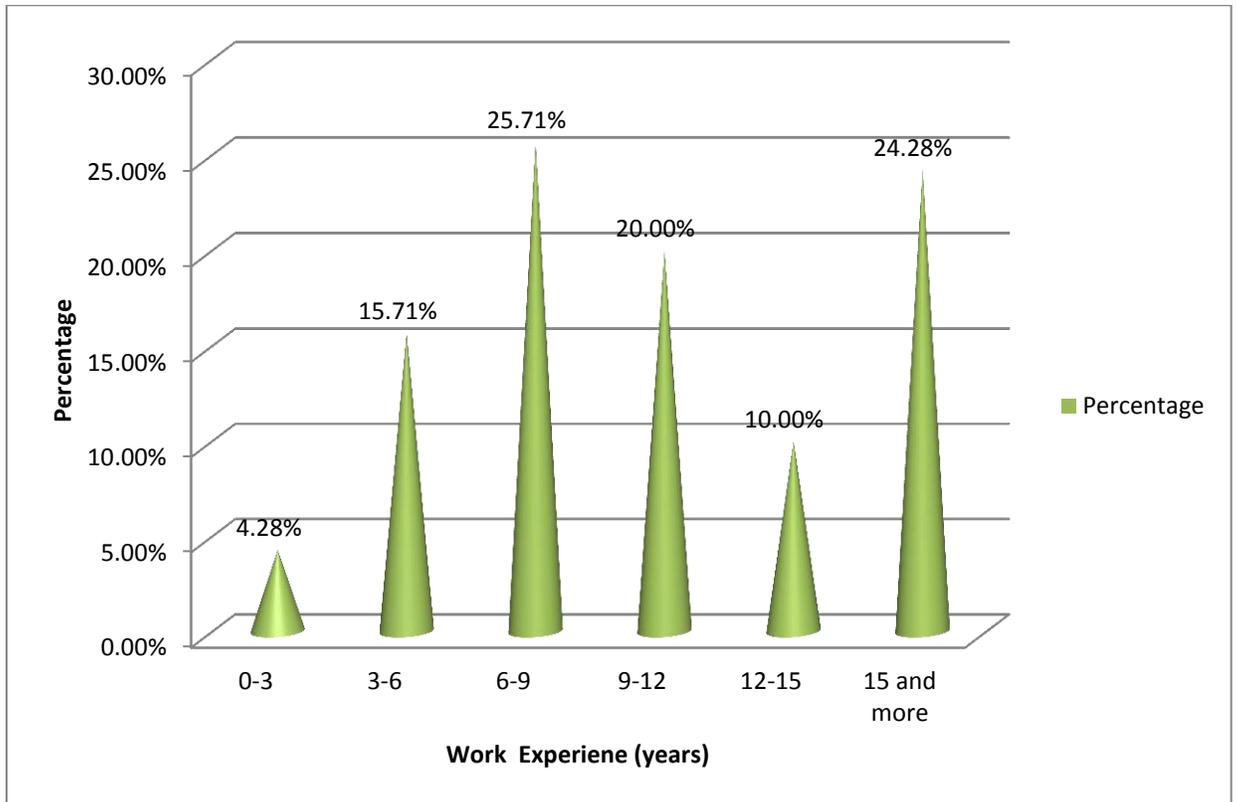
**5.2.7 Work Experience**

The total data of 280 respondents was segregated on the basis of Gender as per the table below:

**Table 5.2.7 Work Experience**

<b>Work Experience</b>	<b>Frequency</b>	<b>Percent</b>
0-3	12	4.3
3-6	44	15.7
6-9	72	25.7
9-12	56	20.0
12-15	28	10.0
15 and more	68	24.3
Total	280	100.0

**Chart 5.2.7 Work Experience**



**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

The above graph shows the distribution of respondents on the basis of their work experience. Nearly 26 per cent of respondents were having 3-6 years of work experience; about 25 per cent had more than 15 years of experience, while 20 per cent of respondents were having 9-12 years of experience.

**5.2.8 Working Hours**

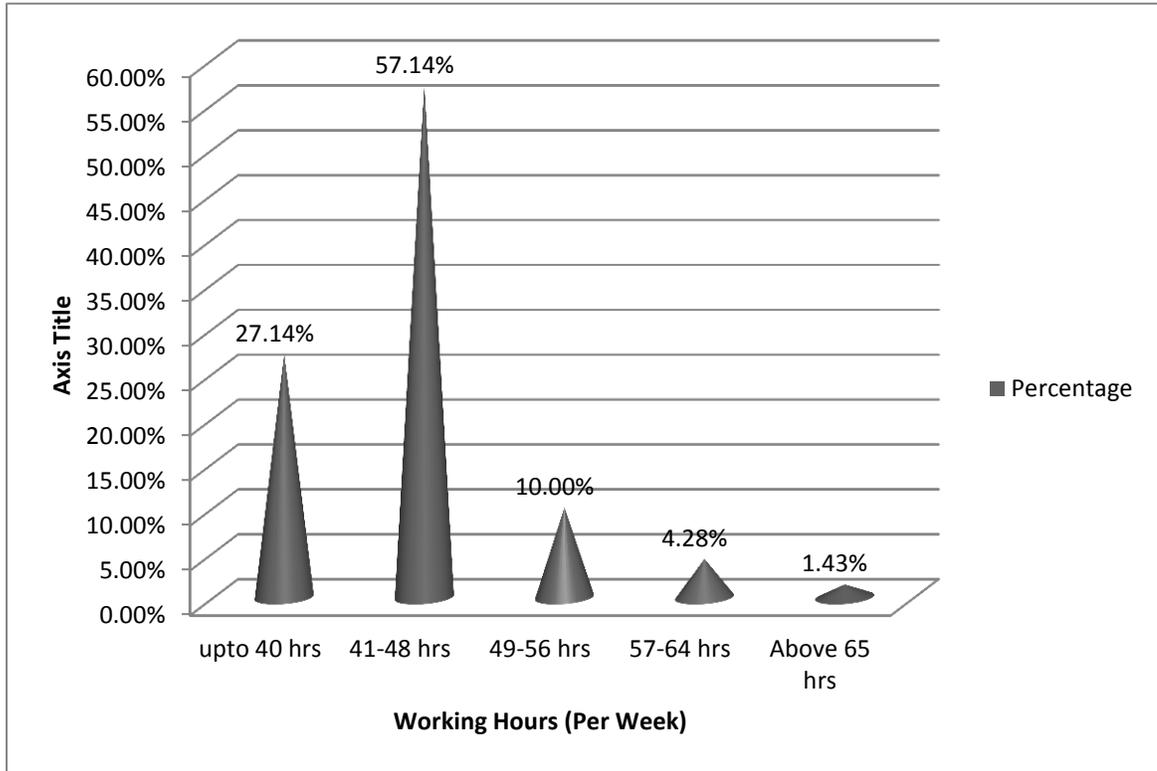
The total data of 280 respondents was segregated on the basis of working hours spent as per the table below:

**Table 5.2.8 Working Hours (Per Week)**

<b>Working Hours Per Week</b>	<b>Frequency</b>	<b>Percent</b>
up to 40 hrs	76	27.1
41-48 hrs	160	57.1
49-56 hrs	28	10.0
57-64 hrs	12	4.3
65 hrs and above	4	1.4
Total	280	100.0

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

**Chart 5.2.8 Working Hours (Per Week)**



The above graph shows the distribution of respondents on the basis of working hours they had spent per week. A majority, i.e., nearly 57 per cent of respondents spent 41-48 hours per week; about 27 per cent spent up to 40 hours per week, while the respondents who spent more than 65 hours per week were very few.

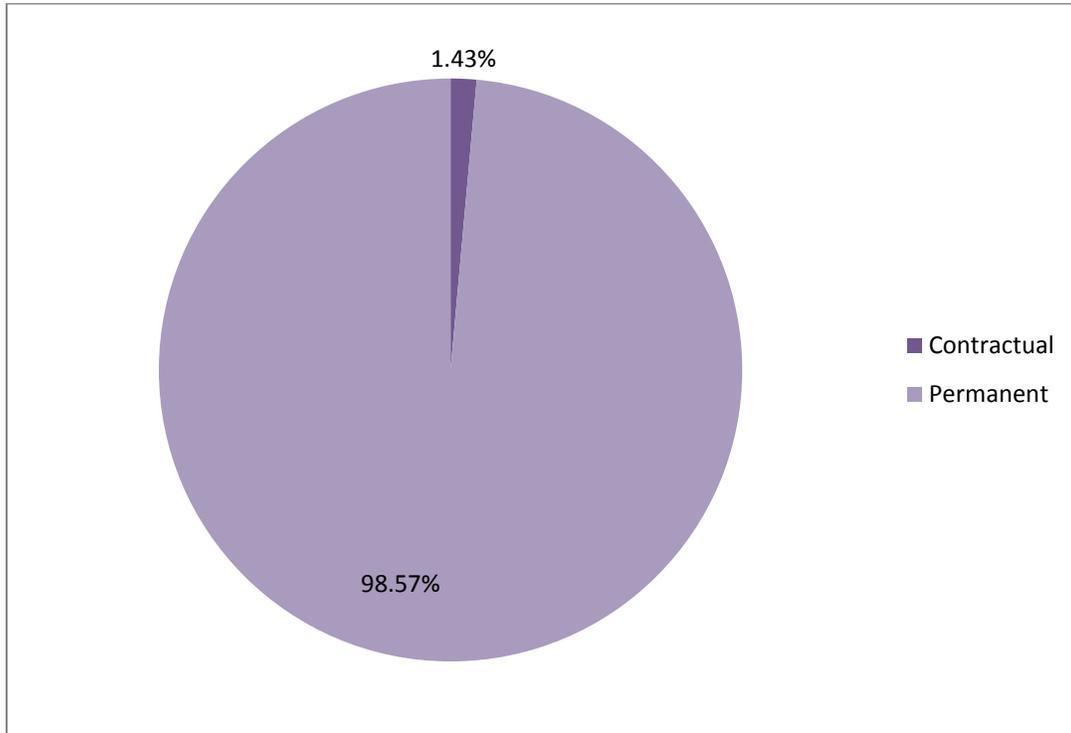
**5.2.9 Type of Employees**

The total data of 280 respondents was segregated on the basis of type of employee as per the table below:

**Table 5.2.9 Type of Employees**

Type of Employee	Frequency	Percent
Contractual	4	1.4
Permanent	276	98.6
Total	280	100.0

**Chart 5.2.9 Type of Employees**



The above graph shows the distribution of respondents on the basis of their type. Almost 99 per cent of respondents were permanent employees, while the respondents working on contractual basis were only about 1 per cent.

### **5.3 VALIDATION OF HYPOTHESIZED VARIABLES**

In this section, the researcher applied statistical techniques to prove stated hypothesis and to analyze whether the responses vary or not on the basis of organization. For this Chi-Square (Goodness of Fit) Test and Pearson's Chi-Square Test were applied and the values of p were calculated under experimental method. After that the values were compared to justify whether the difference was significant or not.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**5.3.1 Hypothesis-1**

H01: The company E-learning courses do not allow participants to pick their own time and place for the training.

H11: The company E-learning courses allow participants to pick their own time and place for the training.

The above mentioned hypothesis has been proved with the help of following variables-

**5.3.1.1 E-learning's ability to offer content when needed**

This variable helped in validation of the hypothesis that E-learning allows participants to pick their own time and place as it offers training whenever needed.

**Table 5.3.1**  
**E-learning's ability to offer content when needed**

	Observed N	Expected N	Residual
Highly Agree	69	56.0	13.0
Agree	139	56.0	83.0
Less Agree	8	56.0	-48.0
Not Agree	11	56.0	-45.0
No Idea	53	56.0	-3.0
Total	280		

***Chi Square (Goodness of Fit) = 203.50, df = 4 P value = 0.000***

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's ability to offer learning content as and when needed.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees strongly agreed or agreed about E-learning's ability to offer learning content as and when needed.

**Table 5.3.2  
Association between Organizations  
and E-learning's ability to offer content when needed**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	16	2	9	15	27	69
	26.7%	8.3%	22.5%	31.3%	25.0%	24.6%
Agree	30	14	25	19	51	139
	50.0%	58.3%	62.5%	39.6%	47.2%	49.6%
Less Agree	2	0	1	0	5	8
	3.3%	0.0%	2.5%	0.0%	4.6%	2.9%
Not Agree	2	2	1	1	5	11
	3.3%	8.3%	2.5%	2.1%	4.6%	3.9%
No Idea	10	6	4	13	20	53
	16.7%	25.0%	10.0%	27.1%	18.5%	18.9%

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Pearson Chi-Square 15.744, df = 16, p value = 0.471*

The above table shows the association between the type of organization and employees' perception of E-learning's ability to offer learning content as and when needed.

No significant difference was found in the opinions of the employees belonging to different organizations about the perception of E-learning's ability to offer learning content as and when needed.

Nearly 40 per cent or more number of employees in all the chosen companies agreed that e-learning provides content as and when needed while only about 10 per cent employees disagreed with the fact.

**5.3.1.2 Emergence of E-learning due to Inflexibility inherent in traditional methods**

This variable also helped in validation of the hypothesis that E-learning allows participants flexible schedule as against traditional practices.

**Table 5.3.3  
Emergence of E-learning due to Inflexibility inherent in traditional methods**

Response	Frequency		
	Observed N	Expected N	Residual
Highly Agree	67	56.0	11.0
Agree	136	56.0	80.0

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Less Agree	13	56.0	-43.0
Not Agree	15	56.0	-41.0
No Idea	49	56.0	-7.0
Total	280		

*Chi Square (Goodness of Fit) = 180.357, df = 4 P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's emergence due to inflexibility inherent in traditional methods.

A Statistical significant difference was found in the opinions of the employees and it was accepted that a majority of employees strongly agreed or agreed about emergence of E-learning due to inflexibility inherent in traditional methods.

**Table 5.3.4  
Association between Organizations  
and Emergence of E-learning due to Inflexibility inherent in traditional methods**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	16	2	8	15	26	67
	26.7%	8.3%	20.0%	31.3%	24.1%	23.9%
Agree	29	13	25	19	50	136
	48.3%	54.2%	62.5%	39.6%	46.3%	48.6%

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Less Agree	2	1	2	0	8	13
	3.3%	4.2%	5.0%	0.0%	7.4%	4.6%
Not Agree	5	3	1	1	5	15
	8.3%	12.5%	2.5%	2.1%	4.6%	5.4%
No Idea	8	5	4	13	19	49
	13.3%	20.8%	10.0%	27.1%	17.6%	17.5%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

***Pearson Chi-Square 20.386 ,df = 16, p value = 0.2033***

The above table shows the association between the organizations and the employees' perception of E-learning's emergence due to inflexibility inherent in traditional methods.

No significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning emerged due to inflexibility inherent in traditional methods.

Nearly 70 per cent employees in all the chosen companies agreed that the reason behind the emergence of E-learning could be attributed to inflexibility inherent in traditional methods.

### **5.3.1.3 E-learning's shortcoming as inconvenient schedule**

This variable also supported in validation of the hypothesis that E-learning allows participants convenient schedule so that they can avail training whenever they need.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**Table 5.3.5**  
**E-learning's shortcoming as inconvenient schedule**

Response	Frequency		
	Observed N	Expected N	Residual
Highly Agree	18	56.0	-38.0
Agree	39	56.0	-17.0
Less Agree	77	56.0	21.0
Not Agree	106	56.0	50.0
No Idea	40	56.0	-16.0
Total	280		

***Chi Square (Goodness of Fit) = 88.036, df = 4, P value = 0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's shortcoming as inconvenient schedule.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or not agreed about inconvenient schedule as shortcoming of E-learning.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.6**

**Association between Organizations  
and E-learning's shortcoming as inconvenient schedule**

Responses	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	4	4	4	0	6	18
	6.7%	16.7%	10.0%	0.0%	5.6%	6.4%
Agree	15	0	4	6	14	39
	25.0%	0.0%	10.0%	12.5%	13.0%	13.9%
Less Agree	23	8	8	15	23	77
	38.3%	33.3%	20.0%	31.3%	21.3%	27.5%
Not Agree	6	4	20	23	53	106
	10.0%	16.7%	50.0%	47.9%	49.1%	37.9%
No Idea	12	8	4	4	12	40
	20.0%	33.3%	10.0%	8.3%	11.1%	14.3%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

***Pearson Chi-Square 54.077, df = 16, p value = 0.000***

The above table shows the association between the organizations and the employees' perception of E-learning's shortcoming as inconvenient schedule.

## **RESULTS AND DISCUSSION - I (TESTING OF HYPOTHESIZED VARIABLES)**

---

A significant difference was found in the opinions of employees belonging to different organizations about the above mentioned fact.

In KEC International Limited, Siemens and Torrent Power, nearly 50 per cent employees disagreed about the fact that E-learning offers inconvenient schedule while in the other two companies namely ABB ltd. and Adani only 10-17 per cent employees disagreed with the fact.

### **Accept Alternate Hypothesis:**

As per above tables and comparing the opinion of the employees it was found that there was significant difference in the opinion of employees, hence null hypothesis was rejected and it was accepted that E-learning courses allow participants to pick their own time and place for the training. It can be concluded that E-learning overcomes the shortcoming of traditional learning techniques by offering convenient and flexible schedule thus enables employees to get training whenever needed.

### **5.3.2 Hypothesis- 2**

**H02:** The employees with less workload do not spend more time on E-learning than employees with higher workload, thus cannot handle larger responsibilities.

**H12:** The employees with less workload spend more time on E-learning than employees with higher workload, thus making themselves capable to handle larger responsibilities.

#### **5.3.2.1 E-learning enables employees to handle greater responsibilities**

This variable was taken to validate the hypothesis that E-learning makes employees with less workload more responsible to handle greater tasks.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**Table 5.3.7**

**E-learning enables employees to handle greater responsibilities**

Response	Frequency		
	Observed N	Expected N	Residual
Can't say	32	93.3	-61.3
No	20	93.3	-73.3
Yes	228	93.3	134.7
Total	280		

*Chi Square (Goodness of Fit) = 292.229, df = 2, P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning as a facilitating step for improving the pace of learning and reducing employee down-time thus enabling employees to handle greater responsibilities.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees agreed about E-learning as a facilitating step for improving the pace of learning and reducing employee down-time thus enabling employees to handle greater responsibilities.

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.8**

**Association between Organizations**

**and enabling employees to handle greater responsibilities through E-learning**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Can't say	8	12	0	4	8	32
	13.3%	50.0%	0.0%	8.3%	7.4%	11.4%
No	12	0	4	0	4	20
	20.0%	0.0%	10.0%	0.0%	3.7%	7.1%
Yes	40	12	36	44	96	228
	66.7%	50.0%	90.0%	91.7%	88.9%	81.4%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

***Pearson Chi-Square 65.443, df = 16, p value =0.000***

The above table shows the association between the employees' perception of enabling employees to handle greater responsibilities through E-learning and type of organization.

A significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning enables employees to handle greater responsibilities by improving their learning speed and reducing downtime.

In KEC International Limited, Siemens and Torrent Power, nearly 90 per cent employees agreed with the above mentioned fact while in ABB Ltd. and Adani the

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

percentage of employees to agree was significantly low. At Adani 50 per cent of respondents were neutral about the above mentioned fact, while others who agreed were 50 per cent. At ABB Ltd. the respondents who agreed were nearly 67 per cent.

**5.3.2.2 Influence of E-learning on Employee Time Saving**

This variable also helped in validation of the hypothesis that E-learning has influence on saving employee time thus enables them to handle greater responsibilities.

**Table 5.3.9**  
**Influence of E-learning on Time Saving**

Response	Frequency		
	Observed N	Expected N	Residual
No Influence	14	56.0	-42.0
Some Influence	40	56.0	-16.0
Moderate Influence	65	56.0	9.0
Significant Influence	105	56.0	49.0
Very Sigft Influence	56	56.0	0.0
Total	280		

***Pearson Chi-Square = 80.39, df = 4, p value =0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's influence on time saving.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on time saving.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.10**

**Association between Organizations**  
**and Influence of E-learning on Time Saving**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
No Influence	0 0.0%	3 12.5%	0 0.0%	3 6.3%	8 7.4%	14 5.0%
Some Influence	9 15.0%	4 16.7%	10 25.0%	3 6.3%	14 13.0%	40 14.3%
Moderate Influence	14 23.3%	1 4.2%	6 15.0%	17 35.4%	27 25.0%	65 23.2%
Significant Influence	17 28.3%	12 50.0%	16 40.0%	21 43.8%	39 36.1%	105 37.5%
Very Significant Influence	20 33.3%	4 16.7%	8 20.0%	4 8.3%	20 18.5%	56 20.0%
Total	60 100.0%	24 100.0%	40 100.0%	48 100.0%	108 100.0%	280 100.0%

***Pearson Chi-Square 34.694, df = 16, p value = 0.004***

The above table shows the association between employees' perception of E-learning's influence in saving time.

## **RESULTS AND DISCUSSION - I (TESTING OF HYPOTHESIZED VARIABLES)**

---

A significant difference was found in opinions of employees belonging to different organizations about the fact that E-learning has influence in saving time.

A significant difference was found in the opinions of employees belonging to different organizations about the fact that E-learning had influence on time saving. In ABB Ltd. nearly 33per cent of the respondents opined that E-learning has very significant influence on time saving while in the other companies the percentage was low. In Adani half of the respondents agreed that it had significant influence.

### **Accept Alternate Hypothesis:**

As per above tables and comparing the opinions of the employees it was found that there was a significant difference in the opinions of employees, hence null hypothesis was rejected and it was accepted that E-learning courses enables employees to handle greater responsibilities by improving their learning speed and reducing downtime. Thus it can be concluded that employees with less workload can be made more responsible by providing training through E-learning.

### **5.3.3 Hypothesis-3**

H03: The trainings imparted through E-learning do not results in improved performance of the employees.

H13: The trainings imparted through E-learning results in improved performance of the employees.

The above mentioned hypothesis has been proved with the help of following variables-

#### **5.3.3.1 Emergence of E-learning due to lowering down of service quality**

This variable helped in validation of the hypothesis that E-learning improves performance of employees by improving service quality.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**Table 5.3.11**  
**Emergence of E-learning due to lowering down of service quality**

Response	Frequency		
	Observed N	Expected N	Residual
Highly Agree	65	56.0	9.0
Agree	134	56.0	78.0
Less Agree	14	56.0	-42.0
Not Agree	14	56.0	-42.0
No Idea	53	56.0	-3.0
Total	280		

***Chi Square (Goodness of Fit) = 173.250, df = 4 P value = 0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's emergence due to lowering down of service quality.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either highly agreed or agreed about emergence of E-learning due to lowering down of service quality.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.12**

**Association between Organizations**  
**and Emergence of E-learning due to lowering down of service quality**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	17	1	6	15	26	65
	28.3%	4.2%	15.0%	31.3%	24.1%	23.2%
Agree	28	14	26	19	47	134
	46.7%	58.3%	65.0%	39.6%	43.5%	47.9%
Less Agree	1	1	3	0	9	14
	1.7%	4.2%	7.5%	0.0%	8.3%	5.0%
Not Agree	4	2	1	1	6	14
	6.7%	8.3%	2.5%	2.1%	5.6%	5.0%
No Idea	10	6	4	13	20	53
	16.7%	25.0%	10.0%	27.1%	18.5%	18.9%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Pearson Chi-Square 24.023, df = 16, p value =0.089*

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

The above table shows the association between the type of organization and employees' perception of E-learning's emergence due to lowering down of service quality.

No significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning emerged due to lowering down of service quality.

Nearly 70 per cent or more number of employees in all the chosen companies agreed that the reason behind emergence of E-learning could be attributed to lowering down of service quality.

**5.3.3.2 Influence of E-learning on employee productivity**

This variable helped in validation of the hypothesis that E-learning improves performance of employees by enhancing their productivity.

**Table 5.3.13**  
**Influence of E-learning on employee productivity**

Responses	Frequency		
	Observed N	Expected N	Residual
No Influence	17	56.0	-39.0
Some Influence	74	56.0	18.0
Moderate Influence	69	56.0	13.0
Significant Influence	108	56.0	52.0
Very Sigft Influence	12	56.0	-44.0
Total	280		

***Chi Square (Goodness of Fit) = 180.357, df = 4 P value = 0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's influence on employee productivity.

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on employee productivity.

**Table 5.3.14**

**Association between Organizations**

**and Influence of E-learning on employee productivity**

<b>Response</b>	<b>Organization Name</b>					<b>Total</b>
	<b>ABB Limited</b>	<b>Adani</b>	<b>KEC International Limited</b>	<b>Siemens</b>	<b>Torrent Power</b>	
No	3	3	4	3	4	17
Influence	5.0%	12.5%	10.0%	6.3%	3.7%	6.1%
Some	16	7	10	14	27	74
Influence	26.7%	29.2%	25.0%	29.2%	25.0%	26.4%
Moderate	19	10	2	15	23	69
Influence	31.7%	41.7%	5.0%	31.3%	21.3%	24.6%
Significant	22	0	24	8	54	108
Influence	36.7%	0.0%	60.0%	16.7%	50.0%	38.6%
Very	0	4	0	8	0	12
Significant Influence	0.0%	16.7%	0.0%	16.7%	0.0%	4.3%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

*Pearson Chi-Square 74.082, df = 16, p value =0.000*

The above table shows the association between employees' perception of E-learning's influence on their productivity and the type of organization.

A significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning has influence on employee productivity.

In KEC International Limited and Torrent Power 50 per cent -60 per cent employees opined that E-learning had significant influence on employee productivity while in the other three companies namely ABB ltd., Siemens and Adani only 20-35 per cent employees agreed with the fact.

**5.3.3.3 Influence of E-learning on Quality of Work**

This variable helped in validating the hypothesis that E-learning positively influences quality of work thus improves employee performance.

**Table 5.3.15**  
**Influence of E-learning on Quality of Work**

Response	Frequency		
	Observed N	Expected N	Residual
No Influence	14	56.0	-42.0
Some Influence	54	56.0	-2.0
Moderate Influence	73	56.0	17.0
Significant Influence	107	56.0	51.0
Very Significant Influence	32	56.0	-24.0
Total	280		

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

*Chi Square (Goodness of Fit) = 93464, df = 4 P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's influence on quality of work.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on quality of work.

**Table 5.3.16  
Association between Organizations  
and Influence of E-learning on Quality of Work**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
No Influence	0 0.0%	3 12.5%	4 10.0%	3 6.3%	4 3.7%	14 5.0%
Some Influence	12 20.0%	4 16.7%	7 17.5%	7 14.6%	24 22.2%	54 19.3%
Moderate Influence	16 26.7%	9 37.5%	5 12.5%	18 37.5%	25 23.1%	73 26.1%
Significant	24	4	16	16	47	107

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Influence	40.0%	16.7%	40.0%	33.3%	43.5%	38.2%
Very	8	4	8	4	8	32
Significant Influence	13.3%	16.7%	20.0%	8.3%	7.4%	11.4%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Pearson Chi-Square 25.571, df = 16, p value = .060*

The above table shows the association between employees' perception of E-learning's influence on quality of work and the type of organization.

No significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning has influence on quality of work.

Nearly 50 per cent employees in all the chosen companies agreed that E-learning has a significant influence on quality of work.

#### **5.3.3.4 Influence of E-learning on Employee Development**

This variable also helped in validation of the hypothesis that E-learning positively influences development of employees thus improves their performance.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**Table 5.3.17**

**Influence of E-learning on Employee Development**

Response	Frequency		
	Observed N	Expected N	Residual
No Influence	7	56.0	-49.0
Some Influence	47	56.0	-9.0
Moderate Influence	86	56.0	30.0
Significant Influence	116	56.0	60.0
Very Sigft Influence	24	56.0	-32.0
Total	280		

*Chi Square (Goodness of Fit) = 142.964, df = 4 P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's influence on employee development.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on development of employees.

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.18**

**Association between Organizations  
and Influence of E-learning on Employee Development**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
No Influence	3 5.0%	0 0.0%	0 0.0%	0 0.0%	4 3.7%	7 2.5%
Some Influence	7 11.7%	6 25.0%	11 27.5%	7 14.6%	16 14.8%	47 16.8%
Moderate Influence	18 30.0%	6 25.0%	13 32.5%	18 37.5%	31 28.7%	86 30.7%
Significant Influence	32 53.3%	4 16.7%	12 30.0%	19 39.6%	49 45.4%	116 41.4%
Very Significant Influence	0 0.0%	8 33.3%	4 10.0%	4 8.3%	8 7.4%	24 8.6%
Total	60 100.0%	24 100.0%	40 100.0%	48 100.0%	108 100.0%	280 100.0%

*Pearson Chi-Square 41.010, df = 16, p value = .001*

## **RESULTS AND DISCUSSION - I (TESTING OF HYPOTHESIZED VARIABLES)**

---

The above table shows the association between employees' perception of e-learning's influence on their personal development and the type of organization.

A significant difference was found in the opinions of employees belonging to different organizations about the fact that E-learning had influence on employee development.

In ABB Ltd. Nearly 53 per cent of the respondents opined that E-learning has significant influence on Employee development while in the other companies the percentage was low. In Adani nearly one third of the respondents agreed that it had very significant influence.

### **Accept Alternate Hypothesis:**

As per above tables and comparing the opinions of the employees it was found that there was significant difference in the opinion of the employees, hence null hypothesis was rejected and it was accepted that E-learning courses had influence on the employees development. Thus it can be concluded that E-learning positively influences employee performance and gives quality output.

### **5.3.4 Hypothesis-4**

**H04:** E-learning does not provide better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.

**H14:** E-learning provides better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**5.3.4.1 E-learning- a more effective practice**

This variable helped in validation of the hypothesis that E-learning is more effective practice as compared to traditional practices.

**Table 5.3.19**

**E-learning- a more effective practice**

Response	Frequency		
	Observed N	Expected N	Residual
Blended Learning	96	93.3	2.7
E- Learning	118	93.3	24.7
Face –to- Face learning	66	93.3	-27.3
Total	280		

***Chi Square (Goodness of Fit) = 14.60, df = 2 P value = 0.001***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning as a more effective practice.

A Statistical significant difference was found in the opinions of the employees and it gets accepted as a majority of employees opined that E-learning was more effective in comparison to other practices.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.20**  
**Association between Organizations**  
**and employees' perception about E-learning as more effective practice**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Blended Learning	20	5	18	15	38	96
	33.3%	20.8%	45.0%	31.3%	35.2%	34.3%
E-learning	26	9	16	22	45	118
	43.3%	37.5%	40.0%	45.8%	41.7%	42.1%
Face -Face Learning	14	10	6	11	25	66
	23.3%	41.7%	15.0%	22.9%	23.1%	23.6%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Pearson Chi-Square 7.723, df = 16, p value =0.461*

The above table shows the association between the organizations and the employees' perception about E-learning as more effective practice.

No significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning is more effective practice.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**5.3.4.2 E-learning- Effective in providing better interaction and understanding**

This variable also supported to validate the hypothesis that E-learning is more effective practice because it provides better interaction and understanding.

**Table 5.3.21**

**E-learning- Effective in providing better interaction and understanding**

Responses	Frequency		
	Observed N	Expected N	Residual
Highly Agree	99	56.0	43.0
Agree	108	56.0	52.0
Less Agree	9	56.0	-47.0
Not Agree	22	56.0	-34.0
No Idea	42	56.0	-14.0
Total	280		

***Chi Square (Goodness of Fit) = 144.893, df =4 P value = 0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning as more effective practice in providing better interaction and understanding.

A Statistical significant difference was found in the opinions of the employees and its gets accepted as a majority of employees agreed that E-learning is more effective practice in providing better interaction and understanding.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.22**

**Association between Organizations**  
**and superiority of E-learning in providing better interaction and understanding**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	22	8	19	15	35	99
	36.7%	33.3%	47.5%	31.3%	32.4%	35.4%
Agree	23	8	14	19	44	108
	38.3%	33.3%	35.0%	39.6%	40.7%	38.6%
Less Agree	1	0	3	1	4	9
	1.7%	0.0%	7.5%	2.1%	3.7%	3.2%
Not Agree	4	4	2	2	10	22
	6.7%	16.7%	5.0%	4.2%	9.3%	7.9%
No Idea	10	4	2	11	15	42
	16.7%	16.7%	5.0%	22.9%	13.9%	15.0%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

***Pearson Chi-Square 15.357, df = 16, p value =0 .499***

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

The above table shows the association between employees' perception of superiority of E-learning in providing better interaction and understanding and the type of organizations.

No significant difference was found in the opinions of the employees belonging to different organizations about the superiority of E-learning in providing better interaction and understanding.

Nearly 60-70 per cent employees in all the chosen companies agreed that E-learning provided better interaction and understanding.

**5.3.4.3 E-learning- More effective in providing relevant and adequate vocational knowledge**

This variable also supported to validate the hypothesis that E-learning is more effective practice because it provides relevant and adequate vocational knowledge.

**Table 5.3.23**

**E-learning- More effective in providing relevant and adequate vocational knowledge**

<b>Response</b>	<b>Frequency</b>		
	Observed N	Expected N	Residual
Highly Agree	105	56.0	49.0
Agree	103	56.0	47.0
Less Agree	3	56.0	-53.0

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Not Agree	23	56.0	-33.0
No Idea	46	56.0	-10.0
Total	280		

*Chi Square (Goodness of Fit) = 153.714, df =4 P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning as a more effective practice.

A Statistical significant difference was found in the opinions of the employees and it is accepted, as a majority of employees agreed that E-learning was more effective in providing relevant and adequate vocational knowledge.

**Table 5.3.24**

**Association between Organizations and superiority of E-learning in providing relevant and adequate vocational knowledge**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	21	7	16	16	45	105
	35.0%	29.2%	40.0%	33.3%	41.7%	37.5%
Agree	24	8	17	18	36	103

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

	40.0%	33.3%	42.5%	37.5%	33.3%	36.8%
Less Agree	0	1	1	1	0	3
	0.0%	4.2%	2.5%	2.1%	0.0%	1.1%
Not Agree	6	2	4	2	9	23
	10.0%	8.3%	10.0%	4.2%	8.3%	8.2%
No Idea	9	6	2	11	18	46
	15.0%	25.0%	5.0%	22.9%	16.7%	16.4%
Total	60	24	40	48	108	280
	100.0%	100.0 %	100.0%	100.0%	100.0%	100.0 %

***Pearson Chi-Square 14.367, df = 16, p value =0.571***

The above table shows the association between the type of organizations and employees' perception of superiority of E-learning in providing relevant and adequate vocational knowledge.

No significant difference was found in the opinions of the employees belonging to different organizations about the superiority of E-learning in providing relevant and adequate vocational knowledge.

Nearly 70-80 per cent employees in all the chosen companies agreed that E-learning provides relevant and adequate vocational knowledge.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**5.3.4.4 E-learning- More effective in providing solutions to FAQs**

This variable also supported to validate the hypothesis that E-learning is more effective practice because it provides solutions to FAQs.

**Table 5.3.25**

**E-learning- More effective in providing solutions to FAQs**

<b>Response</b>	<b>Frequency</b>		
	Observed N	Expected N	Residual
Highly Agree	5	70.0	-65.0
Less Agree	50	70.0	-20.0
Not Agree	136	70.0	66.0
No Idea	89	70.0	19.0
Total	280		

***Chi Square (Goodness of Fit) = 235.071, df = 4 P value = 0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning as a more effective in providing solutions to FAQs.

A Statistical significant difference was found in the opinions of the employees and it is accepted, as a majority of employees did not agree that E-learning was more effective in providing solutions to FAQs.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

**Table 5.3.26**

**Association between Organizations**  
**and superiority of E-learning in providing solutions to FAQ**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	0	4	0	0	1	5
	0.0%	16.7%	0.0%	0.0%	0.9%	1.8%
Less Agree	17	4	4	6	19	50
	28.3%	16.7%	10.0%	12.5%	17.6%	17.9%
Not Agree	27	8	16	18	67	136
	45.0%	33.3%	40.0%	37.5%	62.0%	48.6%
No Idea	16	8	20	24	21	89
	26.7%	33.3%	50.0%	50.0%	19.4%	31.8%
Total	60	24	40	48	108	288
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

***Pearson Chi-Square=60.743, df = 12, p value =0.000***

The above table shows the association between the type of organizations and employees' perception of superiority of E-learning in providing solutions to FAQ.

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

---

A significant difference was found in the opinions of the employees belonging to different organizations about the superiority of E-learning in providing solutions to FAQ.

In Torrent Power 62 per cent of the respondents did not agree, while in the other companies the percentage of disagreement was 30-45 per cent. In Siemens and KEC International; 50 per cent of the respondents had no idea about the above mentioned fact.

**5.3.4.5 E-learning- More effective in meeting needs of employees**

This variable also supported to validate the hypothesis that E-learning is more effective practice because it meets employees' needs.

**Table 5.3.27**

**E-learning- More effective in meeting needs of employees**

Response	Frequency		
	Observed N	Expected N	Residual
Highly Agree	4	56.0	-52.0
Agree	3	56.0	-53.0
Less Agree	43	56.0	-13.0
Not Agree	178	56.0	122.0
No Idea	52	56.0	-4.0
Total	280		

***Chi Square (Goodness of Fit) = 367.536, df = 4 P value = 0.000***

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning as a more effective in meeting needs of employees.

A Statistical significant difference was found in the opinions of the employees and it is accepted, as a majority of employees did not agree that E-learning was more effective in meeting needs of employees.

**Table 5.3.28**  
**Association between Organizations**  
**and superiority of E-learning in meeting needs of employees**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	0	4	0	0	0	4
	0.0%	16.7%	0.0%	0.0%	0.0%	1.4%
Agree	3	0	0	0	0	3
	5.0%	0.0%	0.0%	0.0%	0.0%	1.1%
Less Agree	14	8	0	4	17	43
	23.3%	33.3%	0.0%	8.3%	15.7%	15.4%
Not Agree	31	8	32	24	83	178
	51.7%	33.3%	80.0%	50.0%	76.9%	63.6%
No Idea	12	4	8	20	8	52

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

	20.0%	16.7%	20.0%	41.7%	7.4%	18.6%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Pearson Chi-Square 100.963, df = 16, p value =0.000*

The above table shows the association between the type of organizations and employees' perception of superiority of E-learning in meeting needs of employees.

A significant difference was found in the opinions of the employees belonging to different organizations about the superiority of E-learning in meeting employees' needs.

In KEC International Limited and Torrent Power, nearly 80 per cent respondents were not agreed with the above mentioned fact while in Siemens nearly 42 per cent respondents were neutral.

**5.3.4.6 Influence of E-learning on Meeting Learning Requirements of Employees**

This variable also helped in validation of the hypothesis that E-learning fulfills employees' learning requirements thus improves their performance.

**Table 5.3.29**

**Influence of E-learning on Meeting Learning Requirements**

Response	Frequency		
	Observed N	Expected N	Residual
Some Influence	55	70.0	-15.0
Moderate Influence	77	70.0	7.0
Significant Influence	112	70.0	42.0
Very Sigft Influence	36	70.0	-34.0
Total	280		

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

*Pearson Chi-Square =45.63, df = 3, p value =0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning influence on meeting learning requirements of employees.

A Statistical significant difference was found in the opinions of the employees and it is accepted, as a majority of employees agree that E-learning had significant influence on meeting learning requirements of employees.

**Table 5.3.30**  
**Association between Organizations and Influence of E-learning on**  
**Meeting Learning Requirements**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Some Influence	15	6	10	5	19	55
	25.0%	25.0%	25.0%	10.4%	17.6%	19.6%
Moderate Influence	13	10	6	16	32	77
	21.7%	41.7%	15.0%	33.3%	29.6%	27.5%
Significant Influence	20	4	12	27	49	112
	33.3%	16.7%	30.0%	56.3%	45.4%	40.0%
Very Significant	12	4	12	0	8	36
	20.0%	16.7%	30.0%	0.0%	7.4%	12.9%

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Influence						
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Pearson Chi-Square 39.003, df = 16, p value = .000

The above table shows the association between employees' perception of e-learning's influence on meeting learning requirements of employees.

A significant difference was found in opinions of employees belonging to different organizations about the abovementioned fact.

In Siemens above 56 per cent of the respondents opined that E-learning had significant influence on meeting learning requirements while in Adani the percentage was just nearly 17. In KEC International 30 per cent agreed that it had very significant influence while in other companies it was very low.

**5.3.4.7 E-learning- More effective in providing knowledge to solve situation specific issues**

This variable also supported to validate the hypothesis that E-learning is more effective practice because it meets employees' needs.

**Table 5.3.31**

**E-learning- More effective in providing knowledge to solve situation specific issues**

Response	Frequency		
	Observed N	Expected N	Residual
Highly Agree	9	56.0	-47.0
Agree	4	56.0	-52.0

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Less Agree	39	56.0	-17.0
Not Agree	168	56.0	112.0
No Idea	60	56.0	4.0
Total	280		

*Chi Square (Goodness of Fit) = 317.179, df = 4 P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning as a more effective practice in providing knowledge to solve situation specific issues.

A Statistical significant difference was found in the opinions of the employees and it gets accepted, as a majority of employees did not agree that E-learning was more effective in providing knowledge to solve situation specific issues.

**Table 5.3.32  
Association between Organizations  
and superiority of E-learning in solving situation specific issues**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	1	4	0	4	0	9
	1.7%	16.7%	0.0%	8.3%	0.0%	3.2%
Agree	1	0	0	0	3	4
	1.7%	0.0%	0.0%	0.0%	2.8%	1.4%

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

Less Agree	19	8	0	2	10	39
	31.7%	33.3%	0.0%	4.2%	9.3%	13.9%
Not Agree	23	4	28	30	83	168
	38.3%	16.7%	70.0%	62.5%	76.9%	60.0%
No Idea	16	8	12	12	12	60
	26.7%	33.3%	30.0%	25.0%	11.1%	21.4%
Total	60	24	40	48	108	280
	100.0%	100.0 %	100.0%	100.0%	100.0%	100.0 %

***Pearson Chi-Square = 83.63, df = 16, p value = 0.000***

The above table shows the association between the type of organizations and employees' perception of superiority of E-learning in providing knowledge to solve situation specific issues.

A significant difference was found in the opinions of the employees belonging to different organizations about the superiority of E-learning in solving situation specific issues.

In KEC International Limited and Torrent Power, more than 70 per cent employees disagreed that E-learning is superior to face to face learning as it provides knowledge to solve situation specific issues while in other three companies the percentage of disagreement was significantly low.

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

---

**Accept Alternate Hypothesis:**

As per above tables and comparing the opinion of employees it was found that there was significant difference in the opinion of the employees, hence null hypothesis was rejected and it was accepted that E-learning courses provides better knowledge transfer as compared with traditional learning process due to its regular updating by its developers.

**5.3.5 Hypothesis-5**

H05: E-Learning does not help in quick resolution on technical issues.

H15: E-Learning helps in quick resolution on technical issues.

**5.3.5.1 Emergence of E-learning due to delay in resolving urgent issues**

This variable was taken to validate the hypothesis that E-learning helps in resolving technical issues quickly as in traditional methods resolution of urgent issues used to be delayed.

**Table 5.3.33**

**Emergence of E-learning due to delay in resolving urgent issues**

Response	Frequency		
	Observed N	Expected N	Residual
Highly Agree	102	56.0	46.0
Agree	106	56.0	50.0
Less Agree	2	56.0	-54.0
Not Agree	17	56.0	-39.0
No Idea	53	56.0	-3.0
Total	280		

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

*Chi Square (Goodness of Fit) = 161.821, df = 4 P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's emergence due to delay in resolving urgent issues.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either highly agreed or agreed about emergence of E-learning due to delay in resolving urgent issues.

**Table 5.3.34  
Association between Organizations  
and Emergence of E-learning due to delay in resolving urgent issues**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Highly Agree	22	7	17	17	39	102
	36.7%	29.2%	42.5%	35.4%	36.1%	36.4%
Agree	23	8	16	17	42	106
	38.3%	33.3%	40.0%	35.4%	38.9%	37.9%
Less Agree	0	1	0	1	0	2
	0.0%	4.2%	0.0%	2.1%	0.0%	.7%
Not Agree	5	2	3	1	6	17

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

	8.3%	8.3%	7.5%	2.1%	5.6%	6.1%
No Idea	10	6	4	12	21	53
	16.7%	25.0%	10.0%	25.0%	19.4%	18.9%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Pearson Chi-Square = 13.219, df = 16, p value =0.657*

The above table shows the association between the type of organizations and employees' perception of E-learning's emergence due to delay in resolving urgent issues.

No significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning emerged due to delay in resolving urgent issues.

**5.3.5.2 E-learning's influence on resolution of technical issues**

This variable was taken to validate the hypothesis that E-learning helps in resolving technical issues quickly as it has positive influence on resolution of technical issues.

**Table 5.3.35**

**E-learning's influence on resolution of technical issues**

Response	Frequency		
	Observed N	Expected N	Residual
No Influence	15	56.0	-41.0

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Some Influence	66	56.0	10.0
Moderate Influence	66	56.0	10.0
Significant Influence	121	56.0	65.0
Very Sigt Influence	12	56.0	-44.0
Total	280		

*Chi Square (Goodness of Fit) = 143.607, df = 4 P value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's influence on resolution of technical issues.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on resolution of technical issues.

**Table 5.3.36**

**Association between Organizations**

**and Influence of E-learning on resolution of technical issues**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
No Influence	4 6.7%	0 0.0%	7 17.5%	0 0.0%	4 3.7%	15 5.4%
Some Influence	6 10.0%	8 33.3%	16 40.0%	14 29.2%	22 20.4%	66 23.6%
Moderate	14	4	1	19	28	66

**RESULTS AND DISCUSSION - I  
(TESTING OF HYPOTHESIZED VARIABLES)**

Influence	23.3%	16.7%	2.5%	39.6%	25.9%	23.6%
Significant	32	8	12	15	54	121
Influence	53.3%	33.3%	30.0%	31.3%	50.0%	43.2%
Very	4	4	4	0	0	12
Significant						
Influence	6.7%	16.7%	10.0%	0.0%	0.0%	4.3%
Total	60	24	40	48	108	280
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

***Pearson Chi-Square = 65.884, df = 16, p value = 0.000***

The above table shows the association between the organizations and employees' perception of E-learning's influence on resolution of technical issues.

A significant difference was found in the opinions of the employees belonging to different organizations about the abovementioned fact. In ABB Ltd and Torrent power 50 per cent and more of the respondents opined that E-learning had significant influence on resolution of technical issues, while in the other three companies it was only nearly 30 per cent.

**Accept Alternate Hypothesis:**

As per above tables and comparing the opinion of the employees it was found that there was significant difference in the opinion of the employees, hence null hypothesis was rejected and it was accepted that E-learning courses provides quick resolution on technical issues. Thus it can be concluded that as compared to traditional practices, E-learning does not delay in resolving urgent issues.

### 5.3.6 Hypothesis-6

H06: E-learning is not an ideal solution to meet the development needs for the future.

H16: E-learning is an ideal solution to meet the development needs for the future.

#### **Effectiveness of E-learning in meeting development needs of the organization**

A single variable was taken to validate the hypothesis that E-learning is effective in meeting development needs of an organization.

**Table 5.3.37**

#### **Effectiveness of E-learning in meeting development needs of the organization**

<b>Response</b>	<b>Frequency</b>		
	Observed N	Expected N	Residual
Moderate Influence	4	93.3	-89.3
Significant Influence	180	93.3	86.7
Very Significant Influence	96	93.3	2.7
Total	280		

***Chi Square (Goodness of Fit) = 166.057, df = 2 P value = 0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's effectiveness in meeting development needs of the organization.

A Statistical significant difference was found in the opinions of the employees. Thus, null hypothesis gets rejected and it is accepted that a majority of employees opined that E-learning was effective in meeting development needs of the organizations.

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

**Table 5.3.38**

**Association between Organizations  
and meeting development needs of the organization through E-learning**

Response	Organization Name					Total
	ABB Limited	Adani	KEC International Limited	Siemens	Torrent Power	
Moderate Influence	4 6.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	4 1.4%
Significant Influence	36 60.0%	16 66.7%	36 90.0%	28 58.3%	64 59.3%	180 64.3%
Very Significant Influence	20 33.3%	8 33.3%	4 10.0%	20 41.7%	44 40.7%	96 34.3%
Total	60 100.0%	24 100.0%	40 100.0%	48 100.0%	108 100.0%	280 100.0%

***Pearson Chi-Square 28.641, df = 16, p value =0.000***

The above table shows the association between the organizations and employees' perception of E-learning's effectiveness in meeting development needs of the organization.

## **RESULTS AND DISCUSSION - I (TESTING OF HYPOTHESIZED VARIABLES)**

---

A significant difference was found in the opinions of the employees belonging to different organizations about the fact that E-learning was effective in meeting development needs of the organization. In KEC almost 90 per cent of respondents opined that E-learning had significant influence while in other four companies only 60 per cent -67 per cent agreed about the fact.

### **Accept Alternate Hypothesis:**

As per above tables and comparing the opinion of the employees it was found that there was significant difference in the opinions of the employees, hence null hypothesis was rejected and it was accepted that E-learning practice was effective in meeting development needs of the organization.

### **5.4 HYPOTHESES VIEWED AS PER THE ANALYSIS**

1. As per the analysis null hypothesis was rejected and it was accepted that E-learning courses allow participants to pick their own time and place for the training.
2. Null hypothesis was rejected and it was accepted that E-learning courses enables employees to handle greater responsibilities by improving their learning speed and reducing downtime.
3. Null hypothesis was rejected and it was accepted that E-learning courses had influence on employee development.
4. Null hypothesis was rejected and it was accepted that E-learning courses provides better knowledge transfer as compared with traditional learning

**RESULTS AND DISCUSSION - I**  
**(TESTING OF HYPOTHESIZED VARIABLES)**

---

process due to its regular updating by its developers.

5. Null hypothesis was rejected and it was accepted that E-learning courses provides quick resolution on technical issues.
  
6. Null hypothesis was rejected and it was accepted that E-learning course was effective in meeting development needs of the organization.

**CHAPTER 6**  
**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

## **6.1 INTRODUCTION**

The purpose of this chapter is to further report the testing of un-hypothesized variables covered in the study. The analysis undertakes primary information collected from the respondents to uncover few more aspects related to importance of E-learning. To fulfill the objectives following variables had been identified by the researcher and these variables were tested by applying various statistical tools including Percentile analysis, Averages, Kruskal-Wallis H Test and Chi- square test (goodness of fit).

## **6.2 VALIDATION OF UNHYPOTHESIZED VARIABLES**

In this section, the researcher applied statistical techniques to analyze the responses of employees on some aspects pertaining to E-learning that have been covered under the present study. The study of these variables has been very helpful in fulfilling the objectives of the present research. The details of these variables is as under-

### **6.2.1 Emergence of E-learning due to Competition**

This variable was taken to reveal respondents' views on whether E-learning emerged due to Competition or not.

**Table 6.2.1**  
**Emergence of E-learning due to Competition**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	16	56.0	-40.0
Agree	3	56.0	-53.0
Less Agree	32	56.0	-24.0
Not Agree	105	56.0	49.0

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

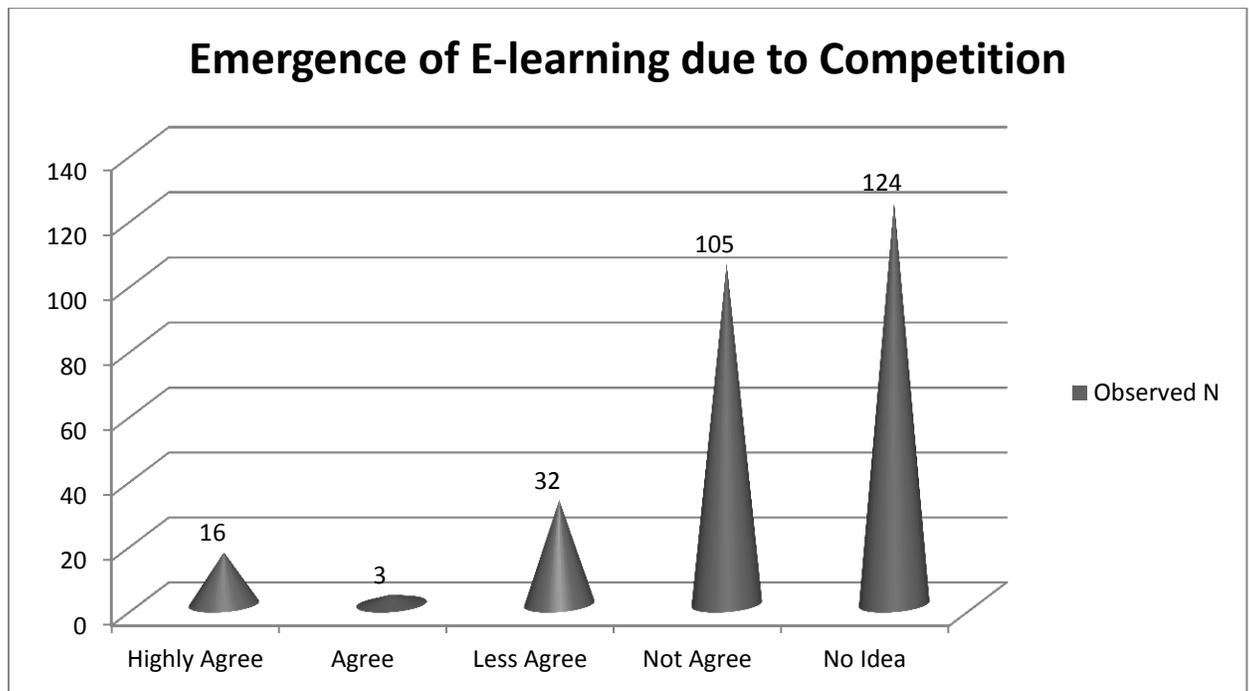
No Idea	124	56.0	68.0
Total	280		

*Chi-Square Test = 214.464, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's emergence due to Competition.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees neither agreed nor had any idea about E-learning's emergence due to Competition. It can be further explained with the help of following chart.

**Chart 6.2.1**  
**Emergence of E-learning due to Competition**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.2 Emergence of E-learning due to Globalization**

This variable was taken to reveal respondents' opinions on whether E-learning emerged due to Globalization or not.

**Table 6.2.2**  
**Emergence of E-learning due to Globalization**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	4	56.0	-52.0
Agree	7	56.0	-49.0
Less Agree	17	56.0	-39.0
Not Agree	108	56.0	52.0
No Idea	144	56.0	88.0
Total	280		

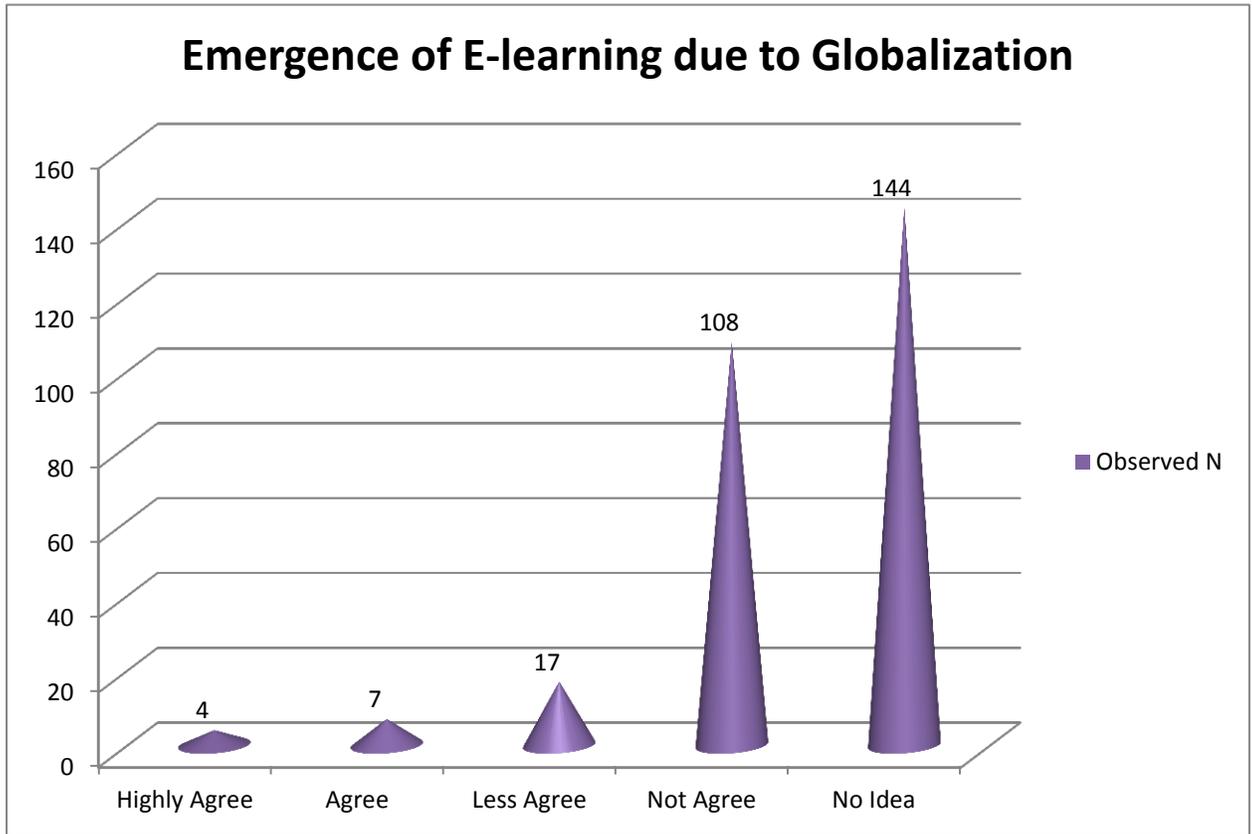
***Chi-Square Test = 304.893, df = 4, p value =0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's emergence due to Globalization.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees neither agreed nor had any idea about E-learning's emergence due to Globalization. Following chart can better portray the respondents' view.

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

Chart 6.2.2



**6.2.3 Emergence of E-learning due to new products or techniques**

This variable was added to know respondents' level of agreement on whether E-learning emerged due to development of new products or techniques or not.

**Table 6.2.3**

**Emergence of E-learning due to new products or techniques**

Responses	Observed N	Expected N	Residual
Highly Agree	4	55.2	-51.2
Agree	4	55.2	-51.2
Less Agree	17	55.2	-38.2

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

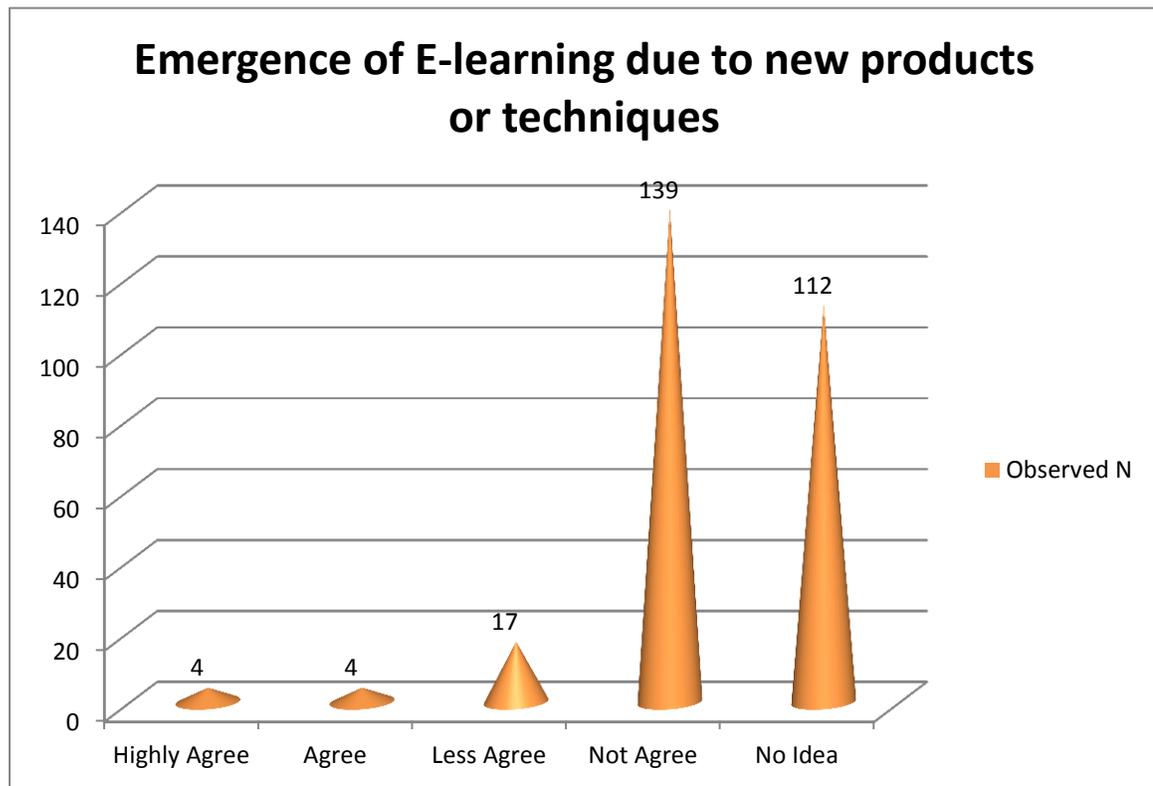
Not Agree	139	55.2	83.8
No Idea	112	55.2	56.8
Total	276		

*Chi-Square Test = 307.080, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's emergence due to new products or techniques.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees neither agreed nor had any idea about E-learning's emergence due to new products or techniques. The above mentioned responses can be showed with the help of following chart.

**Chart 6.2.3**



**6.2.4 Emergence of E-learning due to increased customer complaints**

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

This variable helped in understanding respondents' views on whether E-learning emerged due to increased customer complaints or not.

**Table 6.2.4**  
**Emergence of E-learning due to increased customer complaints**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	16	56.0	-40.0
Agree	8	56.0	-48.0
Less Agree	58	56.0	2.0
Not Agree	134	56.0	78.0
No Idea	64	56.0	8.0
Total	280		

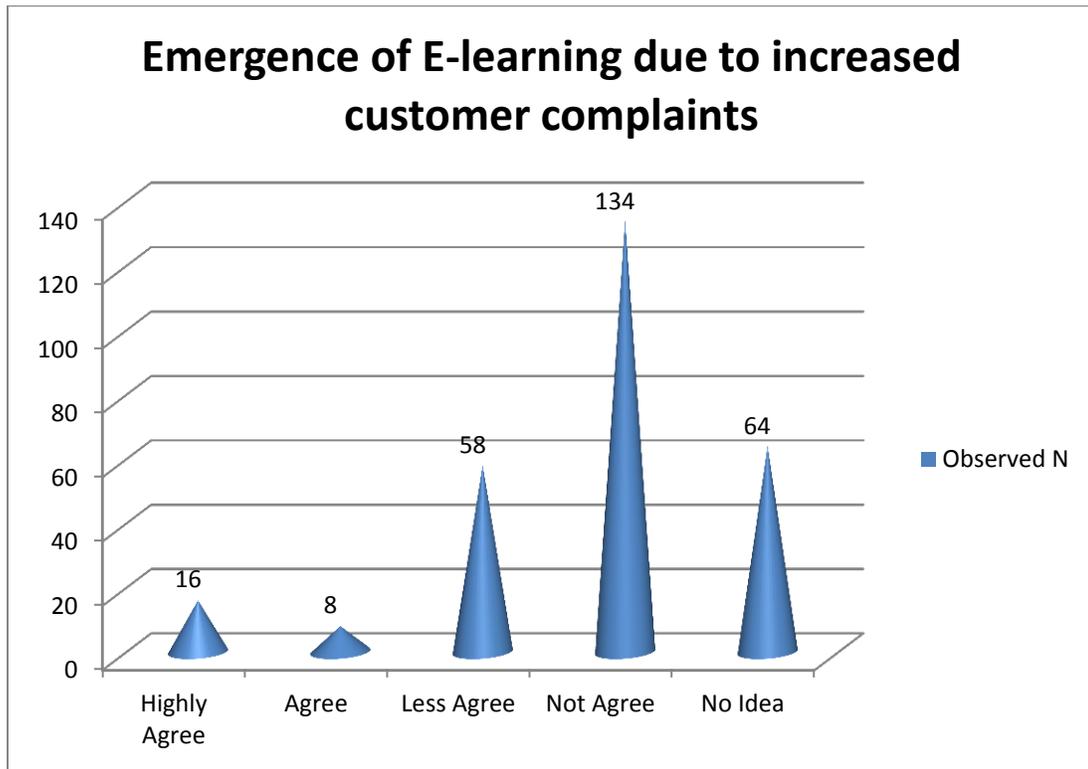
***Chi-Square Test = 179.571, df = 4, p value =0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's emergence due to increased customer complaints.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either did not agree or had no idea about E-learning's emergence due to increased customer complaints. The chart shown below displays the respondents' opinions.

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

Chart 6.2.4



**6.2.5 Objectives of training and development through E-learning in order of importance:**

This variable was taken to reveal respondents' views on important objectives of training and development through E-learning.

**Table 6.2.5**

**Objectives of training and development through E-learning in order of importance**

Options	N	Median	Average Rank	Z Value
Developing employee skills	280	2.00	743.4	-3.67
Saving cost	280	1.00	648.9	-7.24
Saving Employee time	280	2.00	826.0	-0.55

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

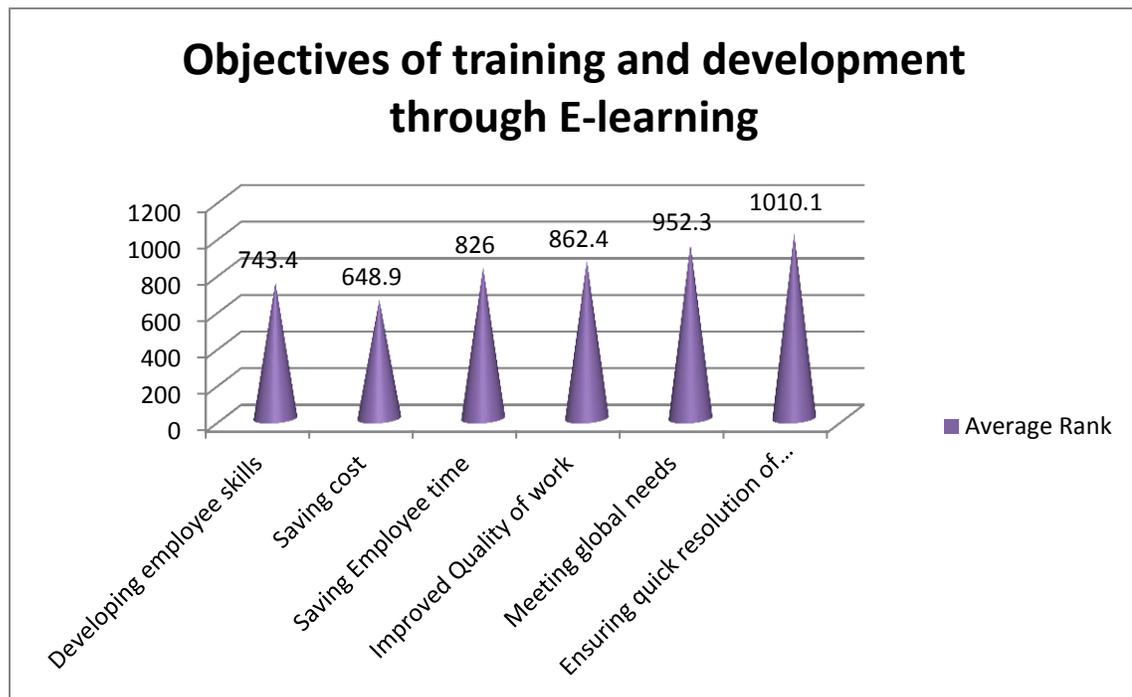
Improved Quality of work	280	2.00	862.4	0.83
Meeting global needs	280	2.50	952.3	4.22
Ensuring quick resolution of issues	280	3.00	1010.1	6.41
OverAll	1680		840.50	

$H = 113.28$   $DF = 5$   $P = 0.000$  (adjusted for ties)

In above table Median and Average Rank are compared using the Kruskal-Wallis H Test to determine whether there is any significant difference between the average rank of different objectives of training and development through E-learning.

A statistical significant difference was found between average rank showing that saving cost (Avg Rank = 648.90) has the highest importance whereas ensuring quick resolution (Avg Rank = 1010.10) of issues has the least importance (Lower Rank is considered as high value). It can be further explained with the help of following chart.

**Chart 6.2.5**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.6 Effectiveness of E-learning on Cost Control**

This variable helped in revealing employees' opinions on effectiveness of E-learning on controlling costs.

**Table 6.2.6**  
**Effectiveness of E-learning on Cost Control**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Some Influence	3	70.0	-67.0
Moderate Influence	34	70.0	-36.0
Significant Influence	147	70.0	77.0
Very Significant Influence	96	70.0	26.0
Total	280		

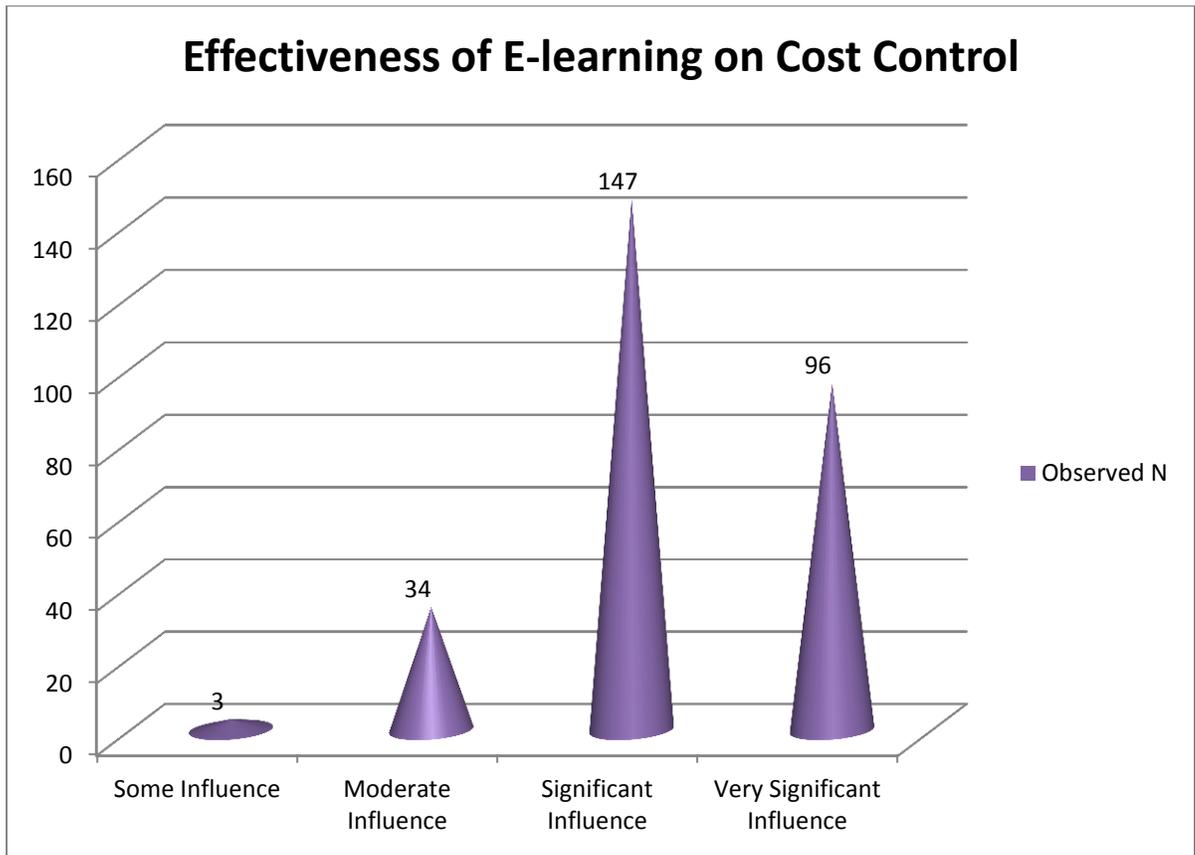
*Chi-Square Test = 177.00, df = 3, p value =0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of E-learning's effectiveness in controlling costs.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on cost control. These responses are shown through the following chart.

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

**Chart 6.2.6**



**6.2.7 Effectiveness of E-learning in Timely completion of assignments**

This variable was added to know respondents' views on whether E-learning is effective in timely completion of assignments or not.

**Table 6.2.7**

**Effectiveness of E-learning in Timely completion of assignments**

Response	Observed N	Expected N	Residual
Some Influence	6	70.0	-64.0
Moderate Influence	33	70.0	-37.0
Significant Influence	149	70.0	79.0
Very Significant Influence	92	70.0	22.0
Total	280		

*Chi-Square Test = 174.14, df = 3, p value = 0.000*

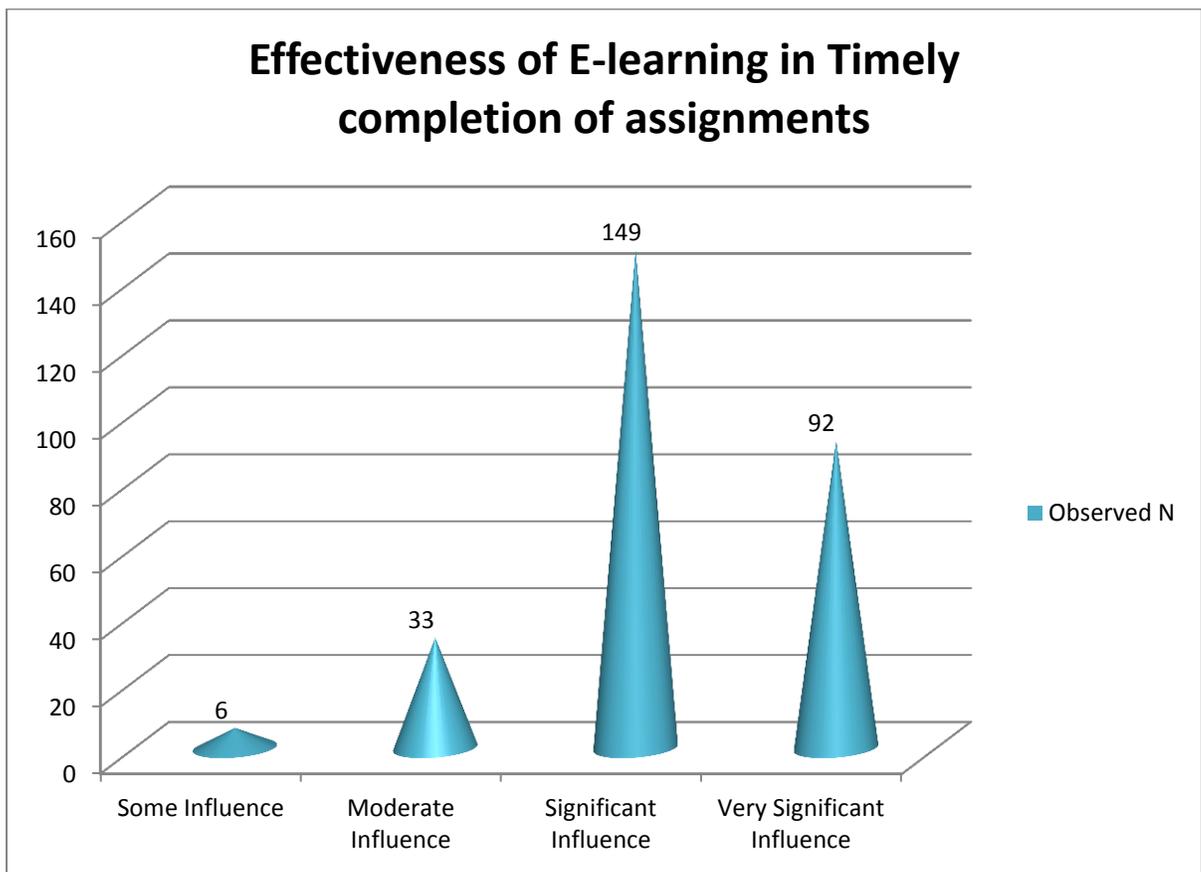
## RESULTS AND DISCUSSION - II (AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)

---

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about E-learning's effectiveness in completing assignments timely.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on Timely completion of assignments. It can be portrayed with the help of following chart.

**Chart 6.2.7**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.8 Effectiveness of E-learning on Reducing Employee Turnover**

This variable helped in revealing respondents' views on whether E-learning is effective in reducing employee turnover or not.

**Table 6.2.8**  
**Effectiveness of E-learning on reducing employee turnover**

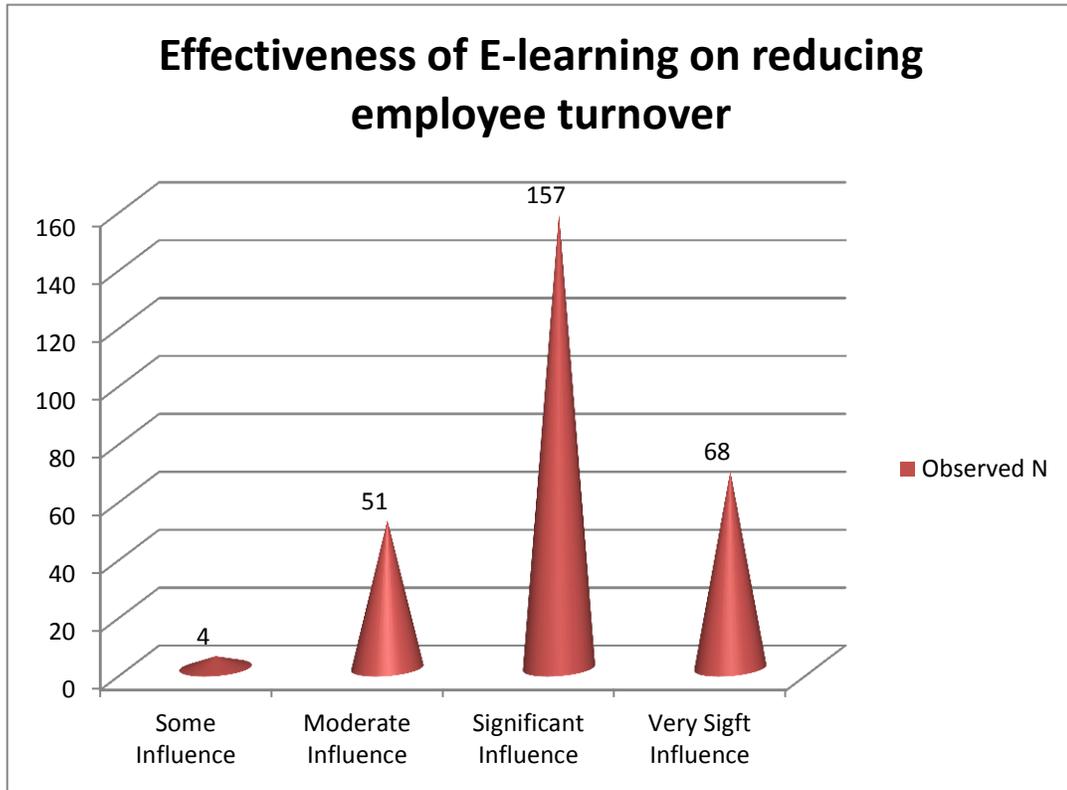
<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Some Influence	4	70.0	-66.0
Moderate Influence	51	70.0	-19.0
Significant Influence	157	70.0	87.0
Very Sigt Influence	68	70.0	-2.0
Total	280		

*Chi-Square Test = 175.57, df = 3, p value =0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about E-learning's effectiveness in controlling costs.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on reducing employee turnover. It is shown with the help of following chart.

Chart 6.2.8



**6.2.9 Effectiveness of E-learning in reducing employee absenteeism**

This variable was chosen to know respondents’ opinions on whether E-learning is effective in reducing employee absenteeism or not.

**Table 6.2.9**

**Effectiveness of E-learning in reducing employee absenteeism**

Response	Observed N	Expected N	Residual
Some Influence	25	70.0	-45.0
Moderate Influence	54	70.0	-16.0
Significant Influence	133	70.0	63.0
Very Sigft Influence	68	70.0	-2.0
Total	280		

*Chi-Square Test = 89.34, df =3, p value =0.000*

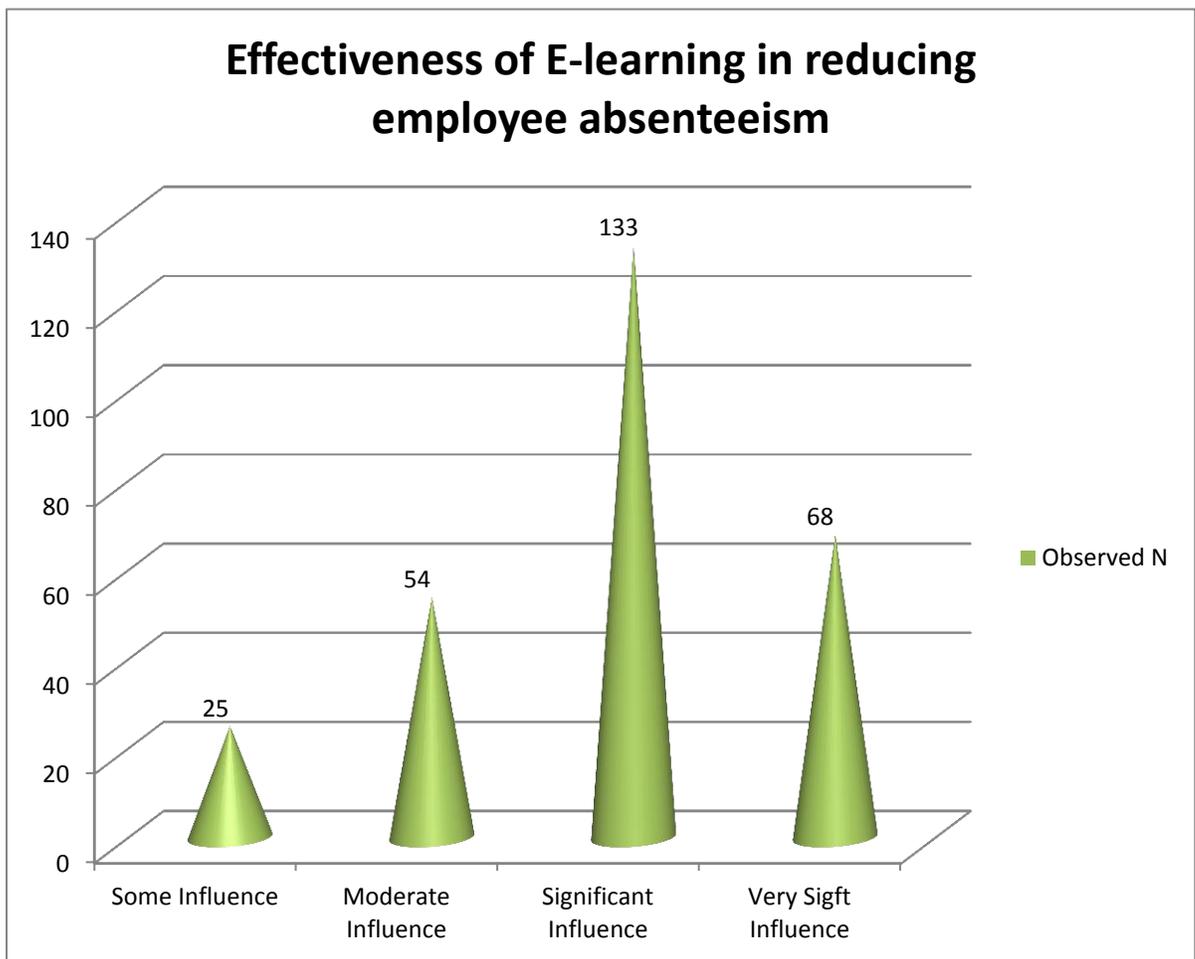
## RESULTS AND DISCUSSION - II (AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)

---

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about E-learning's effectiveness in reducing employee absenteeism.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on reducing employee absenteeism. Following figure displays the above mentioned responses.

**Chart 6.2.9**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.10 Effectiveness of E-learning on Customer satisfaction**

This variable was chosen to reveal respondents' opinion on effectiveness of E-learning on customer satisfaction.

**Table 6.2.10**  
**Effectiveness of E-learning on Customer satisfaction**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
No Influence	12	70.0	-58.0
Moderate Influence	36	70.0	-34.0
Significant Influence	148	70.0	78.0
Very Sigt Influence	84	70.0	14.0
Total	280		

*Chi-Square Test = 154.28, df = 3, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about E-learning's effectiveness in customer satisfaction.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on customer satisfaction. These responses are shown through the following chart.

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

**Chart 6.2.10**



**6.2.11 Effectiveness of E-learning in Competitiveness**

This variable supported in understanding the fact whether E-learning was effective in being competitive or not.

**Table 6.2.11**

**Effectiveness of E-learning in Competitiveness**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Some Influence	18	70.0	-52.0
Moderate Influence	27	70.0	-43.0
Significant Influence	139	70.0	69.0
Very Sigt Influence	96	70.0	26.0
Total	280		

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

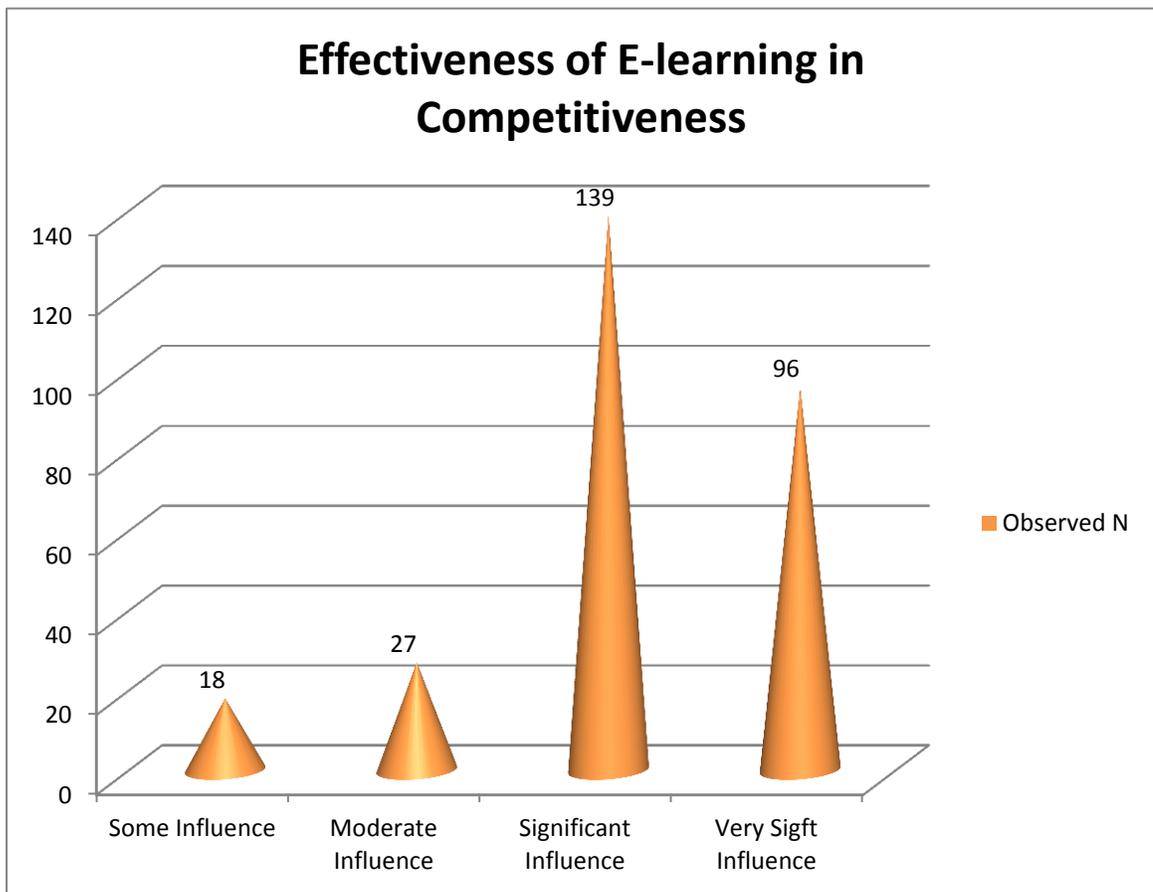
---

*Chi-Square Test = 142.71, df = 3, p value =0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about E-learning's effectiveness in competitiveness.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on competitiveness. Following figure portrays the above mentioned responses.

**Chart 6.2.11**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.12 E-learning's shortcoming as Poor content**

The above-mentioned variable helped the researcher to know respondents' views on poor content as shortcoming of E-learning.

**Table 6.2.12**  
**Poor content**

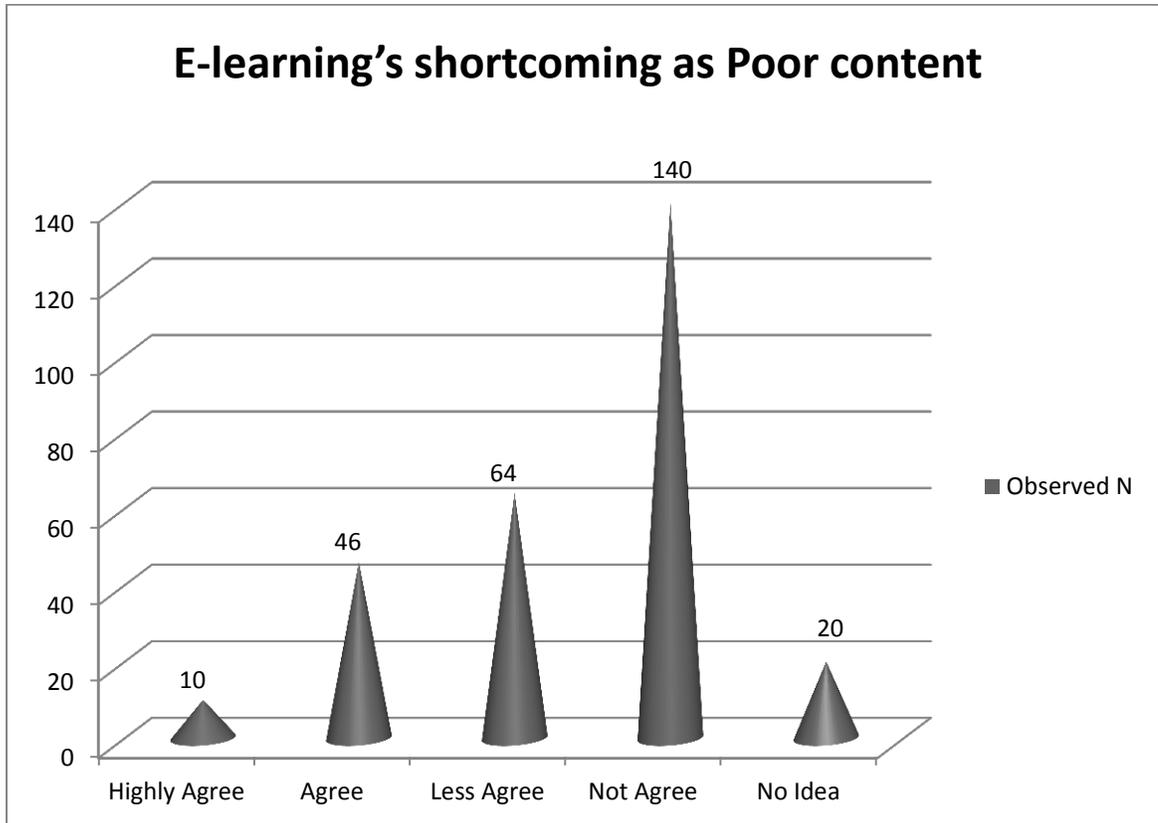
<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	10	56.0	-46.0
Agree	46	56.0	-10.0
Less Agree	64	56.0	8.0
Not Agree	140	56.0	84.0
No Idea	20	56.0	-36.0
Total	280		

***Chi-Square Test = 189.86, df = 4, p value = 0.000***

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about shortcoming of E-learning as poor content.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the poor content as shortcoming of E-learning. It can be shown with the help of following chart.

**Chart 6.2.12**



**6.2.13 Inconvenient schedule**

This variable also supported to reveal respondents' opinion on inconvenient schedule as shortcoming of E-learning.

**Table 6.2.13**

**Inconvenient schedule**

Response	Observed N	Expected N	Residual
Highly Agree	18	56.0	-38.0
Agree	39	56.0	-17.0
Less Agree	77	56.0	21.0

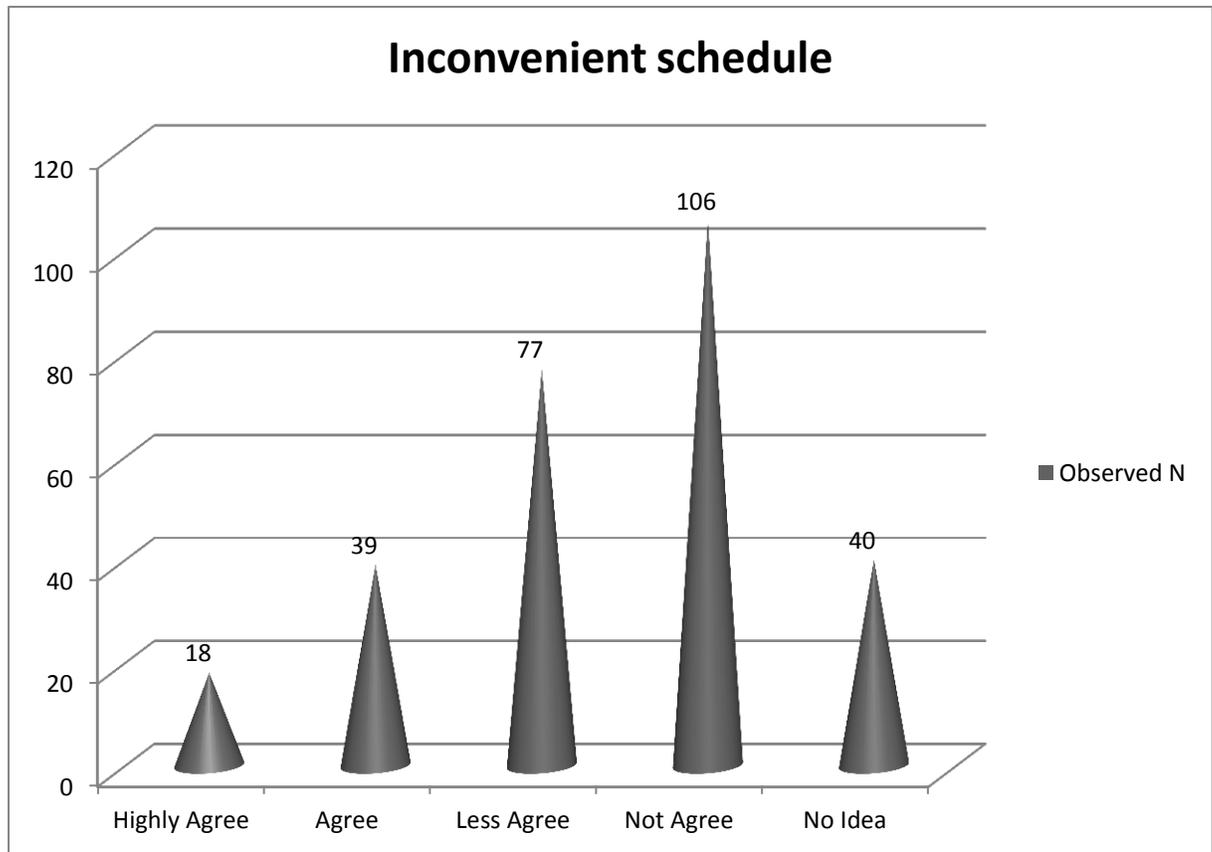
**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

Not Agree	106	56.0	50.0
No Idea	40	56.0	-16.0
Total	280		

*Chi-Square Test = 88.04, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about shortcoming of E-learning as inconvenient schedule. A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about inconvenient schedule as shortcoming of E-learning. These responses are displayed with the help of following figure.

**Chart 6.2.13**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.14 No opportunity for interaction with the trainer**

This variable was taken to know the respondent's views on whether E-learning provides opportunity to learners to interact with the trainer or not.

**Table 6.2.14**  
**No opportunity for interaction with the trainer**

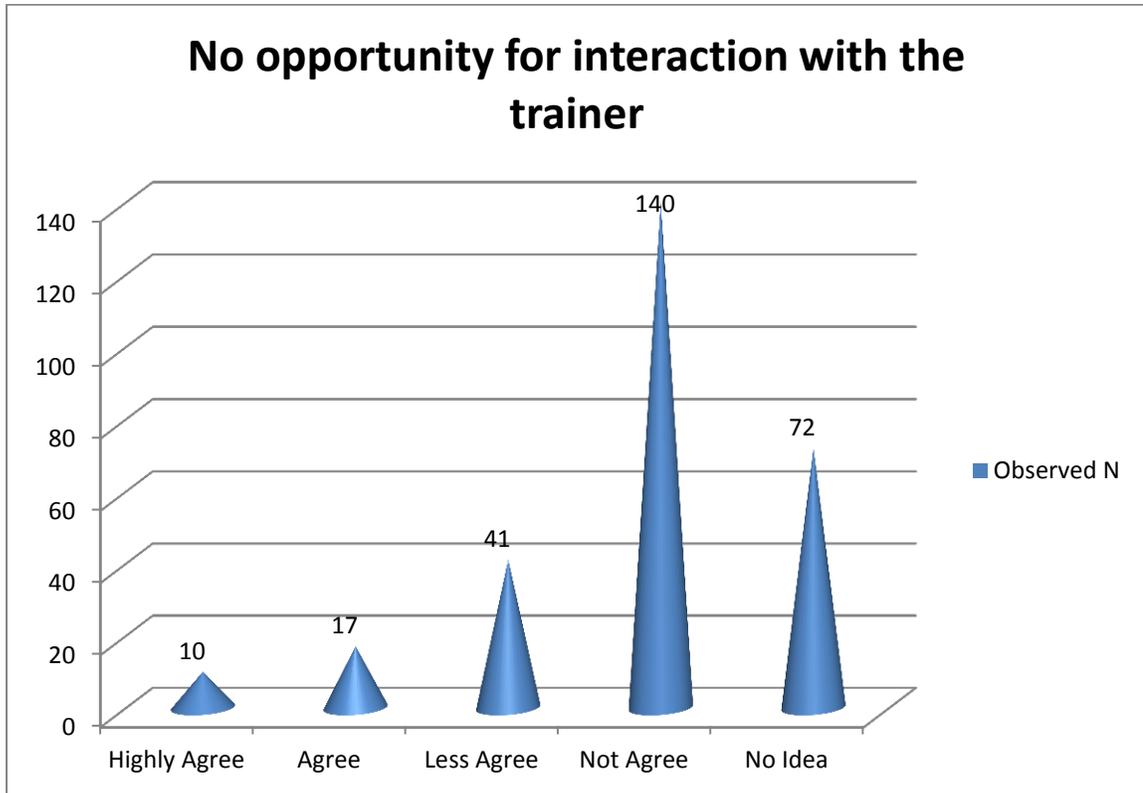
<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	10	56.0	-46.0
Agree	17	56.0	-39.0
Less Agree	41	56.0	-15.0
Not Agree	140	56.0	84.0
No Idea	72	56.0	16.0
Total	280		

*Chi-Square Test = 199.54, df = 4, p value =0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about shortcoming of E-learning as it provides no opportunity for interaction with the trainer.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree that E-learning does not provide any opportunity for interaction with the trainer. It can be depicted through following chart.

**Chart 6.2.14**



**6.2.15 Passive environment**

This variable helped the researcher in understanding the views of respondents on passive environment as one of the shortcomings of E-learning.

**Table 6.2.15**

**Passive environment**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	17	56.0	-39.0
Agree	42	56.0	-14.0
Less Agree	44	56.0	-12.0
Not Agree	141	56.0	85.0
No Idea	36	56.0	-20.0

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

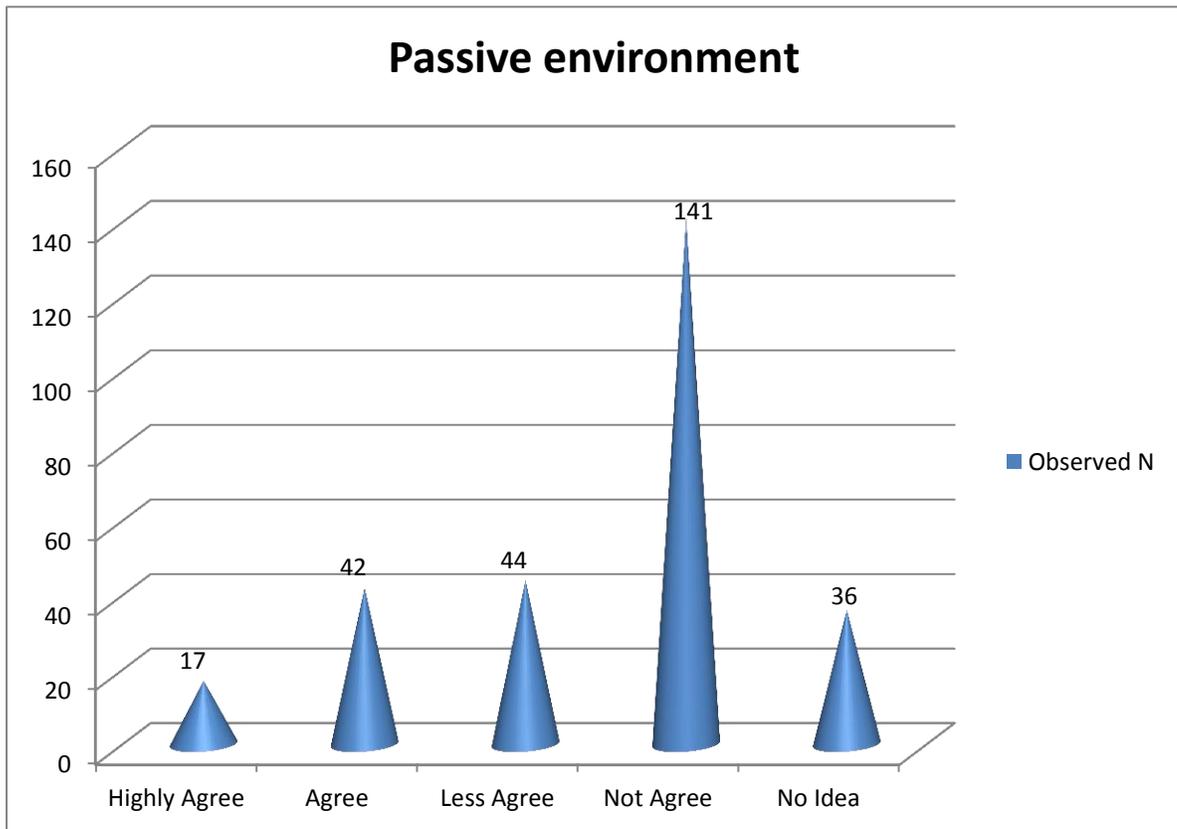
Total	280		
-------	-----	--	--

*Chi-Square Test = 169.39, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about shortcoming of E-learning as Passive environment.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the Passive environment as shortcoming of E-learning. These responses are shown in the following figure.

**Chart 6.2.15**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.16 Inability to keep the pace with the instructions**

This was the variable which helped in understanding views of respondents on employees' inability to keep the pace with the instructions given in E-earning practice.

**Table 6.2.16**  
**Inability to keep the pace with the instructions**

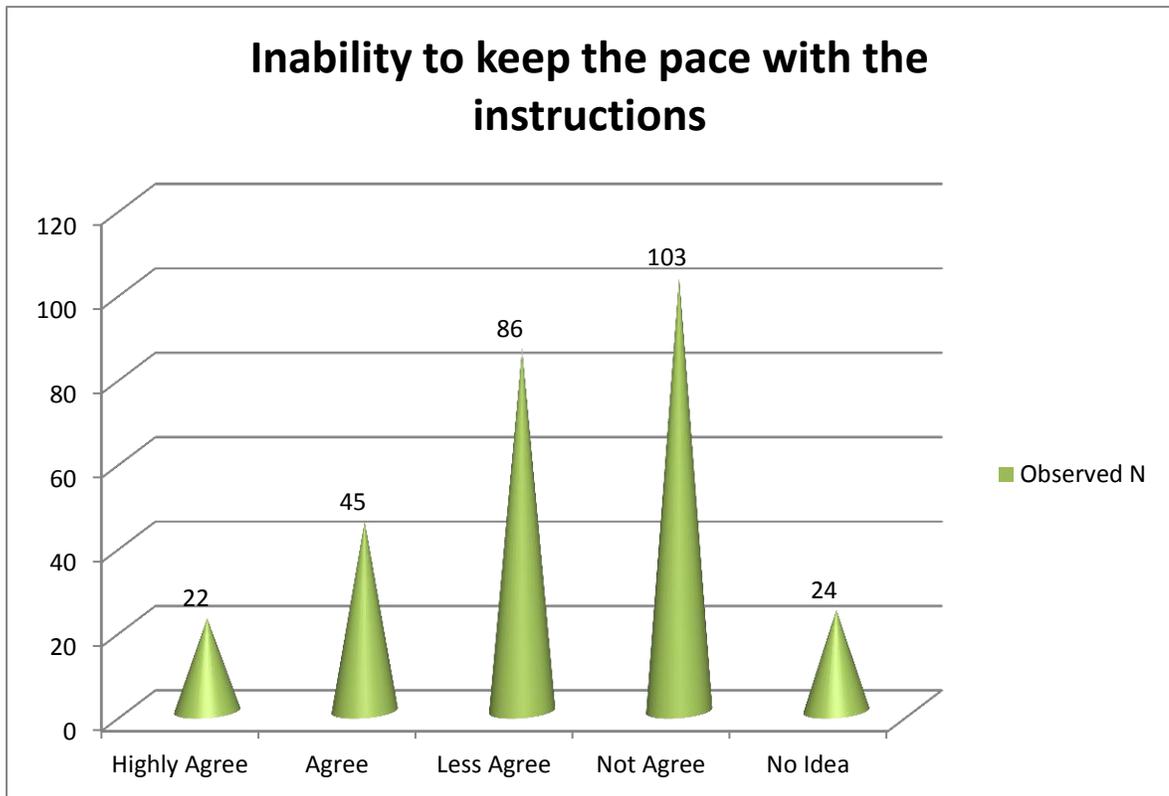
<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	22	56.0	-34.0
Agree	45	56.0	-11.0
Less Agree	86	56.0	30.0
Not Agree	103	56.0	47.0
No Idea	24	56.0	-32.0
Total	280		

*Chi-Square Test = 96.61, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about shortcoming of E-learning as inability to keep the pace with the instructions.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the inability to keep the pace with the instructions as shortcoming of E-learning. The chart below depicts the above mentioned responses.

**Chart 6.2.16**



**6.2.17 Management’s insincere approach towards feedback**

This variable was added to reveal respondents’ views on insincere approach of management towards feedback as one more shortcoming of E-learning.

**Table 6.2.17**

**Management’s insincere approach towards feedback**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	26	56.0	-30.0
Agree	58	56.0	2.0

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

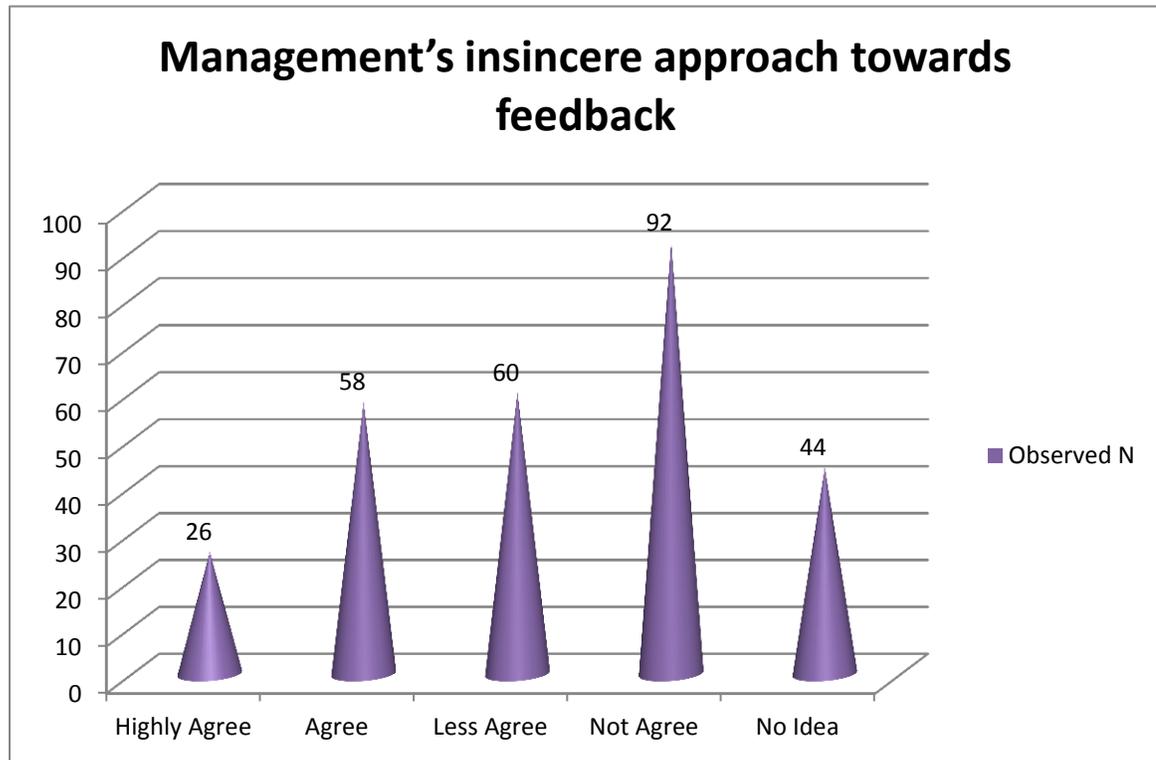
Less Agree	60	56.0	4.0
Not Agree	92	56.0	36.0
No Idea	44	56.0	-12.0
Total	280		

*Chi-Square Test = 42.14, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about shortcoming of E-learning as Management's insincere approach towards feedback.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the Management's insincere approach towards the feedback as shortcoming of E-learning. These responses are displayed with the help of following graph.

**Chart 6.2.17**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.18 Insufficient resources**

The abovementioned variable was chosen to reveal respondents' opinion on insufficient resources as another shortcoming of E-learning.

**Table 6.2.18**  
**Insufficient resources**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	28	56.0	-28.0
Agree	45	56.0	-11.0
Less Agree	69	56.0	13.0
Not Agree	122	56.0	66.0
No Idea	16	56.0	-40.0
Total	280		

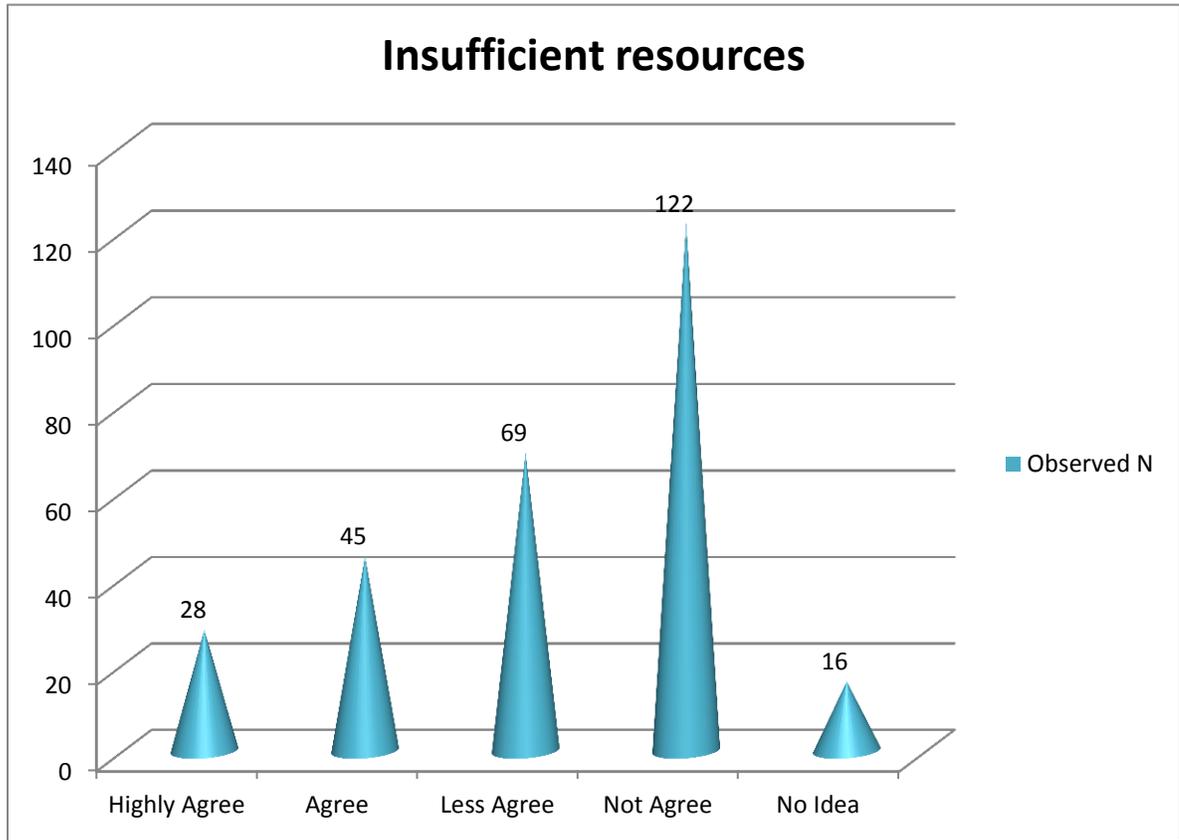
*Chi-Square Test = 125.54, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about shortcoming of E-learning as insufficient resources.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the insufficient resources as shortcoming of E-learning. It can be shown with the help of following chart.

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

**Chart 6.2.18**



**6.2.19 Influence of E-learning on Job Satisfaction**

This variable was chosen to understand the opinion of respondents on influence of E-learning on their job satisfaction.

**Table 6.2.19**

**Influence of E-learning on Job Satisfaction**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
No Influence	11	56.0	-45.0
Some Influence	57	56.0	1.0
Moderate Influence	80	56.0	24.0
Significant Influence	120	56.0	64.0

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

Very Sigt Influence	12	56.0	-44.0
Total	280		

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception about the fact that E-learning has influence on their job satisfaction.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees agreed that E-learning had significant influence on employee job satisfaction.

**Chart 6.2.19**



**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.20 Challenges being experienced pertaining to T&D through E-learning**

In this section respondents were asked to rank the challenges being experienced by the employer in implementing E-learning practice in their organization.

**Table 6.2.20**  
**Challenges being experienced pertaining E-learning**

Option	N	Median	Average Rank	Z Value
High up-front costs	280	2.00	849.50	-4.18
Employee resistance to E-learning	280	2.00	756.70	-7.15
Lack of management support	280	2.00	933.60	-1.50
Lack of technical support	280	2.00	972.80	-0.25
Trainers knowledge and skills to teach	280	3.00	1067.60	2.78
Inappropriate learning culture	280	3.00	1152.20	5.48
Irrelevance to real-time work tasks	280	3.00	1131.10	4.81
Over All	1960		980.50	

**$H = 120.62$   $DF = 6$   $P = 0.000$  (adjusted for ties)**

In above table Median and Average Rank are compared using the Kruskal-Wallis H Test to determine whether there was any significant difference among the average ranks of challenges being experienced pertaining to T&D through E-learning at workplace.

A statistical significant difference was found between average rank showing that employee resistance to E-learning (Avg Rank = 756.70) had the highest importance whereas inappropriate learning culture ( Avg Rank = 1152.20) had the least importance ( Lower Rank is considered as high value).

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.21 Most usual technique for measuring the effectiveness of E- learning**

In this section respondents were asked to rank the techniques used for measuring effectiveness of E-learning.

**Table 6.2.21**  
**Techniques for measuring the effectiveness of E- learning**

<b>Option</b>	<b>N</b>	<b>Median</b>	<b>Average Rank</b>	<b>Z Value</b>
Self-assessment questionnaires	280	2.00	625.40	-8.13
Informal feedback from peers and managers	280	2.00	710.10	-4.93
Focus groups	280	2.00	933.10	3.50
On-the-job observation	280	2.00	825.20	-0.58
Actual job performance using key performance indicators (KPIs)	280	2.00	825.00	-0.59
Customer surveys, comments, complaints	280	3.00	1124.20	10.72
Over All	1680		840.50	

***H = 195.48 DF = 5 P = 0.000 (adjusted for ties)***

In above table Median and Average Rank are compared using the Kruskal-Wallis H Test to determine whether there was any significant difference among the average ranks of most usual technique being used for measuring the effectiveness of T&D through E- learning.

A statistical significant difference was found between average rank showing that Self-assessment questionnaires (Avg Rank = 625.40) had the highest importance whereas

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

Customer surveys, comments, or complaints (Avg Rank = 1124.20) had the least importance (Lower Rank is considered as high value).

**6.2.22 Developments in learning technologies will have the greatest impact on the training and development activities in next five years**

In this section respondents were asked to rank the learning technologies that would have the impact on T&D practices.

**Table 6.2.22**  
**Potential developments in learning technologies**

<b>Option</b>	<b>N</b>	<b>Median</b>	<b>Average Rank</b>	<b>Z Value</b>
On the job training	280	2.00	424.80	0.36
E-learning Modules	280	1.00	372.20	-4.08
Virtual Classrooms and Webinar	280	2.00	464.60	3.72
Over All	840		420.50	

*H = 22.78 DF = 2 P = 0.000 (adjusted for ties)*

In above table Median and Average Rank are compared using the Kruskal-Wallis H Test to determine whether there was any significant difference among the average ranks of options available for developments in learning technologies would have the greatest impact on the training and development activities in next five years.

A statistical significant difference was found between average ranks showing that E-learning modules (Avg Rank = 372.20) had highest the importance whereas virtual classroom and webinar (Avg Rank = 464.60) had the least importance (Lower Rank is considered as high value).

**RESULTS AND DISCUSSION - II**  
**(AN ANALYSIS OF NON HYPOTHESIZED VARIABLES)**

---

**6.2.23 Any competitive advantage through E-learning program within the competitive environment**

This variable revealed respondents' opinion on whether E-learning renders any competitive advantage to the organization or not.

**Table 6.2.23**  
**Competitive Advantage through E-learning**

<b>Response</b>	<b>Observed N</b>	<b>Expected N</b>	<b>Residual</b>
Highly Agree	119	56.0	63.0
Agree	77	56.0	21.0
Less Agree	11	56.0	-45.0
Not Agree	26	56.0	-30.0
No Idea	50	56.0	-6.0
Total	280		

*Chi-Square Test = 135.00, df = 4, p value = 0.000*

The above table shows the Chi square (Goodness of Fit) test value for the distribution of employees' perception of any competitive advantage through E-learning program within the competitive environment.

A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either highly agreed or agreed about gaining competitive advantage through E-learning program within the competitive environment.

**CHAPTER 7**  
**MAJOR FINDINGS, CONCLUSION AND**  
**RECOMMENDATIONS**

## **7.1 INTRODUCTION**

This chapter provides the major findings of this study. Furthermore, this chapter also discusses the results of the study, conclusions drawn followed by the recommendations and propositions for future researches.

## **7.2 MAJOR FINDINGS**

In this section the researcher presents major findings derived from statistical data analysis. It depicts respondents' opinion on overall basis and an attempt is also made to show organization-wise opinion of respondents. For a better understanding findings are divided under following heads:

### **7.2.1 Effective practice**

- A Statistical significant difference was found in the opinions of the employees and it gets accepted as a majority of employees opined that E-learning was more effective in comparison to other practices. However, no significant difference was found in the opinions of the employees belonging to different organizations about this fact.

### **7.2.2 Offer content as and when needed**

- The analysis revealed that a majority of employees were either strongly agreed or agreed about E-learning's ability to offer learning content as and when needed. However, no significant difference was found in opinions of employees belonging to different organizations about the above mentioned fact.

### **7.2.3 E-learning is Superior to Face to Face Learning**

- E-learning was found more effective in providing better interaction and understanding and in providing relevant and adequate vocational knowledge as a majority of employees agreed the facts. However, no significant difference was found in the opinions of the employees belonging to different

organizations.

- A majority of employees did not agree that E-learning was more effective in providing solutions to FAQs. However, a significant difference was found in the opinions of the employees belonging to different organizations as in Torrent Power 62 per cent of the respondents did not agree, while in the other companies the percentage of disagreement was 30-45 per cent. In Siemens and KEC International 50 per cent of the respondents had no idea about the above mentioned fact.
- Most of the employees did not agree that E-learning was more effective in meeting needs of employees. A significant difference was found in the opinions of the employees belonging to different organizations as in KEC International Limited and Torrent Power nearly 80 per cent respondents were not agreed about the abovementioned fact while in Siemens nearly 42 per cent respondents were neutral.
- A majority of employees disagreed that E-learning was more effective in providing knowledge to solve situation specific issues. Employees belonging to different organizations had responded about the fact differently as in KEC International Limited and Torrent Power more than 70 per cent employees disagreed while in other three companies the percentage of disagreement was significantly low.

#### **7.2.4 Emergence of E-learning**

- A majority of employees strongly agreed or agreed about emergence of E-learning due to these reasons namely, inflexibility inherent in traditional methods, lowering down of service quality and delay in resolving urgent

issues. However, no significant difference was found in the opinions of the employees belonging to different organizations about the aforesaid facts.

- A majority of employees neither agreed nor had any idea about E-learning's emergence due to these reasons namely, Competition, Globalization, innovation of new products or techniques and increased customer complaints.

### **7.2.5 Objectives of training and development through E-learning**

A statistical significant difference was found among the importance given to different objectives of training and development through E-learning. Saving Costs was given the highest importance whereas Ensuring Quick Resolution of Issues got the least importance.

### **7.2.6 Influence of E-learning on Employees**

- A majority of employees opined that E-learning had significant influence on employees' productivity. Employees belonging to different organizations responded quite differently about the fact. In KEC International Limited and Torrent Power 50 per cent-60 per cent employees opined that E-learning had significant influence on employee productivity while in the other three companies namely ABB Ltd., Siemens and Adani only 20-35 per cent employees were agreed with the fact.
- A majority of employees revealed that E-learning had significant influence on quality of work. However, no significant difference was found in the opinions of the employees belonging to different organizations about this fact.
- Most of the employees agreed that E-learning had significant influence on development of employees. A significant difference was found in the opinions

of employees belonging to different organizations about this fact. In ABB Ltd. nearly 53 per cent of the respondents opined that E-learning has significant influence on Employee development while in the other companies the percentage was low. In Adani nearly one- third of the respondents agreed that it had very significant influence.

- A majority of employees opined that E-learning had significant influence on resolution of technical issues. Employees belonging to different organizations gave dissimilar responses about this fact. In ABB Ltd and Torrent power 50 per cent and more of the respondents opined that E-learning had significant influence on resolution of technical issues, while in the other three companies the percentage of agreement was only nearly 30.
- A majority of employees agreed that E-learning had significant influence on time saving. A significant difference was found in the opinions of employees belonging to different organizations about this fact. In ABB Ltd. nearly 33 per cent of the respondents opined that E-learning had very significant influence on time saving while in the other companies the percentage was low. In Adani half of the respondents agreed that it had significant influence.
- A majority of employees agreed that E-learning had significant influence on meeting learning requirements of employees. A significant difference was found in opinions of employees belonging to different organizations about the abovementioned fact. In Siemens more than 56 per cent of the respondents opined that E-learning had significant influence on meeting learning requirements while in Adani the percentage of agreement was just nearly 17. In KEC International 30 per cent agreed that it had very significant influence while in other companies it was very low.

- A majority of employees opined that E-learning had significant influence on employee job satisfaction.

#### **7.2.7 Influence of E-learning on Organization**

- Most of the employees opined that E-learning was effective in meeting development needs of the organizations. A significant difference was found in the opinions of the employees belonging to different organizations about the fact as in KEC almost 90 per cent of respondents opined that E-learning had significant influence while in other four companies only 60 per cent-67 per cent respondents were agreed with the fact.
- A majority of employees opined that E-learning had significant influence on cost control.
- A majority of employees agreed that E-learning had significant influence on Timely completion of assignments.
- A majority of employees opined that E-learning had significant influence on reducing employee turnover and absenteeism
- A majority of employees responded positively about E-learning's influence on customer satisfaction.
- A majority of employees agreed that E-learning had significant influence on competitiveness.

#### **7.2.8 Shortcomings of E-learning**

- A majority of employees either less agreed or did not agree about inconvenient schedule as shortcoming of E-learning. Employees belonging to different organizations responded differently about this fact. In KEC International Limited, Siemens and Torrent Power, nearly 50 percent employees did not agree while in the other two companies namely ABB ltd. and Adani only 10-17 per cent employees were disagreed with the fact.

- A majority of employees either less agreed or did not agree about poor content as shortcoming of E-learning.
- A majority of employees either less agreed or did not agree that E-learning did not provide any opportunity for interaction with the trainer.
- A majority of employees either less agreed or did not agree about passive environment as shortcoming of E-learning.
- A majority of employees either less agreed or did not agree about inability of E-learning to keep the pace with the instructions.
- A majority of employees either less agreed or did not agree about Management's insincere approach towards the feedback as shortcoming of E-learning.
- A majority of employees either less agreed or did not agree about insufficient resources as shortcoming of E-learning.

#### **7.2.9 Challenges Experienced by Employees**

- A statistical significant difference was found among average ranks of challenges being experienced pertaining to T&D through E-learning at workplace. It was found that Employee Resistance to E-learning got the highest importance whereas Inappropriate Learning Culture was given the least importance.

#### **7.2.10 Most usual technique being used for measuring the effectiveness of E-learning**

- A statistical significant difference was found among the techniques being used for measuring the effectiveness of E-learning and it was found that Self-assessment Questionnaires was at the top priority whereas Customer Surveys, comments, or complaints got the least importance.

**7.2.11 Learning technologies that will have the greatest impact on the training and development activities in next five years**

- A statistical significant difference was found among learning technologies that will have the greatest impact on the training and development activities in next five years and it was found that E-learning Modules was at the top choice whereas Virtual Classroom and Webinar got the least importance.
- A majority of employees agreed that E-learning proved to be a facilitating step for improving the pace of learning and reducing employee down-time thus enabling employees to handle greater responsibilities. A significant difference was found in the opinions of the employees belonging to different organizations about the fact as in KEC International Limited, Siemens and Torrent Power nearly 90 per cent employees agreed about the above mentioned fact while in ABB Ltd. and Adani the percentage of agreement was significantly low. At Adani 50 per cent of respondents were neutral about the above mentioned fact, while others who agreed were 50 per cent. At ABB Ltd. - the respondents who agreed were nearly 67per cent.
- A majority of employees either highly agreed or agreed that competitive advantage could be obtained through E-learning program within the competitive environment.

### 7.3 CONCLUSION

The following section provides the result of hypothesis testing.

**Table 7.1**  
**Hypothesis Testing Results**

Hypothesis			Result
H1	Null	The company E-learning courses do not allow participants to pick their own time and place for the training.	Reject
	Alternate	The company E-learning courses allow participants to pick their own time and place for the training.	Accept
H2	Null	The employees with less workload do not spend more time on E-learning than employees with higher workload, thus cannot handle larger responsibilities.	Reject
	Alternate	The employees with less workload spend more time on E-learning than employees with higher workload, thus making themselves capable to handle larger responsibilities.	Accept
H3	Null	The training imparted through E-learning does not result in improved performance of the employees.	Reject
	Alternate	The training imparted through E-learning results in improved performance of the employees.	Accept
H4	Null	E-learning does not provide better knowledge transfer as compared with traditional learning process due to its regular updates by its	Reject

MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

---

		developers.	
	Alternate	E-learning provides better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.	Accept
H5	Null	E-Learning does not help in quick resolution on technical issues.	Reject
	Alternate	E-Learning helps in quick resolution on technical issues.	Accept
H6	Null	E-learning is not an ideal solution to meet the development needs for the future.	Reject
	Alternate	E-learning is an ideal solution to meet the development needs for the future.	Accept

As per the analysis it could be concluded that E-learning can provide flexible learning options for employees and allow them to up-skill more rapidly. E-learning in the workplace can decrease the costs of training workforce through reducing travel and employee time away from work. E-learning is particularly useful for a geographically dispersed workforce because it can deliver a consistent training experience. E-learning provides consistency in training, increased convenience and control of learning for learners, improved monitoring capabilities for employers, and reduced costs by decreasing travel costs and employee absenteeism. However, it has some drawbacks but if managed systematically, offers better results. Employee motivation and ability to use technologies are important factors in E-learning participation, along with how the organization supports their employees to conduct E-learning as part of their daily routine. Although better performance compared to traditional delivery can largely be attributed to differences in instructional design and/or content, learners may not engage sufficiently with the material. These research findings have implications for human resource managers and employee training investment decisions. Therefore, managers should invest in the training delivery method that is most effective for their organization. When considering which training method to invest in, managers must

focus on convenience, cost, accessibility, development and deployment speed (Rao, 2011).

#### **7.4 RECOMMENDATIONS**

Since the objectives of the research have been met, the focal point is now on making recommendations on the basis of the research findings. Rapid technological changes and social transformation has required the need for training critically in general and power and energy sector in particular. Manpower in this sector should be appraised with explicit inputs in terms of knowledge, skills and attitude in order to make them accustomed to the new environment.

Trained human resource is needed throughout the work process like scheduling, designing, engineering, manufacturing, acquisition, handling and stocking, assembling, operation, maintenance of power plants, equipment maintenance, power transmission and distribution system, accounting, collection of revenue, management of human capital and finance etc. Each of the above is critical task in its own right. Following are the salient recommendations made:

- Companies with large employee base and have multiple locations can impart training through intranet. A repository of training series on mechanical maintenance applications, turbine & systems, power transformer maintenance and condition based monitoring and maintenance courses in digital form can be created and made available to the workforce on anytime/ anywhere basis.
- To sustain in competitive market, organizations have to emphasis on the specialist training packages that can be customized to meet each functional level requirement, including operational procedures as well as minimum safety directives applicable to each plant.
- Companies could start multiple learning and development e-programs,

including Operator Certification e-programs. System / Maintenance Operator certification e- programs can be conducted to specific knowledge of job skills and reliability standards. It will also prepare employees to handle the inter-connected generation and transmission controls during normal and emergency processes. Each e-program can have features integrated progress reviews and knowledge assessments with automatic scoring and printable completion certificates.

- Functional and technical trainings are important owing to their direct correlation with the employee's role and on-the-job performance. Training need assessment has to precede the design and delivery. Identification of training should not be generic in nature but more focused with reference to the specific expertise vital for job description. Training programs can be tailor - made to accommodate functional, mechanical, electrical and instrumentation streams covering task such as supervision, maintenance and calibration. Some examples of this program are design failure analysis, environment and product training, quality control, etc.
- Attitude of an individual play an extremely important role in his performance. Thus, in spite of the availability of the best of knowledge and skill, the ability to provide the desired services may still be found wanting in individuals if they are not imbued with appropriate attitudes. It is suggested to include training for developing expertise in negotiation skills, management and leadership skills, making presentation and communication skills, conflict management, etc for the workforce.
- Scenario-based e-learning in training process can be an effectual approach to increase learner's engagement level.
- Learning interactivities designed to accomplish knowledge transfer with a

heavy emphasis on skills development on online learning platform can be used for new hires to introduce power generating system and market including: Business operations, auxiliary services, guidelines and future markets.

- Class-room based specialized training and skills programs can be expensive. E-learning can counter this issue by delivering modernized and custom-made solutions on company specific need with a key aim of Skill developments for various verticals in Electrical Engineering domain. Users can launch and complete each course within the subscribed library or series as many times as they wish. Systematic analysis of performance can be an important tool to evaluate ROI of corporate training.
- To help employees to meet rapidly changing market scenario, power sector have to strengthen its learning and development initiatives and should introduce e-learning for its employees in a big way. Common strategies or blanket application of strategies is not the only solution particularly for the environment where learning in chunks is appreciated and found as convenient.
- To improve employee performance and efficiency as per business needs, LMS and other e-learning solutions are important as they are self-directed and much easy than any other methods of training. Workforce can acquaint themselves with the workflows faced in a power plant by use of power plant simulator. The workforce can be trained for "Basic Measurements" to "Advanced Competencies" like "Shaft Maintenance". The usage of the simulator can be appraised as a conducive approach to see how a gas power plant works.
- Training Videos can be provided to supplement Computer Based Training (CBT).
- Now a day's use of satellite mode is encouraged to provide online training to

the users at various locations without restriction of geographical boundaries. Courses can be outlined to focus on refurbishing operational knowledge and awareness, through intensive and interactive practice on power plant simulator during system malfunction.

Such kind of on the job training will inculcate confidence in participants in carrying out their assigned tasks and potentially reducing unscheduled outages and revenue loss, providing better span of life of equipment and thus increasing overall profitability in emerging market.

The only challenge here is to encourage and keep the spirit of learning high among the employees so that they themselves want to invest the time and efforts both.

Use of games for online learning is on the rise. Learners participate actively when they are given a chance to explore organizational components. Following are the observations in this regard:

- Using games to non-game environments like training in order to improve engagement levels, and create fun-filled, interesting experiences for the learners can raise involvement quotients in E-learning programs and pump up employee motivation.
- Learners can apply the gaming situations in real-world status quo and decision-making, which develops their proficiency and expertise.
- Training via M-learning is highly recommended; organizations can deliver target bits of content that help an individual in real time, whether to present product information or to access equipment documentation.
- Knowledge transfer amongst different departments of an organization is an

important in-house tool for development of employees at different functional levels.

- One of the E-learning strategies suggested for better learning and development itinerary is Micro-learning or step by step learning. Distribution of content should be condensed; bite-sized increments can be taken as one of the options to equip with a varied magnitude of expertise.
- Standard procedure of distribution of information material can be chosen later on. A third party or outsourcing firm can be hired for providing expertise related to technical or other services. This will accelerate various initiatives of E-learning programs.
- It is the management of any organization to ensure development of each employee, group of employees not only to increase their productivity but also to keep them satisfied and committed towards the organization. Implementing LMS will not only help organizations to shift from efficiency to effectiveness but also to ensure substantially lower cost solution.
- Align training modules with real-life job descriptions and responsibilities. Opportunity may be given for practical involvement and use of required skills acquired through training so as to encourage people to provide their best at their workplaces.
- Training employees through MOOC (Massive Open Online Courses) has become most available tool for imparting knowledge and training. Therefore this need to be utilized for mutual benefit.
- Use of Interactive software walkthrough can provide in house training to employees directly within company's software.

- Companies can develop own prototype to demonstrate exactly how they would like employees to carry out their tasks. Customized guides shall be made by companies to specifically focus on expertise required for higher competence, yield and competitiveness.
- By integrating 3D simulation and Virtual Reality conceptualization, a 3D Virtual Reality, FGD (Flue Gas Desulfurization) unit can be established to support a wide ranging training mechanism for operators.

This virtual model will allow FGD operators to see the insight into the operating FGD unit to not only concentrate on comprehensive structural components but also on flow features such as heating scale, velocity, chemical species distribution etc. The interactive learning process can provide a more impressive and productive way for operator training.

#### **7.4 PROBLEMS AND LIMITATIONS**

The researcher not found many problems encountered during the research. All respondents were accessible either in person or via e-mail. However, handful of respondents did not responded, despite numerous reminders that delayed collection of primary data considering the fact that the response rate for this study was at 98 per cent.

A sufficient number of respondents assisted in completing the questionnaire, ensuring that the data presented is reasonable. Data analysis was done smoothly, with quantitative, qualitative and historical data giving validity to the findings.

- This study did not examine "blended learning" which involves introducing more than one method of training delivery within one course.

- **Geographical Constraint:** The organizations chosen for this study have wide geographical spread. With the travel constraints due to various reasons, the researcher had tried to gather as much information as possible without compromising on the crux of the mentioned study. Despite that, the researcher could have been covered a larger geographical area subject to availability of sufficient resources to conduct the study.
- **Time-frame Constraint:** Having limitations of time the study was limited to the selected samples of various functional groups. The time constraint also made quite challenging in fulfilling questionnaire and getting feedback from the respondents who had busy schedule. This further reduced return rate of questionnaires. In view of the limited time available for the study, only the training process could be studied. The answers of respondents are taken as their opinion.
- **Data collection Constraints:** In data collection process, primary data was collected during the research. The only primary source of data collection technique used for this study was the questionnaire. A structured questionnaire (see Appendix 2) consisting of 15 questions was designed and circulated to various functional group employees in the selected organizations.

The purpose of the questionnaire was to examine the method of imparting training and its effect on employee performance of the case companies. The questions in the questionnaire were made specific and clear so as to assure that it takes the respondents not more than 15 minutes time to answer and therefore encourage participation. The questionnaire comprised of a cover letter assuring secrecy of content given (see Appendix 1).

This covering letter was mailed to the respondents with an objective to provide

respondents with brief information about what they were being requested to respond and to encourage them into participating in the questionnaire. While collecting the information by means of questionnaire, the researcher experienced that few respondents were hesitant to fill some of the information for number of obvious reasons. They were not willing to give response to some questions probably due to the fact that if disclosed it may put them in embarrassing situation.

However, the researcher has taken due care to make this study representative.

- **Access** - The selected companies are providing their services through their power plants in almost all the regions and districts in the country. The research was intended to cover the whole population which could require the researcher to spend a lot of time and financial resources. In view of this the researcher decided to confine the study to Mumbai and Gujarat Zone and the fact that these zones have sufficient representative sample.
- **Lack of experience:** The researcher found that study on this subject was challenging task and required competence in all stages of research. Due to lack of experience on the part of the researcher in this field of learning the authenticity of the findings took enough time and efforts. As a result application of the data analysis methods was delayed.
- **Industry:** The study is limited to selected power units in India. These companies were specifically chosen because they are amongst the biggest and popular power generation private companies. Although, selected undertakings have various branches located in different cities, the training management task is mostly centralized to the headquarters.
- **Limitation of scope of Research materials:** The researcher was constrained

in the search of research materials. Most of the latest books and research papers in journals on related area were chargeable; therefore the scope of research material was limited to that material which the researcher found available as well as affordable.

- **Data reporting:** Data that is self-reported cannot be easily verified. This is the major limitation as the researcher had to trust on whatever was opined by the respondents.
- **Sample size:** The sample size could have been larger. Moreover, the sample size is confined to the responses of 500 employees only; therefore, the conclusions drawn cannot be generalized for all the public and private sector power companies in the country. In addition, some of the respondents were unwilling in stating unreserved views without reluctance and shown lack of enthusiasm in responding. This has its own impact to certain extent over the rationality of the conclusions drawn. Nonetheless, with available data and sensible use of the limited resources, rational analysis was carried out to ensure that research findings may have sync with the problem and research objectives.

### **7.5 Recommendations for Further Research**

On working upon this thesis, the researcher identified many other ways of further enhancing this research, and some of these can be developed for further research. Research derived from prolonged engagement and continuous observations are often successful. In our case, it will be highly recommended to follow up with case companies to observe any long term effects.

Quantitative data on how well E-learning work can be gained by, which can be compared with equivalent figures from traditional methods of training.

Due to less availability of research on E-learning effectiveness on employee development in context to Indian power sector, we have not been able to rightly measure the effectiveness of monitoring individual employee progress. There are no

studies to focus on creating a functional framework that would measure the success or impact of online training, though there does exist a prerequisite for figuring out how well E-learning can be used as a tool for imparting training and the effects it will have on all Indian organizations in government and private Power and Energy sectors in order to make it even better.

The areas offered as opportunities for further research are listed below:

- It is suggested to explore a larger sample size and different subsidiaries of organizations used in the study to cover. Additionally, researchers should include demographic factors such as gender, age, level of education, learning style and their impact on the effectiveness of employee productivity and job satisfaction.
- It is further suggested to compare the skills of employees who have been trained with both physical class room training and E-learning tool, in order to uncover what kind of variances exist between the two kinds of training and such study outcomes may result from implementing learning management system solution.
- Researcher recommends in-depth investigation in Mobile Learning Technologies as well. Mobile Technology, has had rapid growth with devices such as smart phones, tablet PCs that could stream contents and allow chat and instant messaging which may provide more convenient learning environment letting employees to learn anywhere, anytime irrespective of time and space.
- Future research is needed on how simulation-based E-learning could be extensively used in familiarizing new employee and provides specific job guidance with a risk-free training environment enabling organizations to train

new employees to their jobs more efficiently where they can explore new problem-solving approaches.

- The study undertaken by this researcher is a qualitative study. A grounded theory study could be conducted in an effort to develop a theory regarding the factors that lead to the road-blocks for a successful E-learning training program.
- Researcher suggests that further research should target on the study "Does E-learning has a promising future in Indian companies?"
- Further, the researcher feels the need to conduct study that focus on overall experiences of stakeholders to develop talent attributes such as analytical skills and time- management.
- Some comparative sector, industry specific studies on E learning may be undertaken by prospective researchers. Likewise studies may be undertaken to find out the difference of learning methods between multinational and Indian organizations, service sector and manufacturing organizations, public and private sector organizations, and lastly between cross cultural organizations.
- A specific study may be conducted to understand the viewpoints of management, trainers, HRD department personnel etc.

## **SUMMARY**

## SUMMARY

In an era of constant learning and growing competition, many organizations ensure that technology which they are using is so developed that their workforce can learn anything, anywhere, anytime with least manual efforts. The pace of change at workplace and resistance of employees to leave the workplace for training for a longer duration emphasized on reducing cycle time for learning and the implementation of knowledge has resulted in formation of “just-in-time” rather than “just-in-case” learning. To ensure that an employee possess requisite knowledge and skills to perform a specific operation, the importance of corporate training is undisputable for an organization. Primarily, corporate training is centered on knowledge transfer e.g. internal as well as external conferences and workshops are an important yet expensive part for every business. E-learning is a tool which makes it easy, inexpensive and result oriented as sales people can get their training in dealing with new products and formulating sales strategies online from anywhere, anytime and through any device. E-learning can lead to reduced costs to impart training in a short span of time, especially when employees are scattered worldwide.

The term "E-learning" came into existence in the year 1999; the word was initially used at a CBT systems seminar. Other words also began to get noticed in search of an exact description such as “online learning” and “virtual learning”. In the year 2000, enterprises started adopting E-learning to train their employees. New and experienced workers were having opportunity to advance their industry knowledge base and broaden their skill sets. It allowed individuals at home to access programs that enabled them to earn online degrees and enrich them through extended knowledge.

E-learning is relevant across all areas of employee training including: career development training; new employees' orientation; information on new services or products or just sharing and enhancing work knowledge, competencies, and skills.

E-learning has emerged as the best and most viable option for corporations. Technological breakthrough and the skills needed to fully exploit and manage it have escalated the demand for organization wide E-learning solutions. There are a variety of E-learning products and services available to meet majority of the organizational training needs. E-learning ensures possibility of better interaction and direct engagement, thus offers real chances to improve information standards and learner's morale.

The justification for adopting E-learning can be understood as:

- There is no need to engage all employees for training at the same time. They can choose their own respective time and place of learning as per their convenience.
- It is self-paced and if required, the content is recorded and provided as and when needed by the employee.
- No time limitations. It can be delivered in parts or all at once wholly as per the learner's requirements instead of the trainer's comfort.
- A variety of courses can be conducted and managed through suitable LMS (Learning Management Systems) by a small number of experienced training administrators. LMS can also maintain records of participation in number of courses, test scores, time taken, etc for each learner which can provide intelligent data to enhance employee's skills.
- Measurement of learning becomes possible as performance of each participant can be measured with the help of various ways like score tracking, progress tracking and time tracking. In earlier days this was typically not possible with traditional training practices.

Although most of the organizations have similar reasons to adopt E-learning, but some of them have their own agenda for using it. Use of technology to impart learning such

as CD-ROM, DVD, Internet and Intranets enables an organization to train its employees and potentially reduce the costs.

There are many reasons which attract organizations to implement E-learning for training such as, cost-effectiveness, free-format, flexibility that allows it to be adopted across multiple channels, learning as per the convenience of the learner and its ability to be tailored according to the organizational needs.

### **THE OBJECTIVES**

The main objective of this research was to understand effectiveness of E-learning to enhance employees' productivity and overall performance to ensure organizational growth.

The specific objectives are as under:

- To understand the role of E-learning process in skill enhancement of employees in the Power sector.
- To analyze the potential of E-learning implementation in an organization for enhancing general business skills, task-specific skills, and customer service training.
- To understand effectiveness of E-learning with a blended-learning strategy.
- To identify factors in designing effective training program, instructions, teaching strategies and assessment.
- To identify how E-learning enables organizations to save on costs in employee training and simultaneously adopt processes to improve the overall competitiveness of the enterprise.
- To appreciate contemporary work environment and difficulties in implementation of e-learning in covered power sector units.

### SCOPE OF STUDY

The study, “EMPLOYEE TRAINING AND DEVELOPMENT THROUGH E-LEARNING: A STUDY OF SOME SELECTED UNITS IN POWER SECTOR” throws light on Power sector industry from a perspective of E-learning potential in training and development. It also focuses on various other dimensions such as technical limitations, like limited hardware or network to support E-learning and its design constraints. The study also indicates the major E-learning initiatives taken in India to contribute towards modern technology for learning.

It also outlines effectiveness of E-learning for executive development. It also uncovers the factors which make online training effective. The study further identifies how E-learning enables organizations to save on costs in employee training and simultaneously adopt processes to improve the overall competitiveness of the enterprise.

The study elaborates benefits on E-learning with following dimensions:

- Cost of Training
- Learning Effectiveness
- Environment Impacts
- Ease of Delivery

Above all, this study is an attempt to overcome the concerns and fears that exist in the adoption of E-learning initiatives across power sector organizations on one hand and make academicians, researchers and general masses realize the significance of E-learning by designing a framework so that they start promoting the E-learning process on the other hand.

Chapter first on Conceptual Framework deals with a brief introduction of E-learning so as to develop an understanding of the theme. The chapter introduces and defines various terms and discusses the significance and limitations of E-learning solution for

organizations and learners. It also indicates about major challenges which organizations face while imparting E-learning.

Second chapter reviews relevant literature and outlines eighteen researches that were undertaken in India and 26 researches which were conducted abroad. A review of literature suggests that E-learning as a tool to impart training to employees has started receiving attention of researchers and writers, but its effect on employee productivity has not been studied in context of power sector organizations. This study, therefore, attempted to help in filling the gap by providing empirical information that might be of interest to researchers and other stakeholders belonging to power sector.

Chapter three dealt with “Profile of the Covered Undertakings” and presents a brief description of the selected and leading power sector companies in India i.e. Adani Power Limited, Torrent Power Limited, KEC International Limited and ABB Limited. The profile includes the past records of covered undertakings, their operations, broad area of activities, introduction to their subsidiaries, organizational structure, manpower, turnover and most importantly learning and development practices followed by them.

Chapter Four is on “Research Methodology” which outlines the research design, sample selection method and data analysis. The study is largely empirical in approach in which scientific methodology was used to solve the research questions. The present study is of exploratory nature. In all six hypotheses were developed. They are divided into null and alternate hypotheses to identify E-learning readiness.

### Hypotheses

Hypotheses		Description of Hypotheses
H1	Null	The company E-learning courses do not allow participants to pick their own time and place for the

		training.
	Alternate	The company E-learning courses allow participants to pick their own time and place for the training.
H2	Null	The employees with less workload do not spend more time on E-learning than employees with higher workload, thus cannot handle larger responsibilities.
	Alternate	The employees with less workload spend more time on E-learning than employees with higher workload, thus making themselves capable to handle larger responsibilities.
H3	Null	The training imparted through E-learning does not result in improved performance of the employees.
	Alternate	The training imparted through E-learning results in improved performance of the employees.
H4	Null	E-learning does not provide better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.
	Alternate	E-learning provides better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.
H5	Null	E-Learning does not help in quick resolution on technical issues.
	Alternate	E-Learning helps in quick resolution on technical issues.

H6	Null	E-learning is not an ideal solution to meet the development needs for the future.
	Alternate	E-learning is an ideal solution to meet the development needs for the future.

The variables which have been identified in this study include E-learning, employee satisfaction, employee commitment, job performance and organizational competitiveness. E-learning was viewed as independent variable. A random sample of 500 employees working in selected companies under power sector in India was collected. In the second phase Stratified Sampling Method was used to represent the population and strata were made on the basis of different managerial levels and functional areas. The study was based on primary and secondary data taken from questionnaires and published reports of the organizations undertaken. A variety of statistical tools were applied to the gathered data which include weighted Averages, Chi- square test (goodness of fit and test of independence) and Kruskal Wallis or H test.

The next chapters fifth and sixth present results of the empirical research related to research hypotheses and a summary of the results respectively.

Hypotheses viewed as per the analysis:

Hypothesis		Description of Hypotheses	Result
H1	Null	The company E-learning courses do not allow participants to pick their own time and place for the training.	Rejected
	Alternate	The company E-learning courses allow participants to pick their own time and	Accepted

		place for the training.	
H2	Null	The employees with less workload do not spend more time on E-learning than employees with higher workload, thus cannot handle larger responsibilities.	Rejected
	Alternate	The employees with less workload spend more time on E-learning than employees with higher workload, thus making themselves capable to handle larger responsibilities.	Accepted
H3	Null	The training imparted through E-learning does not result in improved performance of the employees.	Rejected
	Alternate	The training imparted through E-learning results in improved performance of the employees.	Accepted
H4	Null	E-learning does not provide better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.	Rejected
	Alternate	E-learning provides better knowledge transfer as compared with traditional learning process due to its regular updates by its developers.	Accepted
H5	Null	E-Learning does not help in quick	Rejected

		resolution on technical issues.	
	Alternate	E-Learning helps in quick resolution on technical issues.	Accepted
H6	Null	E-learning is not an ideal solution to meet the development needs for the future.	Rejected
	Alternate	E-learning is an ideal solution to meet the development needs for the future.	Accepted

The seventh and last chapter discusses the theoretical and practical implications of the findings, and this is followed by limitations of the study and areas of further research.

The findings of this study are divided as under:

- **Effective practice:** A Statistical significant difference was found in opinion of the employees and it was accepted by majority of employees that E-learning is more effective in comparison to other training practices. However, no significant difference was found in opinion of the employees across the organizations about the fact that E-learning is comparatively more effective.
- **Offer content as and when needed:** Statistically significant difference was found in opinions of employees and it was revealed that a majority of employees were either strongly agree or agree about E-learning’s ability to offer learning content as and when needed. However, no significant difference was found in opinions of employees to this issue across the organizations.
- **E-learning is better as compared to face to face learning:** A Statistical significant difference was found in the opinions of the employees and it had

been accepted that majority of the employees believe that E-learning is more effective practice in providing better interaction and understanding. However, no significant difference was noticed in the opinions of the employees from different organizations about the superiority of E-learning in providing better interaction and understanding.

- Majority of the employees agreed that E-learning is more effective in providing relevant and adequate vocational knowledge. Similarly, no significant difference was observed in opinions of the employees from different organizations to this fact.
- A statistically significant difference was noticed in the opinions of the employees and it is accepted that majority of employees did not agree to the fact that E-learning was more effective in providing solutions to FAQs. A significant difference was found in the opinions of the employees belonging to different organizations as in Torrent Power 62 per cent of the respondents did not agree, while in other organizations the percentage of disagreement was 30 to 45 per cent. In Siemens and KEC International 50 per cent of the respondents reported that they had no idea about this aspect of E-learning.
- A Statistical significant difference was observed in the opinions of the employees and it was accepted, by majority of the employees that they disagree on the issue that E-learning is more effective in meeting development needs of the employees. A significant difference was found in the opinions of the employees belonging to different organizations as in KEC International Limited and Torrent Power; nearly 80 per cent respondents not agreed with the abovementioned fact while in Siemens nearly 42 per cent respondents were found neutral.

- A Statistical significant difference was found in the opinions of the employees and it gets accepted, as a majority of employees did not agree that E-learning was more effective in providing knowledge to solve situation specific issues. A significant difference was found in the opinions of the employees belonging to different organizations as In KEC International Limited and Torrent Power, more than 70 per cent employees disagreed that E-learning is superior to face to face learning as it provides knowledge to solve situation specific issues while in other three companies the percentage of disagreement was significantly low.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that majority of employees' strongly agreed or agreed about emergence of E-learning due to inflexibility inherent in traditional training methods. However, no significant difference was noticed in case of opinions of the employees belonging to different organizations to this fact.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that majority of employees either highly agreed or agreed about emergence of E-learning due to lowering down of service quality. Contrary to it, no significant difference was found in the opinions of the employees belonging to different organizations about the above mentioned fact.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either highly agreed or agreed about emergence of E-learning due to delay in resolving urgent issues. However, no significant difference was found in the opinions of the employees across the organizations about the aforesaid fact.

- A Statistical significant difference was found in the opinions of the employees and it is accepted that majority of employees neither agreed nor had any idea about E-learning's emergence due to Competition.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that majority of employees neither agreed nor had any idea about E-learning's emergence due to Globalization.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that majority of employees neither agreed nor had any idea about E-learning's emergence due to new products or techniques.
- A Statistical significant difference was found in opinions of the employees and it is accepted that majority of employees neither agreed nor had any idea about E-learning's emergence due to increased customer complaints.
- A statistical significant difference was found among the importance given to different objectives of training and development through E-learning. Saving Costs was given the highest importance whereas Ensuring Quick Resolution of Issues had the least importance.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on employee productivity. A significant difference was found in the opinions of the employees belonging to different organizations about the fact. In KEC International Limited and Torrent Power 50 per cent - 60 per cent employees opined that E-learning had significant influence on employee productivity while in the other three companies namely ABB Ltd., Siemens and Adani only 20-35 per cent employees agreed with the fact.

- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on quality of work. However, no significant difference was found in the opinions of the employees belonging to different organizations about this fact.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on development of employees. A significant difference was found in the opinions of employees belonging to different organizations about this fact. In ABB Ltd. nearly 53 per cent of the respondents opined that E-learning has significant influence on Employee development while in the other companies the percentage was low. In Adani nearly one- third of the respondents agreed that it had very significant influence.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on resolution of technical issues. A significant difference was found in the opinions of the employees belonging to different organizations about this fact. In ABB Ltd and Torrent power 50 per cent and more of the respondents opined that E-learning had significant influence on resolution of technical issues, while in the other three companies the percentage was only nearly 30.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on time saving. A significant difference was found in the opinions of employees belonging to different organizations about the fact that E-learning had influence on time saving. In ABB Ltd. nearly 33 percent of the respondents opined that E-learning has very significant influence on time

saving while in the other companies the percentage was low. In Adani half of the respondents agreed that it had significant influence.

- A Statistical significant difference was found in the opinions of the employees and it is accepted, as a majority of employees agree that E-learning had significant influence on meeting learning requirements of employees. A significant difference was found in opinions of employees belonging to different organizations about the abovementioned fact. In Siemens above 56 per cent of the respondents opined that E-learning had significant influence on meeting learning requirements while in Adani the percentage was just nearly 17. In KEC International 30 per cent agreed that it had very significant influence while in other companies it was very low.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees agreed that E-learning has significant influence on employee job satisfaction.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning was effective in meeting development needs of the organizations. A significant difference was found in the opinions of the employees belonging to different organizations about the fact as in KEC almost 90 per cent of respondents opined that E-learning had significant influence while in other four companies only 60 per cent - 67 per cent agreed about the fact.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on cost control.

- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on Timely completion of assignments.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on reducing employee turnover.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on reducing employee absenteeism.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on customer satisfaction.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees opined that E-learning had significant influence on competitiveness.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or not agreed about inconvenient schedule as shortcoming of E-learning. A significant difference was found in the opinions of employees belonging to different organizations about the above mentioned fact. In KEC International Limited, Siemens and Torrent Power, nearly 50 per cent employees disagreed about the fact that E-learning offers inconvenient schedule while in the other two companies namely ABB ltd. and Adani only 10-17 percent employees disagreed with the fact.

- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the poor content as shortcoming of E-learning.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree that E-learning does not provide any opportunity for interaction with the trainer.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about passive environment as shortcoming of E-learning.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the inability to keep the pace with the instructions as shortcoming of E-learning.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the Management's insincere approach towards the feedback as shortcoming of E-learning.
- A Statistical significant difference was found in the opinions of the employees and it is accepted that a majority of employees either less agreed or did not agree about the insufficient resources as shortcoming of E-learning.

## CONCLUSIONS AND RECOMMENDATIONS

On the basis of analysis it is concluded that E-learning can provide flexible learning options for employees and allow them to up-skill more rapidly. E-learning on the workplace can decrease the costs of training workforce through reducing travel and employee time away from work. E-learning is particularly useful for a geographically dispersed workforce because it can deliver a consistent training experience. E-learning provides consistency in training, increased convenience and control of learning, improved monitoring capabilities for employers and reduced costs by decreasing travel costs and employee absenteeism. However, it has some drawbacks but if managed systematically, offers better results. Employee motivation and ability to use technologies are important factors in E-learning participation, along with how the organization supports their employees to conduct E-learning as part of their daily routine. Although better performance compared to traditional delivery can largely be attributed to differences in instructional design and/or content, learners may not engage sufficiently with the material. These research findings have implications for human resource managers and employee training investment decisions. Therefore, managers should invest in the training delivery method that is most effective for their organization.

The chapter concludes with recommendations for future research and overall concluding comments to the study.

Trained human resource is needed throughout the work process like scheduling, designing, engineering, manufacturing, acquisition, handling and stocking, assembling, operation, maintenance of power plants, equipment maintenance, power transmission and distribution system, accounting, collection of revenue, management of human capital and finance etc. Each of the above is critical task in its own right. Following are the salient recommendations by the researcher:

- Companies with large employee base and have multiple locations can impart training through intranet. A repository of training series on mechanical maintenance applications, turbine & systems, power transformer maintenance and condition based monitoring and maintenance courses in digital form can be created and made available to the workforce on anytime/ anywhere basis.
- To sustain in competitive market, organizations have to emphasis on the specialist training packages that can be customized to meet each functional level requirement, including operational procedures as well as minimum safety directives applicable to each plant.
- Companies could start multiple learning and development e-programs, including Operator Certification e-programs. System / Maintenance Operator certification e- programs can be conducted to specific knowledge of job skills and reliability standards. It will also prepare employees to handle the inter-connected generation and transmission controls during normal and emergency processes. Each e-program can have features integrated progress reviews and knowledge assessments with automatic scoring and printable completion certificates.
- Functional and technical trainings are important owing to their direct correlation with the employee's role and on-the-job performance. Training need assessment has to precede the design and delivery. Identification of training should not be generic in nature but more focused with reference to the specific expertise vital for job description. Training programs can be tailor - made to accommodate functional, mechanical, electrical and instrumentation streams covering task such as supervision, maintenance and calibration. Some examples of this program are design failure analysis, environment and product training, quality control, etc.

- Attitude of an individual play an extremely important role in his performance. Thus, in spite of the availability of the best of knowledge and skill, the ability to provide the desired services may still be found wanting in individuals if they are not imbued with appropriate attitudes. It is suggested to include training for developing expertise in negotiation skills, management and leadership skills, making presentation and communication skills, conflict management, etc for the workforce.
- Scenario-based E-learning in training process can be an effectual approach to increase learner's engagement level.
- Learning interactivities designed to accomplish knowledge transfer with a heavy emphasis on skills development on online learning platform can be used for new hires to introduce power generating system and market including: Business operations, auxiliary services, guidelines and future markets.
- Class-room based specialized training and skills programs can be expensive. E-learning can counter this issue by delivering modernized and custom-made solutions on company specific need with a key aim of Skill developments for various verticals in Electrical Engineering domain. Users can launch and complete each course within the subscribed library or series as many times as they wish. Systematic analysis of performance can be an important tool to evaluate ROI of corporate training.
- To help employees to meet rapidly changing market scenario, power sector have to strengthen its learning and development initiatives and should introduce e-learning for its employees in a big way. Common strategies or

blanket application of strategies is not the only solution particularly for the environment where learning in chunks is appreciated and found as convenient.

- To improve employee performance and efficiency as per business needs, LMS and other e-learning solutions are important as they are self-directed and much easy than any other methods of training. Workforce can acquaint themselves with the workflows faced in a power plant by use of power plant simulator. The workforce can be trained for "Basic Measurements" to "Advanced Competencies" like "Shaft Maintenance". The usage of the simulator can be appraised as a conducive approach to see how a gas power plant works.
- Training Videos can be provided to supplement Computer Based Training (CBT).
- Now a day's use of satellite mode is encouraged to provide online training to the users at various locations without restriction of geographical boundaries. Courses can be outlined to focus on refurbishing operational knowledge and awareness, through intensive and interactive practice on power plant simulator during system malfunction.

Such kind of on the job training will inculcate confidence in participants in carrying out their assigned tasks and potentially reducing unscheduled outages and revenue loss, providing better span of life of equipment's and thus increasing overall profitability in emerging market.

The only challenge here is to encourage and keep the spirit of learning high among the employees so that they themselves want to invest the time and efforts both.

Use of games for online learning is on the rise. Learners participate actively when they are given a chance to explore organizational components. Following are the observations in this regard:

- Using games to non-game environments like training in order to improve engagement levels, and create fun-filled, interesting experiences for the learners can raise involvement quotients in E-learning programs and pump up employee motivation.
- Learners can apply the gaming situations in real-world status quo and decision-making, which develops their proficiency and expertise.
- Training via M-learning is highly recommended; organizations can deliver target bits of content that help an individual in real time, whether to present product information or to access equipment documentation.
- Knowledge transfer amongst different departments of an organization is an important in-house tool for development of employees at different functional levels. One of the E-learning strategies suggested for better learning and development itinerary is Micro-learning or step by step learning. Distribution of content should be condensed; bite-sized increments can be taken as one of the options to equip with a varied magnitude of expertise.
- Standard procedure of distribution of information material can be chosen later on. A third party or outsourcing firm can be hired for providing expertise related to technical or other services. This will accelerate various initiatives of E-learning programs.
- It is the management of any organization to ensure development of each employee, group of employees not only to increase their productivity but also to keep them satisfied and committed towards the organization. Implementing LMS will not only help organizations to shift from efficiency to effectiveness but also to ensure substantially lower cost solution.

- Align training modules with real-life job descriptions and responsibilities. Opportunity may be given for practical involvement and use of required skills acquired through training so as to encourage people to provide their best at their workplaces.
- Training employees through MOOC (Massive Open Online Courses) has become most available tool for imparting knowledge and training. Therefore this need to be utilized for mutual benefit.
- Use of Interactive software walkthrough can provide in house training to employees directly within company's software.
- Companies can develop own prototype to demonstrate exactly how they would like employees to carry out their tasks. Customized guides shall be made by companies to specifically focus on expertise required for higher competence, yield and competitiveness.
- By integrating 3D simulation and Virtual Reality conceptualization, a 3D Virtual Reality, FGD (Flue Gas Desulfurization) unit can be established to support a wide ranging training mechanism for operators.

This virtual model will allow FGD operators to see the insight into the operating FGD unit to not only concentrate on comprehensive structural components but also on flow features such as heating scale, velocity, chemical species distribution etc. The interactive learning process can provide a more impressive and productive way for operator training.

The study has several suggestions for further future research work. Due to less availability of research on E-learning effectiveness on Employee development in context to Indian power sector, the study has not been able to rightly measure the effectiveness of monitoring individual employee progress. There are no studies to focus on creating a functional framework that would measure the success or impact of online training, though there does exist a prerequisite for figuring out how well E-

learning can be used as a tool for imparting training and the effects it will have on all Indian organizations in government and private Power and Energy sectors in order to make it even better.

The recommendations offered as opportunities for **further research** are listed below:

- It is suggested to explore a larger sample size and different subsidiaries of organizations used in the study to cover. Additionally, Researchers should include demographic factors such as gender, age, level of education, learning style and their impact on the effectiveness of employee productivity and job satisfaction.
- It is further suggested to compare the skills of employees who have been trained with both physical class room training and E-learning tool , in order to explain what kind of variances exist between these practices of training and additional study the outcomes that may result from implementing Learning management system solution.
- Researcher recommends in-depth investigation in Mobile Learning Technologies. Mobile Technology, has had explosive growth with devices such as smart phones, tablet PCs that could stream contents and allow chat and instant messaging may provide more comfortable learning environment letting employees to learn anywhere, anytime irrespective of time and space.
- Future research is needed on how simulation-based E-learning could be extensively used in familiarizing new employee and provides specific job guidance with a risk-free training environment enabling organizations to train

new employees to their jobs even more efficiently where they can explore new problem-solving approaches.

- This was a purely qualitative study. A grounded theory study could be conducted in an effort to develop a theory regarding the factors that lead to the road-blocks for the successful E-learning training program.
- Researcher suggests that further research should target on the study "Does E-learning has a promising future in Indian companies?"
- Further, the researcher feels the need to conduct the study that focus on the overall experiences of stakeholders to develop talent attributes such as analytical skills and time- management.

Amrita Bhardwaj  
Scholar

Dr. Kapil Dev Sharma  
Supervisor

## **APPENDICES**

**APPENDIX I**  
**BIBLIOGRAPHY**

### BOOKS (1-36)

1. Aldrich, C. (2004), Simulations and the future of learning: An innovative (and perhaps revolutionary) approach to e-learning. San Francisco: Pfeiffer.
2. Alessi, S.M., & Trollip, S.R. (1991), Computer-based instruction: Method and development.
3. Allan, B. 2007, "Blended Learning – tools for teaching and training", London: Facet Publishing, 2007. 228 p. ISBN 978-1-85604-614-5.
4. Anderson, M.D. (2001), Individual characteristics and Web based courses, Learning and teaching on the World Wide Web. San Diego: Academic Press.
5. Barbian, J. (2002), Blended works: here's proof! Online Learning 6(6): 26-30.
6. Biswajeet Pattanayak (1997), "Human Resource Training - Study on Training Evaluation of Indian Industries", First Edition 1998, Published by S.Chand & Company Ltd, pp 99-114.
7. Bonk C. J., & Graham C. R., The Handbook Of Blended Learning: Global Perspectives, Local Designs, San Francisco, Pfeiffer.
8. Brown, K.G. & Ford, J.K. (2002). Using computer technology in training: Building an infrastructure for learning, Creating, Implementing, and Managing Effective Training and Development, pp. 192–233. San Francisco: Jossey-Bass.
9. Cathy Moore (2017), Map It: The hands-on guide to strategic training design.
10. Clark, R. (1999), Developing technical training: A structured approach for developing classroom and computer-based instructional materials. Alexandria, VA: ISPI Press.
11. Cornell R. & Martin B.L. (1997), The role of motivation in web-based instruction, Web-Based Instruction.
12. Cox, G., Curr, T. & Hall, M. (2004), Strengths of Virtual Class Rooms. New York: Brunner Rout ledge.

13. Diane Elkins & Desiree Pinder (2015), *E-Learning Fundamentals: A Practical Guide*.
14. Eddy, E. R., & Tannenbaum, S. I. (2003). Transfer in an e-learning context, *Improving learning transfer in organizations* (pp. 161–194). San Francisco, CA: Jossey-Bass.
15. Graham, C. R. (2013). Emerging practice and research in blended learning, *Handbook of distance education* (3rd ed., pp. 333–350). New York, NY: Routledge.
16. Harold D. Stolovitch & Erica J. Keeps (2011), *Telling Ain't Training*.
17. Horton, W. (2000). *Designing Web-based Training*. New York: John Wiley and Sons.
18. Horton, W.(2002), *Games that teach: Simple computer games for adults who want to learn*.The ASTD e-learning handbook: pp. 139-157. NewYork: McGraw-Hill.
19. Julie Dirksen(2016), *Design for How People Learn* (2nd Edition).
20. Kanuka H,(2008),. “Understanding e-learning technologies-in-practice through philosophies-in-practice, *The theory and practice of online learning*”, 2<sup>nd</sup> edition, ed. T. Anderson, pp. 91-120. Athabasca: Athabasca University
21. Kassy LaBorie & Tom Stone(2015). *Interact and Engage!: 50 Activities for Virtual Training, Meetings, and Webinars*.
22. Kjell Erik Rudestam(2002), *Handbook of Online Learning: Innovations in Higher Education and Corporate Training*. Sage Publications, Inc. 472 pages.
23. Lewis, N. J., & Orton, P. Z. (2012), *Blending learning for business impact: IBM’s case for learning success*.
24. Luther Tai (2007), *Corporate E-Learning: An Inside View of IBM's Solutions*.
25. Michael W. Allen (2003), *Michael Allen’s Guide to E–Learning: Building Interactive, Fun, and Effective Learning Programs for Any Company*.

26. Nick Rushby & Dan Surry(2016), The Wiley Handbook of Learning Technology (Wiley Handbooks in Education) 1st Edition, Kindle Edition.
27. Pallant, J. (2010). A Step by step Guide to Data Analysis using the SPSS Programme. Survival Manual, 4th Edition. McGraw-Hill, England.
28. Prensky, Marc (2001). "Digital game based learning." New York, McGrawHill.
29. Ratan Reddy ( 1995), “ A study of the In –House Training Institutes In central Public enterprises located In the twin cities Hydrabad and Secunderabad- Effective Human resource Training and Development Strategy”, Third edition 2008, published by Himalaya Publishing house, pp466-480.
30. Rao, P.L. (2008), Enriching Human Capital through Training and Development. Excel Books, (New Delhi) 3. All about Learning.14-17, 32-39,167-185.
31. Reddy Sumat (2003) “E-Learning and Technology: New Opportunities in Training and Development”, First Edition 2003, ICFAI Press.
32. Rosenberg, M. J. (2001). E-Learning. Strategies for Delivering Knowledge in the Digital Age. New York.
33. Rossett, A. (Ed.), 2002, “The ASTD E-Learning” Handbook. New York:McGraw-Hill. [books.mcgraw-hill.com/authors/rossette/e-learning](http://books.mcgraw-hill.com/authors/rossette/e-learning).
34. Ruth Clark (2010), Evidence-Based Training Methods, 2nd Edition: A Guide for Training Professionals Kindle Edition.
35. Selcuk Zengin(2009), E Learning and In-Service Training in Law Enforcement: Tapping the Potential of E Learning for In-Service Training in the Law Enforcement Context: Perspectives from the Field.
36. Schank, R.P. (2001). Designing World-Class E-learning, McGraw-Hill, New York, NY.

**RESEARCH PAPER/ ARTICLES/ JOURNAL (37-102)**

37. Addison, M. (2009), Creating 'anytime anywhere' learning, *Training Journal*, April issue.
38. Agarwal, Manish; Nayak, Tapan Kumar ; Gupta, V.P.(2008) , Employees perception towards training in IT sector", *Asia-Pacific Business Review*, April 1, 2008.
39. Alliger, MG, & Janak, AE (1989), "Kirkpatrick's Levels of Training Criteria", *Thirty Years Later. Personnel Psychology*, 42(2), 331-342.
40. Al-Jibouri, S.H. & Mawdesley, M.J. (2001), Design and experience with a computer game for teaching construction project planning and control. *Engineering, Construction and Architectural Management*, Vol. 8 (5/6), pp. 418-27.
41. American Society for Training and Development (2006), Annual report of the industry. Alexandria, VA.
42. Arthur, W, Bennett, W, Edens, S. P, & Bell, TS (2003), "Effectiveness of Training in Organizations", *A Meta-Analysis of Design and Evaluation Features. Journal of Applied Psychology*, 88(2), 234-245.
43. Baker, G. (1992), Application report: Instructional design of a computer-assisted work-related literacy program. *Journal of Computer-based Instruction*, Vol. 19, pp. 33-60
44. Bassi, L.J. & Van Buren, M.E. (1998), The 1998 ASTD state of the industry report. *Training & Development*, Vol. 52 (1), pp. 21-43.
45. Bassoppo-Moyo and C. Temba (2006), Evaluating eLearning: A Front-end, Process and Post Hoc Approach *International Journal of Instructional Media*, v. 33 no. 1 p. 7-22.
46. Bazae, G. A., Barat, N., and Asgharpoor, D. K. (2010), Development of organizational learning through web based training, *Learning Community*, Volume 1, Number 2.

47. Berry, J (2000), Traditional training fades in favor of e-learning. *Internet week*, Vol. 800, pp. 33–50.
48. Bersin, J. (2002), Measure the metrics: How to link e-learning to business strategy. *E-learning*, Vol. 3, pp. 26-28. Bersin, J. (2004). Rapid e-learning has arrived.
49. Bhawani Shankar Subedi ( 2004), “Emerging Trends of Research on Transfer of Learning”,*International Education Journal* Vol 5, No 4, 2004, pp591-599
50. Brown, K. G. (2001), Using computers to deliver training: Which employees learn and why? *Personnel Psychology*, Vol. 54, pp. 271–96.
51. Brown, K.G. & Ford, J.K. (2002), Using computer technology in training: Building an infrastructure for learning. In K. Kraiger (ed.), *Creating, Implementing, and Managing Effective Training and Development*, pp. 192–233. San Francisco: Jossey-Bass.
52. Burnett, K. & Subramaniam, M. (2004), Defining the information technology workforce from the educational perspectives: a pilot study. *Proceedings of the Special Interest Group Information Technology Education (SIGITE '04)*, ACM Press: New York, NY, pp. 202-205.
53. Buchanan, B (1974), Building organizational commitment: The socialization of managers in work organizations. *Administrative Science Quarterly*, Vol. 19, pp. 533-546.
54. Buhagiar, A (2012), Training in the live online space! Is anybody out there? *RTO Management*, Issue 9.
55. Chamberlin, Jamie (1998), "Reaching 'flow' to optimize work and play". Internet article: <http://www.apa.org/monitor/jul98/joy.html>
56. Cone, J.W. & Robinson, D.G. (2001), The power of e-performance. *T+D*, Vol. 55, pp. 32–41.
57. Dagada, R. & Jakovljevic, M. (2004), ‘Where have all the trainers gone?’ E-learning strategies and tools in the corporate training environment. *Proceedings of the Annual Conference of the South*

- African Institute of Computer Scientists and Information Technologists (SAICSIT '04), ACM Press: New York, NY, 194-203.
58. Davenport, Rex. 2006, "Future of the Profession." T+D60(1): 41.
  59. Dealtry, R. (2002a), "Managing the issue of learning relevance in the formulation of corporate learning strategies", *Journal of Workplace Learning*, Vol. 14 No. 5, pp. 209-14.
  60. Derouin, R. E., Fritzsche, B. A. & Salas E. (2004), *Optimizing e-learning: Research-based guidelines for learner controlled training*. *Human Resource Management*, Vol. 43, pp. 147-162.
  61. Derouin, R.E., Fritzsche, B.A. & Salas, E. (2005), *E-Learning in Organizations*. *Journal of Management*, Vol. 31, pp. 920-940.
  62. Dobbs, K. (2000), "What the online world needs now", *Training*, Vol. 37, September, pp. 84-94.
  63. Egan, D., Hessian, D., Taylor, C. & Zenger, J. (2003), *Suppliers: it's time to push e-learning and e-learning ROI up to the CEO level as a business investment versus a cost center*. *T&D*, 57(1), 62-64.
  64. Falconer, L. (2006), *Organizational learning, tacit information, and e-learning: a review*. *The Learning Organization*, Vol. 13 (2), pp. 140-51.
  65. Fedák, Viliam & Bauer, P. (2005), *E-learning in education of electrical drives and power electronics: opportunities and challenges*.
  66. Galagan, P.A. (2000), "E-learning revolution", *Training and Development*, Vol. 54 No. 12, pp. 25-30.
  67. Goodridge, E. & Swanson, S. (2001), *ROI boosts e-learning – online-training sales rise, even as it budgets are tightened*. *Information Week*, (May 7, 2001), 135-136.
  68. Gwyneth Hughes (2007), "Using blended learning to increase learner support and improve retention" volume 12, issue 3, DOI: 10.1080/13562510701278690.

69. Hardt, P. (2009), How do executives evaluate e-learning? A grounded theory study , *Journal of Applied Research in Workplace E-Learning*, Volume 1, Number 1
70. Hartley, D. (2000),“All aboard the e-learning train”,*Training and Development*, Vol.7, pp. 37-42.
71. Honey, P. (2001), E-learning: a performance appraisal and some suggestions for improvement. *The Learning Organization*, Vol. 8 (5), pp. 200-202.
72. Iain S. Macdonald, Mark Bullen, Robert Kozak (2007), “Identifying Effective Pedagogical Approaches for Online Workplace Training: A case study of the South African wood products manufacturing sector” A referred e-journal Vol 8, No 3.
73. John Trasler (2002), "Effective learning depends on the blend", *Industrial and Commercial Training*, Vol. 34 Issn: 5, pp.191 – 195.10.1108 / 00197850210437111. Publisher: MCB UP Ltd.
74. Julie Bos(2007), “Top trends in Training and leadership Development”, *Workforce Management* , November 19, 2007,pp 35-38.
75. Kim, K. J., Bonk, C. J., & Zeng, T. (2005), Research paper: surveying the future the workplace: e-learning: the rise of blending, interactivity, and authentic learning. *eLearn Magazine*, 2005(6), 2-6.
76. K.L. Kumar. Science and Technology Courses via E-Learning: An African Scenario with Lessons from South East Asia. *International Journal on E-learning* v. 1 no. 3 p. 65-70. July/September 2002.
77. Kramer, H. (2007), “Measuring the effect of e-learning on job performance”. (Order No. 3288849, Nova Southeastern University). ProQuest Dissertations and Theses, 148-n/a.
78. Kuznia, K. D. (2006), The correlates and influences of career-related continuous learning: Implications for management professionals. (St. Ambrose University). Retrieved from ProQuest Dissertations and Theses.

79. Lee, H., Tsui, E., and Garner, B. J. (2008), Leveraging web 2.0 concepts to create an open and adaptive approach to corporate learning, *Cutter IT Journal*, Volume 21, Number 1
80. Lee, J., Zo, H., and Lee, H. (2014), Smart learning adoption in employees and HRD managers, *British Journal of Educational Technology*, Volume 45, Issue 6
81. London, M., and Hall, M. J. (2011), Web 2.0 support for individual, group and organizational learning, *Human Resource Development International*, Volume 14, Number 1
82. Lu, HP & Chiou, MJ (2010), “The impact of individual differences on e-learning system satisfaction: A contingency approach”. *British Journal of Educational Technology*, 41(2).
83. Mahapatra, R. & Lai, V. S. (2005), Evaluating end-user training programs. *Communications of the ACM*, 48(1), 67-70.
84. Martocchio, J.J. (1994), Effects of conceptions of ability on anxiety, self-efficacy, and learning in training. *Journal of Applied Psychology*, Vol. 79, pp. 819–825.
85. M. Bhattacharya Ed. Special Issue on E-Learning Prospective in Asia Pacific. *International Journal on E-learning* v.1 no.3 p. 5-6, 23-70. July/September 2002.
86. Michalski, M. P. (2014), Symbolic meanings and e-learning in the workplace: The case of an intranet-based training tool, *Management Learning*, Volume 45, Issue 2
87. Morgan, B. R., & Casper, JW (2000), “Examining the Factor Structure of Participant Reactions to Training”, A Multidimensional Approach. *Human Resource Development Quarterly*, 11(3), 301-317.
88. Nunes, M., McPherson, M., Annansingh, F., Bashir, I., & Patterson, D. (2009), The use of e-learning in the workplace: A systematic literature review, *Journal of Applied Research in Workplace E-Learning*, Volume 1, Issue 1

89. Newton, Robert & Doonga, Nitin (2007), Corporate e-learning: Justification for implementation and evaluation of benefits. A study examining the views of training managers and training providers, *Education for Information*, vol. 25, no. 2, pp. 111-130, 2007.
90. Park, J. & Wentling. (2007), Factors Associated with Transfer of Training in Workplace Elearning, *Journal of Workplace Learning*, 19(5), pp. 311-329.
91. Pang, K. (2009), Video-driven multimedia, web-based training in the corporate sector: Pedagogical equivalence and component effectiveness, *International Review of Research in Open and Distance Learning*, Volume 10, Number 3
92. Phillips, J., Phillips, P.P. and Zuniga, L. (2000), "Evaluating the effectiveness and ROI of eLearning." *What works online*, 2, quarter.
93. Rana, E. (2001), "Take initiative on online learning, trainers urged", *People Management*, Vol. 25 January, p. 14.
94. Saravani, S.-J. & Clayton, J. (2013), The impact of e-learning on workplace capability: Creating a framework of development, *International Journal of Business Excellence*, Volume 6, Number 2
95. Sneha M. Joshi, K. Pushpanadham, & Anjali Khirwadkar (2002), Knowledge Management through E-Learning: An Emerging Trend in the Indian Higher Education System. *International Journal on E-Learning* v. 1 no. 3p. 47-54. July.
96. Strother, J.B. (2002), An assessment of the effectiveness of e-learning in corporate training programs. *International Review of Research in Open and Distance Learning*, Vol. 3.
97. Tan, AJ. Hall, JR, & Boyce, C. (2003), "The Role of Employee Reactions in Predicting Training Effectiveness" *Human Resource Development Quarterly*, 14(4), 397-411.

98. Tavangarian, D., Leypold, M.E., Nölting, K., Röser, M. & Voigt, D (2004), Is e-Learning the Solution for Individual Learning? *Electronic Journal of e-Learning*, Vol. 2 (2), pp. 273-280.
99. Virpi Slotte, Anne Herbert, (2008),“Engaging workers in simulation-based e-learning”, *Journal of Workplace Learning*, Vol. 20 Iss: 3, pp.165 – 80.10.1108/13665620810860477.
100. Wang, Y-S., Wang, H-Y. & Shee, D.Y (2007), Measuring e-learning systems success in an organizational context: Scale development and validation. *Computers in Human Behavior*, Vol. 23, pp. 1792-1808.
101. Yanping Liu&Hong Wang (2009), A comparative study on e-learning technologies and products: from the East to the West.
102. Zhang, D., Nunamaker, J.F. (2003). Powering e-learning in the new millennium: An overview of e-learning and enabling technology, *Information Systems Frontier*, 5(2), 207-218.

### WHITE PAPERS (103-120)

103. Adams, J. M., Hanesiak, R., Morgan, G., Owston, R., Lupshenyuk, D., and Mills, L.(2010), Blended learning for soft skills development: Testing a four-level framework for integrating work and learning to maximize personal practice and job performance, Ottawa, Canadian Council on Learning, retrieved from <http://www.ccl-cca.ca/pdfs/FundedResearch/201009AdamsHanesiakMorganOwstonLupshenyukMillsFullReport.pdf>
104. Adkins, S. (2003). ROI from workflow-based e-learning. *Learning Circuits*, retrieved May 15, 2006, from [www.learningcircuits.org/2003/oct2003/adkins.htm](http://www.learningcircuits.org/2003/oct2003/adkins.htm)
105. Allen, M. (2003). The lessons of e-learning. *Optimize* (Issue 22), retrieved, September 25, 2006, from <http://www.optimize.com/article/showArticle.jhtml;jsessionid=OIF>

- D4C4ID5 05WQSNDLPSKHSCJUNN2JVN? printableArticle=true&articleId= 17701029&q ueryText
106. Allen, I. E., & Seaman, J. (2010). Learning on demand: Online education in the United States, 2009 Babson Park, MA: Babson Survey Research Group, retrieved from, <http://www.sloanconsortium.org/publications/survey/pdf/learningondemand.pdf>
  107. Barron, T. (2002). Evolving Business Models in e-learning. Summary whitepaper, SHRI Consulting Business Intelligence.
  108. Dr hc Jörg Becker (2015), Corporate Education, Corporate Digital Learning, how To Get It “Right”, retrieved from <https://assets.kpmg.com/content/dam/kpmg/pdf/2015/09/corporate-digital-learning-2015-KPMG.pdf>
  109. Essilor (2015), Story of Impact: Transforming Managers into Effective Leaders with Scalable, Technology Driven Solutions. Greensboro, NC: Center for Creative Leadership, retrieved from <http://insights.ccl.org/wp-content/uploads/2015/03/Essilor.pdf>
  110. Lionbridge (2006) Global Expansion Requires New HR and Training Strategies, retrieved from, [https://cdn.ymaws.com/www.nchrtd.org/resource/resmgr/Docs/HR\\_and\\_Training\\_in\\_Global\\_En.pdf](https://cdn.ymaws.com/www.nchrtd.org/resource/resmgr/Docs/HR_and_Training_in_Global_En.pdf)
  111. Minton, M.C. (2000). Is your organization ready for e-learning? Seven key questions you need to answer, Communication Project Magazine, 3(1), retrieved on February 13, 2010 from <http://www.comproj.com/Minton.htm>.
  112. Overton, L., and Hills, H. (2010), E-learning maturity in the workplace - the benefits and practices, Journal of Applied Research in Workplace E-Learning, Volume 1, Number 1, retrieved from [http://www.towardsmaturity.org/elements/uploads/Towards\\_Maturity\\_Benchmark\\_research\\_from\\_Impact\\_Dec\\_09.pdf](http://www.towardsmaturity.org/elements/uploads/Towards_Maturity_Benchmark_research_from_Impact_Dec_09.pdf)

113. Samir Mehta and Holly Downs (2016), Six Strategies For Digital Learning Success, retrieved from <https://www.ccl.org/wp-content/uploads/2016/05/Digital-Learning-Success-White-Paper-1.pdf>
114. Sarah Axon (2010), carbon reduction and e-learning, retrieved from, [https://www.aoc.co.uk/sites/default/files/Carbon\\_Reduction\\_and\\_elearning\\_2010.pdf](https://www.aoc.co.uk/sites/default/files/Carbon_Reduction_and_elearning_2010.pdf)
115. Vidhyu Rao, Manikandan Subramaniam (2013), Creating a Learning Technology Roadmap:Maximizing Efficiency While Boosting Business Effectiveness, retrieved from <https://www.cognizant.com/whitepapers/Creating-a-Learning-Technology-Roadmap-Maximizing-Efficiency-While-Boosting-Business-Effectiveness-Part-II.pdf>
116. University of Sydney's Workplace Research Centre, (2013), E-learning's contribution to workforce development, Canberra, Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, retrieved from <http://avetra.org.au/wp-content/uploads/2009/08/Paper-33-Damien-Oliver.pdf>
117. Voce, J. (2007, April). E-learning at UCL: A student perspective, retrieved January 21, 2013, from <http://www.ucl.ac.uk/isd/staff/e-learning/tools/webct/migration/Student-survey-report.pdf>
118. Aurobindo Saxena, Priyasha Singh, Rashi Jain, Disha Ahuja(2016), Whitepaper on Digital Learning Market in India,retrieved from [www.technopak.com/Files/Whitepaper-on-Digital-Learning-Market-in-India.pdf](http://www.technopak.com/Files/Whitepaper-on-Digital-Learning-Market-in-India.pdf)
119. ThinkQ.(2004). How e-learning can increase ROI for training. White Paper.
120. Rupa Shankar, Nihar Routray (2013), The Next Generation Learning Management System, retrieved from <https://www.happiestminds.com/whitepapers/The-Next-Generation-Learning-Management-System.pdf>

**WEBSITES (121-139)**

121. <http://www.astd.org/Publications/Magazines/TD/TD-Archive/2008/03/Rapid-Talent-Development>, November 2011
122. <http://www.clomedia.com/talent.php?pt=search>. December 2012
123. [http://www.astd.org/TD/Archives/2010/Nov/Free/1110\\_2010+State+of+the+Industry.htm](http://www.astd.org/TD/Archives/2010/Nov/Free/1110_2010+State+of+the+Industry.htm)[8]
124. <http://www.trainingmag.com/managesmarter/images/pdfs/IndRep06.pdf>
125. Bozarth, Jane. 2010 “Nuts and Bolts: Getting Management Support for Training.” *Learning Solutions Magazine*, <http://www.learningsolutionsmag.com/articles/484/nuts-and-bolts-getting-management-support-for-training>, accessed August 2, 2010.
126. David Kahn: “How effective is multimedia in online training”–  
[www.learningguru.com/wpapers/multimedia.pdf](http://www.learningguru.com/wpapers/multimedia.pdf)
127. Downes, Stephen. (2005, October 15). *E-Learning 2.0*.  
<http://www.downes.ca/post/31741>.
128. [http://en.wikipedia.org/wiki/Computer\\_Supported\\_Collaborative\\_Learning](http://en.wikipedia.org/wiki/Computer_Supported_Collaborative_Learning)
129. [www.gurukulonline.co.in](http://www.gurukulonline.co.in)–“Is there a case of e-learning in India”
130. Hart, Jane. Updated July 5, 2013. “The Workplace Learning Revolution.”
131. Centre for Learning and Performance (2013), <http://c4lpt.co.uk/new-workplace-learning>
132. [www.itpeopleindia.com](http://www.itpeopleindia.com)
133. Jennings, Charles. 2010, “Learning on the Job.” *Global Focus*4(1),  
[http://www.efmd.org/images/stories/efmd/globalfocus10/Issue\\_1\\_2010\\_cjennings.pdf](http://www.efmd.org/images/stories/efmd/globalfocus10/Issue_1_2010_cjennings.pdf)
134. Jennings, Charles, April 7, 2010, “Five Barriers to Effective Learning Organizations,” *Improving Performance Through Learning Innovation*,

- <http://charles-jennings.blogspot.com/2010/04/five-barriers-to-effective-learning-in.html>
135. <http://www.ictseuropesystems.com/Eagle-CBT-computer-based-training-platform.html>
136. Mackey, David. (2005). Transforming Training: A Guide to Creating a Flexible Learning Environment: the Rise of the Learning Architects. London, GBR: Kogan Page, Limited. 23. Online Available <http://site.ebrary.com/lib/aguniv/Doc?id=10124838&ppg=30>
137. Megha Banduni, “The future of e-learning in India”, [www.expresscomputeronline.com](http://www.expresscomputeronline.com) , 14<sup>th</sup> November 2005
138. Overton, Laura. July 23, 2010. “Is the Formal Training Room Obsolete?”
139. TrainingZone, <http://www.trainingzone.co.uk/topic/learning-technologies/formal-training-room-obsolete/143936>, accessed August 2, 2010.

**APPENDIX II**

COVER LETTER FOR SURVEY  
AND  
SURVEY QUESTIONNAIRE

**Research Title:**  
**“EMPLOYEE TRAINING AND DEVELOPMENT THROUGH E-  
LEARNING”**  
**(A STUDY OF SOME SELECTED UNITS IN POWER SECTOR)**

Dear Sir/Ma'am,

I am soliciting your cooperation in getting valuable inputs in response to the question raised in enclosed structured questionnaire pertaining to research undertaken titled “Employee Training and Development through E-learning- A Study of Some Selected Units in Power Sector”. The researcher is of the firm belief that being a proactive and progressive organisation you need to grapple quickly and constantly to changing training needs.

The aim of the researcher is to determine effectiveness of E-learning solutions in selected organisations so as to enhance core competencies of people to support business operations.

I value your feedback in arriving to the conclusion that how modern technologies enable people development on the job.

Thanking you in anticipation.

Yours sincerely

Amrita Bhardwaj

Research Scholar, Faculty of Commerce and Management Studies

University of Kota, Kota

Email: amrita78bhardwaj@gmail.com

Mobile: 9999652915

## Questionnaire for Doctoral Research



---

The study is being undertaken by Amrita Bhardwaj, A Doctoral Scholar of the University of Kota, Kota.

She may be contacted at: amrita78bhardwaj@gmail.com

---

### A. General information about e-learning in your organization

1. Which amongst the following three learning and development practices your organization commonly use?

- Blended learning (such as combining instructor-led training with online learning)
- E-learning
- Face to face learning (such as external conferences, workshops and events)

2. In your opinion which of the below mentioned practice is more effective?

- Blended learning (such as combining instructor-led training with online learning)
- E-learning
- Face to face learning (such as external conferences, workshops and events)

3. Is training and development through e-learning in your organization helpful to the employees in providing learning content as and when needed?

Highly Agree  Agree  Less Agree   
Not Agreed  No Idea

4. Please give your opinion on the following by checking most relevant columns and rows:

<b>E-learning is superior as compared to face to face learning as:</b>	<b>Highly Agree</b>	<b>Agree</b>	<b>Less Agree</b>	<b>Not Agree</b>	<b>No Idea</b>
It provides better interaction and understanding.					
It provides relevant and adequate vocational knowledge.					
It provides solutions to FAQ (frequently-asked-questions).					
E-learning information perfectly meets my needs.					
It provides knowledge that is helpful to solve situation specific issues.					

5. Please give your opinion on the following by ticking relevant columns.

<b>E-learning need emerged due to :</b>	<b>Highly Agree</b>	<b>Agree</b>	<b>Less Agree</b>	<b>Not Agree</b>	<b>No Idea</b>
Competition					
Globalization					
New products or techniques					
Lowering down of service quality					
Inherent inflexibility in traditional methods					
Increased customer complaints					
Delay in resolving urgent issues					

6. Kindly rank the following objectives of training and development through e-learning in your organization in order of importance:

<b>No.</b>	<b>Objectives / Goals</b>	<b>Rank</b>
1.	Developing employee skills	
2.	Saving cost	
3.	Saving employee time	
4.	Quality of work	
5.	Meeting global needs	
6.	Ensuring quick resolution of issues	

**B. Outcomes of e-learning**

7. Indicate the extent to which you think application of knowledge, skills and behavior learned from e-learning activities had a positive influence on the following aspects related to your work. *Please check the appropriate response beside each measure.*

<b>Measures</b>	<b>No Influence</b>	<b>Some Influence</b>	<b>Moderate Influence</b>	<b>Significant Influence</b>	<b>Very Significant Influence</b>
Work output					
Quality					
Personal development					
Time saving					
Meeting learning requirements					
Job satisfaction					
Resolution of technical					

## Survey Questionnaire

---

issues					
Other (please specify----- -----)					

8. Please give your opinion with regard to effectiveness of e-learning in relation to your organization by ticking relevant column.

<b>Parameters</b>	<b>Highly Agree</b>	<b>Agree</b>	<b>Less Agree</b>	<b>Not Agree</b>	<b>No Idea</b>
Meeting development needs of the organization					
Cost control					
Timely completion of assignments					
Reduces employee turnover					
Reduces employee absenteeism					
Customer satisfaction					
Competitiveness					

9. Indicate the extent to which you experience shortcomings in training and development activities through e-learning in within your organization.

<b>Shortcomings</b>	<b>Highly Agree</b>	<b>Agree</b>	<b>Less Agree</b>	<b>Not Agree</b>	<b>No Idea</b>
Poor content					
Inconvenient schedule					
No opportunity for interaction with the trainer					

## Survey Questionnaire

---

Passive environment					
Inability to keep the pace with the instructions					
Management's insincere approach towards feedback					
Insufficient resources					

10. What challenges are being experienced pertaining to T&D through e-learning at your workplace? Please rank first three of them.

No.	Challenges	Rank
1.	High up-front costs	
2.	Employee resistance to e-learning	
3.	Lack of management support	
4.	Lack of technical support	
5.	Trainers knowledge and skills to teach	
6.	Inappropriate learning culture	
7.	Irrelevance to real-time work tasks	

11. Which of the following is the most usual technique being used at your organization for measuring the effectiveness of T&D through e-learning?

1. Self-assessment questionnaires
2. Informal feedback from peers and managers
3. Focus groups
4. On-the-job observation
5. Actual job performance using key performance indicators (KPIs)
6. Customer surveys, comments, or complaints

12. In your opinion, which amongst the following developments in learning technologies will have the greatest impact on the training and development activities in next five years?

- 1. On the job training
- 2. E-learning Modules
- 3. Virtual Classrooms and Webinar

13. Do you get any competitive advantage through e-learning program within the competitive environment?

- Highly Agree       Agree       Less Agree   
Not Agreed       No Idea

14. Do you consider e-learning a facilitating step for improving the pace of learning and reducing employee down-time thus enabling you to handle greater responsibilities?

- Yes       No       Can't say

15. How enthusiastic your top management is in endorsing e-learning and its regular application to develop new skills at all levels in the organization? State your opinion-

-----  
-----  
-----

**C. Personal Information**

2. Gender: a. Male       b. Female



## Survey Questionnaire

---

c. 49-56 hrs

d. 57-64 hrs

e. 4 hrs and above

10. Type of employee: a. Permanent

b. Contractual

## **APPENDIX III**

### **Published Research Papers in UGC Referred Journals**

ISSN (Print) : 2349-6916

ISSN (Online) : 2454-8340



AN INTERNATIONAL JOURNAL OF APPLIED MANAGEMENT & TECHNOLOGY

# PROFESSIONAL PANORAMA

(Double Blind Peer Reviewed Bi-Annual Journal)

Volume : 3

Issue : 1

January-June 2016

1. **Women Empowerment in Panchayati Raj Institutions**  
*Om Prakash Bairva*
2. **Receivables Management in FMCG Sector: A Study of Selected Companies**  
*Dr. Davendra Kumar Sharma*
3. **Growth of Retail Industry in Rajasthan**  
*Ravish Pandey*
4. **Rural Marketing in India: Prospects and Challenges**  
*Dr. Ragini Sharma*
5. **Changing Scenario of Indian Sanitary Ware Market**  
*Dr. Tripti Vijaywargia*
6. **M.G. Vassanji: A Comprehensive Study of Inter-Personal Relations among Women**  
*Dr. Neelima Pareek*
7. **Telecommunication Sector- A Prime Driver in Accelerating India's Economic Growth Communication**  
*Tanu Yadav and Dr. Jitendra Kumar Sharma*
8. **Foreign Direct Investment**  
*Dr. Neetu Mathur*
9. **Work Life Balance in Organisational Framework: A Conceptual Study**  
*Urvika Mathur and Dr. Tapasya Julka Malhotra*
10. **Customer Relationship Management in Banking Industry**  
*Dr. Sakshi Arora*
11. **Skill Building: The Need of the Hour**  
*Dr. Himanshu Shekhawat and Damyanti Sodha*
12. **Training and Development through E-Learning: A Case Study**  
*Amrita Bhardwaj and Dr. Kapil Dev Sharma*
13. **Working Capital Analysis in Rajasthan Financial Corporation**  
*Dr. Richa Singhal*
14. **Management Thinker Series**

**Professional Panorama**

**(An International Journal of Applied Management & Technology, Jaipur)**

**ISSN: 2349-6916**

**Double Blind Peer Reviewed Bi-annual Journal Volume 3, Issue 1 Jan-June 2016**

**Editor: Dr. Tapasya Julka Malhotra & Dr. Rita Jain**

**Advisory Board**

<p><b>Prof. Karunesh Saxena</b> Former Director FMS, Mohan Lal Sukhadia University, Udaipur</p>	<p><b>Praveen Kumar</b> Managing Director Supremus Group, New Delhi</p>
<p><b>Prof. Navin Mathur</b> Head, Deptt. of Business Administration University of Rajasthan, Jaipur</p>	<p><b>Prof. P.K.Gupta</b> Former Dean, Institute of Management Studies, Devi Ahilya Vishwavidalya, Indore</p>
<p><b>Prof. Neeran Gautam</b> Management Consultant &amp; Visiting Professor IMT Ghaziabad</p>	<p><b>Dr. Matauddin Peerzada</b> Social Activist Palej, Gujrat</p>
<p><b>Prof. Parimal H. Vyas</b> Vice-Chancellor, The Maharaja Sayajirao University of Baroda</p>	<p><b>Prof. Umesh Holani</b> Chairman &amp; Dean Faculty of Commerce, Jiwaji University, Gwalior</p>
<p><b>Parag Agarwal</b> Director- HLS, MitKat Advisory Services (P) Ltd, Guargaon</p>	<p><b>Viviana Salieri</b> Consultant for Lean &amp; Green Methodologies, Italy</p>

**Professional Panorama**

(An International Journal of Applied Management & Technology, Jaipur)

ISSN: 2349-6916

Double Blind Peer Reviewed International Journal, Volume 3, Issue 1, Jan, June 2016

<b>Review Board</b>		
<b>Prof. A.K. Saxena</b> Head, Dean & Director Institute of Management Studies, Bundelkhand University, Jhansi	<b>Abhinav Kumar Shrivastava</b> Security Consultant, Paramount Computer System UAE	<b>Atin Amit</b> Director, Technology Services Intelegencia, Gaziabad
<b>Prof. A. K. Sarkar</b> Head and Dean Faculty of Management MJP Rohilkhand University, Bareilly	<b>Prof. Harsh Dwivedi</b> Dean, Faculty of Management Studies University of Rajasthan, Jaipur	<b>Prof. J.S. Panwar</b> Former Dean & Director, Faculty of Management, Sardar Patel University, V.V. Nagar, Gujarat
<b>Prof. R.C. Mishra</b> Director, School of Management Studies & Commerce, Uttarakhand Open University, Haldwani	<b>CS Dr. Renu Choudhary</b> Associate Professor Xcellon Institute, Ahmedabad	<b>Ripudaman Magon</b> Director Natural Support Consultancy Services Pvt. Ltd. Jaipur
<b>Prof. R.P. Maheshwari</b> Associate Professor, Ramanujan College University of Delhi, New Delhi	<b>Sameer Dua</b> Founder Director The Institute for Generative Leadership, Pune	<b>Dr. Shalini Talwar</b> K.J. Somaiya Institute of Management Studies & Research, Mumbai
<b>Sushil Behl</b> General Manager Sure Safety (India) Pvt. Ltd. Vadodra	<b>Prof. V.K. Singh</b> Head & Dean Dept. of Management Studies Guru Kangdi University, Hardwar	<b>Dr. V. Aditya Srinivas</b> Chief Operating Officer & Chief Economist Bombay Stock Exchange Brokers' Forum, Mumbai
<b>Vishesh Jain</b> Analytics Specialist Goldman Sachs, Bengaluru		

## Training and Development through E-Learning: A Case Study

Amrita Bhardwaj\*  
Dr. Kapil Dev Sharma\*\*

### **Abstract**

*For an organisation human resource is an altogether important asset. Skills and knowledge of people are the driving force of growth and social development. Training and Development ensure that employees may develop competencies and maximise their potential. The major factor hindering employees training are time and budget. The emerging trends in technologies require development of new skills and knowledge so as to meet the emerging challenges. Therefore, companies are nowadays focusing on advanced and effective training methods to train and develop their people. E-learning is becoming a dominant tool that is widely used in organisations worldwide for the purpose of employee training. This case study identifies the use of E-learning for training and development processes within the organisations being studied.*

**Keywords-** *E-learning, E-learning components, Corporate E-Learning, E-learning strategy, Evaluating E-learning.*

### **Introduction**

In recent years, E-learning has become an increasingly popular tool for imparting training within organisations. E-learning is a structured electronic form of learning. It can be categorised into two forms: synchronous and asynchronous. Synchronous e-learning occurs in real time with participants actively communicating with each other conducting through online chat and videoconferencing. Coursework and

---

\* *Research Scholar, Faculty of Commerce and Management Studies, University of Kota, Kota*

\*\* *Vice Principal, Government Commerce College, Kota*

communications via e-mail, blogs and forums are some examples of asynchronous e-learning. The combination of synchronous and asynchronous e-learning allows employees to benefit from the different delivery formats regardless of their schedules or preferred learning methods.

E-learning is evolving at a very fast speed and transforming the way organisations are delivering learning and advanced knowledge to their employees. It has provided flexible access to content and instruction at any time, from any place. E-learning in the organisation has evolved rapidly over the past 10 years. In particular, E-Learning has assisted the emergence of new learning and development practices.

Many large organisations are moving to E-learning to increase access to training and decrease their costs. The benefits of e-learning are very much obvious. Training needs exceed traditional training resources. Cost savings, less time away from work, just-in-time training, and individualised lessons are just a few of the advantages of e-learning (Berge, 2000).

With E-learning, now organisations can increase the productivity of employees and optimise their working hours as it allows anytime, anywhere accessibility to training courses. It also facilitates organisations to quickly provide training to employees when there are new product launches. Thus this enables employees to assist the customers in a more effective manner and to generate more sales for organisations. Following are the pros and cons of e-learning:

**Pros:**

- E-learning is accessible '24/h 7'd in a week and all over the year.
- It helps us to intelligently track the areas that need special attention.
- It is a 360 degree learning process in the sense that, training can constitute of multiple resources of different types facilitates flexibility and self-paced learning.

**Professional Panorama: An International Journal of Management & Technology**

- It allows the company to offer personalised training that is up to date and in line with the requirements of the company with the help of videos, audios, texts, websites, applications, etc.
- An E-learning solution efficiently uses resources to train multiple people at a given time.

**Cons:**

- The costs to develop content and establish an E-learning infrastructure can be very significant.
- The content must match the medium. Complex issues that require hands on learning process may not fit the model.
- Remote areas with limited bandwidth may not be able to realise the benefits of E-learning.
- E-learning limits personal interaction and social cues.

The study conducted by Geetha K. Joshi, Venkata Subrahmanyam & Sandhya Anvekar (2014) concluded that E-learning controls costs, enhances quality of work, suits to geographically scattered employees, provide more consistent course delivery and render more individual instruction and attention to the employees by modernising the workforce.

**Factors Influencing e-Learning**

- Economic Factors: Convenient time duration, flexible training time and lesser cost.
- Environmental: Motivation, guidance and support.
- Individual: Gender, age, occupation, attitude and computer proficiency.
- Organisational: Participation of employees, synchronisation across departments.
- Technological: Computer availability and internet accessibility.

### **E-Learning Practices in Covered Undertakings**

E-learning can empower employees and allow them to take ample amount of training to gain mastery over concepts. It also allows training at one's own pace and comfort, without worrying about attending any training session at a particular time and place. E-learning is being used by organisations as a means of communicating, training, and enhancing employee value. To uncover the role of E-learning to impart training, the real life experience of companies / businesses is given here under:

### **TRU Group of Companies**

TRU Group is known for its customer-oriented approach with focus on impeccable standards of operational excellence in consulting, design, project management, implementation and quality, to create tailor-made solutions to meet its clients' expectations. With an extensive network spread in India and Dubai TRU Group is the premier service provider to all IT solutions with expertise in different domains like:

- Business applications & information service
- Consulting and implementation
- Wide area network
- Development & Internet Technology

The company has partnered with cutting edge product Companies: RAMCO, 3i InfoTech, Sage, SAP, PC Soft, QUADRA, and MAIA one Key so as to provide for the evolving needs of its clients and solve the ever changing challenges faced by the IT industry.

TRU Information & Systems Ltd.: It is an Internet communication and networking product and services company having partners e.g. Sify Communications, Reliance Communications, Hughes Communications, Cisco, IBM, Microsoft, and Citrix. The company provides services to enable customers to use all products related to wireless equipment implementation and support.

**Professional Panorama: An International Journal of Management & Technology**

TRU Care Consultants Ltd is a professional IT consulting firm, providing customers with flexible, rapidly deployed ERP, BI, SCM, CRM solutions. The differentiating factor is its in-depth technical, project management and problem-solving skills that enable the company to provide high-value solutions and rapid return on investment. It provides enterprise solutions to end customers which include:

- Business study
- GAP analysis
- Selection of a suitable business app
- Implementation
- End user training
- Post implementation support and AMC
- Development / customisation of business specific processes.

TRU Technologies LLC is a global presence of TRU Group based in Dubai UAE. It has partnered with 3i-Infotech Ltd. Middle East for business solutions like Orion ERP. TRU Tech is a recognised player in offering solutions for mission-critical, high transaction processing environments to all Verticals in the industry.

TRU Business Solutions Pvt. Ltd. (BSPL) is in the business of aligning solutions to client goals. It is catering in the areas given below:

- Goal definition & strategy mapping
- Business strategy design
- Designing monitoring matrix
- Visual analytics & dashboard building
- Business consulting
- Industry specific business solutions

**Professional Panorama: An International Journal of Management & Technology**

- Horizontal solutions - ERP, CRM, BI, DMS, HR, SFA, POS, Payroll, AR/AP etc.

This study describes how training and development has been an integral part of TRU Group culture. It explains in detail the initiatives taken by the TRU Group for employee training and development and examines how these initiatives have benefited in improving employees' productivity, performance and quality of work.

TRU group's presales team provides all the necessary support to the sales team. It is primarily engaged in identifying the technical and business requirements of the customers, prior to designing a solution, consulting with technical teams about capabilities, and supporting business sales teams, account managers and partners in proposal activities.

Pre-sales support activities undertaken by TRU: The pre-sales team conducts in-depth research to understand the potential areas and identify the list of prospects that may need the organisation's products or services. The business requirements of clients are validated and mapped with the organisation's offerings. A presentation of offerings in accordance with the business requirements gathered during the qualification stage is prepared and demonstrated.

The Pre-sales Technical Specialist program is specially designed for company's pre-sales team to help them close leads. To facilitate this, Class Room Sessions to train the Pre-Sales team is held on all Saturdays.

Modules Covered: The E-learning systems are integrated with e-content and e-management, where learning styles and preferences are combined with varying media and delivery systems to create an effective virtual experience. This includes:

- Understanding the client - pattern in vertical / horizontal (Programming / Platform) / Technology Architecture / Solution
- Pattern match of the client's Domain / behavioural expectations

**Professional Panorama: An International Journal of Management & Technology**

- Project briefing: Introduction to Platforms / Architectures / Technologies.

The Sales team focuses primarily on closing deals. The Sales team designs the solutions, makes corporate presentations for corporate clients and takes orders.

The Project Team primarily studies the project in detail and verifies it. Client verification is carried out and meetings with end users are conducted to discuss the mapping criteria, mapping requirement and Score card. Business mapping requirement (BMR) document is prepared accordingly.

Infrastructure and Implementation team sets up various data centers as per the client's need. Virtual Private Networks (VPN), Disaster Recovery Site (DRS) are set up at Primary and Secondary Sites. Business Intelligence(BI) is used for MIS reporting whereas; business dashboards are designed using HTML and Excel. Global products like RAMCO (for ERP and Magna), EPICOR, 3I Info Tech ORION, software solutions with built-in CRM, SCM, finance, and HR capabilities—are provided to organisations to smoothly integrate disparate teams, functions, processes and systems.

Training and development of implementation team plays a very significant role because the products / services are often heavily customisable and the requirements from client(s) are very unique. Training is done to prepare collaterals, case studies, and presentations. The Pre-sales team must know the functionality of the product and the business processes of the industry. For example, EPICOR deals in discrete manufacturing and RAMCOR deals in both Discrete and Process manufacturing. EPICOR products are mostly used by manufacturing companies. The TRU group employees login at partner portals (EPICOR and RAMCOR) and access different learning modules.

Five years back, the TRU group followed class room training which led to many hurdles such as physical presentation, dispersed geographical locations. Cost to company was high while training was imparted to those employees only who were involved in the US and France based projects. Training was dependent on a number of participants and absenteeism of instructor or participants were inhibiting factors. However E-learning provided flexibility and the schedule of training was distributed amongst the participants much before the commencement of the training.

**Learning process:** The E-Learning process in above stated organisations comprise of the following steps:

- Nomination of employee, as per the type of training (Specific or general), employees are nominated for various modules
- Requirement gathering and schedule making
- Selection of domain experts
- Design of training modules
- Scheduling and sharing of training calendar
- Informing employees two weeks ahead on the type of training to be attended.
- Type of Training Modules:
  - General product training for new releases;
  - Product upgrade updates;
  - Module Specific- for production, taxation, aimed for functional consultants.

Challenges faced with this model of training are:

- Time zone (country specific) - trainer is in one zone and participants are in different time zones.
- Live training and language problem- Chinese instructors giving product training.

**Professional Panorama: An International Journal of Management & Technology**

- People sometimes miss training schedules(due to non-availability, customer visits, vacations), other priorities supersedes the training requirements.
- Less active participation as compared to class room training.

**Issues:** To make E-Learning effective attention may be given on the following issues:

- Understand the training and development initiatives.
- Trainees' engagement must be considered as vital issue to be addressed.
- Understand the issues which constitute a learning organisation.
- Understand the limitations of training and development initiatives in driving change.

TRU group recognised that E-learning is essential as the management realised that product cycles, competitive intelligence, industry information and corporate strategies are evolving at a much faster speed and the only way to enhance their employee knowledge is through online learning. Electronic delivery does not only mean reducing cost but increasing effectiveness, in terms of improving the way the organisation does business. Apart from this, online training is also preferred because of its cost-effectiveness. One of the biggest differences between online training and traditional modes of training is that the delivery cost of the former is very low. TRU Group has outsourced its training activities in an effort to take advantage of E-learning training and also to reduce the cost. E-Learning has helped the group tremendously. Cost of training has gone down, flexibility in attending training is given, queries are answered fast and each training program have been documented. Through E-learning certification processes becomes faster; and employee's motivation have been enhanced.

**Blend of Classroom Training and E-learning**

To reap the benefits through human development the group is using both modes of training in a judicious fashion. For example sales skill set training is lacking in current scenario, where real life case studies and experiences to be shared. For this trainer impact will be high. Online training is not about replacing human-taught courses with online self-directed content or computers are replacing human contact, instead the issue is how to blend the two or when to implement a human touch within the online course. Question is how can organisations integrate collaborative opportunities and live mentoring with rich internet resource. The shift should be towards a “blended” or “integrated” approach to online training.

Earlier the group was utilising only classroom training however at later stages RAMCOR started their own E-Learning training modules. Recently, RAMCOR initiated three days training module and the last two days are devoted to class room interactions. Under the module trainer presentations are easily available, shared and accessible as per convenience of the learner.

**Learning experience with EPICOR- Global Prospective**

Problem Faced- Excessive Training leads to Iteration. Client utilises the employee first and post taking the certification, the employee switches company. They attend training but do not go for certification whereas; some clients need certified people to handle their projects.

Any organisation planning to implement online training should access five critical online training success factors as detailed by Teri Anderson:

- Assessing or evaluating corporate culture and readiness for online learning
- Specific content and programs
- Internal capabilities or infrastructure
- Cost options of the initiative

- Targeted clients or employees.

TRU Group had planned to implement a new ERP system for customers at Pune. The project was ambitious with tight timeframes and the implementation team training had to be in line with the demands of the undertaking.

Challenges faced by the implementation team were:

- A huge number of staff was to be trained in various functions core to the business functioning (12+ staff on one site) in different modules.
- A fundamental mindset change by local staff was required who were deployed on site and had worked on a different ERP product.
- No dedicated Training resources were available. Staff doing the change of system had to take time away from the project to train staff on-site and remotely. The majority of go-live team was based in Pune.
- TRU needed a system which allowed their staff to take on a self-training approach which didn't allow key staff who was busy with the change and needed time to complete the core business requirements.

#### **Solution**

- Epicor's custom-produced digital multimedia and eLearning courseware offered the power of real-world simulation and interactivity, plus built-in tracking of training results.
- Epicor's E-learning solution allowed TRU group staff to give time to go through training in a staggered pattern removing the requirement for additional staffing hours. The E-learning solution and quick reference cards allowed staff a chance to "refresh" their knowledge on 'go-live' and reduced the number of 'How do I' type requests.
- The cloud-based platform provided by Epicor offered end-to-end training solutions to TRU group- employees, partners and customers. A customisable library of effective, multimedia lessons was developed.
- The database provided a simple way to schedule and record training.

### Results

- The online training solution was highly effective. The self-learning module developed enabled staff to learn the new system on their own time and pace. The eLearning solution allowed staff to refresh their knowledge when needed during 'go-live'. Employees continued to complete their core business requirements while learning the new system without requiring additional staffing hours.
- Continued function using old system during migration to the new system minimised impact. TRU was able to accelerate the implementation of the major ERP change in a large manufacturing business in six months.
- With the use of E-learning solutions, the company was able to seamlessly integrate their people, processes, applications, and data. This enabled the organisation to automate and streamline its operations and support business growth.
- TRU group was able to easily manage learning solutions that produced real performance enhancement and, in turn, gave boost to company business.

TRU Group of Companies implemented different E-learning programs (learn-at-your-own-pace) of employee development and delivery of effective, cost-efficient online training for different groups, based on their requirements.

The self-paced E-learning training empowered workforce and increased productivity with tailor-made solution for employees. E-learning programs improved the efficiency and increased motivational level of a large number of staff across different locations. The company was able to easily monitor individual employee learning and progress.

### Conclusion

E-learning in corporate training has become increasingly popular worldwide and plays a crucial part in the training and development

process of many big organisations. Skilled and knowledgeable employees are the real assets of a company. E-learning provides the impetus for improving consistent quality of training which in turn is instrumental in increasing the knowledge and skill levels of employees. More and more companies around the globe prefer E - learning as their chosen training format.

Many organisations are already deriving huge benefits from E-learning. E-learning's evolution is leading training and development and HR professionals to re-evaluate its potential as an efficient, flexible and cost-effective method to deliver quality learning and development opportunities to employees. E-learning has revolutionised training through various mediums such as video conferencing, interaction, creative story lines and exercises developed by recognised subject matter experts (Avalon Consulting, 2008).

Recent findings from various case studies indicate that E-learning dimension provides greater speed and flexibility for the learner. This also indicates that the training can be tailored to be least disruptive to a firm's work schedules and there is less time "off-the-job". This will eventually lead to a decline of classroom-based events and corresponding increase of technology-based training. A blended approach, incorporating E-learning with traditional formats of training has already been identified as the correct way to proceed. It is believed that in the next few years there will be a steady, but notable, increase in use of E-learning for enhancing and expanding traditional training methods in the organisation programmes.

### **References**

1. Allen, M., Mabry, E., Mattrey, M., Bourhis, J., Titsworth, S., & Burnell, N. (2004), Evaluating the Effectiveness of Distance Learning: A Comparison Using Meta-analysis, *Journal of Communication*.

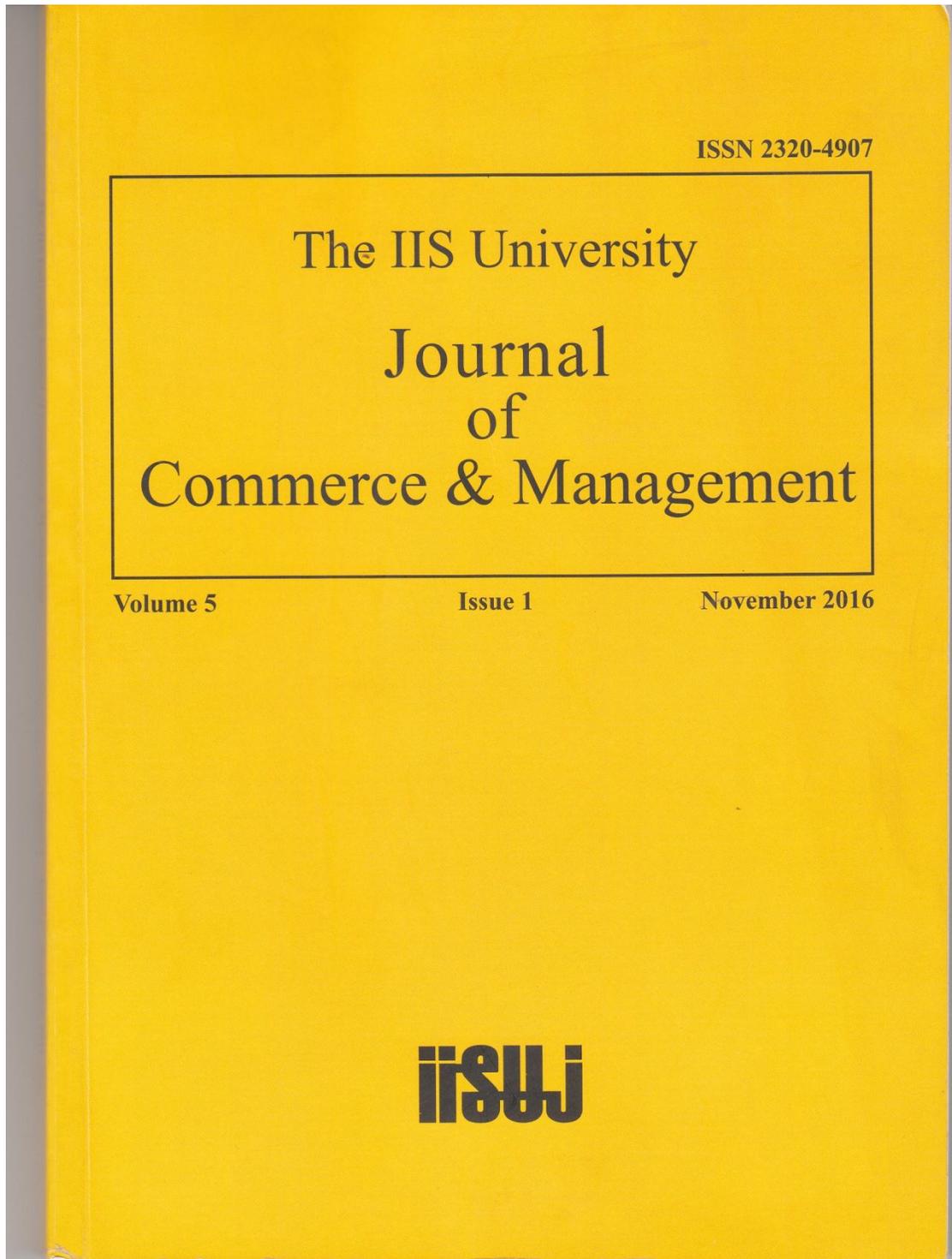
---

**Professional Panorama: An International Journal of Management & Technology**

2. Brown, K.G., & Charlie. S.D (2013), An Integrative Model of E-learning Use: Leveraging Theory to Understand and Increase Usage, *Human Resource Management Review*, 23, 37-49.
3. Clark, R. C., & Mayer, R. E. (2008), *E-learning and The Science of Instruction*, USA: John Willey & Sons.
4. Monika, C (2013), Analysis of Perceptions of Conventional and E-Learning Education in Corporate Training, *Journal of Competitiveness*, 5(4), 73-97, available at [www.dx.doi.org](http://www.dx.doi.org)
5. Rakesh. H.M. (2014), Contextual Factors in using E-Learning Systems for Higher Education in India, *IOSR Journal of Business and Management*, 16 (2).
6. Vargas, N., & Tian, X. (2013), E-Learning: Much More than a Matter of Technology, *International Journal of e-Education, e-Business, e-Management and e-Learning*, 3(3), 277, available at <http://dx.doi.org>.
7. Ying Chieh Liu, Yu-A Huang, & Chad Lin. (2012), Organisational Factors' Effects on the Success of E-Learning Systems and Organisational Benefits: An Empirical Study in Taiwan, 13(4).
8. Alavi, M., & Leidner, D. E. (2001), Technology-mediated Learning-A Call for Greater Depth and Breadth of Research, *Information Systems Research*, 12 (1), 1-10.
9. Cheng, K. W. (2007), The Curriculum Design in Universities from the Perspective of Providers in Accounting Education, *Education*, 127(4), 581-590.
10. Chou, B. R. (2001), Dilemma in E-learning: Knowledge or Skills are More Important? *Management Magazine*, 324, 158-161.
11. Chung, R. G., & Yang, P. W. (2006), To Develop the Evaluation Indicators for Effectiveness of Corporate E-Learning, *Journal of Human Resource Management*, 6(1), 12 3-140.
12. Kirkpatrick, D. L. (1959), Techniques for Evaluating Training Programs, *Journal of the American Society for Training and Development*, 13(11), 3-9.

**Professional Panorama: An International Journal of Management & Technology**

13. Kirkpatrick, D. L. (1976), Evaluation of Training in R. L. Craig (Ed.), *Training and Development Handbook: A Guide to Human Resource Development*, 2<sup>nd</sup> ed. New York: McGraw-Hill.
14. Kulik, C. C., &Kulik, J. A. (1991), Effectiveness of Computer-based Instruction: An Updated Analysis, *Computers in Human Behaviour*, 7: 75-94.
15. Selix, G. (2001), Improving Blended Learning, *E-learning*, 2:48.



**The IIS University Journal of Commerce & Management**

(A double blind, refereed journal)

ISSN 2320-4907

**The IIS University**

Gurukul Marg, SFS, Mansarovar, Jaipur 302020, India

Website: [www.iisuniv.ac.in](http://www.iisuniv.ac.in) • [www.iisjcm.org](http://www.iisjcm.org)

Email: [jcm@iisuniv.ac.in](mailto:jcm@iisuniv.ac.in)

**Editors-in-Chief:**

M.K. Sharma

Subhash Garg

**Editorial Advisory Board:** Atul Mitra, Iowa, US

Lee Sang No, South Korea

Kim Seung Woon, South Korea

Purshotam Rao, Hyderabad

Parimal H. Vyas, Vadodara

Balwinder Singh, Amritsar

M. Ramchandra Gowda, Bangaluru

K.S. Sharma, Jaipur

Raakhi Gupta, Jaipur

**Editorial Committee:**

Ankita Jain, Convenor

Roopam Kothari

Mahima Rai

Aditi R. Khandelwal

**Publication Support**

Ritesh Mandawara

**Aim and Scope**

The IIS University Journal of Commerce & Management, published by the The IIS University, provides a forum for an in-depth analysis of problems related to various disciplines in trade, commerce, business and management practices and also encourages scholarly dialogue on a broad range of topics within these disciplines: General Management, Human Resource Management, Marketing, Finance, International Business, Information Technology, and Emerging Paradigms in Commerce & Management. The journal encourages articles focusing on theoretical, applied and inter-disciplinary research that are accessible to a wider group of scholars. It also publishes Research Articles, Review Articles, General Articles, Case Studies and Book Reviews.

**Copyright**

Copyright rests with the authors of the respective papers, who alone are responsible for the contents and views expressed.

ISSN 2320-4907

The IIS University  
Journal  
of  
Commerce & Management

Volume 5

Issue 1

November 2016

**iisuj**

Contents	Page
<b>Customers' Attitude towards Innovative Banking Services with Special Reference to Berhampur Town</b> <i>Gouri Sankar Lall</i>	1-11
<b>Institutional Innovations and Development of Markets for Agricultural Services : A Case of Agri Clinic and Agri Business Centers (AC &amp; ABC) Scheme in India</b> <i>P Kanaka Durga</i>	12-21
<b>Perceptions and Preferences of Consumers regarding Cement Brands in South Rajasthan</b> <i>Rajeev Jain, Shilpi Choudhary</i>	22-31
<b>Green Consumerism: The Need of the Hour</b> <i>Samridhi Tanwar</i>	32-40
<b>CSR Affects the Stock Market Investors' Attitude for Investing: A Study on Berhampur Town</b> <i>Shantanu Das, Ashok K Mohanty</i>	41-55
<b>E-learning in Indian Power Sector: A Study of KEC International Limited</b> <i>Kapil Dev Sharma, Amrita Bhardwaj</i>	56-65
<b>Impact of CSR Practices on Consumer Buying Behaviour</b> <i>Ruchi Jain, Tanya Kailey</i>	66-76
<b>An Insight into Sandalwood &amp; Medicinal Plant Cultivation as a Potential Entrepreneurial Project</b> <i>Joyjit Sanyal, Sujit Sikidar</i>	77-84
<b>Vital role of ICT in Financial Inclusion: An embodying opportunity for India</b> <i>Asha Mamraj Sharma</i>	85-95
<b>A Study of Financial Inclusion In India-Implementing Agencies and Stakeholders In Rajasthan</b> <i>Meenakshi Sharma, Mehak Gulati</i>	96-113

## Contributors

**Amrita Bhardwaj**, Research Scholar, Faculty of Commerce and Mgt Studies, University of Kota, Kota  
amrita78bhardwaj@gmail.com

**Asha Mamraj Sharma**, Assistant Professor, Amity Business School, Amity University, Rajasthan  
asha82\_ms@yahoo.co.in

**Ashok K Mohanty**, Head, PG Department of Commerce, Behrampur University, Odisha  
profashokmohanty@gmail.com

**Gouri Sankar Lall**, Reader, P.G. Department of Commerce, Behrampur University, Dist.- Ganjam, Odisha-  
760007  
gourilall@gmail.com

**Joyjit Sanyal**, Assistant Professor, Department of Commerce Assam University Diphu Campus, Assam  
joyjit50@gmail.com

**Kapil Dev Sharma**, Vice Principal, Government Commerce College, Kota  
Sharmakapil0826@gmail.com

**Meenakshi Sharma**, Sr. Asst. Prof., Department of Financial Studies, The IIS University, Jaipur  
meenakshi.sharma@iisuniv.ac.in

**Mehak Gulati**, Research Scholar, Department of Commerce, The IIS University, Jaipur  
gulatimehak@yahoo.co.in

**P Kanaka Durga**, Project Manager, MANAGE, Hyderabad- 500030  
kanakad@manage.gov.in

**Rajeev Jain**, Head, Department of Commerce and Management, University of Kota, Kota  
rajeevjain@uok.ac.in

**Ruchi Jain**, Sr. Asst. Prof., Department of Business Studies, The IIS University Jaipur  
ruchi.jain17@iisuniv.ac.in

**Samridhi Tanwar**, Faculty, The Technological Institute of Textiles & Science, Bhiwani, Haryana  
samridhi.tanwar@gmail.com

**Shantanu Das**, Kalam Institute of Technology (KIT), Behrampur University, Odisha  
shantanu.das.kumar@gmail.com

**Shilpi Choudhary**, Faculty, Pacific University, Udaipur

**Sujit Sikidar**, Professor, Department of Commerce, Gauhati University, Assam  
sujit.sikidar@gmail.com

**Tanya Kailay**, Research Scholar, Department of Commerce, The IIS University, Jaipur  
1992tanya22@gmail.com

## **E-learning in Indian Power Sector: A Study of KEC International Limited**

**Kapil Dev Sharma, Amrita Bhardwaj**

### **Abstract**

KEC International Ltd. is a global organization engaged in Infrastructure, Procurement and Construction. Their key areas of operation is into Power Transmission, Power systems, Cables with Railways, Telecom and Water to manage and operate their highly diversified enterprise. The company employs more than 5000 people worldwide, therefore, training and retraining these employees scattered in a very wide and different terrain is a demanding task. Presence of the company across the countries and location is a big challenge for the company.

At KEC employees are rated as the most valuable asset and reserve to meet the challenges posed by the operations of the company in a highly charged and fiercely competitive industry.

The company has adopted E-learning in a big way to keep the competition at a bay through well-educated and trained workforce and E-learning has been chosen as a best bet because the people working in power sector are facing a problem of continuous up-gradation of knowledge.

Since the functions in power market are very complex, Energy Management System is mostly used as optimization tool and new features are added to this system, hence, a good and continuous retraining through E-learning is being practiced in the company.

In the power sector all over the world E-learning is the utmost trusted and practical tool. However in India E-learning is yet to travel long miles.

While doing the study in an Indian power industry it has been observed that the training and education aspects have assumed a very significant and crucial role in the power market perspective.

While the study was being made, both technical and non-technical aspect of the employee have been approached and the study has analyzed several areas of E-learning and a contemporize position of corporate E-learning at KEC India Ltd. in particular has been observed. The study reviews the tropical challenges faced by the case company and tries to present the future of E-learning in the power industry domain.

**Keywords:** power market, power industry, energy management process, corporate eLearning

**Introduction**

The advancement of technology along-with social transformation all over business and industry training has gained great importance. Power sector has made training a regular feature right from induction, during the job process and also to increase competencies of their staff. The induction level training is important as the bridge the gap between academics and application of knowledge regarding equipment and processes. Trained manpower is required at practically all the aspects of the industry such as; planning, designing, material handling and storage, production process, maintenance of equipment, distribution management etc. Skill development or skilled manpower is the requirement of the day due to global competition, sophistication and advanced technological development. The regular updating of skill overcomes technological advancement woes by grasping and implementing latest process technology with confidence and perfection. To survive and excel in this competitive world, organizations have to focus on learning to enhance knowledge, skills and attitudes of the staff in all the processes.

Power sector organizations rely heavily on instructor-led training (ILT). Computers and video / audio tapes are used to supplement the various modes of traditional learning. The popularity of E-learning is gaining day by day in India but the adoption of this practice in learning and development is still at a very basic stage as compared to conventional methods of training and also in comparison to other countries such as US and UK. ICT based learning with talent development has already made inroads in the Indian Industry scenario. Power sector has also made significant progress. Audio-visual resources and on the job training has a major contribution towards external conferences, events, workshops and classroom based trainings in India. E-learning has provided tons of organized information at one's ease and convenience as against long-drawn out classroom sessions.

E-learning has proved to be an asset for most of the functional employees in power sector employees as they face challenges of continuous learning process.

Since the tool for optimization is Energy Management Systems (EMSs) is followed by several on-line application functions, such as, RPG Virtual Gurukul and 360 transform encompasses and is versatile with hardware and software tools to handle the organizational and information structures of an organization and upgrade employees' knowledge on the functional area. The complexities of the power market and with regular additions of new features require the users to use specialized systems ensuring the best performance with minimum risk. With higher value trade volumes, continuous trainings and refresher kits learning play an important role. The added value of E-learning has been experienced by the companies thus making its employees to undertake continuous learning without incurring heavy travel cost and time from work.

The importance of the role of training in power business is highlighted because of the following reasons:

- a) The very high financial business rise

- b) The very intense competition
- c) Continuous value addition through quality training refresher updates and professionally developed courses to the entire team equips the organization towards competitive gains.
- d) The evaluation process under E-learning is instant through virtual sharing under real-time business activities.

Since the business uses the Energy Management Systems form a platform to connect various trade partners in optimizing calculations and communications and the power systems 360 transform creates and defines requirements for the kind of training required. Various software applications are used to assess, evaluate, create and define the training content.

The study evaluates E-learning position in KEC- the power giant. In this paper an analysis has been made by comparing the perceived quality, effectiveness and efficiency of E-learning and the conventional training.

Scope and limitations of the study

The study is aimed to find review evaluate the role of E-learning as a major tool especially under EMS for its trade actions in power production and procurement companies. The company implemented E-learning courses into its refresher and training program and subsequently experienced radical effect in reducing the training costs accompanied by enhanced performance resulting from employees' practice. The study aimed to find out success of training and development courses on the employees at KEC Ltd.

The study has certain limitations:

- Scarcity of resources and time
- This research was intended to use the questionnaire to gather important data from the respondents instead of personal interactions.
- There are also different indicators of employee's performance which are not centered in this study because of time constraint.

### **Literature Review**

No previous studies have been found on E-learning in the Indian power industries. However, a study in the Nordic power market known as Nord Pool titled "Corporate E-learning Position in Finnish Energy Business - Power Market Perspective" (Juha P. Lahti and Taminee Shinasharke) has been found. Articles and research papers were collected from university and general research databases available online, with the keywords for exploration as "E-learning success in India", "E-learning effectiveness models" and "Corporate e-learning".

However, the rational and technical characteristics can be obtained through general E-learning literature.

### **E-learning-Corporate views**

According to Urdan and Weggen (2000), "E-learning is a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, and digital collaboration." E-learning can be considered including transferring and distributing content via all electronic media e.g.: Internet, intranets, audio/video tape, interactive TV, and CD-ROM, Pen drives etc. Majority of information and content for all the technology delivered training is currently available on LMS and CDs, followed by online training via organization's intranet.

E-learning has been observed to be highly popular in all areas of corporate being an effective training process is fast replacing the conventional methods considering its economic benefits apart for its sophisticated learner centric synchronous learning environment.

Globalization has given manifold challenges to organization through cut-throat competition, thus compelling organizations to explore new techniques and methods to bridge the gap between skilled and unskilled labor. The ever increasing research and development has increased the complexity and speed of work in organizations thus creating a bigger gap in performing skills.

Corporate E-learning process has given a boost and has promised tremendous growth to the education industry.

The economic value assessment of ICT based Education industry is approximately 15 billion Dollars. Thus the outcome shows the importance of this study in contrast with the contemporary position of E-learning and noteworthy scale in the latitude of this study.

Below mentioned topics are reviewed and evaluated as a result of study analyze and synthesis:

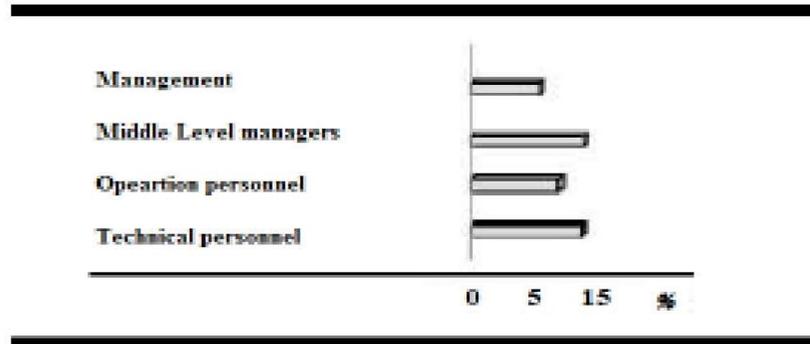
- E-learning status in KEC Ltd
- E-learning readiness
- Risk evaluation of E-learning in comparison to conventional learning methods
- E-learning system used in KEC Ltd.
- Suggested Strategies

### **E-Learning status in KEC Ltd**

This study was initiated through the feedback of a survey conducted with reference to the conventional training/learning methods vis-à-vis E-Learning.

The results of the study indicates that the company uses only 7 per cent of E-learning module in the total trainings. Figure 1 presents average estimations as to what percentage of training done under E-learning module as against the total training performed in the company in its various divisions.

The study predicted E-learning does not currently enjoy the position of a highlighted strategic area in the Indian Energy companies of India. The variation in various participants self-estimation in various divisions varied just about 10% and since the data being very small min/max findings are small.



**Figure 1 represents Participants’ estimated percentages E-learning as against total learning**

The budget estimates towards E-learning as per the self-estimation justifies the above observation.

**E-Learning readiness**

As a part of the research, study conducted to find out the acceptance level of individuals in the specified field. It showed slightly more positive acceptance levels than the average. Amongst the complex constructs developed by many scholars to measure E-learning acceptance in the organizations, user satisfaction is the most commonly used parameter in evaluating the effectiveness of E-learning. According to D&M IS model the direct antecedent of E-learning impact on individual performance is based on System quality, information quality and system use.

**Evaluating risks of E-learning compared to conventional learning**

Majority, of all the interviewed strategic decision makers’ feel that the conventional learning process is less risky to the core business as compared to E-Learning. The reason is judged to be the quality of content and delivery. Due to quality reasons E-learning is not considered as a trusted alternative, as under risk managing policies companies prefer human checkpoints at various stages of operations. Earlier on, the traditional classroom training was considered to be the lion’s share of corporate training. Eventually, learning has moved towards technology-driven content delivery. Costing, flexibility, convenience, quality and accessibility. The key factors of E-learning, contributes to the extensive deployment of the modern day delivery medium among companies worldwide.

### **Methodology**

Under Random Sampling method Primary data was collected through questionnaire from the employees. Secondary data was collected from company's in house magazines, handouts, website and annual reports

### **Sample Size**

The sample size used for the study was 100 respondents, out of it 68 were Male respondents and 32 were Female respondents of KEC, Mumbai.

The aim of this study is to determine assess and review the present area and the approach from both qualitative and quantitative viewpoint. Observational parts of the business side are highlighted.

This study was done in the business environment of some particular power markets in India and neighboring countries. The research was conducted by interviewing the organizations top management personnel, operative personnel and the experts behind the technical solutions and the trainers.

During the study, company's existing E-learning platforms and material were also reviewed. This was done with the point of gaining up a superior picture of background knowledge of the specialized E-learning tools used in the field of study.

Results have been frames through analysis and synthesis the management and personnel responsible for training and the technical experts working on the E-learning platforms. Results have been assigned to differentmodules for the better understanding of company's personnel perspectives.

### **Research Focus and Analysis**

The study focused to evaluate and interview the company's CEO, CTO and middle level personnel of KEC ltd.

All personnel of the management, technical personnel, middle managers and operational personnel were contacted and it was found that the operative personnel were more inclined to E-learning than the middle level management personnel.

### **Outcomes**

The evaluation and review conducted as a result of the study synthesis and analysis considering the following aspects.

- a. E-learning position in the case company
- b. E-learning acceptance
- c. Evaluating risks of E-learning as compared to traditional learning
- d. E-learning platform in case company

**a. E-learning position in the case company**

The study shows a good start and interest by the company towards E-learning but data shows that the E-learning has been chosen as a highlighted strategic area to meet the challenges of the competition. It has been observed that the young employees are more enthused and interested in E-learning than the middle aged personnel.

The table 1 shows the Gender ratio amongst the total no of respondents. Thus the ratio being 68 per cent and 32 per cent between Males and females.

**Table 1. Respondents in Terms of Gender**

Gender	No. of Respondents	%
<i>Male</i>	68	68
<i>Female</i>	32	32
<i>Total</i>	100	100

Source: Primary data

**b. E-learning acceptance**

The study has tried to establish as to how well the E-learning has been accepted in the specified field. The research shows participants perception towards acceptance level of E-learning.

**Table 2. Respondents Attended the Training**

Particular	No. of Respondents	%
<i>Yes</i>	100	100
<i>No</i>	0	0
<i>Total</i>	100	100

Source: Primary data

The below table 3 shows that 74 per cent of the total respondents were very clear of the purpose of training and the remaining were not clear.

**Table 3: Clarity about Training Objectives**

Particular	No. of Respondents	%
<i>Yes</i>	74	74
<i>No</i>	26	26
<i>Total</i>	100	100

Source: Primary data

**c. Evaluating risks of E-learning as compared to traditional learning**

All the strategic decision makers feel that the traditional learning has lesser risk to the core business than E-learning due to quality reasons. As most of them

believe that E-learning may not dependable for big financial transactions. There are more chances of human errors.

According to the interviewed groups, E-learning has increased the likelihood of risks as compared to traditional training. However, the manpower group feels that E-learning has augmented the core business risk for various reasons.

Important reason is a seen E-learning limits itself to:

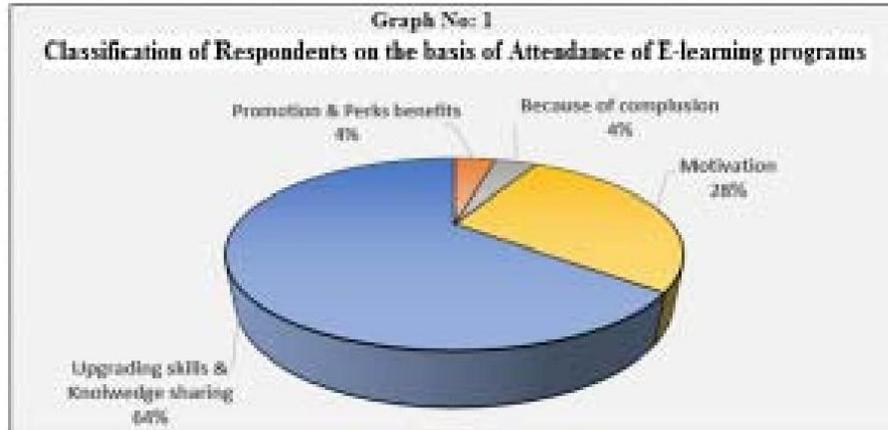
- Quality of interaction
- Scope of Natural discussions
- Limitations in two-way Communication (e.g. by limiting nonverbal communication)

**d. E-learning system used in case company**

In the case company the E-learning platform is an integration of commercial collaboration and intranet solutions. It supports synchronous as well as asynchronous interactions. The forums in the company’s LMS help users to construct threaded discussions. These forums are helpful in answering general questions of the entire class, allowing users to come together or discuss on a certain topic or on crucial issues.

**Suggested Strategies**

All the participants in the study understand the rising role of E-learning in the coming 5 years. The descending order ranking of the various groups were the Technical staff, followed by the managerial staff and lastly the operational group. On an average people in younger age group, i.e. under the age of 40 years had higher expectations from E-learning. It was observed that most of the decision makers did recognize the importance of E-learning.



**Graph No. 1 indicates that the majority of the staff sees positive growth in their skill set and knowledge.**

### Conclusion

Based on the interviews conducted and data collected and studied, it appears that E-learning is establishing itself and has been welcomed as a real option and the attitudes are in support of E-learning, though it is progressing at a very slow pace. The main reason is that under the E-learning module the digital delivery has a poorer state due to slow pace of implementation. Nearly all the employees are satisfied with the modern day training methods that are followed by the company.

Adoption of E-learning in KEC Ltd. mainly concentrated on areas like quality aspects, job oriented refresher trainings, technical skills and knowledge which is a big step towards achieving more efficient, flexible and effective employee training for the company.

Most of the respondents had a positive response towards overall quality and its effectiveness along with the development programs and were also satisfied with the present training methods. However, some of the interviewed employees feel that traditional classrooms provides them a social factors like interaction between colleagues, inter-departmental communication, subject oriented discussions etc.

The e-learning programs offered by the company have positive influence on employee's job leading to efficiency, minimal errors and high levels of job involvement. It creates positive results and contributes to favorable work conditions in the organization. Nearly all the employees have been a part of E-learning programs to enhance their expertise and knowledge levels.

### Future Research

Due to staff's positive response towards the social factor under conventional training methods, the management see risk in implementing E-learning. More efforts and innovation is required to develop E-learning platforms. Before surveying the implications of an E-learning program for corporate employees it is recommended to investigate how management decides the learning needs of the employees. While few individuals wrangle the obvious advantages of E-learning, methodical research is expected to confirm that learners are really acquiring and utilizing the expertise that are being instructed online, and that E-learning is the most ideal approach to accomplish the outcomes in a professional workplace.

### References

- Bindu and Hansa, L.M.. (2015). Dimensions of E-Learning Effectiveness - A Theoretical Perspective. *IJER@Serials Publications*, 12(2), 411-416.
- Human Capital Challenges in the Indian Power Sector. *Interim Report, Institute of Energy Management and Research (IEMR)*. Retrieved from website [greatlakes.edu.in/gurgaon/pdf/Human\\_Capital\\_Challenges\\_in\\_the\\_Indian\\_Power\\_Sector.pdf](http://greatlakes.edu.in/gurgaon/pdf/Human_Capital_Challenges_in_the_Indian_Power_Sector.pdf)

- Kadam V.N.. (2015). A Study of HRD Approaches with Special Emphasis on Training and Development Practices in MAHAGENCO. *International Journal of Multifaceted and Multilingual Studies*, 1 (VII).
- Lahti, P.J. and TamineeShinasharkey. Corporate E-learning Position in Finnish Energy Business- Power Market Perspective. Retrieved from website [www.ijcim.th.org/SpecialEditions/v20n](http://www.ijcim.th.org/SpecialEditions/v20n)
- Learning and Development at Workplace: Changing Paradigms & Emerging Trends. Retrieved from website [www.grantthornton.in/publications/http://gtw3.grantthornton.in/assets/Learning\\_and\\_Development\\_at\\_Workplace-Changing\\_Paradigms\\_and\\_Emerging\\_Trends.pdf](http://www.grantthornton.in/publications/http://gtw3.grantthornton.in/assets/Learning_and_Development_at_Workplace-Changing_Paradigms_and_Emerging_Trends.pdf)
- Siddiqui, T.A.. (2012). An E-learning System for Quality Education. *IJCSI International Journal of Computer Science Issues*, 9(4), No 1, p 1, ISSN (Online): 1694-0814.
- Urdan, T. A. and Weggen, C.. (2000). Corporate e-Learning: Exploring a New Frontier. *WR Hambrecht and Co*. Retrieved from Journal URL [http://cclp.mior.ca/Reference%20Shelf/PDF\\_OISE/Corporate%20e-learning.pdf](http://cclp.mior.ca/Reference%20Shelf/PDF_OISE/Corporate%20e-learning.pdf)

ISBN: 978-0-9994483-5-9



Estd. in 2001

ISO 9001:2015  
Certified

NBA  
Accredited

NAAC  
Accredited



[www.facebook.com/mcw.tcet](http://www.facebook.com/mcw.tcet)



[www.twitter.com/multiconw](http://www.twitter.com/multiconw)



*Proceedings of*  
**National Conference in  
Applied Sciences & Humanities**



Organized by,  
**Department of Humanities & Sciences**  
February 23<sup>rd</sup> & 24<sup>th</sup> 2018, Friday & Saturday

Compiled & Edited By:

**Dr. Vivek Mishra**

**Dr. Krishnakant Mishra**

**Mr. Rohitkumar Singh**

**Mr. Yogesh Bhalekar**

**Mr. Vimal Gosar**

**Mr. Amol Sapkal**

**Dr. Neha Mishra**

**Mr. Sunny Nanade**

*Thakur Singh Charitable Trust's (Regd.)*

**THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY**

(Approved by AICTE, Govt. of Maharashtra & Affiliated to University of Mumbai\*)

Institute Accredited by National Assessment and Accreditation Council (NAAC), Bangalore#

• ISO 9001 : 2015 Certified • Accredited Programmes by National Board of Accreditation, New Delhi\*\*

\*Permanent Affiliated UG Programmes : • Computer Engineering • Electronics & Telecommunication Engineering • Information Technology (w.e.f. A.Y. 2015-16)  
• Electronics Engineering (w.e.f. A.Y. 2017-18)

\*\*1st time Accredited UG Programmes : • Computer Engineering • Electronics & Telecommunication Engineering • Information Technology (3 years w.e.f. 16-09-2011)

\*\*2nd time Accredited UG Programmes : • Computer Engineering • Electronics & Telecommunication Engineering • Information Technology • Electronics Engineering (3 years w.e.f. 01-07-2016)

# 1st cycle of Accreditation : • "A" Grade for 5 years (w.e.f. 30-10-2017)



Estd. in 2001

ISO 9001:2015  
Certified

NBA  
Accredited

NAAC  
Accredited

---

## NCASH - 2018 Conference Proceedings

---



# MULTICON-W 2018

In Association with





In Association with



“National conference in Applied Sciences and Humanities (NCASH 2018)”

**Chief Patron**

Mr. V. K. Singh, Chairman, TEG

**Patron**

Mr. Jitendra R. Singh, Trustee, TEG

Mr. Karan V. Singh, CEO, TCET, TIMSR, TIMSCDR

**Program Chair**

Dr. B. K. Mishra, Principal, TCET

**Advisory Committee**

Dr. S. N. Merchant, IIT, Bombay.

Dr. Dhiren Patel, Director, VJTI Mumbai,

Dr. Weifa Liang, Emeritus Professor, Australia

Dr. Prakash D. Vyavahare, Professor, S. G. S. I.T.S, INDORE,

Mr. Saurabh Srivastava, Assistant Vice Presedent, Reliance Jio Infocomm Ltd

Dr. Manoj Kumar Kuwar, Ex-Director, B.I.T, Chhattisgarh, India

**Technical Program Committee**

Witold Pedrycz, Research Chair, Canada

Dharma P. Agrawal, University of Cincinnati, Cincinnati, USA

B. P. Patil, Army Institute of Technology, Pune, India

G. Sinha, Professor, CMR Technical Campus, Hyderabad, India

K. Rajesh, Head, High-Performance Computing ,BARC, India

**Program Co- Chair (NCASH-2018)**

Dr. Deven Shah, Professor, IT Dept.

**Convenor**

Dr. Vivek Mishra, Assistant Professor, H&S Dept.

**Co-Convenor**

Dr. Krishnakant Mishra, Assisstant Professor, H&S Dept.

**Secretary**

Mr. Rohit Kumar Singh, Assistant Professor, H&S Dept.

Dr. Sunita Pachori, Assistant Professor, H&S Dept.

**Treasurer**

Mr. Yogesh Bhalekar, Assistant Professor, H&S Dept.

Mr. Ashwin Pathak, Assistant Professor, H&S Dept.

**Reviewer Committee**

Dr. Vivek Mishra

Dr. Krishnakant Mishra

Mr. Rohit Kumar Singh

Mr. Yogesh Bhalekar

**Publication & Editorial Committee**

Mr. Vimal Gosar, Assistant Professor, Mechanical Engineering Dept.

Mr. Amol Sapkal, Assistant Professor, Mechanical Engineering Dept.

Dr. Neha Mishra, Assistant Professor, H&S Dept.

**Publicity**

Mr. Sunny Nanade

### NCASH- 2018

- |    |   |       |
|----|---|-------|
| 01 | TiO <sub>2</sub> Doped Polyaniline Nano Composites  | 1-2   |
|    | <i>Rajni Bhauguna</i>   |       |
| 02 | Finite Element Method for Machining of Composite Materials : A Review   | 3-14  |
|    | <i>Sunny Nanade</i>   |       |
| 03 | XPS and UV-Vis Absorption Study of Pt, Pd wire gauze Supported Hydrogen Mitigation Catalysts                            | 15-18 |
|    | <i>Kiran K. Sanap, Salil Varma</i>  |       |
| 04 | Raman Spectroscopic Studies on Zr Substituted BaCe <sub>0.8</sub> Y <sub>0.2</sub> O <sub>3</sub> Electrolyte for SOFCs | 19-20 |
|    | <i>Pooja Mahadik, Vishal Tendulkar, S. Varmab, B.N. Wanib</i>   |       |
| 05 | A Study of Instructional Methods for Teaching English Language Learners in Technical Programmes                         | 21-22 |
|    | <i>Nivant Kambale</i>   |       |
| 06 | Sea Water Air Conditioning : Review   | 23-24 |
|    | <i>Amol Sapkal</i>  |       |
| 07 | Recent Technology For Synthesis of Coumarin Derivative  | 25-26 |
|    | <i>Neha Mishra, Pritesh Sharma, Karishma Singh</i>  |       |
| 08 | Reach the Unreached : Street Children Literacy  | 27-30 |
|    | <i>Ashwin Pathak, Ela Agarkar</i>   |       |
| 09 | Evaluate the Need of Scientific Study to Validate the Effect of Yoga  | 31-32 |
|    | <i>Bansi Shah, B. R Sharma</i>  |       |

- 10 Training and Development Through E-learning: Empirical Issues 33-36  
*Amrita Bhardwaj*
- 11 Enhancement of 4Cs through Collaborative Learning Method 37-38  
*Bhim Kunte, Govind Waghmare*
- 12 Role of English Language Teacher for Engineering Students 39-40  
*Amol Dapkekar*
- 13 Developing Result Prediction Model for Improving Academic Performance of Students 41-46  
*Vimal Gosar, Neha Mishra, Vivek Mishra*
- 14 Transforming Passive Vocabulary to Active Vocabulary- Innovative Techniques to Enrich Vocabulary 47-48  
*Jyoti Vanave, Sarika Awasthi*
- 15 Innovative Utilization of Technology in Teaching Learning and Evaluation 49-52  
*Ela Agarkar, Khushbu Parmar*
- 16 Nation Development & Crisis Management through National Service Scheme 53-56  
*Sajjan Kumar Lal, Satish Singh*
- 17 Qualitative and Microbial Analysis of Raw and Soil Biotechnology Treated Domestic Sewage Water from Palghar, Maharashtra, India 57-60  
*Reshma Rodrigues, Anita Johnson, Sunita Pochori*
- 18 Utilization of Social Media as a Tool in Enhancing English Language for Employability - A Pragmatic Approach 61-64  
*A. Jyothi Kumari, Priyanka Patil*
- 19 Effect of Hall Current on Steady Hydro Magnetic Rotating Flow of a Viscous Incompressible Fluid through a Porous Medium in a Parallel Plate with Constant Heat Flux 65-68  
*Satish Singh, Sajjan Kumar Lal*

# Training and Development Through E-learning: Empirical Issues

Amrita Bhardwaj

Management, University of Kota, Kota, India  
amrita78bhardwaj@gmail.com

**Abstract-**Training and educative aspects have become crucial part for efficient operative functioning of employees. This paper examines and provides a review of the role of E-learning for employee training and development practice in order to improve organizational effectiveness.

**Keywords:** E-learning, training and development, Corporate learning

## I. INTRODUCTION

Use of the internet becomes a necessity now days as companies and organizations are adopting technologies to improve the efficiency of day-to-day operations. As multinational companies are expanding globally, the opportunities to connect with people across other countries also increase. E-learning successfully tackles the issue of training all these parties at once [1]. In times of competition and technological advancements, all organizations try to ensure that their technology is developed enough to enable anytime, anywhere learning of their workforce. The challenges of changing pace and employees leaving organizations due to extended periods of training have created an urgent need to reduce the time taken for learning and executing of knowledge, leading to the rise of E-learning [2].

The ever changing nature of technology and required skills to completely utilize it has resulted in increasing demand for enterprise wide E-learning solutions. A large number of E-learning solutions are currently available to meet the demands and challenges of training needs.

E-learning means Electronic learning According to Derek Stockley 2003 "The delivery of a learning, training or education program by electronic means. E-learning delivers content via a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material."

### Problems of learning using traditional ways

The problems and issues include the following: Not all employees can be spared for training at the same time. (e.g. Imagine an organization where everybody has to be trained, can organizations afford to send people, even in batches for a traditional classroom course. Increased costs of travel and stay, if learners are coming from different locations. Individually employees may differ in their levels of understanding and grasping the course content. Instructors try their best to cover the entire course in least amount of time. Learners get limited scope

to revise concepts or re-attempt, unless the company decides to regulate their trainings. Ideally, learning should be continuous but instructor led training makes it a onetime event.

## II. CASE OF E-LEARNING

Globally, all businesses, big or small, local or global is adopting e-learning as a means of imparting effective learning. E-learning can be termed as a type of training delivered on a computer to meet individual and organizational goals. The purpose of an organization in using E-learning is to assist the individual improve job performance and satisfaction, perceive on the job skills and facilitate the company produce a competitive work force. It is not alarming that the approach of E-learning is growing expeditiously. The advantages of E-learning are:

There is no compulsion to send all employees at a similar time. The employees can opt for their time and place of learning. Do not follow a set schedule and if need be employee can go over again and again till confidently acquainted with the subject. No time compulsion. Learning can be in segments or all at once as per the learner's need-rather than the trainer's ease. LMS system and small number of trainers can be deployed to manage a large number of courses. The LMS platform with assessment toolkit can track records of courses opted, test scores, time taken, etc for each learner which can provide rational data for nurturing employee's skills. It results in measurable learning. Measuring employee engagement gives better control and leads towards improving it. With the help of score tracking, progress tracking and time tracking matrix, the performance of each employee undergoing the training becomes measurable. Resulting in a more satisfied and retainable manpower. Flexible course distribution accessible through digital technologies, standalone CD ROMs, Internet or a companywide Intranet. Hence less business expenses, which can be a significant cost today. E-learning has become a central scholastic and teaching instrument in the current business climate for the simple reason that corporations have adopted it as part of their business operations.

## III. E-LEARNING IN INDIA

Learning has evolved over the years as people wish to move away from the conventional way of leaning. Learning has become all about self-development, online training and education on the go. Internet has contributed heavily to the growth of E-learning. E-learning has been adopted by the corporate sector in

employee training and growth. According to the report, "India E-Learning Market Outlook to FY'2018 – Increasing Technology Adoption to Drive Future Growth", the market is expected to grow at a CAGR of 17.4% over the period FY'2013-FY'2018 basically driven by many factors such as growing acquisition of technology, scarcity of quality education, Ease and cost factors and others. With the usage of E-learning in talent management in corporations, the demand of custom E-learning content and technology is likely to surge thus driving the E-learning growth in India [8]. The report, Learning & Development (L&D) at Workplace: Changing Paradigms, Emerging Trends - prepared jointly by 24x7 Learning and Grant Thornton, in alliance with IIM-Kozhikode concluded that many companies spend on training of their critical workforces to enable them to keep up with the global work environment. The study is based on the report of top 150 companies and focuses primarily on analysis of Learning and Development industry in India with prominence on the corporate training market and the practices of learning and development. The report projects India to become the 3rd largest economy globally by 2028. It also highlights some of the key challenges such as accelerating T&D in a rapidly competitive business environment. It says that only 27% of companies use E-learning as a Learning & Development tool. The size of the Indian E-learning market which has been estimated to be \$276 million in 2008 grew at a Compound Annual Growth Rate (CAGR) of 15.9% to reach US\$ 578 million between 2008 and 2013.

**Naresh B, Dr. BhanuSreeReddy** (June 2015), in paper titled "Challenges and Opportunity of E-Learning in Developed and Developing Countries-A Review" compares E-learning environment and its difference between the developing countries. the developing country faces challenges like, lack of adequate infrastructure, trainers, lack of financial support, Government policies, less student willingness. The developed countries on the other hand have more support from the government, proper training regarding technology and awareness of E-learning and user's readiness to learn new technology. The report highlights that high population and higher student-faculty ratio can drive e-learning in the developing world coupled with some of the features of the developed world. The developed world is however paralyzed by minimal student engagement, student motivation, and high student drop out ratio. Indigenous effort such as the establishment of NPTEL by IIT is taking E-learning to the masses. Indian E-learning technology market had increased from USD 88 million in FY'2008 to USD 173 million in FY'2013 at a CAGR of 14.4%. Indian e-learning content market is also advancing to grow at a CAGR of 18.4% from FY'2014-FY'2018. The total Indian E-learning market is anticipated to reach USD 1.3 billion by FY'2018. The size of India's online education market is expected to grow from the current \$20 billion to \$40 billion by 20179.

**Training & Development Programs by GE capital India:** GE Capital is an expert providing a diversity of training programs

ranging from leadership and general business expertise including E-Training, soft-skills training and competency-based training to programs including Managerial courses in leadership, innovation, and project planning and executive development.

#### IV. E-LEARNING ABROAD

**Prince F. Ellis and Kevin D. Kuznia(2014)** conducted a research on "Corporate Elearning Impact on Employees" the research explored how employees' productivity, job performance, and job satisfaction were impacted by using E-Learning. Corporations use various forms of E-learning processes and applications, such as computer based training (CBT), web-based training (WBT), and many others [7]. The results showed that the use of technology alone will not yield desired results; corporations need to determine a balance between E-learning strategies and managerial support.

**Josephine Nyokabi Mwangi (2014)** conducted a study titled "An Investigation towards E-Learning at the Workplace: A Case Study of Unep Staff at Gigiri". The purpose of the study was to investigate the adoption and use of E-learning at the workplace with a focus on UNEP staff members working in Gigiri. The finding acknowledges the importance of using E-learning in the workplace and recommends the following to the organization on the perceptions of E-learning initiatives; future development of E-learning programs should focus on technical and organizational issues, the E-learning research should be based on the context of use and application at workplace. Resistance from the employees, technological incompatibility and lack of incentives for adopting new work practices by management are identified as major obstacles in the application of E-learning practices.

#### V. E-LEARNING ISSUES AND CHALLENGES

E-learning is considered by organizations as a new training possibility and as a prospect to economize time and money. Nevertheless, quite often, poor quality learning experiences and a high percentage of losses are observed. Lack of learners' motivation. It is one of the most common E-learning challenges that E-learning professionals must overcome. Learners often have the set belief that conventional training programs are more effective because they believe they can be more fruitful in a familiar environment. Busy learner schedule. Many employees resist taking an E-learning course because they suppose that they won't be able to go at their own pace or that it will require a great deal of their time. Also, trying to keep track of learners' progress can be the most difficult challenge to address. The belief that E-learning environment offers no support. It is a general misconception and drawback that E-learning courses are isolated and offer no support for their learners. Also, virtual environment is not enough to sustain learner interest.

#### VI. FINDINGS

The author gathered some insights based on analysis of secondary data available reveals following outcomes for

Corporate India and Abroad experiences: Almost 50% of the companies gives preference to E-learning Training Method over traditional classroom-based instructions. 85% of the companies think E-learning as most effective training technique to help employees learn and train in new skills. 79% of the companies are ready to take leap to improve their work force performance and investing more to update their LMS Systems. 86% of the corporate employees are opting E-learning for corporate training requirements by creating their own content. As fastest growing Indian companies are rapidly increasing their footprint internationally, around 80% of businesses in India are expected to increase the time and effort spends on L&D preference given to E-learning. In the coming ten years, India is likely to become the third largest economy globally, one of the key challenges in sustaining the development force of the economy is how to keep the pace with L&D practices in an increasingly competing business world. There is a shortage of skilled professionals especially in the frontline positions. Due to a growing demand for competent professionals, this challenge rises as an open door for Indian L&D industry which is presumed to triple by 2020.

Amongst the various sectors which are making extensive use e-learning for L&D and also spending considerable amount on it are IT, BPO, technology, banking and the financial sector. Despite the fact that Indian businesses are as yet subject to the conventional training methods, there is an opportunity to upsurge the role of E-learning by delivering more significant and detailed modules to the organizations to train their employees. With organizations willing to take up-learning courses to promote right people with the right skills into the right position, the need for customized E-learning content and technology is anticipated to advance. Across the world most of the organizations are looking for E-learning to train their globally dispersed workforce. In UK, Spain and Benelux nearly 40% of companies train more than 50% of their employees using E-learning. France uses E-learning only for 17% of its employees. In the services sector E-Learning is most widely used as 43% of the companies train more than 50 % of their employees via e-learning.

The practice of E-learning appears to grow immediately after 2012. Given the economic backdrop, numerous organizations are in quest to maintain or reduce their overall training expenses, further they are looking to curtail training cost per employee in order to be able to train a greater number of staff without expanding their budget on learning and development practices. The findings of the E-learning survey affirm that E-learning has turned into a rational delivery mode for all sizes of business. Whether the establishment has less than thousand employees or between 1,000 and 10,000, the number of users in the learning zone is expanding. Quite a few firms like Franklin Covey, Toshiba, Michigan, Xerox, ABB Ltd, Pidilite are using E-learning to increase proficiency and potency of their employee. E-learning advances performance of employee and it diminishes the cost of training. Organizations are able to safeguard nearly

fifty percent when adopting E-learning in place of classroom training. Training with E-learning implies that courses can be rendered into shorter sessions and extend over number of days so that the business would not let slip an employee for entire days at a time. Moreover, it improves productivity as employees save commuting time. Not strikingly, the more enhanced forms of E-learning are highly prevalent among larger firms and companies that are technology-savvy. At Fortune 500 firms, 73.6 percent of training is delivered through Intranet, online methods.

## VII. FUTURE IMPLICATIONS

E-learning has been gaining wide acceptance in today's organizations and will continue to rise. Because of the value added with E-learning companies are willing to spend the money to implement or provide it to their employees. The Millennial employees are touted to be more flexible and adept to E-learning at work places and expect this to be an integral part of their employee development process. The rationale behind this is that the millennium generation is a digital generation who are already used to learning in this way (Ettinger et al., 2006B). The challenge that companies will face is to engage these new employees in the delivery of E-learning they are used to such as video games and digital media that they use in their everyday lives. The challenge is to transform what can be a simple mechanical process into an exciting online classroom with powerful interactive features, such as streaming media, personalized skill assessment, application and simulation exercises, case studies, video-clips etc.

## VIII. CONCLUSION

Corporate Training is the medium for businesses to expand knowledge base of their clients. Employees can be trained to become more dynamic and increase the success level to get an extra edge over competitors in their field. Corporate training programs are designed for an organization that may wish to train their employees on specific aspects of their job processes or responsibilities. Sometimes, face-to-face training becomes cumbersome due to travelling issues and schedules. This can lead to waste of manpower and resources and reduce the work speed. The conventional training involves a lot of manpower, resources and most importantly time. Over the period of time, E-learning has revolutionized the way corporate trainings are being delivered across the world. E-learning has enabled businesses to conduct successful business operations and achieve greater results. Small sized business and corporate are also conducting such training sessions through online learning management systems. The concept of E-learning is gaining momentum and companies are reaping its benefits to achieve better performance. Now, in a span of time, tens of thousands of corporate trainings can be given to employees over a wide range of time and space thus resulting in having a competitive work force.

### REFERENCES

- [1] Harun, M.H. (2002). "Integrating e-Learning into the workplace", *Internet and Higher Education*, Vol.4, 301-310.
- [2] Moolman, H. B. and Blignaut, S. (2008). "Get set! E-Ready, e-Learn! The e-Readiness of warehouse workers", *Educational Technology and Society*, Vol. 11, No. 1, 168-182.
- [3] Chen, R. and Hsiang, C. (2007). "A study on the critical success factors for corporations embarking on knowledge community-based e-learning", *Information Sciences*, Vol. 77, 570-586.
- [4] Serrat, O. (2010). "E-learning and the workplace", knowledge solutions, Asian Development Bank, Philippines.
- [5] Bielawski, L. and Metcalf, D. (2003). "Blended learning: integrated knowledge, performance support and online learning," Amherst, MA:HRD press.
- [6] De Freitas, S. (2007). "Post-16 e-learning content production: a synthesis of the literature", *British Journal of Educational Technology*, Vol. 38, No. 1, 349-364.
- [7] Abdul Hakim Ahmad Dardar, Ahmad Jusoh and Amran Rasli, "The Impact of Job Training, job satisfaction and Alternative Job Opportunities on Job Turnover in Libyan Oil Companies" -*Social and Behavioral Sciences* 40 ( 2012 ) 389 –394.
- [8] Kellett L. (2002). *Knowledge brief: Getting the most from technology in schools*. West Ed.
- [9] Allen, I.E. & Seaman, J. (2010). *Learning on Demand. Online Education in the United States*, 2009. Babson Park, MA: Babson Research Group.

**About Conference**

13th International Conference on Science, Technology and Management (ICSTM-18) is a global event organized by Conference World at Maharashtra Chamber of Commerce, Industries and Agriculture Tilak Road, Pune (India). This conference provides an international forum for researchers, developers, engineers and practitioners who are involved in real time projects that provide solutions to exchange their valuable ideas and showcase the ongoing works which may lead to path breaking foundation of the futuristic engineering. It accentuates indispensability of interdisciplinary and cross – linked thinking with respect of innovation and market opportunities. All the accepted paper will be published in International Journal with ISSN Approved by UGC.

**ICSTM-18**

**Indexing:**  **DOAJ**  **UGC** Approved Journals

**Publish By:**  
**A.R. Research Publication**  
3186, Santpura, Govindpuri, Madinagar 201-201

---



**www.conferenceworld.in**

**13<sup>th</sup>**  
**International Conference on**  
**Science, Technology and Management**

**Venue:**  
**Mahratta Chamber of Commerce, Industries and Agriculture**  
**Tilak Road, Pune (India)**

**01<sup>st</sup> -02<sup>nd</sup> December 2018**

**Editors**  
**Mrs. Manasi V. Ghamande**  
**Dr. A.K. Sharma**

**ICSTM-18**



**13<sup>th</sup> International Conference on Science, Technology and Management**

Mahratta Chamber of Commerce, Industries and Agriculture, Pune (India) (ICSTM-18) 

01<sup>st</sup>-02<sup>nd</sup> December 2018      www.conferenceworld.in      ISBN:978-93-87793-58-3

**Challenges of Corporate E-learning in India**

**Amrita Bhardwaj<sup>1</sup>, Kapil Dev Sharma<sup>2</sup>**

*<sup>1</sup>Ph.D. Research Scholar Faculty of Commerce and Management*

*University of Kota, Kota, India*

*<sup>2</sup>Professor, Department of Commerce and Management*

*Government Commerce College, Kota India*

**ABSTRACT:** *E-learning in an organization can be defined as a kind of training delivered via computer that meets individual learning as well as organizational goals. The key to success of E-learning is to achieve the organizations strategic goals through reliable learning. In order to do so, companies need to deliver high-quality training programs that potentially can offer good returns to corporations within their current training plans.*

*Training being a crucial part for efficient operative functioning of employees, corporate E-learning programs often end up in disappointment. This paper discusses the challenges faced by employees and companies in applying E-learning approach of training and development. It also identifies the factors that hinder the growth of e-programs in organizations. The findings are supported by conducting an online survey on power sector in India.*

**KEYWORDS:** E-learning, training and development, Corporate learning, E-learning challenges

**I INTRODUCTION**

Until about 20 years ago, training was not done in front of a computer, but in the classroom with a qualified trainer. Due to technological advancement, organizations have started using computer based training and the field of E-learning began to take shape. In the early 1990s, many organizations provided videotape-based training to their employees.

The initiative of delivering training on video was not the perfect solution, hence a new form of training evolved, i.e., CBT or Computer based Training. Although, CBT proved more effective but it was unable to measure employee performance in a central database and was also not easy to upgrade. As a result E-learning emerged into. (Clark, 2002)

The term "E-learning" came into existence in the year1999, the word was initially used at a CBT systems seminar. Other words also began to get noticed in search of an exact description such as "online learning" and

## 13<sup>th</sup> International Conference on Science, Technology and Management

Mahratta Chamber of Commerce, Industries and Agriculture, Pune (India) (ICSTM-18) 

01<sup>st</sup>-02<sup>nd</sup> December 2018 [www.conferenceworld.in](http://www.conferenceworld.in) ISBN:978-93-87793-58-3

“virtual learning”. In 2000s, enterprises started adopting E-learning to train their employees. New and experienced workers were having opportunity to advance their industry knowledge base and broaden their skill sets. It allowed individuals at home to access programs that enabled them to earn online degrees and enrich them through extended knowledge.

E-learning is relevant across all areas of employee training including: career development training; new employees' orientation; information on new services or products or just sharing and enhancing work knowledge, competencies, and skills (Harun 2002). In order to respond quickly to persistently changing learning needs, E-learning has emerged as the best and most viable option for corporations. Technological breakthrough and the skills needed to fully exploit and manage it have escalated the demand for organization wide E-learning solutions. There are a variety of E-learning products and services available to meet majority of the organizational training needs.

### II RATIONALE FOR E-LEARNING

Teaching and training in their traditional senses are ways of delivering knowledge, just like a proverbial one-way street. E-learning ensures the possibility of better interaction and direct engagement, thus offers real chances to improve information standards and learner's morale.

The justification for adopting E-learning can be understood as:

- There is no need to engage all employees for training at the same time. They can choose their own respective time and place of learning as per their convenience.
- It is self-paced and if required, the content is recorded and provided as and when needed by the employee.
- No time limitations. It can be delivered in parts or all at once wholly as per the learner's requirements instead of the trainer's comfort.
- A variety of courses can be conducted and managed through suitable LMS (Learning Management Systems) by a small number of experienced training administrators. LMS can also maintain records of participation in number of courses, test scores, time taken, etc for each learner which can provide intelligent data to enhance employee's skills.
- Measurement of learning becomes possible as performance of each participant can be measured with the help of various ways like score tracking, progress tracking and time tracking. In earlier days this was typically not possible with traditional training practices.

### III REVIEW OF LITERATURE

This section gives description of the perspective of E-learning potential in training and development, and some of the challenges and benefits of E-learning and how the E-learning courses allow participants to pick their own time and place for training. Review the literature was also done on employee attitudes regarding E-learning. The

**13<sup>th</sup> International Conference on Science, Technology and Management**Mahratta Chamber of Commerce, Industries and Agriculture, Pune (India) (ICSTM-18) 01<sup>st</sup>-02<sup>nd</sup> December 2018 [www.conferenceworld.in](http://www.conferenceworld.in) ISBN:978-93-87793-58-3

study reveals that while 84 per cent companies consider E-learning an efficient and cost effective tool for organizational learning, only 27 per cent use it as a Learning & Development tool.

**Naresh B, Dr. Bhanu Sree Reddy (June 2015)**, in the paper titled “Challenges and Opportunity of E-Learning in Developed and Developing Countries-A Review” compares the E-learning environment and its difference between the developing countries. This paper identifies the problems faced by those countries. The developing country faces more challenges like lack of infrastructure, trained instructors, lack of financial support, Government policies and less student readiness. But E-learning provides more opportunity since it is in developing stage. The things that are to be learned from developed countries are support from the government, proper training regarding technology and awareness of E-learning and user's readiness to learn new technology. If the developing countries could adopt the success factors of developed countries in terms of E-learning implementation, there is a huge potential for the growth of E-learning in developing countries since it has a large population and huge difference in student and faculty enrollment ratio. In developed countries, government provides financial support for developing E-learning with clear action plans for future proceedings. They have uninterrupted electricity supply and internet facility. Even though developed countries are strong in infrastructure, the challenges faced are found related to student engagement, student motivation, and high student drop out ratio. Opportunity for the developed countries is to implement successful E-learning models, which in turn improves the economic growth of the country. They increase productivity to maximum level with minimum effect by using ICT through which knowledge can be shared across the world. If proper steps are taken, challenges and the differences between the developed and developing countries can be minimized to a greater extent by implementing E-learning in higher education. Developing countries like India the premium institution (IIT's) taking some initiation towards implementing E-learning in an Indian context. NPTEL is the portal created by IIT's and they have started offering online courses across the world.

**Anand Rimmi, Saxena Sharad, Saxena Shilpi (June 2012)** in their research paper titled “E-Learning and its impact on rural areas” study about the awareness and impact of E-learning in selected rural areas in India. The result indicates that E-learning is found to be highly emerging knowledge tool today. In developed as well as in developing countries E-learning can bring lot of benefits. E-learning has much wider scope in the areas which are undeveloped and are not so educated. E-learning provides knowledgeable contents through CD, DVD, multimedia and other tools. The main limitation of this method is the availability of proper bandwidth, readiness of E-learners and a set of skills to deliver the content to learners. Overall, almost 48 per cent providers reported that E-learning is beneficial to rural gentry for advance knowledge, promotions and better job opportunities, and to learn new developing technologies in the market.

This study is aimed to determine challenges pertaining to training and development through E-learning. It also identifies the factors that hinder the growth of e-programs in organizations. This study is an attempt to overcome the concerns and fears that exist in the adoption of E-learning initiatives across power sector organizations. The

**13<sup>th</sup> International Conference on Science, Technology and Management**

Mahratta Chamber of Commerce, Industries and Agriculture, Pune (India) (ICSTM-18) 

01<sup>st</sup>-02<sup>nd</sup> December 2018    [www.conferenceworld.in](http://www.conferenceworld.in)    ISBN:978-93-87793-58-3

main objective of this study is to explore and overcome the current work environment and difficulties in implementation of E-learning in Power sector.

- Taking into account the challenges faced by employees in E-learning program and to determine effectiveness of E-learning program in selected organizations, the respondents were asked to share their experiences they had with E-learning practices being followed in their organizations and to extend suggestions. The variables which have been identified in this study include E-learning, employee satisfaction, employee commitment, and job performance and organizational competitiveness. A random sample of 150 employees working in selected Indian power and energy companies was collected. Stratified Sampling Method was used to represent the population and strata were made on the basis of different managerial levels and functional areas. Data collection was carried out by contacting the employees one to one to get the responses. A web based link was sent to sample of employees in participating organizations. Various statistical techniques were employed to examine the data such as Five-point Likert type numerical scales ranging from Highly Agree to No Idea and No influence to very significant influence were used.

The study is based on primary and secondary data taken from designed questionnaires and published annual reports of the covered organizations.

**IV E-LEARNING ISSUES AND CHALLENGES**

E-learning despite predictions, cannot kill traditional training and education. Many senior executives hesitate to adopt E-learning as a mode to train their employees. Some of the reasons that pose resistance in using it are its novelty, lack of knowledge, insufficient budget, lack of IT infrastructure, and employee resistance to the idea (Ettingeretal.2006a).

E-learning too requires time for attending sessions and completing assignments like any traditional learning course. For implementing a successful E-learning program, companies need to understand its limitations and develop a well thought out plan to implement it in order to succeed. In addition to the lack of understanding, budget limitations, technology infrastructure, and reactions of employees, E-learning standards are posing challenges. The limitations of these standards include the portability of content from one system to another that can create trouble.

E-learning is considered by organizations as a new training possibility and as a prospect to economize time and money. Nevertheless, quite often, poor quality learning experiences and a high percentage of losses are observed.

- **Lack of learners' motivation.** It is one of the most common E-learning challenges that E-learning professionals must overcome. Learners often have this set belief that conventional training programs are more effective because they believe they can be more fruitful in a familiar environment.

## 13<sup>th</sup> International Conference on Science, Technology and Management

Mahratta Chamber of Commerce, Industries and Agriculture, Pune (India) (ICSTM-18) 

01<sup>st</sup>-02<sup>nd</sup> December 2018 [www.conferenceworld.in](http://www.conferenceworld.in) ISBN:978-93-87793-58-3

- Busy learner schedule. Many employees resist taking an E-learning course because they suppose that they won't be able to go at their own pace or that it will require a great deal of their time. Also, trying to keep track of learners' progress can be the most difficult challenge to address.
- The belief that E-learning environment offers no support. It is a general misconception and drawback that E-learning courses are isolated and offer no support for their learners. Also, virtual environment is not enough to sustain learner interest.

### Challenges being experienced pertaining to T&D through E-learning

In an online survey done on Indian power and energy companies respondents were asked to rank the challenges being experienced by the employer in implementing E-learning practice in their organization. A statistical significant difference was found among average ranks of challenges being experienced pertaining to T&D through E-learning at workplace. It was found that Employee Resistance to E-learning got the highest importance whereas Inappropriate Learning Culture was given the least importance.

## V FINDINGS

Although approachable, employees and companies are reluctant to accept this approach of training due to cost, expertise, and reliability issues.

Some common challenges and obstacles faced by organization implementing an E-learning solution are:

- **Budget**  
Initial investment requirement for E-learning solution is larger due to content and program development costs. Budgets and cash flows are needed to be negotiated.
- **Technology and security related issues**  
Technology related issues like whether the existing hardware and software setup can help to achieve the training goals or additional technological expenditures will be required and whether all software and hardware setups are compatible.
- **Limited in scope**  
Improper content of E-learning may pose a challenge in view of some experts, though they are limited in number.
- **Organization's Culture**  
Organization's Culture can be an issue where learner's demographics and psychographics may influence them against using computerization for E-learning programs.
- **People resistance**

## 13<sup>th</sup> International Conference on Science, Technology and Management

Mahratta Chamber of Commerce, Industries and Agriculture, Pune (India) (ICSTM-18) 

01<sup>st</sup>-02<sup>nd</sup> December 2018      www.conferenceworld.in      ISBN:978-93-87793-58-3

Employees are naturally resistant to change. It may be difficult to convince management to make the investment and the employees to enroll for E-learning program. Employees may find themselves falling behind or moving at a slower pace in the enrolled programs.

### VI FUTURE IMPLICATIONS

These research findings have implications for human resource managers and employee training investment decisions. The importance of E-learning cannot be exaggerated. With at least 84% of survey respondents using E-learning at work, employers and human resource managers should think strategically before investing in the training delivery method that is most effective for their organization. E-learning topics must be aligned with the company's strategic goals.

### VII CONCLUSION

As per the analysis it could be concluded that E-learning can provide flexible learning options for employees and allow them to up-skill more rapidly. E-learning in the workplace can decrease the costs of training workforce through reducing travel and employee time away from work. E-learning is particularly useful for a geographically dispersed workforce because it can deliver a consistent training experience. E-learning provides consistency in training, increased convenience and control of learning for learners, improved monitoring capabilities for employers, and reduced costs by decreasing travel costs and employee absenteeism. However, it has some drawbacks but if managed systematically, offers better results. Employee motivation and ability to use technologies are important factors in E-learning participation, along with how the organization supports their employees to conduct E-learning as part of their daily routine. Some employees also believed that their company leaders continued to invest in E-learning and that eLearning is an effective tool for training and development. However, employees continue to face difficulties when using eLearning.

Attitude of an individual play an extremely important role in his performance. Thus, in spite of the availability of the best of knowledge and skill, the ability to provide the desired services may still be found wanting in individuals if they are not imbued with appropriate attitudes. The only challenge here is to encourage and keep the spirit of learning high among the employees so that they themselves want to invest the time and efforts both. At the same time, without motivation from top management, it is difficult to implement corporate E-learning strategy. There was a significant and positive relationship between job satisfaction and organizational commitment (Top & Gider, 2013). Therefore, management should consider these two factors carefully so that the full benefits of E-learning are realized.

### REFERENCES

- [1] BiswajeetPattanayak (1997),“Human Resource Training - Study on Training Evaluation of Indian Industries”, First Edition 1998, Published by S.Chand & Company Ltd, pp 99-114.

### 13<sup>th</sup> International Conference on Science, Technology and Management

Mahratta Chamber of Commerce, Industries and Agriculture, Pune (India) (ICSTM-18) 

01<sup>st</sup>-02<sup>nd</sup> December 2018 [www.conferenceworld.in](http://www.conferenceworld.in) ISBN:978-93-87793-58-3

- [2] Harun, M.H. (2002). "Integrating e-learning into the workplace", Internet and Higher Education, Vol.4, 301-310.
- [3] Lewis, N. J., & Orton, P. Z. (2012), Blending learning for business impact: IBM's case for learning success.
- [4] Ratan Reddy ( 1995), " A study of the In –House Training Institutes In central Public enterprises located In the twin cities Hydrabad and Secunderabad- Effective Human resource Training and Development Strategy", Third edition 2008, published by Himalaya Publishing house, pp466-480.
- [5] Rao, P.L. (2008), Enriching Human Capital through Training and Development. Excel Books, (New Delhi) 3. All about Learning.14-17, 32-39,167-185.
- [6] Reddy Sumat (2003) "E-Learning and Technology: New Opportunities in Training and Development", First Edition 2003, ICFAI Press.
- [7] Rosenberg, M. J. (2001). E-Learning. Strategies for Delivering Knowledge in the Digital Age. New York.
- [8] Rossett, A. (Ed.), 2002, "The ASTD E-Learning" Handbook. New York:McGraw-Hill. [books.mcgraw-hill.com/authors/rossette/e-learning](http://books.mcgraw-hill.com/authors/rossette/e-learning).
- [9] Keegan, D. (1980). On Defining Distance Education: Distance Education 1(1) 13-36.
- [10] Rosenberg, M. J. (2001). E-learning: Strategies for delivering knowledge in the digital age. New York: McGraw-Hill.
- [11] Longmire, W. (2001). A Primer on Learning Objects. Managing Web-Based Training : ASTD.
- [12] Tomei, A., (2003). Challenges of teaching with technology across the curriculum: issues and solutions. Information Science Publishing.
- [13] Mortimore, P., (1999). Understanding pedology and its impact on learning. Paul Chapman Publishing Ltd.
- [14] Rana, Hemant, Rajiv, and Prof. Manohar Lal. "Rough set based system for effective E- learning ." Computing for Sustainable Global Development (INDIACom), 2014 International Conference on. IEEE, 2014; ISSN 0973–7529 and ISBN 978-93-80544-10-6.
- [15] Harasini L., et al. (2001). The Virtual University: A State of the Art. Advances in Computers, Vol. 55, PP 1- 47.
- [16] Witten I.H., et al. (2000). Greenstone: A comprehensive Open-Source Digital Library Software System. ACM 2000 Digital Library, PP 113-121.
- [17] Rajiv & Manohar Lal, (2011). Web 3.0 in Education & Research, BVICAM's International Journal of Information Technology (BIIT), Vol. 3 No. 2; ISSN 0973 – 5658.
- [18] Robin D. Morris, (2011). Web 3.0: Implications for Online Learning, TechTrends Vol. 55, No. 1 Springer.

**APPENDIX IV**

**Conference Certificate**

## Conference Certificate

- National Conference on Applied Science and Humanities, organized by the Thakur College of Engineering and Technology, Mumbai (23<sup>rd</sup> and 24<sup>th</sup> February 2018).

Article Presented:

- Training and Development through E-learning: Empirical Issues

- 13th International Conference on Science, Technology and Management, organized by Mahratta Chamber of Commerce, Industries and Agriculture, Tilak Road, Pune(1st December and 2nd December 2018)

Article Presented:

- Challenges of Corporate E-learning in India



**THAKUR TRUSTS**

*Zagdu Singh Charitable Trust's (Regd.)*

**THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY**

(Approved by AICTE, Govt. of Maharashtra & Affiliated to University of Mumbai)

Thakur Village, Kandivali (E), Mumbai - 400101.



**icet**

ESTD. 2001

ISO 9001 : 2015 Certified

NBA and NAAC Accredited

---



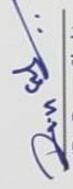
**NCASH 2018**

**Certificate of Appreciation**

This is to certify that Dr./Mr./Ms. **Amrita Bhardwaj** \_\_\_\_\_ has presented/published a **SHORT** \_\_\_\_\_ length paper with the title **Training and Development Through E-learning: Empirical Issues** in the **National Conference on Applied Sciences & Humanities (NCASH 2018)** organized during February, 23<sup>rd</sup> & 24<sup>th</sup>, 2018 at Thakur College of Engineering and Technology.



(Dr. Vivek Mishra)  
Convener



(Dr. Deven Shah)  
Technical Chair



(Dr. B. K. Mishra)  
Principal & Programme Chair

**Philanthropic Partners**




Thakur College of Engineering  
Bolar

**Technocrat Partners**



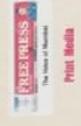


**Collaborators**





**Other Partners**




**9<sup>th</sup> National & International Conferences & Workshops**

2018



International Journal of Management Technology and Engineering

An ISO : 7021 - 2008 Certified Journal

ISSN NO: 2249-7455 / web : www.ijamtes.org / e-mail : submit@ijamtes.org

Address : A14/7- UA, Armament, Pune, India - 411021

# CERTIFICATE OF PUBLICATION

This is to certify that the paper entitled

**“Challenges of Corporate E-learning in India”**

Authored by

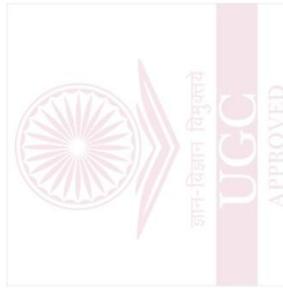
**Amrita Bhardwaj**

From

**University of Kota, Kota, India**

Has been published in

**IJMTE JOURNAL, VOLUME 8, ISSUE XII, DECEMBER - 2018**



*K. M. Pandey*

**Dr. K. M. Pandey**  
Editor-In-Chief  
IJMTE

[www.ijamtes.org](http://www.ijamtes.org)



DOI:16.10089/IJMTE

member

CROSSREF.ORG  
THE CITATION LINKING BACKBONE

