

# INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

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

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

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**TRAINING FOR SKILL UP-GRADATION IN SELECTED IT ORGANIZATIONS: A SAMPLE SURVEY**

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**ABSTRACT**

*This paper is an attempt to study the current status of skill up-gradation in Indian IT (Information Technology) industry. The objective of the study is to identify the level of penetration of skill up-gradation activities and their shortcomings. The paper will suggest suitable strategies and focus areas for IT managements to improve skill level of employees. The study is conducted by means of online survey. The study is conducted in three IT organisations operating in Hyderabad and Secunderabad. Some of the responses are collected through social networking sites from few other IT organisations. The analysis is done using statistical averages. It has been observed that IT industry is focusing on formal training as well as certifications of its employees. The average number of training programs attended and certifications obtained is fairly good. But, it appears that all the employees are not uniformly trained or certified. They are considerable number of employees with very little training/certifications where as some employees are having fairly large number of trainings/certifications. Also, employees are allocating fairly large percentage of time for on the job learning. However, the study has not collected data on number of days employee has attended training programs and the nature of training programs attended. The managements are advised to make it compulsory to participate in training programs for all employees every year. The managements are advised to provide financial and training assistance to all employees for certification on relevant skills. The project managers are advised to plan for on the job learning during the effort and schedule finalization of the projects.*

**KEYWORDS**

IT organizations, skill up gradation, training, certifications.

**ABBREVIATIONS**

CDAC	Center for Development of Advanced Computing (Govt. of India)
CMC	CMC Ltd. (a TATA enterprise)
CTS	Cognizant Technology Solutions
HR	Human Resource
IBM	International Business Machines
IT	Information Technology
N	Frequency at Mode
JNIAS	Jawaharlal Nehru Institute of Advanced Studies
JNTU	Jawaharlal Nehru Technology University
MNC	Multi National Corporation
OTHERS	Represents IT companies of the participants. The IT Companies include: AISFM, AT & T global Business solutions, Excelian, GSS Infotech, Harsco India services Ltd., Napier, Mphasis, CTS, TCS, IBM, UGH
TBSS	TATA Business Support Services Ltd. (A TATA enterprise)
TCS	TATA Consultancy Services Ltd.
UHG	United Health Group

**1. INTRODUCTION**

Information Technology (IT) industry is growing very fast in India. Computer science is still not a mature science and IT industry is evolving with time. This industry is dependent on highly skilled and motivated work force. There is a need to continuously train the work force to meet challenging customer requirements. Here is an attempt to study the focus on formal training by Indian IT industry. The paper will identify areas of improvement for skill building activity and suggest suitable strategy and policy changes.

The study is based on survey conducted in few IT organization employees. The focus is on formal training programs and certifications obtained. Also, the percentage of time for on the job training is collected. However, the survey does not cover nature of the topic and duration of formal training. The analysis is done using SOFA, a statistical tool. The statistical averages calculated are presented in Note 1 at the end of the paper.

The study clearly shows that IT industry has focus on formal training. There is evidence of formal training programs being organized by IT firms but there is no evidence that all the employees have time and opportunity to attend these training programs. Also employees need a good percentage of time for on the job training. It can be concluded that, there is focus on formal training, but special focus is required to cover all the employees. There is a need to study further whether on the job training is essential, if so is it planned by the project managers. The managements have to suitably modify Human Resource policies so that each employee will attend a certain minimum days of training and obtain certifications on regular basis on contemporary technologies.

**2. REVIEW OF LITERATURE**

Innovation and competitiveness are essential for growth of the enterprise. Skilled and capable employees are key for innovation. Enterprise competitiveness as well as regional competitiveness are impacted by enterprise training (Padilla Raman, 2007). Investments in human capital have positive impact on firm level productivity (Yang Chih-Hai, 2010). Local and small enterprises are more concerned about the need to acquire technology and be technologically updated (Ciravegna Luccano, 2001). The motivation levels of employees and employee retention are essential for any enterprise, more so in IT industry. It has been established that training investments improve motivation levels, increase employee retention and reduce attrition (Damaraju Sirisha, 2013, Katsimi Margarita, 2008).

Another important concern is even though qualified graduates are produced from the colleges, there is lack of requisite skill (Upadhyaya Carol 2007, Li Xiaoping, 2011). Job obsolescence can be a major concern, if regular training is not provided to employees. Workers need to take more responsibility for management of



their learning (Guglielmino Paul J,1987). But, training provided by employers is portable across employers. Even in case of training financed by employers, the employees pay through reduced static wages. The training means a formal class room training. But, in industry as well as academy, active learning is gaining importance day by day. Facilitation and coaching rather than lecture are essential for motivating the students. Team based models of training and development appear to be encouraging organizational commitment, job satisfaction and co-worker satisfaction and thereby reducing attrition (Kennett Geraldine, 2013). It is recommended that 2-4 hours of training time is provided per week (Damaraju Sirisha, 2013). Small units have no system to ascertain training needs (M Srimannarayana, 2006). Majority of local entrepreneurs lack social ties with professional abroad. Even MNC directors have less means and incentives to establish linkages that foster technological learning (Ciravegna Luccano, 2001).

### 3. NEED/IMPORTANCE OF THE STUDY

The importance of training and skill building is well understood. But, how much of the effort by the managements in IT organizations is actually converted to actual skill building needs to be established. In view of the above it is proposed to study the skill building activity in Indian IT industry. The skill building activity is measured by the number of training programs attended and the number of certifications obtained by it's employees. Also, percentage of time for on the job learning by IT employees is studied.

### 4. OBJECTIVES OF THE STUDY

The objectives of this study are given below:

1. To access and inform IT companies the level of penetration of their skill building initiatives like formal training and certifications.
2. To suggest strategies and policy changes to Indian IT companies for improvement of skill up-gradation of IT employees.
3. To stress the importance of on the job learning to the managements for taking suitable actions.

### 5. HYPOTHESES

The literature clearly established that IT corporates have to focus on formal training to its employees to stay competitive in the business. Even fresh recruits need proper training to be productive and IT work force needs continuous training. Training not only improves productivity but also increases employee retention also. In order to test the effectiveness of training plans of Indian IT industry the following Hypotheses are proposed to be tested in this study.

Hypothesis 1: The Indian IT enterprises are providing regular training to employees.

Hypothesis 2: The training programs are covering all the employees.

Hypothesis 3: All the employees are having required certifications.

### 6. RESEARCH METHODOLOGY

The study is based on online survey conducted. Three IT organisations are selected including one government organization. One large sample is selected by random selection process from total population of the organization. The other two samples are from selected firms based on simple random sampling. The survey is administrated to all the members of the selected sample. The fourth sample is from social networking sites. Actual survey is conducted for employees with experience up-to 35 years of service. However, the data pertaining to employees with experience up-to 15 years only is considered. The main purpose is to focus on current generation and avoid extreme values which may affect statistical analysis.

The variables considered are Training, Recent training, Certifications, Recent certifications and On the job training. Training is the number of training programs attended during the entire duration of employment. Recent training is the number of formal training programs attended during the last one year of service. Similarly, certifications is the number of certifications obtained by each individual during his entire career. Recent certifications are the number of certifications obtained by the individual during the last one year. On the job training is the percentage of time an individual is utilizing for On the job learning during the project execution.

The data is analyzed to test the hypotheses by statistical analysis. Arithmetic averages have been computed to understand the per head quantities. The coefficient of skewness is computed to understand the uniformity of distribution. Also Pearson's constant is calculated to understand the relation between experience and training/certifications. The SOFA the Statistics Open for All an open source tool is used for analysis.

### 7. RESULTS & DISCUSSION

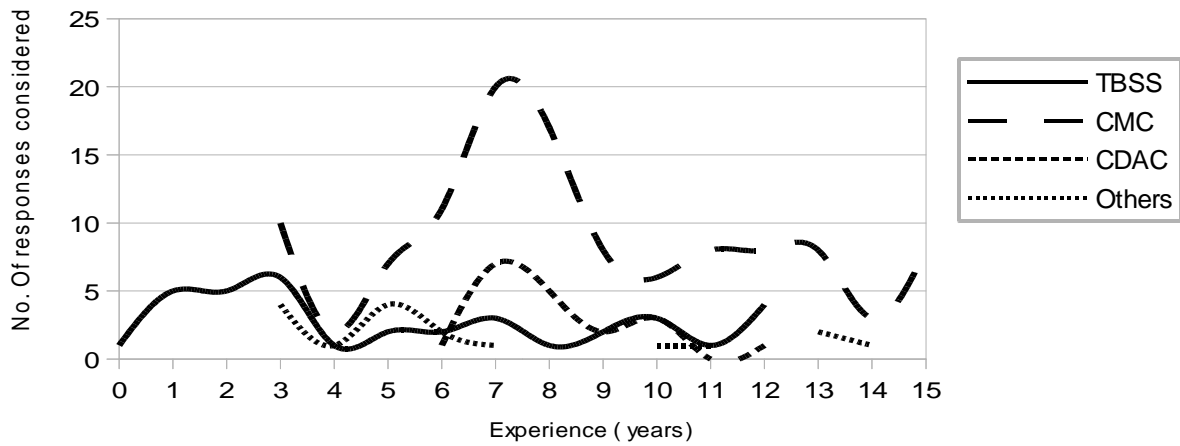
The sample is mainly from three companies. Two companies, CMC and TBSS belong to TATA group. One more sample is from Government of India center CDAC. The fourth sample from social networking sites is comprising of employees from companies like TCS, UHG, Napier, IBM, CTC etc. and is referred as OTHERS. As mentioned earlier, the abbreviations are given in Note 2 at the end of the paper. For CMC 400 employees are selected randomly and questionnaire was mailed. Only 144 have completely responded to the survey. From the TBSS technology support team, all the selected employees have been mailed the online survey. Out 50 employees contacted by mail 38 employees have completely responded to the survey. For CDAC, Hyderabad unit was selected and around 40 regular employees were mailed the survey. However, 21 employees have completely responded to the survey. Around 33 IT professionals have tried to respond to survey through social networking sites (Facebook / LinkedIn). Only 19 professionals have responded completely. The details are tabulated below Table Sample Sizes (Table 1)

TABLE 1: SAMPLE SIZES

Organization	Sample size	Response	Response considered
CMC	400	144	116
TBSS	50	38	37
CDAC	40	21	21
OTHERS	33	19	18

Out of the responses received, only responses from employees of experience up-to 15 years is considered for analysis. The focus is mainly on work force and middle management. Top management and Senior management is not considered to minimize the effect of extreme values on averages. The experience vs number of responses are plotted on line graph and presented below as Experience Graph (Graph 1):

GRAPH 1: EXPERIENCE GRAPH

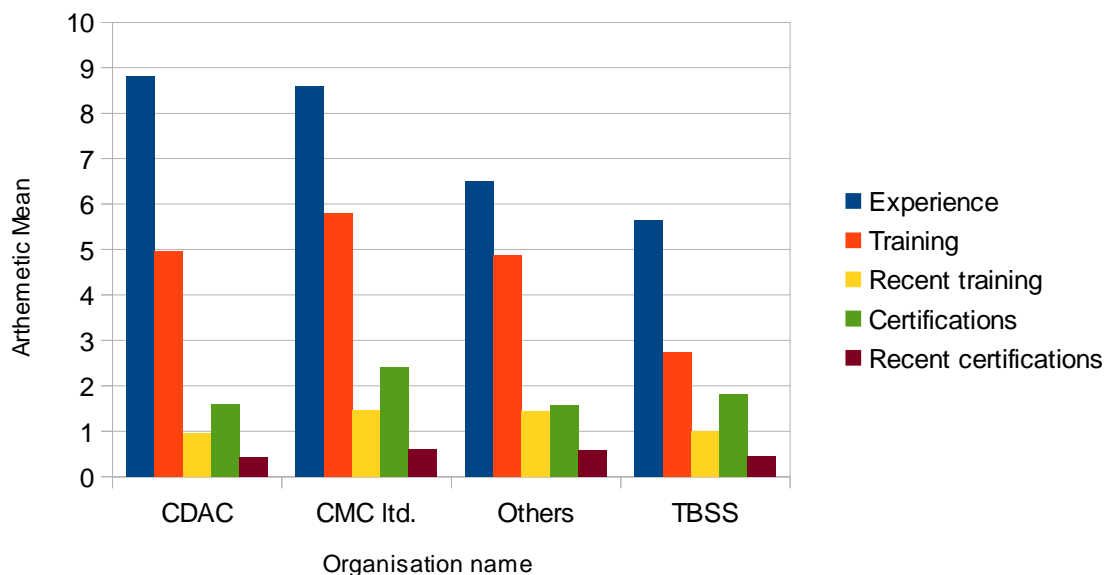


Each line represents one organization. X axis represents experience in years and Y axis represents number of responses considered for the given experience. Both CMC and CDAC have more respondents in 7-8 years' experience range. For TBSS peak is in 1-3 years range, but has representation across. The responses from social networking sites has representation across but there is no participation for 8-9 years' experience range.

The statistical averages are accepted measure of central tendency. The statistical averages are calculated and presented in the **Note 1**. The arithmetic mean is plotted as bar graph for each organization representing Experience, Training, Recent training, Certifications and Recent certifications.

The arithmetic means are shown below bar graph: Skill Building (Graph 2).

GRAPH 2: SKILL BUILDING

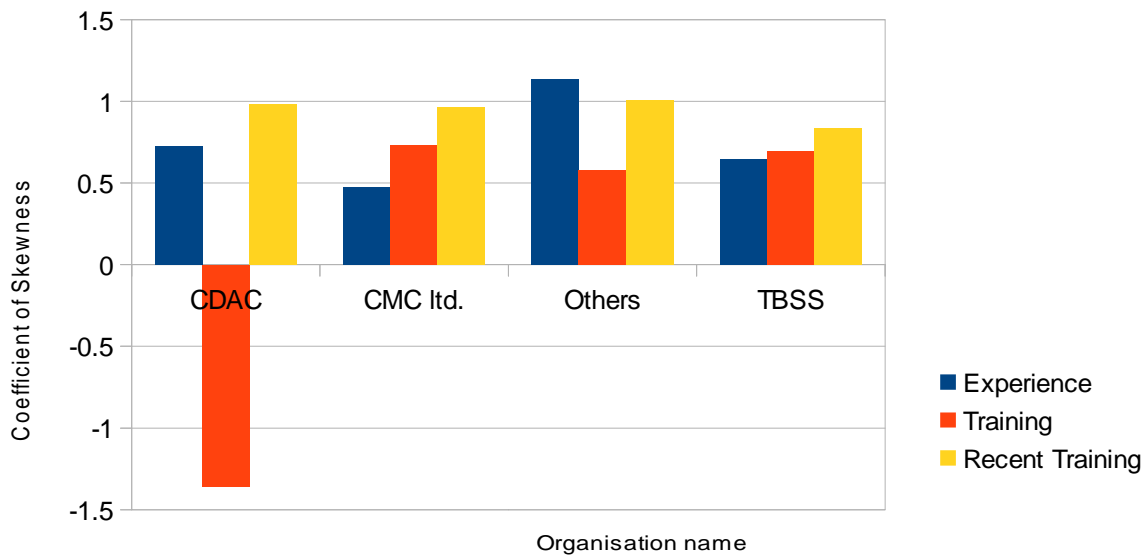


The graph indicates that average experience is 6-9 years and average training programs in the career are 3-6 programs. On the average each employee is attending at least one training program in every one and half to two years. However, the Recent training graph i.e. training program in last one year shows that each employee has attended at least one training program on average. Similarly, the employees have around one and half to two certifications on the average. The recent certifications show that average is half certificate meaning every alternate employee is certified in the last one year. We can safely conclude that the organization have focus on training their employees and employees are improving their skills by certifications.

With the above reasoning we conclude that Hypothesis 1: "The Indian IT enterprises are providing regular Training to employees" is true.

Then the important question is whether all the employees are covered. Are these training programs uniformly distributed among all employees or some employees are trained more and others are not getting an opportunity. The coefficient of skewness is a clear measure of dispersion. The sample covers wide range of experience 1-15 years, but the respondents are not uniformly distributed over the range. Coefficient of skewness gives distribution of the sample. If all the employees are given uniform opportunity, the coefficient of skewness for Training will be same as coefficient of skewness for Experience. The Training Skewness graph (Graph 3) below shows coefficient of skewness for Experience and Training for the selected organisations.

GRAPH 3: TRAINING SKEWNESS



The graph clearly shows that except for TBSS the coefficient of skewness for Experience and Training are not same and hence, the training imparted is not uniform for all the employees. The coefficient of skewness for Recent training is also not near to the coefficient of Experience.

Another important indicator of dispersion is frequency(N) at mode and range. Please refer to Note 1 again. The Mode for experience is 7 and N is 7 whereas average is 8.81 for CDAC. Similarly, for CMC Mode is 7 and N is 20 whereas average is 8.59. The difference between Mean and Mode is small (less than 2) and Range is 9 for CDAC and 12 for CMC. We can conclude dispersion of experience in selected sample is reasonably uniform and average is not very much affected by extreme values.

In case of training Mean is 4.95 and Mode is 10 with frequency of 4 (out of population of 19) for CDAC. For CMC Mean is 5.8 and Mode is 2 with frequency of 13 (out of population of 98). The range for CDAC is 10 and CMC Range is 36. Mode is far away from Mean in both cases. These numbers indicate that training is not uniformly distributed among the employees across various experience levels. Even Standard Deviation is high supporting above argument.

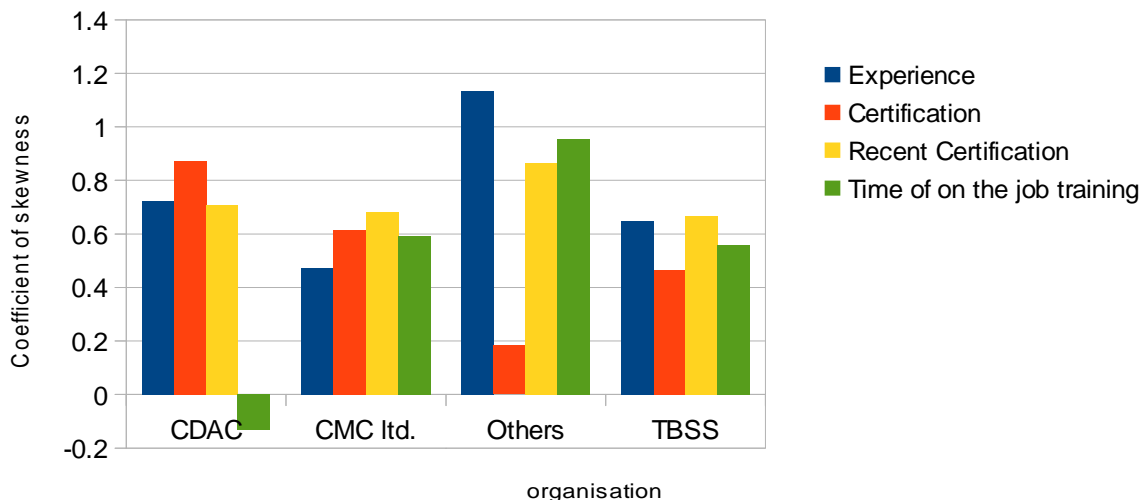
If we look at recent training values, Mean is 0.95 and Mode is 0 for N value of 8 out of 19 and Range of 3 for CDAC. For CMC the Mean is 1.47 Mode is 0 for N value of 30 out of 94 and Range 8. It clearly shows that more than 30% for employees are not trained in recent past. Another important observation are some employees are trained thrice in CDAC and 8 times in CMC in last one year. It clearly shows that organisations are providing opportunity to training all the employees in the recent past, but only few employees are enjoying the benefits of training and the benefit is not reaching all the employees. Even for TBSS the training Mean is 2.75 but Mode is 1 and range is 11. For OTHERS the Mean is 4.88 and Mode is not well defined (3&4) but range is 20.

The above discussion statistically shows that training is planned to cover all the employees but not reaching all the employees. Hence, the hypothesis 2 “The training programs are covering all the employees.” is not true. The training programs are not covering all the employees.

Certification is another important indicator of skill of employees. Organizations are said to be having focus on certifications. As per Note 1 we will examine the average certifications for the samples studied. The average number of certifications are 1.61 (CDAC) 2.4 (CMC) 1.81(TBSS) and 1.58(OTHERS). This clearly shows that average is more than one certificate for employee for all organisations. But, Mode is 0 for CDAC and OTHERS. Mode is 1 for CMC and TBSS. But ranges are 5(CDAC), 10(CMC), 7(TBSS) and 4(OTHERS). The average number of certifications in the recent past are 0.44(CDAC), 0.6(CMC), 0.69(TBSS) and 0.58(OTHERS). If the certifications are uniformly distributed one of every two employees are certified in recent past. But, the mode is Zero for all (CDAC, CMC, TBSS and OTHERS) with N as CDAC:11(18), CMC: 53(90), TBSS: 18(28), OTHERS: 6(12) indicating that 61% of CDAC 58% of CMC, 64% TBSS and 50% of OTHERS are not certified in the recent past. The ranges are 2(CDAC), 4(CMC), 2(TBSS) and 2(OTHERS). The above observations clearly show that organisations have focus on certifications and the focus increased in the recent past.

The coefficient skewness for certifications is shown in Certification Skewness (graph 4) graph below:

GRAPH 4: CERTIFICATION SKEWNESS



It can be observed that coefficient of skewness for experience and certification is not same in any one of the selected organizations. The observation is that employees are certified but certification is not distributed as per experience. The coefficient of skewness for Experience and Recent certification are very near for CDAC and TBSS. The near coefficient of skewness indicates that there is similarity in distribution of Experience and Recent certification. We can conclude that in CDAC and TBSS even experienced employees are focusing on certifications. But, For CMC and OTHERS the values of coefficient of skewness for Experience and recent certification are different. For CMC only time spent On the job training and Recent certifications are near, indicating similar distribution. We may conclude that employees are utilizing on the job learning to get certified.

It can be summarized that there is focus on certifications and average certification is good, but all the employees are not certified. Hence, the hypothesis 3 "All the employees are having required certifications." is not true.

In IT industry employees change organizations frequently. When we talk about experience vs total training or certifications, current organization may not have much of an impact. Hence, here is an attempt to understand the relation between experience and skill building by considering all the employees surveyed ignoring the current organization. In order to understand correlation between various factors Pearson's test of linear Correlation is calculated.

The results are tabulated below in the Pearson's Linear correlation (Table 2):

TABLE 2: PEARSON'S LINEAR CORRELATION

Parameter 1	Parameter 2	Two tailed p value	Pearson's R static	Degree of freedom	Slope	Intercept
Experience	Training	0.001	0.241	169	0.304	2.722
Experience	Recent Training	0.405	-0.066	161	-0.025	1.504
Experience	Certifications	0.014	0.191	162	0.108	1.286
Experience	Recent Certifications	0.969	0.003	151	0.001	0.55
Experience	On the job training	0.004	-0.206	197	1.403	37.935

The p value is small for Experience Vs. Training, Experience vs Certifications and Experience Vs. On the job training. Statistically there is leaner relationship between these set of variables. Recent training and recent certification have no relation with experience as p value is large. Logically also, all the employees need training and certification. Experience need not warrant less or more skills as IT Industry needs continuous skill building. Hence, recent certifications and training need not have correlation with experience. But, employees with longer experience is expected attend more training programs and get more certifications during their total career. The correlation between experience and training/certifications is expected to be very strong. But, from the above table person's r static is nearer to zero rather than one. Hence, we have to conclude that the correlation is very low. Across the organisations, IT industry is focusing on training and skill building, but all the employees are not equally trained or certified.

## 8. LIMITATION OF THE STUDY

The study has collected data on number of training programs attended. But, nature of training and duration of training are not collected. Hence, we do not have data to understand number of days' employees have attended formal training. Also, we do not know, whether the training programs are technical training programs and are with hands on experience. Another important observation is employees are utilizing considerable amount of time On the job training. We do not know whether the projects have allocated that much time for learning for each individual or whether employees are spending additional time in office due to necessity.

## 9. CONCLUSION AND RECOMMENDATIONS

The IT industry is based on evolving technology and fast growing. The employees need continuous training to be innovative and deliver the products/projects as per customer requirements. The fresh work force recruited is qualified but doesn't seem to be possessing required skills to be productive from day 1. Even the currently working and active employees need to be trained in latest technologies on regular basis. The IT industry has the need and has a focus to train the employees on regular basis. Also, today, IT industry is heavily depended on external certifications to assess the skill level of their employees on state of the art technologies.

The study has proved that IT industry has the focus on skill building and their employees are attending training programs. The employees are certified. But, it is also observed that all the employees are not given equal opportunity to attend the training programs. Some employees are attending more programs where as some are not attending any training program. Similarly, average certification is good but, all the employees are not certified. Another important observation is more employees are trained and certified in the recent past. It may be required to identify the reasons for unequal participation in skill building and take corrective action.

Based on the conclusions above the following recommendations are made.

1. IT companies to mandate all employees to attend at least one training program in a year.
2. IT companies to mandate certain number of training days for each employee per year.
3. IT companies to provide financial and training support to all employees on regular basis to take certification examinations.

Sample survey clearly established that IT companies have to further strengthen their HR policies to improve the skill up-gradation on regular basis.

## 10. SCOPE OF FURTHER RESEARCH

Further study can be done to asses relevance and quality of training imparted to the employees.

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## REFERENCES

1. Ciravegna Luccano, 2001, "FDI, Social Ties and Technological Learning in New Silicon Valley Clones. Evidence from the Costa Rican ICT Cluster", *"Journal of development studies"*, Vol 47, No. 8, August 2011, pp 1178-1198
2. Damaraju Sirisha, 2013, "Learning and Development in Information Technology(IT) Companies", *"International Journal of Research in Commerce and Management"*, ISSN 0976-2183, Volume no 4(2013) Issue no 7(July) pp 121-122
3. Guglielmino Paul J, Guglielmino Lucy M., Long Huey B, 1987, "Self Directed Learning Readiness and Performance in the work place: Implications for Business, Industry and Higher Education", *"Higher Education"* Vol. 16, No. 3 (1987), pp 303-317
4. Katsimi Margarita, 2008, "Training, Job Security and Incentive Wages", *"Scottish Journal of Political Economy"*, Vol 55, No 1, February 2008, pp 67-78
5. Kennett Geraldine, 2013, "The Impact of Training practices on Individual, Organization and Industry Skill development", *"Australia Bulletin of Labour"*, Vol 39, No 1 2013, pp 112-135
6. Li Xiaoping, Faulkner David, Yan Yanni, 2011, "The Strategic stages of China – UK educational alliances an empirical study", *"Asia Pacific Business Review"*, vol 17, No. 1, January 2011, pp 7-24
7. M Srimannarayana, 2006, "Human resource management in Small Business", *"Indian Journal of Industrial Relation"*, vol 41, No.3 (January 2006), pp 313-334
8. Padilla Raman, Juarez Miriam, 2007, "Effects of training on competitiveness in the manufacturing sector", *"CEPAL Review 92"*, august 2007, pp 45-60
9. Upadhya Carol, 2007, "Employment, Exclusion and 'Merit' in the Indian IT industry", *"Economic and political weekly"*, Vol no 42, No 20, May 19-25, 2007, pp 1863-1868
10. Yang Chih-Hai, Lin Chun-Hung, Ma Daw, 2010, "R&D Human Capital Investment and Productivity: Firm level Evidence from China's Electronic Industry", *"China & World economy/72-89"*, Vol 18 No. 5, 2010 pp72-89

**ANNEXURE****NOTE 1****STATISTICAL AVERAGES****EXPERIENCE**

Organization	Mean	Std. Deviation	Median	Mode with N	N	Range	Coefficient of skewness
CDAC	8.81	2.5	8	7(7)	21	9	0.724
CMC	8.59	3.36	8	7(20)	116	12	0.4732
OTHERS	6.5	3.97	5	3,5(4)	18	13	1.1335
TBSS	5.65	4.09	5	3(6)	37	14	0.6479

**TRAINING**

Organization	Mean	Std. Deviation	Median	Mode with N	N	Range	Coefficient of skewness
CDAC	4.950	3.72	5	10(4)	19	10	-1.3575
CMC	5.8	5.19	5	2(13)	98	36	0.7321
OTHERS	4.88	4.57	4	3,4(4)	16	20	0.5776
TBSS	2.75	2.51	2.5	1(7)	32	11	0.6972

**RECENT TRAINING**

Organization	Mean	Std. Deviation	Median	Mode with N	N	Range	Coefficient of skewness
CDAC	0.95	0.97	1.0	0(8)	19	3	0.9793
CMC	1.47	1.52	1	0(30)	94	8	0.9671
OTHERS	1.44	1.31	1	1.0,2.0(5)	16	5	1.0076
TBSS	1.0	1.2	1	0.0(12)	29	5	0.8333

**CERTIFICATIONS**

Organization	Mean	Std. Deviation	Median	Mode with N	N	Range	Coefficient of skewness
CDAC	1.61	1.85	1	0.0(7)	18	5	0.872
CMC	2.4	2.28	2	1.0(26)	97	10	0.614
OTHERS	1.58	1.31	1.5	1.0,2.0(3)	12	4	0.1832
TBSS	1.81	1.74	1	1.0(13)	31	7	0.4655

**RECENT CERTIFICATIONS**

Organization	Mean	Std. Deviation	Median	Mode with N	N	Range	Coefficient of skewness
CDAC	0.44	0.62	0	0.0(11)	18	2	0.7096
CMC	0.6	0.88	0	0.0(53)	90	4	0.6818
OTHERS	0.58	0.67	0.5	0.0(6)	12	2	0.8656
TBSS	0.46	0.69	0	0.0(18)	28	2	0.6666

**ON THE JOB TRAINING**

Organization	Mean	Std. Deviation	Median	Mode with N	N	Range	Coefficient of skewness
CDAC	27.86	16.32	30	30.0(6)	21	60	0.1311
CMC	24.49	24.5	15	10.0(19)	116	100	0.5914
OTHERS	25.67	21.62	20	5.0(3)	18	70	0.956
TBSS	36	32.22	30	10.0,50.0(6)	37	100	0.5586

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