Role of Pre-Employment Training in Enhancing Employability of Diploma Engineers

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Abstract— *This paper presents an empirical study conducted to find out the role of pre-employment training in enhancement of employability. The study was specifically focused upon the automobile cluster employing the fresh engineering diploma holders. The universe of the study consisted of 26 such industries. Stratified random sampling technique was employed for drawing the sample classified into two groups: - 1) Managerial level and 2) Supervisory level consisting of engineering diploma holders. Standardized scales were administered to 572 Ss out of which 12 responses were dropped down, and 560 Ss were retained in the final sample put to experimentation. Descriptive and analytical research techniques were applied for the analysis of the data collected during the experiment. Statistical tools like 'Cronbach alpha coefficient', 'Pearson correlation coefficient', 'Analysis of variance (ANOVA)' etc were employed for treatment of the collected data for drawing the useful conclusions and testing of the hypotheses. From the experimental analysis the employability of diploma engineers was found to be associated with pre-employment training. Such a study focused on the fresh engineering diploma holders employable by the industries has yet not been reported in the literature.*

Keywords— Analysis of Variance, Career opportunity, Educational empowerment, Pre-employment training, Training evaluation.

I. INTRODUCTION

Literature on Training & Development is very rich in practice and reflected in many books and journals. But after going through many books and articles it was valuable to investigate whether the pains of the training and development practices have been undertaken in industrial setups. It is also important to note the training as process of efficiency improvement. There are number of organizations where this kind of support is not provided to the employees in spite of National Policy that training has to be provided to the employees to upsurge their skill sets and to gain through the training strategies. The organizations have understood the importance of providing the training to their employees so as to get the advantage in the area of competition. There is now increasing acknowledgment that training has significant role in gaining competitive advantage. Extensive research undertaken within human resource area has found that majority of the organizations engaging in innovative practices include training and development as key elements to attaining best practices.

It is valuable to note that training offers many benefits to employees and to the organization as a whole. Employees become more assured, open to change and supportive of each other. In addition, employees are inspired to achieve improved performance as a result of training. The benefits employees gain is personal, career oriented and job related knowledge. The availability of training to the employees make them devoted for achieving performance and develop strong relations with the organization and stay longer in the organization.

The automobile sector is people based industry where the end product is often produced by a number of employees together bringing the end product for organization and customers. Management of labor concentrated industries face intimidating task to measure the potential unpredictability in the performance of the staff involved in the end product. Therefore the implication of appropriate training activities for all business within the auto sector is of considerable importance. As training and development practices have the potential to increase the service levels in the industry, organizations want to work out cost and benefits of training and development.

Therefore the main aim of this study was to examine the Training & Development activities within automobile companies of Maharashtra, identifying training and development systems, its evaluation and its impact on employees and organizations effectiveness and their performance. To achieve these objectives, the study has acknowledged the literature and published studies as best practices in the area of training and development.

A. Automobile Sector of India

The Indian automobile sector is growing at a rate of about 16% per annum and is now going to be the second fastest growing automobile market in the world. The sector is going through a phase of rapid change and high growth. With the coming up of new projects, the

industry is undergoing technological change. The major players such as, Honda, Toyota, Bajaj, Maruti are now focusing on mass customization, mass production, etc. and are expanding their plants.

According to National Development and Reform Commission (NDRC), India's auto making capacity was expected to become 20 million units by the end of the year 2011 exceeding the yearly demand of about 8 million units.

This rapid expansion is because of growing urbanization, rise in the standard of living of consumers, easy availability of finance, liberalization, privatization, and globalization of Indian industry. This rapid expansion has created lots of job opportunities. Interested one in this sector has to specialize in automobile/mechanical engineering.

Currently, Automobile in India is retaining around 10 million employees and is expected to employ more people in near future. Unorganized sector is employing 67% people while, organized sector is employing only 33% people, which is a major drawback for automobile-sector.

B. Need for Training in Automobile Sector

With this rapid expansion and coming up of major players in the sector, the focus is more on the skilled employees and the need of human resource development has increased. The companies are looking for skilled and hard working people who can give their best to the organization. Various companies are opening training institutes to train interested ones in this sector, like Toyota has recently opened Toyota Technical Training Institute (TTTI) near Bangalore that will offer 4 courses in automobile assembly, mechatronics (a combination of mechanical and industrial electronics), automobile weld and automobile paint. TTTI will provide both a high standard of education and training in automotive technology as well as employment opportunities.

This paper is spread into five sections. Section I highlights the current scenario on training and development and its need and importance. Section II profiles the related studies conducted earlier briefly discussing their findings. Section III portrays the experimental design and the research methodology employed in this study. Section IV deals with statistical processing and analysis of data collected during the course of the study, and finally the papers ends with conclusions and recommendations i.e. the final outcome of this study presented in section V of this paper.

II. REVIEW OF LITERATURE

The literature on need and importance of training is engrossed with a number of useful contributions from researchers across the world. But the studies focusing on the manufacturing sector involving automobile sector are only a handful. The literature is found almost void of studies which have specifically dealt with the employability issues of engineering diploma holders. Hence, only those studies and works have been included in review which somewhat go in the same direction.

Training evaluation is defined as the assessment of value or worth. Value is a rather a vague concept, and this has contributed to the different interpretations of the term training evaluation [1]. Perhaps the most amusing and least academic definition of training evaluation has been offered in [2] referring to it as a form of training archaeology where one is obsessively digging up the past in a manner unrelated to the future.

However, coming to the practical studies, the study presented in [3] examined the relationship between the amount and helpfulness of entry training and work outcomes for new-comers during organizational socialization. A sample of 152 newly hired entry-level professionals completed a questionnaire after the first six months of socialization. Supervisor ratings of job performance were obtained four months later. The results indicated that the amount of training received by newcomers was positively related to job satisfaction, commitment, intention to quit, ability to cope and several measures of job performance. Newcomers' perceptions of the helpfulness of training were also positively related to job satisfaction, commitment and intention to quit beyond that explained by training amount. A report was published on using microscopic measurement when evaluated in company management training program in Britain. Responses were gathered from 234 managers by asking a question, in what way do they expect the course to improve their job performance? The areas of application answered were, new techniques, financial control, cooperation, decision making, staff development, attitude towards job etc. To assess the usefulness of the course, the managers were interviewed after six months to find out their subordinates'(who had attended the training course) reflected changes in job behavior. Fifty percent replied that there were positive changes and none reported any adverse effect of the training course on the job [4]. Study in [5] attempted to evaluate a supervisory training program in textile technology conducted in Ahmedabad to progress and revive the technical knowledge and problem solving skills of supervisors. Open ended interview schedules were used. At the same time structured interviews were held to evaluate the effect of training. The subject matter tests were conducted. Post test experimental design was also used. First the experience of the trainees was gathered and then secondly when they actually started performing the job, after the training. This

was to know the retention of the training. It was concluded that he experimental trainee group performed better in all the aspects.

Currently, model of training evaluation proposed in [6] is being used by many organizations to understand the impact of employee training and development efforts on the organization, despite concerns about its limitations. Traditional performance measures, such as business and financial outcomes, are certainly important to consider and should be included in the research studies whenever possible. Yet other performance measures, such as retention, promotion rates and task flexibility, among others, should also be considered since employee development programs may in fact have more immediate impact on them. Researchers should consider organizational performance as being the result of a dynamic chain of performance outcomes, such as: employee development outcomes being linked to individual promotion rates, which are linked to the individual's job performance outcomes, which are linked to business unit outcomes and so on.

One application of the second level of evaluation, knowledge, was reported in [7]. In this study the IBM Corporation incorporated knowledge tests into internally developed training. To ensure the best design, IBM conducted a study to identify the optimal test for internally developed courses. Four separate tests composed of 25 questions each were developed based on ten key learning components. Four scoring methods were evaluated including one that used a unique measure of confidence. The confidence measurement assessed how confident the trainee was with answers given. Tests were administered both before and after training. Indices from the study assisted the organization to evaluate the course design, effectiveness of the training, and effectiveness of the course instructors. The development of the confidence index was the most valuable aspect of the study. It was also reported that behavior in the workplace was not only a function of knowledge, but also of how certain the employee was of that knowledge.

British Airways assessed the effectiveness of the Managing People First (MPF) training by measuring the value shift, commitment, and empowerment of the trainees [8]. An in-depth interview was used to measure the action potential (energy generated in the participants by the course) and level of action as a result of the course. A want level was used to measure the action potential and a do level for the action. Each measurement was assigned a value of high, medium, or low. However, high, medium, and low were not defined. The study showed that 27%of all participants (high want level and high do level) were committed to MPF values and pursued the programs and aims/philosophy. Nearly 30% of participants were fully committed to the aims/philosophy of MPF although they did not fully convert commitment to action (high want level and medium and low do level). Approximately one-third of the participants (29%) moderately converted enthusiasm into committed action (medium and low want level and medium and low do level). But 13% remained truly uncommitted (low want level and low do level). The study presented in [9] evaluated a two-day technical training course involving 123 motor-vehicle technicians over a seven month period in a longitudinal study. The main objective of this study was to demonstrate that training improved performance, thereby justifying the investment in the training as appropriate. It was suggested that the levels in the Kirkpatrick Model [6] may be interrelated. They investigated six trainee features and one organizational characteristic that might predict outcomes at each measurement level. The six trainee features studied were learning motivation, confidence about the learning task, learning strategies, technical qualifications, tenure, and age. The one organizational feature evaluated was transfer climate which was defined as the extent to which the learning from the training was actually applied on the job.

In study presented in [10] data were collected on 119 managers in the steel industry who had attended in company training programs. A questionnaire was administered and their responses were tallied. A majority of the respondents were found to be satisfied with the instructors, the size of the training group, the training material, and training equipments. All but one felt that training contributed to a large extent in developing their knowledge, skills and attitudes. Yet, two studies suggest some opposite findings. Study presented in [11] collected data on supervisors who underwent training in an Indian engineering company. They were given a checklist. The responses indicated that the inputs on industrial relations had little impact on their effectiveness. However, most of them felt that training improved their self confidence, motivation, identification with the management goals and communication ability. In another study [12] data were collected on 999 respondents from banking institutions. Though managers found the training program less effective with respect to their contributions to job performance, they agreed that the formal training is useful. In a supervisory development program [13], the participants were asked before the commencement of training program to write what qualities, in their opinion, should supervisor must have, and rate them on a scale of one to ten. The results of the study suggested that training can show visible and effective results.

III. EXPERIMENTAL DESIGN AND RESEARCH METHODOLOGY

Descriptive and analytical methods were used for analysis of the data collected during the course of the present study. The experimental design employed for the present study is briefly described below.

A. Universe of the Study

The universe of the study comprised of twenty six (26) automobile companies from the major districts of Maharashtra State, manufacturing two wheelers, passenger cars, and commercial vehicles.

B. Sample and Sampling Design

The sample consisted of 52 senior executives (2 from each company), which included 1 HR senior manager and 1 HR executive; and 520 supervisory and other shop floor employees (20 from each company). For drawing the sample from the universe stratified random sampling technique was used. Thus the total sample size was 572 but due to incomplete response 12 responses were rejected and the final sample size retained after the drop down was 560.

C. Data Collection

Data which were collected has a mix of primary as well as secondary data. For primary data standardized scales were used for both the groups of Ss. For secondary data published medium like journal, periodicals, annual reports etc were used.

IV. STATISTICAL PROCESSING AND ANALYSIS OF DATA

A. Statistical Tools and Techniques Employed

The data collected during the course of the study was subjected to analytical treatment using various tools like mean, correlation coefficient, standard deviation, variance etc.

B. Reliability Test for 33 Items Scale

The reliability of the test on a 33 items scale as shown in Table 1 was carried out using Chronbach's alpha coefficient. For testing of null hypotheses, one way ANOVA was applied. The hypotheses going in the same direction were grouped together.

Table 1

Reliability Test		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.988	0.987	33

C. Presentation and Analysis of Data

Fig. 1 illustrates the model used in automobile sector for training the personnel whereas Fig. 2 demonstrates that the effectiveness of the training is evaluated by means of pre and post training scores. Fig. 3 shows employees' general impression about training. Fig. 4 depicts the responses about the practical application of training to the job whereas Fig. 5 depicts how valuable is training to the career.

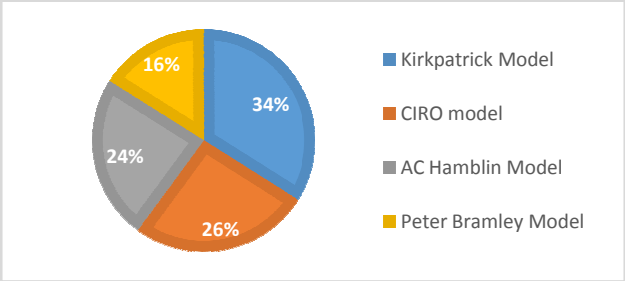

Fig. 1: Model used in training process

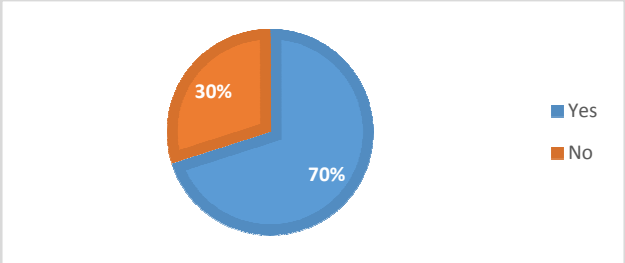

Fig. 2: Evaluating effectiveness of training

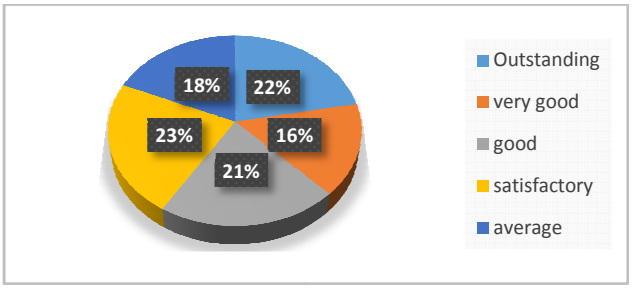

Fig. 3: General impression about the training program

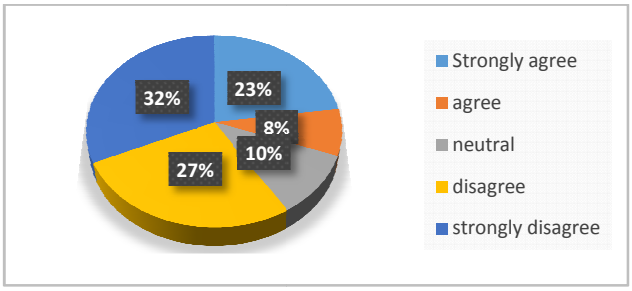

Fig. 4: Contents of training related to practical application

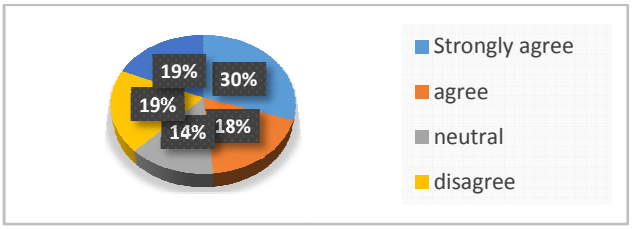

Fig. 5: Contents of training related to value addition

D. Testing of Hypotheses

For the convenience for proving the hypotheses, the hypotheses going in the same direction were grouped together.

Group 1:

1 Less than 30% of fresh diploma engineers meet the

minimum skill expectancy criteria.

2 Training forms an integral part of skill development of fresh diploma engineers.

3 Government apprentice scheme helps in enhancing skills of fresh diploma engineers.

ANOVA: Single Factor

Table 2

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	50	62	1.24	0.186122
Column 2	50	148	2.96	1.957551

Source of Variation	SS	df	MS	F	P-value	F crit
Between	73.96	1	73.96	69.003	5.59E-13	3.938
Within Groups	105.04	98	1.072			
Total	179	99				

Null hypothesis rejected as F > Fcrit

Group 2:

4 Effectiveness of OJT (On the job training) is better than class room training.

5 OJT contributes a lot in enhancing the employability.

Table 3

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	510	630	1.235	0.18028
Column 2	510	1156	2.266	1.11539

Source of Variation	SS	df	MS	F	P-value	F crit
Between	271.25	1	271.25	418.70	3.22E-78	3.851
Within Groups	659.49	1018	0.647			
Total	930.74	1019				

Null hypothesis rejected as F > Fcrit

Group 3:

6 Trained diploma engineers are preferred over graduate engineers because of their hands on experience/skills.

7 Diploma engineers are easy to manage as compared to graduate engineers.

Table 4

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	510	1704	3.34	2.779
Column 2	510	2210	4.33	2.891
Column 3	510	1820	3.57	2.949

Source of Variation	SS	df	MS	F	P-value	F crit
Between	275.55	2	137.77	47.955	0	3.00
Within Groups	4387.1	1527	2.873			
Total	4662.6	1529				

Null hypothesis rejected as F > Fcrit

Group 4:

8 Diploma engineers are more engaged, focused and stable in employment.

9 There is a relationship between pre-employment training and employability of diploma engineers.

10 Employability of diploma engineers has direct effect on the growth of automobile cluster in Maharashtra.

Table 5

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	50	68	1.36	0.2351
Column 2	50	68	1.36	0.2351
Column 3	50	65	1.30	0.21429

Source of Variation	SS	df	MS	F	P-value	F crit
Between	0.12	2	0.06	0.263	0.76913	3.057
Within Groups	33.54	147	0.228			
Total	33.66	149				

Null hypothesis accepted as F < Fcrit

Group 5:

11 Pre-employment training enhances the engagement level of diploma engineers.

12 Employability enhances the career progression of a diploma engineer

13 Apprenticeship training is a very critical and widely used method of pre-employment training.

Table 6

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	510	2030	3.98039	3.90924
Column 2	510	1397	2.73922	2.68431

Source of Variation	SS	df	MS	F	P-value	F crit
Between	392.83	1	392.83	119.16	2.60E-26	3.851
Within Groups	3356.1	1018	3.297			
Total	3748.9	1019				

Null hypothesis rejected as F > Fcrit

E. Correlation Matrix

Correlations matrix about employees' perception about opportunity for application of training is shown in Table 7. As shown in the table, the obtained correlations have been found significant at 1% level of significance.

Table 7

Correlation Items: - Employees Perception About Opportunity for Application of Skills Acquired While Training		Given adequate time to reflect and plan the improvement in area of work	Right kind of climate for implementation of new ideas provided	Benefited from training program	Training has contributed towards value addition	Able to do job more efficiently after training	Made some contribution after training	Follow upon learning objective taken
Given adequate time to reflect and plan the improvements in area of work	Pearson Correlation	1	.873**	.831**	.832**	.903**	.672**	.881**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	510	510	510	510	510	510	510
Right kind of climate for implementation of new ideas provided	Pearson Correlation	.873**	1	.677**	.830**	.887**	.661**	.745**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	510	510	510	510	510	510	510
Benefited from training program	Pearson Correlation	.831**	.677**	1	.654**	.754**	.763**	.708**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	510	510	510	510	510	510	510
Training has contributed towards value addition	Pearson Correlation	.832**	.830**	.654**	1	.716**	.700**	.704**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	510	510	510	510	510	510	510
Able to do job more efficiently after training	Pearson Correlation	.903**	.887**	.754**	.716**	1	.513**	.807**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	510	510	510	510	510	510	510
Made some contribution after training	Pearson Correlation	.672**	.661**	.763**	.700**	.513**	1	.538**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	510	510	510	510	510	510	510
Follow upon learning objective taken	Pearson Correlation	.881**	.745**	.708**	.704**	.807**	.538**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	510	510	510	510	510	510	510
**. Correlation is significant at the 0.01 level (2-tailed).								

V. CONCLUSIONS

This paper has examined the benefits and role of pre-employment training in enhancing the employability of engineering diploma holders. Pre-employment training was found having positive relationship with employee development, organizational performance, career opportunity etc. Expectations of trainee diploma engineers to convert and club pre-employment training into educational empowerment, whereby they can be awarded undergraduate and postgraduate degrees in industrial engineering program, under appropriate government mechanism, is the most exciting contribution of the present study.

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