CHAPTER - 3

METHODOLOGY
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3.1 Introduction

As per the American Society for Training and Development (ASTD), the concept of E-Learning is growing rapidly within organizations. They are utilizing it to help the individual achieve improved job performance and satisfaction, understand on the job skills and help the company create a competitive work force. Companies need to train and educate their employees in a cost effective, efficient, thorough manner. E-Learning is providing solutions to companies to achieve these goals. Creating competitive advantage by aligning workforce with company strategy is one of the most important goals of E-Learning. There are both benefits and limitations to E-Learning and companies need to consider both of them and devise a plan to utilize E-Learning to reach their strategic goals before embarking on the actual development of both technology and E-Learning media for distribution to employees. Return on investment is a key factor when organizations decide to implement E-Learning. There are both tangible and intangible reasons that E-Learning provides the return on investment companies are looking for. As a new generation of employees enter the workforce it will be increasingly important for companies to offer E-Learning as a solution to develop their skills and maintain employees’ life-long learning objectives and also increase the core competencies to support the business operations effectively and efficiently.

Hence, the topic – Synchronous E-Learning for Human Resource Management has been selected for the research.

3.2 Purpose of the study

Developing the talent and creating a learning organization is the challenge for all the business leaders to sustain and grow the global business. Developed resources add great value to the organization with their core competencies at all levels of the organization.

Presently, the IT industry has to compete for the best talent with other sectors like telecom, semiconductor and product based companies.
Broadly, the study aimed to determine:

- Whether the IT industry seriously perceives the effectiveness of E-Learning tools to develop respective Talent?
- Which are the E-Learning tools that could support effective and efficient way of supporting Talent Development for enhancing core competencies?
- What could be cost effective distance learning tools for executive E-MBA from the leading Management Institutions in India?
- What are the latest E-Learning tools available for Learning Management System, Learning Content Management system?

3.3 Specific Objectives of the Study

The main purpose of the present study was to find out how effectively talent could be developed in the organization to enhance core competencies to support the business operations.

Therefore the specific objectives of the study were:

1. To determine what good and better E-Learning systems / Technology are like for Talent Development for Human Resource Management.

2. To evaluate the effectiveness of Synchronous E-Learning tool to make a process driven and learning organization in the present Talent age.

3. To identify promising approaches to E-Learning that may meet present and future business / educational needs on the basis of advancement of Technology like - Virtual Learning Environment (VLE).

3.4 Design of Research

The research design was a systematic plan to study the problem. The research was targeted towards finding out the effectiveness of E-Learning. To understand the topic, the researcher did extensive
review of literature on the topic. It was found that the effectiveness of E – Learning depends on the following factors:

1. Technology
2. Interface Design
3. Evaluation
4. Pedagogical
5. Institutional
6. Ethical
7. Resource Support
8. Management

Details of data on the above parameters could be gathered from different set of people. Hence, it was decided that at least four sets of respondents need to be interviewed / questioned. They were:

1. Software Professionals, who are using the Synchronous E-Learning
2. E MBA students, who are doing their EMBA from IIM Bangalore.
3. CEOs/ Directors/Heads of HR, who had implemented Synchronous E-Learning in their respective organizations.
4. Subject Matter Experts / E Learning solution providers/ Program Managers.

It was decided to create four sets of questionnaires for the above mentioned four sets of people.

3.4.1 Design of Questionnaire:

Understanding that no survey can achieve success without a well-designed questionnaire, the following points were considered while framing the questionnaires: More details on design of the questionnaire are given on the following pages.

1. Deciding on the information required on E- Learning:

The information required was to focus on effective communication of E-Learning, how E-Learning can be made better and how different advanced Technologies will further support effectiveness of E-Learning.
2. Defining the target respondents:
The respondents defined as:
- Software Professionals, who are using the Synchronous E-Learning
- E MBA students, who are doing their EMBA from IIM Bangalore.
- CEOs/ Directors/Heads of HR, who had put Synchronous E-Learning in their respective organizations.
- Subject Matter Expertise / E Learning solution providers/ Program Manager.

3. Choosing the method(s) of reaching the target respondents:
To reach the target respondents, the method chosen was the questionnaire method. However, it was difficult to get 100% positive response from respondents due to their busy schedule and long distance locations. So, researcher had to follow up through telephonic interviews, personal interviews and emails.

4. Deciding on question content for E-Learning:
The content of the questions were decided to be on effective communication of E-Learning, how E-Learning can be made better and how different advanced Technologies will further support effectiveness of E-Learning.

5. Developing the question wording:
The wording of the questions were kept simple so that respondents could easily understand and respond.

6. Putting the questions into a meaningful order and format for E Learning data:
A proper sequence was followed with the order of the questions so that it progressed gradually from easy to more difficult.

7. Checking the length of the questionnaires:
The length of the questionnaires were not too much. Only 10 questions were asked in each set. This enabled respondents to quickly complete give the answers.
8. Pre-testing the questionnaire – (Pilot Study):

Pilot study was conducted to pre test the questionnaires and this has been explained in the following pages.

9. Developing the final survey form:

Based on the results of the pilot study, final questionnaires were developed. Earlier the questionnaires had all dichotomous questions such as “Yes” or “No”. On the basis of the pilot study the researcher realized that flexibility should be given to the respondents answers. Hence 5 point Likert scale was used for every question, which ranged from Strongly Agreed, Agreed, Not Sure, Disagree and Strongly Disagree.

3.5 Pilot Study

Pilot study refers to so-called “feasibility studies”, which are "small scale version[s], or trial run[s], done in preparation for the major study" (Polit et al., 2001: 467). However, a pilot study can also be the pre-testing or 'trying out' of a particular research instrument (Baker 1994: 182-3). One of the advantages of conducting a pilot study is that it might give advance warning about where the main research project could fail, where research protocols may not be followed, or whether proposed methods or instruments are inappropriate or too complicated. In the words of De Vaus (1993: 54), "Do not take the risk. Pilot test first."

As a part of the pilot study, the “trial questionnaire” along with a covering letter [Appendix A] explaining therein the purpose of the research study was administered to 10 Software Professionals, 10 E MBA Students, CEOs / Heads of Human Resource / HR Managers of five organizations including researcher’s organization – Redknee (India) Technologies Pvt. It was designed covering various dimensions of Talent development by using Synchronous E-Learning tools. It measures the effectiveness of Synchronous E-Learning for the distance education institutions and organizations. In the light of the experience gained, valuable opinions/suggestions received during the pilot study, the trial questionnaires were reviewed and edited and technical flaws / inconsistencies were removed making it more comprehensive, compact, meaningful and purposeful. A sample of the final questionnaire is attached in Appendix ‘A’.
3.6 Hypothesis

a. Definition of Hypothesis
Wikipedia defines that people refer to a trial solution to a problem as a hypothesis, often called as “educated guess” because it provides a suggested solution based on the evidence. A researcher tests and rejects several hypotheses before solving the problem. A hypothesis is a proposition made as a basis of reasoning without the assumption of its truth. Since it is a supposition, it can only be the starting point of an investigation based on known facts and a hypothesis has to be validated empirically. Every Hypothesis can thus be proved or disproved.

b. Null Hypothesis (Ho)
The null hypothesis, Ho, represents a theory that has been put forward, either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved. Special consideration should be given to the null hypothesis. This is due to the fact that the null hypothesis relates to the statement being tested, whereas the alternative hypothesis relates to the statement to be accepted if / when the null is rejected.

c. Alternative Hypothesis (H1)
The alternative hypothesis, H1, is a statement of what a statistical hypothesis test is set up to establish. The final conclusion once the test has been carried out is always given in terms of the null hypothesis. We either "Reject Ho in favour of H1" or "Do not reject Ho".

If we conclude "Do not reject Ho", this does not necessarily mean that the null hypothesis is true, it only suggests that there is not sufficient evidence against Ho in favour of H1. Rejecting the null hypothesis then, suggests that the alternative hypothesis may be true.
3.6.1 Statement of Hypothesis for the Present Study

For the present study, the following hypotheses were formulated:

**Null Hypothesis (Ho)**

2. “The available technological development will not add to the betterment in the systems of Synchronous E-Learning for distance education and Talent Development in the organization”.

**Alternative Hypothesis (H1)**

1. Synchronous E-Learning is the process of effective communication Talent Development for Human Resource Management.
2. The available technological development will add to the betterment in the systems of Synchronous E-Learning for distance education and Talent Development in the organization.
3.7 Design of the Final Questionnaire

On the basis of the pilot study and Hypotheses formulated, appropriate changes were made and final questionnaire was designed. The researcher then selected the following four categories of respondents for the research and made a separate questionnaire for each category, as given below:

- **No. 101** Questionnaire: Applicable to all the Software professionals, who are using the Synchronous E-Learning tools to enhance their competencies.

- **No. 102** Questionnaire: Applicable to all the e-MBA students, studying from Indian Institute of Management, Bengaluru (IIMB).

- **No. 103** Questionnaire: Applicable to all the Senior Executives, CEO, Director, and Head –HR, who had an opportunity of implementing Synchronous E-Learning.

- **No. 104** Questionnaire: Applicable to all the Subject Matter Experts, Senior Executives, who are developing Synchronous E-Learning Solutions.

The questionnaire focused on reasons for effective and efficient way to support the Talent development on the basis of available technologies. Accordingly, the researcher used closed/ open ended, multiple choice, nominal and ordinal questions. Necessary care was taken to ensure that they were simple, direct, and unambiguous and maintained an appropriate sequence. The Likert scale has been used for collecting the degree of response by the respondents.

3.8 Collection of Data

a. Primary Data

This is data which is collected afresh and for the first time, and thus happens to be original in character. Primary data is firsthand information collected through various methods such as observation, interviewing, mailing etc. Primary data is directly collected by the researcher from its original sources. The researcher can collect the required data precisely according to his research needs.
The field survey and personal interviews techniques have been adopted in elucidating responses for the present study. Primary data was collected through the questionnaire method by distributing and collecting data from the Senior Executives, Heads – HR/ HR representatives of various IT and ITES industries in Pune and Bengaluru. The details of the same are discussed below. The researcher was proactive enough to spend some time with the respondents before the respondents actually filled up the questionnaire and could gather some information and reactions of the respondents which were very useful for the research as a whole conclusion.

b. Secondary data

These are sources containing data which have been collected and compiled for another purpose. It is data that already exists and does not have to be collected by the researcher. This is data collected by someone else and which have already passed through the statistical process.

For the present study secondary data was collected through the following sources:

1. Various articles which are published in Web sites, books, journals, Blogs, magazines, research papers published in research journals.
2. Newspaper articles (Appendix ‘C’).
3. Web sites were also accessed as a major source to provide valuable and important data for research and literature review.

3.9 Selection of Sample

The researcher himself is a Senior Human Resources professional and was implementing the Synchronous E-Learning for Corporate compliance, Code of Conduct, Non-Disclosure Agreement (NDA) as a part of the Talent induction in the Pune office as part of REDKNEE global HR Policy. Thus, he had good scope to evaluate most of the Pune and Mumbai based E-Learning solutions companies before implementing the Synchronous E-Learning. Further, it helped the researcher to collect the appropriate data for the current research, especially on Synchronous E-Learning tools with Learning Management System. A list of IT companies based in India was obtained from the
eLearning India magazine to know more about the available E-Learning solution providers. The list, thus taken, had 138 IT companies and independent Indian E-Learning consultants. The IT companies and Distance Learning Educational institutions in Pune and Bengaluru were identified covering:

a. Small, medium and large IT services companies
b. Institution imparting Distance Education, which had implemented Synchronous E-Learning
c. Product development companies which had implemented E-Learning solution
d. E-Learning Solution development companies.

Once the questionnaire was finalized, the researcher started establishing contact with CEO/ Head Operations / Directors /HR professionals in the IT companies. Subsequently, a letter was sent explaining the objectives of the present study along with the questionnaire, addressed to HR personnel of 50 IT companies, who had an opportunity of implementing E-Learning tools to support their Talent Development and also E-Learning Software developing companies. It was a great challenge to communicate the purpose of the current research, where employees’ information was essential, there being inherent fear and hesitation on the part of Head Operations / Human Resources professionals to share the information, especially in respect of sharing the employees’ information as it is confidential. The researcher was often required to meet the respondents personally and assure that all the information sought would be kept strictly confidential and would be used exclusively for the academic research study. Besides, it was also suggested that they could take the liberty to contact the researcher to seek any clarification/clear doubts about the content of the questionnaire.

The researcher collected the required information on the spot from the IT hub locations like Magarpatta City, Hinjewadi, Kalyani Nagar, EoN Karadi, Aundh IT Park, IBM Shastri Nagar, Airport road in Pune and some of the IT companies in Bengaluru. Social media / new working supported the researcher in contacting software professionals and MBA students for collecting the answers to the questionnaires. It was interesting to note the latest tools of E-Learning implemented by MNCs for Talent Development.
3.10 Categorization of Respondents for Collection of Data:
The sample consisted of four categories of respondents as given below:

**Category 1: Software Professionals** - 390 questionnaires were distributed to Software professionals, but the researcher was able to get the response from only 375 software professionals. Even among these, it was found that the correct data was not mentioned, so the researcher had to discard 75 questionnaires and considered only 300 for software professionals.

**Category 2:** 62 questionnaires were distributed to working professionals, who were studying for E-MBA from IIM, Bengaluru. Out of the 60 questionnaires, 12 questionnaires were found to be invalid, since they were incomplete in many respects and hence were discarded from the final research and finally only 50 respondents were considered.

**Category 3:** 58 questionnaires were distributed among CEOs, Directors, and Heads of Human Resources of the companies, who were using Synchronous E-Learning tools for Talent Development. Out of the questionnaires distributed some were found to be invalid, since they were incomplete in many respects and hence were discarded from the final research and finally only 50 respondents were considered.

**Category 4:** 68 questionnaires were distributed among Subject Matter Experts, Directors, and Heads of Operations, who were developing software for E-Learning solutions for Synchronous E-Learning for Talent Development. Out of the questionnaires distributed, some were found to be invalid, since they were incomplete in many respects and hence were discarded from the final research and finally only 50 respondents were considered.

Thus a total of 450 respondents were considered for the research. The breakup being: 300 Software professionals, 50 e-MBA students, 50 Senior Executives /Directors/Head HR of the IT companies and 50 Subject Matter Experts or Senior Executives, who were developing E-Learning software solutions.
The sample of study bears the following characteristics:

1. Only one questionnaire was obtained from each individual.
2. The nature of organization included small, medium and large companies, who were using Synchronous E-Learning tools.
3. They also included IT enabled services, product development and IT services companies.
4. The companies were software private limited companies in Pune and Bangalore
5. Companies varied from those with turnover of INR 50 Crores to more than INR 100 Crores.

3.11 Analysis of Data

1. The data collected had been tabulated and presented in the form of tables, charts and graphs.
2. Statistical tools like Sign Test, Kruskal –Wallis Test and ANOVA were used to analyze the data obtained.

In case of Software professionals and E-MBA students Questions 4, 7 and 8 of Questionnaires No. 101 and No. 102 were combined and the mean of these three statements of respondents was taken to calculate the results with reference to one of the hypothesis i.e., “Synchronous E-Learning is the process of effective communication for learning in the organization for Talent Development for Human Resource Management”. This analysis has been done using the Sign Test and cross tabulations by using SPSS (Appendix B).

In case of Directors/CEOs, questions 4, 9 and 10 of Questionnaire No. 103 were combined. Also, in case of E-Learning solution providers questions 1, 4 and 10 of Questionnaire No.104 were combined to calculate the results, which would prove the second hypothesis i.e., “The available technological development will add to the betterment in the systems of Synchronous E-Learning for distance education and Talent Development in the organization”. This analysis has been done using the Sign Test and cross tabulations by using SPSS (Appendix B).
Before combining the questions, reliability of the combined data had been tested using Cronbach's Alpha (as it was greater than 0.5). Further to test the above stated hypotheses One-Way ANOVA was also applied.

3.12 Statistical Tools used for Analysis of Data

a. Sign Test:

Sample Sign Test

Assumptions: Data is non-normally distributed, even after log transforming. This test makes no assumption about the shape of the population distribution, therefore this test can handle a data set that is non-symmetric, that is skewed either to the left or the right.

Working: The SIGN TEST simply computes a significance test of a hypothesized median value for a single data set. Like the 1 SAMPLE T-TEST you can choose whether you want to use a one-tailed or two-tailed distribution based on your hypothesis; basically, do you want to test whether the median value of the data set is equal to some hypothesized value (H₀: η = η₀), or do you want to test whether it is greater (or lesser) than that value (H₀: η > or < η₀).

Likewise, you can choose to set confidence intervals around η at some α level and see whether η₀ falls within the range. This is equivalent to the significance test, just as in any T-TEST. Under the hypothesis that the sample median (η) is equal to some hypothesized value (η₀, so H₀: η = η₀), then you would expect half the data set S of sample size n to be greater than the hypothesized value η₀. If S > 0.5n then η > η₀, and if S < 0.5n then η < η₀. The SIGN TEST simply computes whether there is a significant deviation from this assumption, and gives you a p value based on a binomial distribution. If you are only interested in whether the hypothesized value is greater or lesser than the sample median (H₀: η > or < η₀), the test uses the corresponding upper or lower tail of the distribution.

b. The Kruskal–Wallis Test

The null hypothesis that samples in two or more groups, are drawn from populations with the same mean values. To do this, two estimates are made of the population variance.
These estimates rely on various assumptions (see below). The ANOVA produces an F-statistic, the ratio of the variance calculated among the means to the variance within the samples. If the group means are drawn from populations with the same mean values, the variance between the group means should be lower than the variance of the samples, following the central limit theorem. A higher ratio therefore implies that the samples were drawn from populations with different mean values.

The results of a one-way ANOVA can be considered reliable as long as the following assumptions are met:

- Response variables are normally distributed (or approx. normally distributed).
- Samples are independent.
- Variances of populations are equal.
- Responses for a given group are independent and identically distributed normal random variables (not a simple random sample (SRS)).

c. **ANOVA** is a relatively robust procedure with respect to violations of the normality assumption. If data are ordinal, a non-parametric alternative to this test should be used such as Kruskal–Wallis one-way analysis of variance.

Given the summary statistics, the calculations of the hypothesis test are shown in tabular form. While two columns of SS are shown for their explanatory value, only one column is required to display results.


### 3.13 Limitations of the study.

The following are the limitations of this research study.

1. The study was restricted to IT companies only located in Pune and Bengaluru.
2. The study was focused on IT companies only and hence results of the analysis are not applicable to other type of industries.
3. The information provided by the respondents may not be 100% accurate on the type of the Synchronous E-Learning tool from their respective company, as they were not fully aware about the technical specifications.