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### **A study on effectiveness of training and development in State owned oil marketing company (OMC) in India**

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#### **ABSTRACT**

In this competitive world, where nothing is static, every day an innovation comes into the market. This demands the organization to be dynamic in their business process and keep on implementing the changes so that they will be competitive in the market<sup>1</sup>. These dynamic market scenario of VUCA world is applicable to State owned OMCs operating in India, too. From stringent environmental rules and regulations necessitating change in refining technology and revamping the refineries, to new demands of renewable and sustainable energy in the form wind/ solar/ other non-conventional energies – OMCs have felt the need to diversify their business as well as maintain smooth and efficient operation of existing business, to gain and maintain market share. This necessitates continuous update of functional and behavioural knowledge through planned training and development (T&D) programmes. Evaluation of effectiveness of these T&D programmes and initiatives should be done objectively to facilitate the organizations for further planning.

In this study, an attempt has been made to evaluate the effectiveness of T&D programmes undertaken by the largest OMC in India, which operates its own refineries, pipelines, marketing network and has an unique R&D centre. Research design used in this study is descriptive in nature. Self-perceptive feedbacks have been collected from various departments of the organization through questionnaire form. Total 88 Nos. officers of the organization have responded. Based on the response, evaluation of the effectiveness of T&D programmes has been done through Kirkpatrick 4-level model.

**KEYWORDS:** Kirkpatrick, T&D, level, ANOVA, effectiveness

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## INTRODUCTION

Training is a formal process applied systematically to impart knowledge and help people to acquire necessary skills to perform their jobs satisfactorily. Development is the growth or realization of a person's ability and potential through the provision of learning and educational experiences. Evaluation of L&D can be described as a systematic process of collecting and analyzing information for and about a training programme which can be used for planning and guiding decision making as well as assessing the relevance, effectiveness, and the impact of various training components. It is a process of “comparing the actual and real with the predicted or promised” which emphasises the need to reflect on what was achieved in comparison to what was hoped for.

Donald Kirkpatrick, Professor Emeritus at the University of Wisconsin and past president of the American Society for Training and Development (ASTD), first published his Four-Level Training Evaluation Model in 1959, in the US Training and Development Journal. Despite its age, Kirkpatrick’s model continues to be used in contemporary research. The four levels are as under:

**Table 1: Kirkpatrick 4-level model**

Level 1: Reaction	How do participants feel about the T&D programme they have attended. It measure their satisfaction level in terms of the degree to which participants find the training favorable, engaging and relevant to their jobs.
Level 2: Learning	It measures the degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training
Level 3: Behavior	It measures the the degree to which participants apply what they learned during training when they are back on the job
Level 4: Results	It measures the degree to which targeted outcomes occur as a result of the training and the support and accountability package

## LITERATURE REVIEW

The main objective of training is to make sure that the rightly skilled and willed human resource is available to the organization at right time<sup>3</sup>.

Training and development are an important tool for any organization to maintain their human resources update in respect of knowledge, skills, abilities. Employees are the indispensable asset and key elements which help organizations to gain and maintain their competitive advantage in the market. Therefore, Organizations spend their resources in training and development of their employees with the expectation that it will provide more effectiveness in achieving the organizational goal<sup>1</sup>.

A comprehensive T&D programme must be preceded by thorough training need analysis and training need assessment. It ensures right people is provided with right training in right moment. Approaches to T&D can be both active and reactive<sup>2</sup>.

Since, the holistic operation of an OMC involves great deal of technology related jobs like construction of assets like refineries, pipelines etc., operation of plants, maintenance of equipment etc.,

technology-training is very necessary in this type techno-marketing companies. It helps the engineers, scientists, supervisors, workers update and enhance their existing knowledge. This is more relevant in today's fast changing world where an innovative technology gets obsolete and replaced by a new innovation in just few years<sup>6</sup>.

The factors of production of any process are summarily capital, labour and land. Since, growth rate of population in India is highest amongst the countries and absolute no. population in India is also ginormous, therefore, India has abundance of labour. However, both quality and quantity needs to be looked into before putting this labour force into production process. Here comes the T&D initiatives and processes which will help to ensure the quality of this labour force, i.e., their skills, knowledge and abilities<sup>4</sup>.

Imparting T&D programmes is essential for the companies to achieve organizational goal effectively. However, calculating the effectiveness of the T&D process objectively is also of prime importance to calculate ROI, justify cost (tangible and intangible) incurred behind training and help the organizations to bring about necessary changes and adjustments in their T&D process to keep it up to date<sup>5</sup>.

## **RESEARCH METHODOLOGY**

Based on Kirkpatrick 4 level model, a questionnaire having 5 questions on each of the 4 levels, total being 20 questions, was prepared. Five points Likert scale (5-Strongly Agreed, 4-Agree, 3-Undecided, 2- Disagree, 1-Strongly Disagree) that best describes the extent to which the respondents agree with each items in the questionnaire has been used for each question. The questionnaire was circulated amongst officers of the OMC. 88 Nos. officers responded and the feedback from the officers served as primary data.

## INSTRUMENTATION

**Table 2: Questionnaire based on Kirkpatrick 4-level model**

<u>Level 1 – Reaction</u>	<u>Level 2 – Learning</u>
<ol style="list-style-type: none"> <li>1. You get communicated about the training programme well in advance</li> <li>2. Relevant topics related to programme objectives are covered in the training programme</li> <li>3. The training methods provided during the training session is helpful and systematic</li> <li>4. The faculty selected for the training are competent and aware of different tools to make the training interesting and interactive</li> <li>5. Training is practical enough to have potential for applying the learning at the job location</li> </ol>	<ol style="list-style-type: none"> <li>1. Functional training helps in acquiring job related skills, knowledge, new ideas and information</li> <li>2. Developmental training programme helps in personal growth and is useful in the long run for the organization</li> <li>3. Training has helped you to collaborate with different levels of hierarchy</li> <li>4. Training has helped you to become more confident and committed towards your job</li> <li>5. a) Rate yourself on the following: Knowledge on the subject (trained) prior to training (scale of 1 to 5; 1 being low and 5 being high) b) Rate yourself on the following: Knowledge on the subject (trained) post training (scale of 1 to 5; 1 being low and 5 being high)</li> </ol>
<u>Level 3 – Behaviour</u>	<u>Level 4 – Result</u>
<ol style="list-style-type: none"> <li>1. You deliberate your learning from the training programme with your reporting officer and sought support for applying the learning in job execution</li> <li>2. You share your learning from the training programme with colleagues in the department</li> <li>3. You transfer your learning into effect when back on the job</li> <li>4. You observed noticeable and measurable change in your activity and performance when back in your roles</li> <li>5. You are able to sustain the change in behavior and new level of knowledge</li> </ol>	<ol style="list-style-type: none"> <li>1. Training improves your job performance</li> <li>2. Training has helped you to build stronger relationships with your colleagues, thereby gain respect</li> <li>3. Training improves working condition, majorly with respect to safety and process</li> <li>4. Training helps to achieve standards and accreditations</li> <li>5. Training has helped you in increasing the productivity</li> </ol>

**Table 3: Internal consistency of the questionnaire**

Items/Levels	Level 1	Level 2	Level 3	Level 4	Combined
Cronbach's Alpha	0.8	0.8	0.8	0.9	0.9
Internal Consistency	Good	Good	Good	Excellent	Excellent

## RESULTS AND DISCUSSIONS

### Level 1 (Reaction)

#### Q1. You get communicated about the training programme well in advance

Table 4: Calculation of weighted average of a particular question

Sl. No.	Response Category	Score (a)	Nos. of Respondents (b)	Weighted Score (a x b)	Weighted Average (Sum of (a x b)/ Sum of b)
1	Strongly Agree	5	40	200	4.2
2	Agree	4	31	124	
3	Neutral	3	12	36	
4	Disagree	2	4	8	
5	Strongly Disagree	1	1	1	
Total			88	369	

Likewise weighted average score of other questions are also calculated.

Average score for the level:

Table 5: Average score for level 1

Q. No.	Weighted Average Score	Simple Average
1	4.2	4.3
2	4.4	
3	4.3	
4	4.4	
5	4.1	
Total	21.4	

Maximum possible score (c) = 5

Actual Score for the Section (d) = 4.3

Internal Customer Satisfaction =  $(d/c) \times 100\% = 86\%$

Satisfaction level of the trainees on conducted T&D programme is 86%.

## Level 2 (Learning)

Individual weighted average score for question no. 6-9 are calculated as per the same methodology mentioned in Table 4. However, calculation of score for question no. 6 has been calculated in a different way as mentioned below:

Q10.

a) Rate yourself on the following: Knowledge on the subject (trained) prior to training (scale of 1 to 5; 1 being low and 5 being high)

AND

b) Rate yourself on the following: Knowledge on the subject (trained) post training (scale of 1 to 5; 1 being low and 5 being high)

**Table 6: Calculation of score for question no. 10**

Total Improvement Score (post training – pre training) of 88 responders =	152
Average Improvement Score (Total/88) =	1.73
Maximum Possible Improvement Score (5-1 = 4)	4.00
% Improvement (1.73/4 x 100%) =	43%
% of Improvement set as Internal Target for L&D Department = (Since, it is neither feasible or practical to make an 100% improvement on self assessment score of a sample population, through L&D)	50%
Efficiency of L&D Department (43%/50%) x 100% =	<b>86%</b>

**Table 7: Average score for question no. 6-9 for level 2**

Q. No.	Weighted Average Score	Simple Average
1	4.5	<b>4.4</b>
2	4.5	
3	4.3	
4	4.4	
Total	17.7	

Maximum possible score (c) = 5

Actual Score for the Section (d) = 4.43

Learning Efficiency for the 1<sup>st</sup> 04 questions = (d/c) x 100% = 88.6%

Average score for the level:

**Table 8: Average score for level 2**

Item	Efficiency Value	Weights (Nos. of questions)	Weighted Average Efficiency
Learning Efficiency based on the 1st 04 questions	88.6%	4	<b>88%</b>
Learning Efficiency based on the last question	86%	1	

Learning efficiency of the trainees on conducted L&D programme is 88%.

### Level 3 (Behaviour)

Average score for the level

**Table 9: Average score for level 3**

Q. No.	Weighted Average Score	Simple Average
1	4.2	<b>4.37</b>
2	4.4	
3	4.5	
4	4.4	
5	4.3	
Total	21.8	

Maximum possible score (c) = 5

Actual Score for the Section (d) = 4.4

Post-training Change in Behaviour = (d/c) x 100% = 87.4% ≈ **87%**

Post-training, there is 87% Change in Behaviour of the trainees.

#### Level 4 (Result)

Average score for the level

**Table 10: Average score for level 4**

Q. No.	Weighted Average Score	Simple Average
1	4.6	<b>4.434</b>
2	4.4	
3	4.4	
4	4.3	
5	4.5	
Total	22.2	

Maximum possible score (c) = 5

Actual Score for the Section (d) = 4.4

Overall impact on increasing Organisation's performance =  $(d/c) \times 100\% = 88.68\% \approx 89\%$

There is an overall impact of 89% on increasing the performance of the Organisation.

#### Findings

##### Overall effectiveness of T&D programmes:

**Table 11: Calculation of overall effectiveness of T&D programmes**

Item	Impact	Weights (Nos. of Q)	Weighted Average
Level 1 - Reaction	86%	5	<b>87.5% <math>\approx</math> 88%</b>
Level 2 - Learning	88%	5	
Level 3 - Behaviour	87%	5	
Level4 - Result	89%	5	

#### F-Test (One Way ANOVA)

It is observed that the mean scores of the 4 levels in Kirkpatrick model vary within a range of 4.28 - 4.43. If each of the level is considered as independent samples having 05 items (questions), then it is required to test whether the difference in sample means are insignificant, i.e., due to chance.

H0: Difference in sample means are insignificant

H1: Difference in sample means are significant

Calculated F value is 1.90. From standard F-table, F value at 5% significance level with 3 & 17 as degree of freedom is 3.20. Since, calculated F value < 5% F-limit (from the F-table), therefore, null hypothesis H0 stands.

Therefore, we can infer that, difference in sample means are insignificant, i.e., due to chance. It indicates that difference in overall satisfaction / improvement / efficiency score of trainees for 04 separate levels are insignificant. It signifies that the learning received from T&D (as measured

through Level – 1) is smoothly propagated and reflected as ‘Results’ (as measured through Level – 4) and there exists no significant gap between learning and end results.

## **CONCLUSIONS**

The above study and the aforementioned high effectiveness value of T&D services indicate that T&D excels because of following:

1. Right training needs to be given to the right person at the right time. Therefore, nomination of candidates for different trainings needs to be done based on Training Need Analysis (TNA).
2. For proper TNA, Training Need Identification Survey (TNI) needs to be carried out for each employee.
3. More on job training programme should be conducted.
4. Training needs to be provided on a planned basis keeping in backdrop both the short term and long term goal of the organization.
5. Skill development is possible through well planned training programmes provided in phased manner, both in classroom and field training mode.
6. L&D helps to develop skills of the employees, in both functional and developmental aspects, which in turn helps the organization to achieve its operational and strategic goals.

## **LIMITATIONS**

1. The concerned OMC is a pan India organization with various functional divisions. The sample was collected from officers working in eastern region of pipelines division. Therefore, location and time were constraints for collecting data from other parts of India and other divisions.
2. Since, it is a broad topic, detailed analysis of each and every aspects of this topic was not possible to cover.
3. The answers given by the respondents have been considered as unbiased and true reflection of their perception.
4. The survey conducted was more of objective nature and results are completely based on the views of the respondents.
5. Due to large strength of the organization, random sampling method has been used to collect the information which may lead to error.



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