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A Case Study Approach for Evaluation of Employee Training Effectiveness and Development Program

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Abstract:

Employee training and development creates positive impact on basic functions of an organisation to expand human capital and contend in a quickly changing business world. This study aims to evaluate the effectiveness of employee training program in the MNC. Utilizing the Kirkpatrick's four levels of evaluation model, this study particularly inspects the responses of the employees to the training programs, the level of employees learning, the employee's behaviour on the job effect of the training on the worker's state of mind that is attitude of the employees. The research was carried to evaluate the effectiveness of training program in quality department at multinational company. This case study approach explores the effectiveness of a training programme of an organisation by using Kirkpatrick model. The research methodology used in this study was survey data collection method. The Data survey questionnaire based on Kirkpatrick model. Present study includes all employees of Quality department as sample for this study. Data analysis was carried out utilizing the SPSS 20 software and questionnaire reliability was tested using the (Cronbach's alpha) test and was found more than (Alpha=0.7). A paired sample T-test was directed and it has been found that the employees find the training program more effective. This study analyzed experimentally four stages of measuring training effectiveness with the help of questionnaire. The result of hypothesis determines four levels have significant impact on training program.

Keywords: training, effectiveness, evaluation

1. Introduction

Training effectiveness comprises of two basic terms that are training and its effectiveness on the trainees. This effectiveness can be a measure of training evaluation. So in general effectiveness measurement has two major factors associated with it and they are training program and the evaluation of the training.

1.1. Training

Training may be defined as the systematic acquisition of skills, rules, concepts, attitudes that should result in improved performance of the trainee (Aamodt, 2007;Goldstein and Ford, 2002).Training is vital for various reasons for every employee of the organisation for the new process implemented or if the employee is new to that particular process. Employees selected for a particular job often need to get appropriate knowledge and skills about the work to be done. It always helps an employee to know about the organization process, work content, importance and awareness about the work assign. And their liking toward the job helps organisation to grow. As well as, when job changes, training helps employee to adapt to the new environment. Training is always necessary to understand, grow and get success in a new job role in an industry. Also there is always a scope for current old employees to undergo a training process so as to improve and succeed in different job role to grow career as an individual. Therefore, training may find to be profitable not only to associates but also to the organizations in which they work. Training results in mutual growth of employees and organization.

1.2. Evaluation

Evaluation can be defined as a systematic way of valuation which ultimately gives the necessary information required for the continuous improvement and the growth. Although, in current scenario professionals are not much bothered about knowing how many new employees had undergone training, and how much they liked it and what they have learned through the training. But in

more numbers they are really interested to know that whether employees are implementing what they have learned during the training, and very importantly in what percent it has helped in improvement of institutional results. Evaluation involves various types of analysis and also important models and methodologies usually applied to significant impact on performance. The usually stated definition of evaluation is: "Evaluation is the systematic assessment of the worth or merit of some object or aim" (Williams, 1976)

1.3. Training Evaluation

The term training evaluation is described as a systematic anthology of descriptive as well as judgemental information needed to take effective training decisions related to the selection, adoption, value and modification of various instructional activities involved in training (Werner & De-Simone, 2006). This definition mentions not only descriptive but also combined available information. Training evaluation is also necessary in order to understand and ensure that the information and material shared with the team is useful as well as appropriate (Merwin, 1992). Evaluation of the training is the resource generally used to decide the value of it. Broadly it can be stated a procedure of assessing the results of the training (King & Rothwell, 2001). It helps to understand the importance of the training whether it is aligning with the goals of an organisation. At a glance, it focuses especially on outcome of the learning; also it gives a micro analysis of training results (Alvarez, Salas & Garofano, 2004). Each and every training program should undergo the evaluation process because this is the best way to ascertain that the financial investments are worth (Abdel-Wahab, Dainty, Ison & Hazlehurst, 2008). Evaluation of training is a tedious process to carry out in fine however; it should be conducted for enhancing the standard of the training (Aminuddine, 1997). Evaluation should not be treated as a separate part but it should be incorporated within the training process only so as to check the effectiveness of the training, said by the experts (Kirkpatrick, 1998). The systematic process of examining a training programme is stated as training evaluation and none of the training programme can be said organised completely without evaluating its effectiveness (Harper & Bell, 1982). Some author refers to the planned collection, collation and analysis of information to enable judgments about value and worth. A wise technician defines evaluation as the assessment of value or worth (B. Worthen, 1997). Evaluation ensures whether training has done the expected effect and employees are well capable of implementing the same in their tasks assigned. Evaluation is a comparison of observed/actual obtained value to a standard or criteria of comparison (Phillips 1991). On other way round it can be stated as training evaluation is a procedure of analysing the collected feedback data in order to decide at what extent the objectives/goals are achieved and at what extent the training has become successful in its aim (Schalock, 2001). The training unit, in a successful programme is aware of company's tactical direction and can devise and execute innovative approach of aligning individuals in required track. Training is a place where new skills are going to develop also attitude toward work is changing new creative ideas evolve and the organisation is redeveloped. It frequently takes a quite high expense to coach a critical crowd of workforce. Ultimately training must be judged so as to understand its impact on the functions of the organisation (B. Becker, 1996). As time passed, the scientific researchers have invented the method of evaluating the training effectiveness in optimize manner. Few of the methods are written below.

- Four level model of Kirkpatrick's
- Virmani and Premila's evaluation model
- Aimao Zhang's peer approach to evaluation
- Peter Bramely's evaluation model
- David Reay's approach to evaluation
- Hamblin's five level model
- Warr's framework for evaluation

Out of these, Kirkpatrick's four level models is a widely used and accepted framework for the purpose of training evaluation. This is the framework which has now become most popular model for training evaluation in among various industries. Kirkpatrick's four-level model of training evaluation and criteria continues to be the most widespread (Salas & Canon-Bowers, 2001).

1.4. Model for Evaluation of Training Effectiveness.

Discussion on the topic of various types of evaluation may sound like little academic but this has a significant importance in evaluation as this finally direct towards the strong different models and schemes for evaluation. The very popular and used model for evaluation was invented by Donald J. Kirkpatrick. Now a days this is the most famous way used to evaluate the trainings. This model deals with four levels of training outcomes: reaction, learning, behavior, and results. Kirkpatrick (1959) designed a model with four levels of evaluation: The Four Levels of Evaluation, sometimes referred as the *Kirkpatrick's Evaluation Model*, can be stated as follows:

- Reactions to the training: the reaction as well as thoughts and views of the employees, trainees about the training experience;
- Learning measures: the trainees results of learning and increase in knowledge from the training experience;
- Behavior measures: the employees behavioral change and improvement after implementing the skills on the job; and
- Results: the effects on the organization from job of participants with respect to performance improvement.

1.5. Motivation for Research Work

It has been observed that, most of the time trainer and training programs are only evaluated based on the employee feedback. However it has a limitation. In practice the most widely and commonly used method for training evaluation includes measuring employee feedback and reactions towards training given, and most of the time is done on the last day of the training. Reactions

captured are surely not enough to establish a solid bridge between training given and better performance. For necessary improvement in the training, the trainer and training department should have the information about not only the training effectiveness but also the quality of training provided. Industries which involve evaluating the effectiveness of the training given are also responsible for knowing the learning of the participants as well as checking whether the knowledge shared in training is being implemented in their working area. Hence, training program and its periodic evaluation would certainly help an organisation to be in flash light for achieving the objectives, goals. This study is basically based on training program evaluation of employees of multinational engine manufacturing industry to verify that the training program has been succeeded in getting the expected result that was anticipated as main basis of obtaining the real opinion for the calculating training effectiveness. Hence, study has given prominence to their views.

1.6. Research Objectives

The main Objective of this research is to apply the Kirkpatrick's model of training evaluation to measure the effectiveness of training of continuous quality improvement to find the variables which have a impact on training effectiveness. The following are the objectives.

Measure the effectiveness of training by using Kirkpatrick's model with four levels of training evaluation.

- Reactions to the training.
- Learning Measures.
- Behavior Measure.
- Results.

2. Literature Review

Evaluation of tour guides training programs of Tehran based on Kirkpatrick four levels i.e. reaction, learning, behavior, results. Findings of this study was tour training courses have found effective as the learners thereof have succeeded in conveying positive attitude and reply towards the training program and were content with the offered training program and they had fixed their professional manners changing (K. Mohamadkhani, 2013). Evaluation of training effectiveness to calculate how soft skills training program can be assessed from the viewpoint of the students of engineering colleges to check its usefulness based on Kirkpatrick model (S. Ezhilan, 2013). Evaluated training effectiveness of teacher training program based on Kirkpatrick model. (Karri S. et. Al, 2011). Factors relationship between indicated training design, evaluation features and the efficacy of training in the in the industry based on Kirkpatrick model (Arthur W. et. al, 2003). It was suitable to use the Kirkpatrick's four-level model to assess the e-training (Zheng L. et. al 2013). Management. By using two groups such as control group and experimental group management training was evaluated based on four levels of Kirkpatrick model (Steenma H. et.al, 2010). Evaluation of the usefulness of a program of faculty development for PBL tutors using multiple levels identified by Kirkpatrick. Moving through Kirkpatrick's levels was intended to permit for sequentially more specific and meaningful measures of effectiveness (Paslawski T. et. al, 2014).

3. Research Methodology

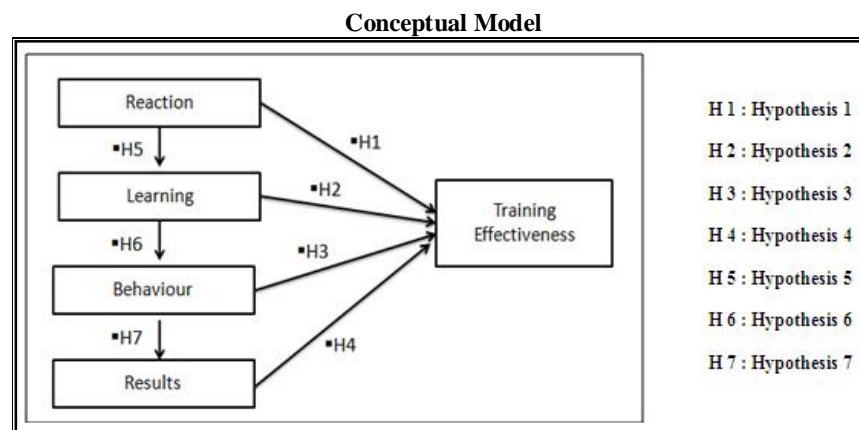


Figure 1: Conceptual Model

3.1. Hypothesis or Research questions

The following hypotheses are framed in order to achieve the research objectives

- Hypothesis 1
 H_0 : Change in reaction has no significant influence on training effectiveness.
 H_a : Change in reaction has significant influence on training effectiveness.
- Hypothesis 2
 H_0 : Change in learning has no significant influence on training effectiveness.
 H_a : Change in learning has significant influence on training effectiveness.

- Hypothesis 3
H₀: Change in behaviour has no significant influence on training effectiveness.
H_a: Change in behaviour has significant influence on training effectiveness.
- Hypothesis 4
H₀: Change in result has no significant influence on training effectiveness.
H_a: Change in result has significant influence on training effectiveness.
- Hypothesis 5
H₀: Change in reaction has no significant influence on learning.
H₁: Change in reaction has significant influence on learning.
- Hypothesis 6
H₀: Change in learning has no significant influence on behaviour.
H_a: Change in reaction has significant influence on behaviour.
- Hypothesis 7
H₀: Change in behaviour has no significant influence on training result.
H_a: Change in behaviour has significant influence on training result.

3.2. Population and sampling

All quality department employees of the constituted and defined population for this study. All the employees of quality department have been taken as the sample for this study. There were total 33 employees in quality department. The continuous quality training was given to all employees for decreasing quality issues and to increase product quality of the product. For evaluating training effectiveness of programme four levels of Kirkpatrick model was used .All the completed questionnaires were received from the employees after the training programme. Hence data from 33 respondents were taken for the data analysis.

3.3. Data collection

The research used questionnaire as medium to obtain the quantitative data needed. There are four sections in the questionnaire, consisting of section A: Evaluation of Employee training effectiveness against the four Kirkpatrick levels (Reaction, Learning, behaviour, Results)

3.3.1. Measurement scale:

The questionnaire consisted of a series of statements, where the employee respondents needed to provide answers in the form of agreement or disagreement to express their attitude towards the training programme. A Likert scale was used so that the respondent could select a numerical score ranging from 1 to 5 for each statement to indicate the degree of agreement or otherwise. Where 1, 2,3, 4 and 5 denote 'Strongly agree', 'agree', 'neither agree' nor disagree (Neutral)', 'Disagree', and 'Strongly disagree' respectively.

3.3.2. Data Analysis

This research uses quantitative data and quantitative analyses has been carried out using the Statistical package for social sciences (SPSS) software version 20.the study also tested the reliability of the survey instrument so that the desired and valid results are obtained. for this the Cronbach's Alpha has been used. Descriptive statistics like mean and standard deviation have been used for the analyses.To test the hypotheses Paired sample T- tests have been used.

4. Results and Analysis

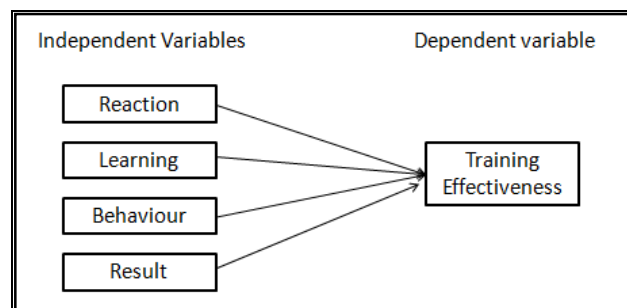


Figure 2: Dependent and independent variables

These independent variables have been used as items in the survey instrument. The various variables under each construct are as follows.

4.1. Reliability of the survey Instrument (Questionnaire)

This research uses quantitative data and quantitative analyses has been carried out using the Statistical package for social sciences (SPSS) software version 20.the study also tested the reliability of the survey instrument so that the desired and valid results are

obtained. For this the cronbach’s Alpha has been used. The below table consists reliability statistics of questionnaire of Kirkpatrick’s four levels.

Reliability Statistics		
Levels	Cronbach’s Alpha	N of Items
1.Reaction	0.838	6
2.Learning	0.702	4
3.Behaviour	0.721	6
4.Results	0.785	6
Overall Reliability	0.902	22

Table 1: Reliability of the Questionnaire

4.2. Hypothesis Tests

Hypothesis 1

- H_0 : Change in reaction has no significant influence on training effectiveness.
- H_a : Change in reaction has significant influence on training effectiveness.

Paired Samples Statistics					
Pair 1	Reaction Total Training Effectiveness total	Mean	N	Std. Deviation	Std. Error Mean
		1.9152	33	.51728	.09005
		1.7282	33	.50352	.08765

Paired Samples Correlations				
Pair 1	Reaction Total & Training Effectiveness Total	N	Correlation	Sig.
		33	0.621	0.000

Paired Sample Test									
Pair 1	Reaction Total – Training Effectiveness Total	Paired Differences					t	df	Sig.(2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
					0.18697	0.44433			

Table 2 : Paired samples Statistics, Correlations and Paired sample T-Test (Hypothesis 1)

As it can be seen in table, this hypothesis has been approved at 95% confidence and $\alpha = 0.5$ level. The significant level is 5% i.e. 0.05. In hypothesis 1 result shows significant (2-tailed) level is 0.022 i.e. less than 0.05 ($0.022 < 0.05$). Hence reject null hypothesis and accept alternative hypothesis at 5% significance level. Hence Change in reaction has significant influence on training effectiveness.

Hypothesis 2

- H_0 : Change in learning has no significant influence on training effectiveness.
- H_a : Change in learning has significant influence on training effectiveness.

Paired Samples Statistics					
Pair 2	Learning Total Training Effectiveness total	Mean	N	Std. Deviation	Std. Error Mean
		1.5052	33	0.47271	0.08229
		1.7282	33	0.50352	0.08765

Paired Samples Correlations				
Pair 2	Learning Total & Training Effectiveness Total	N	Correlation	Sig.
		33	0.555	0.001

Paired Sample Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	99% Confidence Interval of the Difference				
					Lower	Upper			
Pair 2	Learning Total – Training Effectiveness Total	0.22303	.46147	.08033	0.44302	0.00304	2.776	32	.009

Table 3: Paired samples Statistics, Correlations and Paired sample T-Test (Hypothesis 2)

As it can be seen in table, this hypothesis has been approved at 99% confidence and $\alpha = 0.1$ level. The significant level is 1% i.e. 0.01. In hypothesis 2 result shows significant (2-tailed) level is 0.009 i.e. less than 0.01 ($0.009 < 0.01$). Hence reject null hypothesis and accept alternative hypothesis at 1% significance level. Hence Change in learning has significant influence on training effectiveness.

Hypothesis 3

- H_0 : Change in behaviour has no significant influence on training effectiveness.
- H_a : Change in behaviour has significant influence on training effectiveness

Paired Samples Statistics					
Pair 3	Behaviour Total Training Effectiveness total	Mean	N	Std. Deviation	Std. Error Mean
		1.4909	33	0.36087	0.06282
		1.7282	33	0.52352	0.08765

Paired Samples Correlations				
Pair 3	Behaviour Total & Training Effectiveness Total	N	Correlation	Sig.
		33	0.565	0.001

Paired Sample Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	99% Confidence Interval of the Difference				
					Lower	Upper			
Pair 3	Behaviour Total – Training Effectiveness Total	0.23727	0.42240	0.07353	0.43863	0.03591	3.227	32	.003

Table 4 : Paired samples Statistics, Correlations and Paired sample T-Test (Hypothesis 3)

As it can be seen in table, this hypothesis has been approved at 99% confidence and $\alpha = 0.1$ level. The significant level is 1% i.e. 0.01. In hypothesis 3 result interprets significant (2-tailed) level is 0.003 i.e. less than 0.003 ($0.003 < 0.01$). Hence reject null hypothesis and accept alternative hypothesis at 1% significance level. Hence Change in behaviour has significant influence on training effectiveness.

Hypothesis 4

- H_0 : Change in result has no significant influence on training effectiveness.
- H_a : Change in result has significant influence on training effectiveness.

Paired Samples Statistics					
Pair 4	Results Total Training Effectiveness total	Mean	N	Std. Deviation	Std. Error Mean
		1.4100	33	0.36063	0.06278
		1.7282	33	0.50352	0.08765

Paired Samples Correlations				
Pair 4	Result Total & Training Effectiveness Total	N	Correlation	Sig.
		33	0.576	0.000

Paired Sample Test									
Pair 4	Result Total – Training Effectiveness Total	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	99% Confidence Interval of the Difference				
					Lower	Upper			
		0.31818	0.41781	0.07273	0.51736	0.11901	4.375	32	.000

Table 5: Paired samples Statistics, Correlations and Paired sample T-Test (Hypothesis 4)

As it can be seen in table, this hypothesis has been approved at 99% confidence and $\alpha = 0.1$ level. The significant level is 1% i.e. 0.01. In hypothesis 4 result interprets significant (2-tailed) level is 0.000 i.e. less than 0.01 ($0.00 < 0.01$). Hence reject null hypothesis and accept alternative hypothesis at 1% significance level. Hence Change in results has significant influence on training effectiveness.

Hypothesis 5

- H_0 : Change in reaction has no significant influence on learning.
- H_1 : Change in reaction has significant influence on learning.

Paired Samples Statistics					
Pair 5	Reaction Total Learning total	Mean	N	Std. Deviation	Std. Error Mean
		1.9152	33	0.51728	0.09005
		1.5052	33	0.47271	0.08229

Paired Samples Correlations				
Pair 5	Reaction Total & Learning Total	N	Correlation	Sig.
		33	0.599	0.000

Paired Sample Test									
Pair 5	Reaction Total – Learning Total	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	99% Confidence Interval of the Difference				
					Lower	Upper			
		0.41000	0.44511	0.07748	0.19781	0.62219	5.291	32	0.000

Table.6: Paired samples Statistics, Correlations and Paired sample T-Test (Hypothesis 5)

As it can be seen in table, this hypothesis has been approved at 99% confidence and $\alpha = 0.1$ level. The significant level is 1% i.e. 0.01. In hypothesis 5 result interprets significant (2-tailed) level is 0.00 i.e. less than 0.01 ($0.00 < 0.01$). Hence reject null hypothesis and accept alternative hypothesis at 1% significance level. Hence Change in reaction has significant influence on training learning.

Hypothesis 6

- H_0 : Change in learning has no significant influence on behaviour.
- H_a : Change in reaction has significant influence on behaviour.

Paired Samples Statistics					
Pair 6	Learning Total Behaviour Total	Mean	N	Std. Deviation	Std. Error Mean
		1.5052	33	0.47271	0.08229
		1.4909	33	0.36087	0.06282

Paired Samples Correlations				
	Learning Total & Behaviour Total	N	Correlation	Sig.
Pair 6		33	0.467	0.006

Paired Sample Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	99% Confidence Interval of the Difference				
					Lower	Upper			
Pair 6	Learning Total – Behaviour Total	0.30707	0.49186	0.08562	0.13266	0.48148	3.586	32	0.001

Table.7: Paired samples Statistics, Correlations and Paired sample T-Test (Hypothesis 6)

As it can be seen in table, this hypothesis has been approved at 99% confidence and $\alpha = 0.1$ level. The significant level is 1% i.e. 0.01. In hypothesis 6 result interprets significant (2-tailed) level is 0.001 i.e. less than 0.01 ($0.001 < 0.01$). Hence reject null hypothesis and accept alternative hypothesis at 1% significance level. Hence Change in results has significant influence on training effectiveness.

Hypothesis 7

- H_0 : Change in behaviour has no significant influence on training result.
- H_a : Change in behaviour has significant influence on training result.

Paired Samples Statistics					
Pair 7	Behaviour Total – Results Total	Mean	N	Std. Deviation	Std. Error Mean
		1.4909	33	0.36087	0.06282
		1.4100	33	0.36063	0.06278

Paired Samples Correlations				
	Behaviour Total & Results Total	N	Correlation	Sig.
Pair 7		33	0.554	0.001

Paired Sample Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 7	Behaviour Total – Results Total	0.08091	0.34082	0.05933	0.03994	0.20176	1.364	32	0.043

Table 8 Paired samples Statistics, Correlations and Paired sample T-Test (Hypothesis 7)

As it can be seen in table, this hypothesis has been approved at 95% confidence and $\alpha = 0.05$ level. In hypothesis 6 result interprets significant (2-tailed) level is 0.043 i.e. less than 0.05 ($0.043 < 0.05$) Hence Change in behaviour has significant influence on training results at 5% significance level. But fail to reject the null hypothesis at the 1% significance level

5. Conclusion

- This study inspected exactly four levels of measuring training effectiveness with the assistance of a survey utilizing a sample of the employees who present to the training program. The names of the variables for the test of hypothesis were reaction, learning, and Behavior and Results. It could be led that Kirkpatrick's model of preparing assessment holds decently well in this context.
- The outcome of paired sample T-test analysis interprets that the four factors namely reaction, learning, learning, Behaviour and outcome derived in hypothesis test analysis are statically significant in explaining the training effectiveness. These four elements can impact the trainees' perspectives on the effectiveness of the training program.
- The first level concentrated on worker's responses to the training program. The second level concentrated on learning and aptitudes picked up from the training. The third level concentrated on the progressions in the task behaviour of workers after accomplishing the training program. The fourth level concentrated on the changes in the working of parts or the whole work which have resulted from changes in the task behaviour beginning in training.
- The study additionally endeavoured to distinguish some of the variables that assistance in analyzing the accomplished level of effectiveness. As indicated by the finding of the first research objective, the Paired sample t-test results outlined that; continuous quality improvement course for workers in multinational organization had been effective regarding making positive attitude and response in learners. The findings identified with this segment of the study showed that, the expectations of the members in these training program, who were new in the framework, had been met in a satisfactory level.
- Second level in making positive attitude among the learners and push learners' fulfilment. Regarding the findings of the second research question, Paired sample T- test results showed that employees had palatable advancement in their learning. They had recognized that the level of learning of the training system had increased.
- Regarding the findings of the third research objective, Paired sample T-test results demonstrates that, taking the continuous quality improvement training course had prompted learners' professional behaviour from the participants' perspective. The employees had confirmed that, in the wake of fulfilling the continuous quality improvement training course and starting their expert profession in this respect, they would be able to practical knowledge and apply their uncommon information of their viewpoint or passing on the knowledge to others.
- Regarding the finding of the fourth research objective, the after-effects of the paired sample T-test analysis lead to the conclusion that after few months of training program, the practical knowledge on the job and confidence of the employees increased significantly.

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