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Does Training Need Analysis Help to Minimize Competency Gap: An Investigation

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Abstract

Business sustainability can be best maintained with competent employees who support and effectively contribute towards achievement of organizational goal. Thus competency gap of employees need immediate intervention through training. This study aims to develop a competency frame work for an operation department of an automobile parts manufacturing company. The competencies were mapped on the basis of skill relevance to perform a specific job in operation. Standard scoring was developed to evaluate four major competencies: behavioral, managerial, functional, and personnel of 37 line employees. The result indicated that there was a wide managerial competency gap and minor gaps in personnel competency. Immediate intervention for competency gap through training of the employees had helped the company to gain its competitiveness in defect-less production and enhancing service quality. The study was focused on a manufacturing unit only, whereas the research approach had huge scope to be implemented in service industries also. The paper is an original piece of study where a unique research approach has been applied to resolve training issues of manufacturing industries. The approach could be used for micro to large organizations.

Keywords: Training Need Analysis, Training, Competency Mapping and Competency Gap.

JEL Classification: P4, P46

Paper Classification: Research Paper

Introduction

Employees were always considered to be most important human capital of organization. It was also observed that every organization wanted to be loaded with maximum competent employees so as to achieve its vision and mission and rapid cumulative growth rate (Bennis, 1973; Cameron, 1974). More competent employees mean more productivity. To maintain a good ratio of competent employees, many organizations do hire job-fit talents or train existing employees to make them more competent. Past researches indicated that organization's investment into training

and development lead to competitive advantage (Chadwick 1986; Constable & McCormik 1987; Handy 1987; Hussey 1990). A research by Cosh, Duncan & Hughes (1998) specified that training facilitates expansion, development and also increase profitability of an organization. There were cases, which practically tested that training of existing employees was more favourable than hiring a new talent for organizations, as existing employees already know the organization culture, working pattern and their colleagues. So they could easily adjust themselves to new requirements after training and seemed to be more confident about their career growth. Thus, training need analysis played a key role for organization to motivate employees for their better career growth and performance. Misanchuk (1984) said that three main components such as competency, skill of individual and individual's training desire were required to understand training need analysis. According to Agut, Grau & Peiró (2003) study, competency mapping was vital for analysing training needs; which was defined as the gap between current and required performance (Rossett, 1987). However, gap between desired & current performance did not always require further training (Wright & Geroy, 1992). On the other hand, there were few authors who consider that performance gap arising out of skill deficiency requires training (Mitchell & Hyde, 1979; Swierczek & Carmichael, 1985; Wright & Geroy. 1992). The need for training might occur due to various reasons such as differences in values or culture (Sargent & Stupak, 1989). Rossett (1995) defined training need as a gap between current state of performance and desired state of performance, mapped after training need analysis. Few authors defined training need as gap between the degree of knowledge, skills and abilities of a person which he/she had, that did not match the standards specified for a job to perform in an effective manner (Goldstein, 1993; McEnery & McEnery, 1987). From above discussion it might be concluded that gap between present and desired state direct towards training so that gap can be minimised. According to Evarts (1988), competency mapping was a way of defining gap between the desired and current performance of employees. Reid & Barrington (1994) argued that finding the right reason for the gap is extremely important because it would help in getting the right solution. As per McKillip (1987), training need analysis should focus on the main reason of gap between the current and desired state. The method of training need identification totally depends on the area of focus determined by organization. So, focusing in right direction is most crucial for achieving organization vision and mission. Many times it was also observed that companies, who neither focus on training nor its needs, at different hierarchical levels, had somehow failed to achieve their bull's eye (Kerr & McDougall, 1999). So gap identification and minimization of it would help organization for forecasting demand and supply of competent employees and develop skill inventories for future use such as dejobbing, cross domain functional assignments and even business decision for rightsizing and downsizing.

Jacobs (1989) defined competency as skill or ability required to complete any managerial task successfully. Hornby & Thomas (1989) defined it as the ability to perform job related functions. Strebler, Robinson & Heron (1997) define competency as an essential label to define training requirement. Katz & Kahn (1966) defined competency as a group of four areas, viz., technical or functional, managerial, human (behavioral) and conceptual. Researchers defined functional competency as a job associated with functional expertise required to perform any specific role. Managerial competency is defined as knowledge, skills and attitude required for planning, organising and mobilising the resources. Human (behavioral) competency is defined as knowledge, attitude and skills required for motivating and utilising human resource to develop them. And conceptual or personnel competency is defined as ability to imagine and visualise the invisible at intellectual level or about norms of the company. Lawler (1994) & Ulrich (1997) talked about identifying outstanding performing employees or under desired performance employees, so that they could be referred for training.

The requirement of trainings was not the same for all the organizations. It generally varies in terms of organizational structure, environment, technology and culture of organization (Vickerstaff, 1992). Different researchers had defined different ways to design a training program. Stetar (2005) indicated root-cause analysis, investigation analysis and selection of intervention as some of the ways for deciding training need. Wilson (1999) had suggested methods like interview, questionnaire, observation and focus group methods to define factors contributing to incompetence among employees and design an action plan for training to overcome lack of competency.

Training Need Analysis (TNA) was a systematic way of gathering data on existing employees' capabilities and skills demanded in organization. It also helps to understand and analyze the implication of new and changed roles for employees under internal mobility such as promotion, transfer etc. TNA might be aligned with organizational strategy and it aimed to provide training after identifying competency gap where organization lacks in competency standards. To get good training result, it should be done systematically step by step, beginning with training need identification, developing and designing an appropriate training to serve the needs, training implementation according to plan and training program evaluation to check that desired result had been achieved. The process described above is also known as training cycle (Blanchard & Thacker, 2003; Goldstein & Ford, 2002; Mondy & Noe, 2005).

Conceptual Review

Overview of literature suggested that training patterns at private sector had evolved over recent years. Traditionally, training was job-focused, limited to skills and abilities orientation, needed by employees to perform specific job descriptions. Past trainings were used to create awareness or educate employees, so that they could be developed to their fullest potential. Recently, distinction among training, education, and development has become blurred (Wart, Cayer & Cook 1993). From the extensive literature review some of suggested brief annotations of taxonomies used for training are given in Table 1.

Table 1: Taxonomies of Training

Technical:	Non-job specific:	Management:	Employee
- Procedural	- Basic	- Supervisory	Enrichment
-Mechanical	- General	- Management	
- Professional		- Executive	

Source: Wart et al., 1993

McGehee & Thayer (1961) have been usually regarded as pioneer authors for training in organizations. They suggested three-level approach to determine training need such as organizational analysis, person analysis and task analysis. Organizational analysis is process of mapping organizational vision and mission. The focus is on identifying employee's competency, assess them and compare them with a standard to determine their capability index or competency gap. Task analysis focuses on understanding the tasks to be assigned under a particular role and then map different competencies required to perform those tasks. This would help in better understanding of competency gap analysis and action plan required to minimize the gap. Human resource professionals would contribute best towards organizations' success by maximizing human capital efficiency with training, information and tools to meet different job related challenges (Rodriguez, Patel, Bright, Gregory & Gowing, 2002).

To focus on research problem for identifying competent employees and training needed as per their competencies, Myers (2004) presented a competency-based training model which provided a framework that leverages employees' collective knowledge in plastic industry. Tmdeau (2005) developed a competency model for training systems engineers. Similarly, Ng, Chan & Wong (2006) conducted a site-wide training needs analysis and discovered that engineers from various departments competent in design and development related jobs did not have the facilities of enhancing engineering competency. Aggour (2007) discussed about implementation of structured competency assurance programs at oil companies, with a goal to ensure that company's workforce should be competent to carry out required job functions in an efficient and safe manner that would maximize financial gain for companies. Li, Yang & Lin (2008) investigated several literature reviews, in-depth interviews and focus group methods to analyze training needs for research and development of department employees. Li, He & Yang (2009), in another research, indicated that training needs analysis methodology could be utilized to develop employee training programs for service companies focusing on employee competency. Tasie (2011) studied training needs analysis (TNA) on academic staffs (Professors, Associate Professors, Lecturers/Assistant Lecturers, Language Instructors and Tutors) at Gulf University for Science and Technology, Kuwait, to develop and establish a competency profile, which was validated by focus groups comprised of faculty members in various disciplines from three departments namely Management and Marketing; Modern Language; and Finance and Economics. Priyadarshini (2012) described a consolidated and effective training assessment model to identify employees with training needs using competency mapping methodology in an auto company. Sarkar (2013) talked about training as a usual formula for organizations through which employees were introduced to learning, but the challenge was to identify appropriate training needs of employees. Thippaiah, Allagh & Murthy (2014) identified competencies needed among food regulatory workforce in India, to develop a competency-based training curriculum for food safety regulators. Taha's (2015) article described several essential and fundamental concepts for developing a competency-based curriculum, which emerged as residency training programs for lifelong learning path of any physician in the field of orthopaedics. Researchers from wide array had provided a systematic approach to determine training needs or performance gaps while mapping competency required for a particular job profile or designation.

Competency Mapping

Competency mapping could be described as process of grafting different components of competency required for performing diverse task associated with a particular job profile. Once competencies are decided, next step is to decide standards scores for each competency so as to create benchmark for employees to understand sustainability competency level. For instance, either 50 percent of any score could be assumed as standards or mean of employee's scores could be taken as standards, viz., if knowledge score for 100 employees summed as 300 after giving rating to individual employee wit 1 as minimum and 5 as maximum. The total score would be divided by no of employees, i.e., 300/100 = 3. So standard score was assumed as 3. Using force distribution method, employees could be grouped into different segments, those scored above 3 were performers and employees who scored below 3 were required to undergo training process. Celia & Karthick (2012) defined competency mapping as a process of evaluating potential candidate's competencies with desired expertise. For mapping competency following steps could be followed: mapping organizational goal, identification of department; alignment of performance with organizational goal; mapping job description of different job hierarchies with same profile, assigning grades as per organization structure, conducting semi-structured interview with supervisors for collecting data on

skills expectation or skill requirement to perform a job, summarizing those skills, classifying them and leveling them with particular competency and finally preparing skill inventories, competency calendar and competencies mapping standards (Yuvaraj, 2011).

Research Gap

Overview of literature indicated few studies on competency mapping for manufacturing business unit. Only few researches had been conducted so far with focus at South India, such as Koripadu & Subbiah (2014) applied skill gap analysis (SGA) as one of the potential remedies for Clinical Data Management (CDM), to gear up for bridging the gap of employee skills within the organization. That effort would strengthen the CDM capability, scalability, consistency across geographies along with improved productivity and quality of deliverables. Sarkar (2013) shared a practical insight on the implementation of competency mapping for training need analysis. Balaji & Vimala (2012) attempted to study competency mapping in Adecco Service organization at Chennai. They identified competency gap of employees based on 11 dimensions recognized to perform job at that office. Mean difference between expectation and actual performance was tested with't' test and Radar Chart was used to identify the competency gap of employees in each dimension. However, the initial study of Koripadu & Subbiah (2014) was analyzed with SGA Tool with heat map developed on Macros MS Excel and the second and third studies of Sarkar (2013) & Balaji & Vimala (2012) were analyzed with the help of ANOVA,'t' test to understand the mean difference between standards and actual performance of the employees, which required complex understanding of statistical application and its inferential analysis. The present study was conducted in a manufacturing business unit at North India, where research approach used was very simple and could be used by lay man, who did not have any understanding of statistics. Many researchers had studied competency in different perspectives, but understanding competency for training need analysis was found to be a recent approach for enhancing human capital performance.

Contribution of the Study

The above descriptive study focuses on training need analysis and improvement opportunities within an organization and also reveals procedures of quality work. That kind of analysis could be conducted at business unit, organizational, work group or individual levels of an organization. There were many proposed processes of training need analysis, but this study was beyond what managers or individuals had stated as training needs, as it is integrated with competency modelling as well. The study indicates that the analyst must confirm correlation between proposed training and desired results. It also includes the identification of non-training factors influencing employees' behavior and efficiency. Often, this kind of exercise would help in investigating factors of productivity and performance related issues, which may be solved using some solutions without undergoing training. Here desired result means return on investment from training either in terms of cost or positive behavioral changes among employees. If training failed to influence employees, early intervention would be appreciated to tune the employees' performance in achieving organizational goal. The possible solution to those kind of problem could be choosing appropriate training methods such as vestibule training, role basket, demonstration method or sensitivity training. Another way chosen by most of the MNCs to gain employee engagement for work is gamification of key performance indicators. Gamification is known as a process of implying game element and techniques to non-game oriented job. This engages employees in their job through recreation, which would motivate them and create a sense of achievement through higher grades, badges or rewards. Thus, resulting in employees' efficiency and involvement as input and organization achievements as effective output.

The present study identifies employees' training needs, as early intervention for maximising productivity. This study could be used for data collection and analysis by any department of an organization other than human resource such as marketing, finance etc. Only difference would lie in tracking different types of skills and competencies required for particular function to be performed on the basis of organization hierarchy structure and job description. The approach could be also applied in other human resource functionalities such as employee engagement; attrition rate; employee satisfaction or performance management.

Research Approach

Statement of Purpose

Does competency mapping help in training need analysis and enhance organization effectiveness?

Objectives

1. To conduct training need analysis for line employee of operations department.
2. To develop competency mapping process.
3. To explore the skills required for competency mapping.
4. To minimize the competency gap through training need analysis and training.

Research method

Type of Study: This project was purely a descriptive study based on exploratory analysis of empirical data.

Sample: All 37 employees working for operation department of the subject organization, located in National Capital Region (NCR) of India were selected for the assessment process.

Method of Data Collection: The employees were evaluated in groups without affecting their daily functions. Therefore, to meet the requirement, rotational shift was designed for the time being, to observe the working style of 5 to 6 employees and assign them competency scores, according to their working capabilities.

Variables Studied: The major variables selected for measuring competencies are behavioral, managerial, functional and personnel. Their sub-variables were subjected to validity, thus Principal Component Analysis (PCA) had been applied to extract sub variables indicators (See Table 2).

Research Models Used: The data was analyzed with the help of stem and leaf display, continued with forced distribution of employees' scores to form bell curve performance analysis. Finally, probability plots for different competencies were displayed to understand distribution fit.

Statistical Tools Used: Minitab was used for analyzing data.

Training needs analysis procedure

The process of the Training Need Analysis conduct in the subject organization follows six stage approach as indicated in the Figure 1 below:

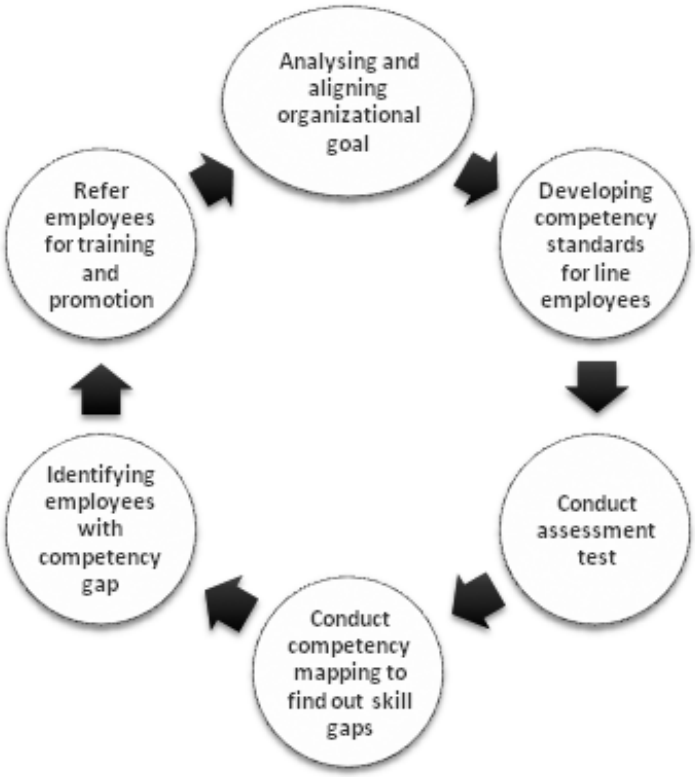


Figure 1. Six stage approach of Training Need Analysis

To develop competency standards, managers were requested to map the organizational goals. Focus group discussions helped to map organization's vision as improving production and providing high service quality to their customers. To meet that vision, organization took to the mission of developing competent employees as part of it's action plan.

As a first step towards the mission, the line managers were called for a brain-storming session to decide the list of skills required to perform a particular task for line operation. The initial capability index was standardized through application of Principal Component Analysis (PCA: software Minitab) to identify interrelationships among skills or group of skills under same hypothetical skill factors considered for the competency mapping. 37 employee's performance data was used for factor analysis to extract major capabilities, which might predict productivity for the department or organization. The scores were given by supervisors of a particular department to their subordinates on the basis of observing their working styles for a period of 1 month. Skills considered for the assessment were carrying 10 marks each to evaluate.

The Kaiser - Meyer - Olkin Measure of Sampling Adequacy measured an index of 0.611, indicating that units of respondents selected were highly adequate to consider the data as normally distributed.The Bartlett's Test of Sphericity was used to test skill-to-skill correlation matrix indicating validity and suitability of responses collected. The value of Chi-Square of 453.050, significant at 5% level of significance, indicates that the skill-to-skill correlation matrix was not an identity matrix and therefore suitable for factor analysis. To evaluate the construct validity, Principal Component Analysis (PCA) with Varimax was applied to determine the variance of different skills within a

major competency. The components if cross-loaded or had low loading factor below 0.40, were deleted as indicated in the Table 2 below (Deleted item/s is/were indicated below).

Table 2: Principal component analysis of employees' skills

Sl. No.	Factors	Reliability of accepted items	Items Extracted	Factor Loading
1.	Behavioral competency	0.820	Soft skill	0.550
			Attitude	0.757
			Interpersonal skill	0.949
			Proactive	0.816
			Personality	0.907
2.	Managerial competency	0.616	Event management	0.820
			Stock handling	Deleted
			Situation handling	0.818
			Customer service	0.696
			Data recording	0.835
3.	Functional competency	0.678	Sales knowledge	0.684
			Communication	0.695
			Data entry	Deleted
			Product knowledge	0.789
			Cash handling	0.814
4.	Personnel competency	0.600	Target achieved	
			0.635	
			Over time	0.658
			Average handling time	0.665
			Recess time	Deleted
			Leave	0.775

In the process of PCA out of 20 skills, 17 skills were retained for competency analysis. Stock handling and data entry were deleted due to low factor and also since they were not very relevant for the job profiles considered for the competency mapping. The retained skills under different competencies with eigenvalues more than 1 were labelled for further analysis as behavioral skills (5 skills), managerial skills (4 skills, one skill deleted), functional skills (4 skills, one skill deleted) and personal skills (4 skills, one skill deleted) as dependent variable. The reliability coefficients (Cronbach's alpha) for all four dimensions ranged from 0.60 to 0.820, indicating good internal

consistency among skills considered for measurement (indicated in Table 1). The combined reliability for the 17-items is relatively high (α = 0.739), suggesting high internal consistency among the skills of various competencies. The four factor solution accounted for 62.422 percent of the variance in the capability index construct, and the item-to-total correlations is 0.50, indicating that skills score were not to discriminate between employees who had similar or dissimilar competencies. The 17 skills with four competencies were further subjected to Confirmatory Factor Analysis (CFA) and scale refinement (for this study, sample size did not support for CFA).

The skills derived from the principal component analysis, were assigned with standardized score on the basis of their relevancy in performing operational work. Behavioral competency would carry 50 marks as total and three other competencies-functional, managerial and personnel would carry 40 marks respectively (as one skill from each competency was deleted). Fifty percent of each total score would be considered as standard score for the competency mapping which would be expected by employees to achieve. Thus the total and standards scores of competencies were indicated in the Table 3 below:

Table 3: Total and Standard Scores for Competencies

Sl. No.	Competencies	Total Scores	Standard Scores
1.	Behavioral competency	50	25
2.	Managerial competency	40	20
3.	Functional competency	40	20
4.	Personnel competency	40	20

5 point bipolar Likert scale was used to the scores would be clustered on the following basis:

Never meet expectation = 1 (score between 01 to 20 percent)
Meets expectations sometime = 2 (score between above 20 to 40 percent)
Meet expectations = 3 (score between above 40 to 60 percent)
Exceed expectation most of the time = 4 (score between above 60 to 80 percent)
Always exceed expectations = 5(score between above 80 to 100 percent)

To explain the total process, a flow diagram has been developed to take a glance on the Training Need Analysis process (indicated in Figure 2). The process diagram indicates that employees would be forced distributed on the basis of their scores assigned by their supervisor in any particular competency. Those employees with scores that exceeded expectations or standards, would be eligible for promotion, those employees with scores just exceeding expectation were generally considered for increment in pay package and meeting expectation: would only receive recognition for job. Any employee(s) scoring below standard or comes in the range of never or sometimes meet expectations would be subject to training in the particular competencies. If those employees were not able to prove their competency, then to a certain extent after training, they were subjected to be considered for demotion, transfer, job rotation or rightsizing.

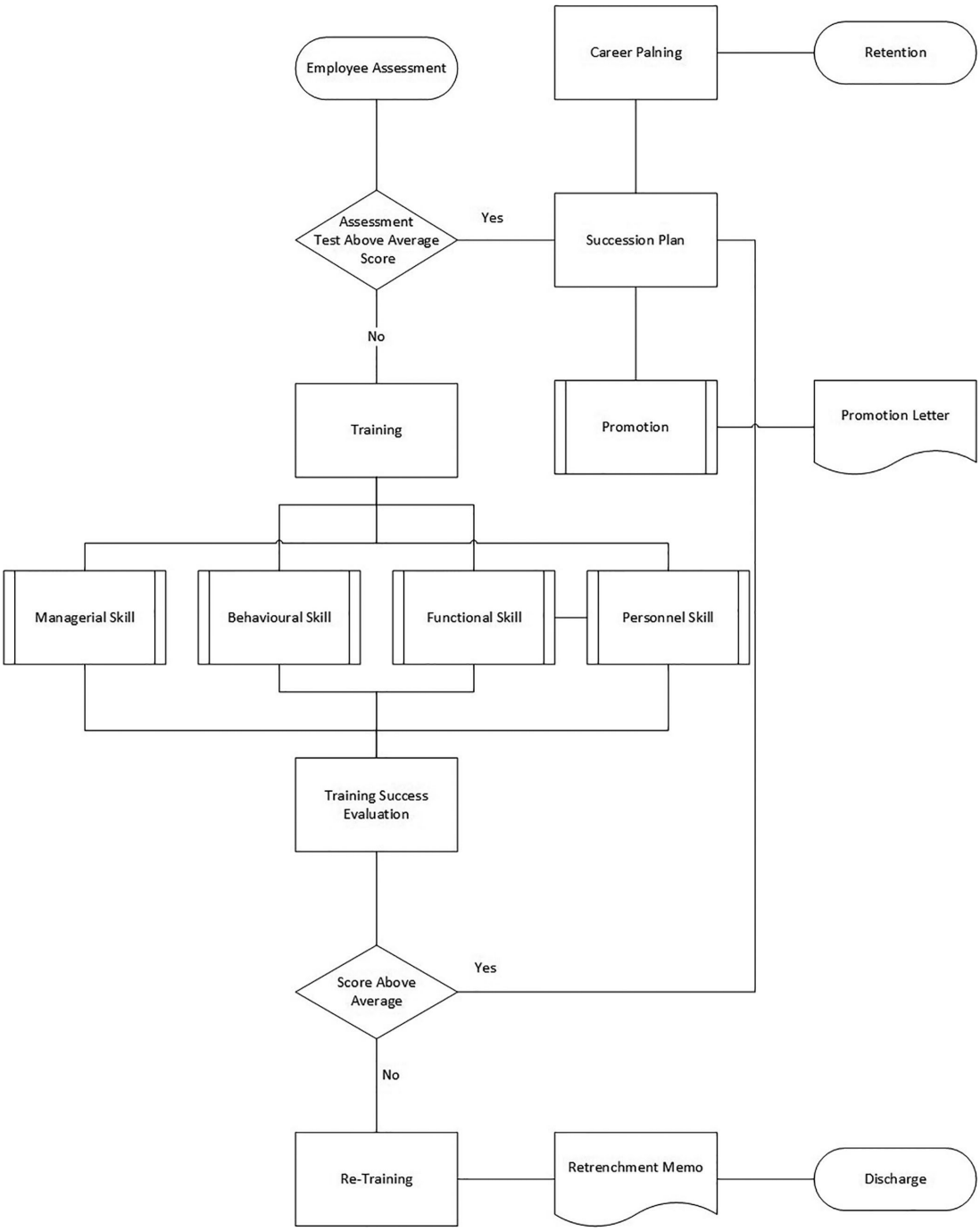


Figure 2. Process diagram of Training Need Analysis

After all efforts of HR department, if employees were found to be non-performers and training had no changes or development in their competencies, then those employees were mapped for either counseling or subjected to direct downsizing. Downsizing would be retrenchment of the

employees on the grounds of lower productivity or temporary layoffs. The types of trainings designed for the organization's action plan after TNA are indicated below:

i. **Behavioral Training –** This training deals with qualities related with attitude, identifying the motivational receptiveness, practical application potential, developing value and morals, correct body language practice, time-management, interpersonal skills and different leadership approach for developing behavioral impact on colleagues and clients.

ii. **Managerial Training –** The managerial training is about handling customer sale services and after sale services. It also deals with data mining, storing and analyzing data for understanding different issues related to customers.

iii. **Functional Training –** It includes balance and movement of body and its parts for more efficient action and wastage minimization to save time and energy. The competency contains skills required to achieve quality in process and satisfy customers as well.

iv. **Personnel Training –** It emphasizes on personnel aspects like taking leave without hampering organization job priority, efficient use of work load hours and personal presentation and grooming and clarity on organizational norm and procedures.

Result and Discussion

The result had the application of stem-and-leaf display to map number of employees above average and below average through force distribution. Histogram was used to assess the shape and spread of the data as normal distribution. Here the normal distribution graph was defined by two parameters: the mean and the standard deviation. The mean defines the peak or center of a normal distribution. The standard deviation defines the spread of a normal distribution in each graph.

Stem-and-Leaf and Histogram Display: Behavioral, Managerial, And Functional and Personnel Competency

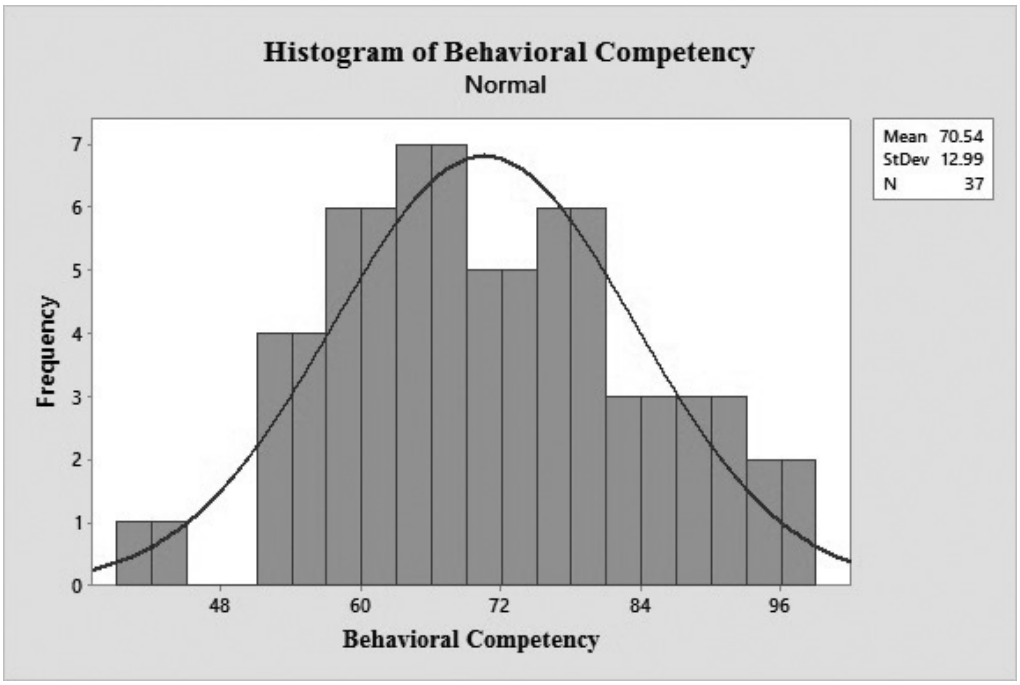
The "stem" is used to group the scores and each "leaf" shows the individual scores within each group.

Stem-and-leaf of Behavioral Competency; N = 37

Leaf Unit = 1.0	
1	4 2
1	4 0
4	5 123
7	5 577
12	6 00224
(7)	6 566789
18	7 2333
14	7 78899
9	8 024
6	8 688
3	9 234

- The leaf unit was 1.0. The first and second stem was 4 with one leaves: 2 and 0. This means that two employees scoring in the range of forty percent: 40-42.
- Twelve employees were in the range of sixty percent: 60, 60, 62, 62, 64, 65, 65, 66, 66, 67, 68, and 69.

- Five employees were in the seventy percent range; six were in the eighty percent and three were in the ninety percent, range.
- The median for the sample was 65, so both the fifth and sixth rows had cumulative count of 7.
- Therefore, two employees in the first two stems were mapped with competency gap in behavior and recommended for immediate counselling to improve their attitude and approach towards others employees.



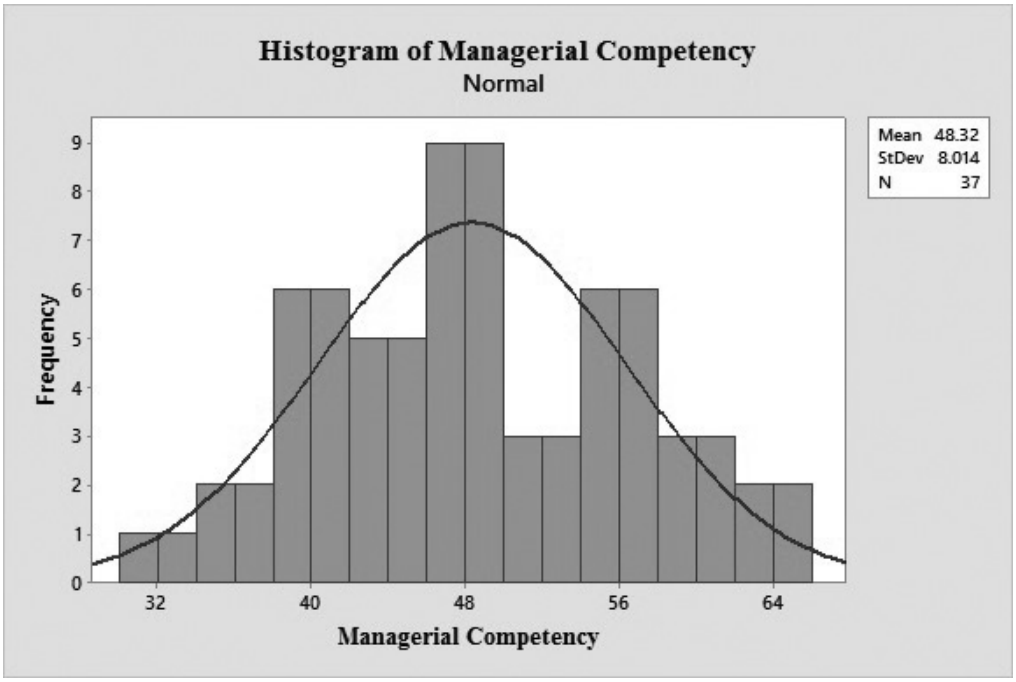
Graph 1. Normal Distribution of Behavioral Competency

The histogram indicates that most of the employees had scored 70 percent and above, thus the skills under those competencies were not in critical condition and employees were capable of handling behavioral related issues.

Stem-and-leaf of Managerial Competency; N = 37

Leaf Unit = 1.0	
1	3 1
6	3 67889
12	4 111224
(11)	4 55778999999
14	5 13344
9	5 556699
3	6 124

- Cumulatively seventeen employees were in forty percent range and median for the sample was 59.
- Out of 37 employees, 24 employees were mapped below the score of 50 percent, therefore all of them were recommended for training. Thus 64.86 percent of employees of the operations department were not thorough with managerial skills and needed immediate intervention to minimize competency gap.



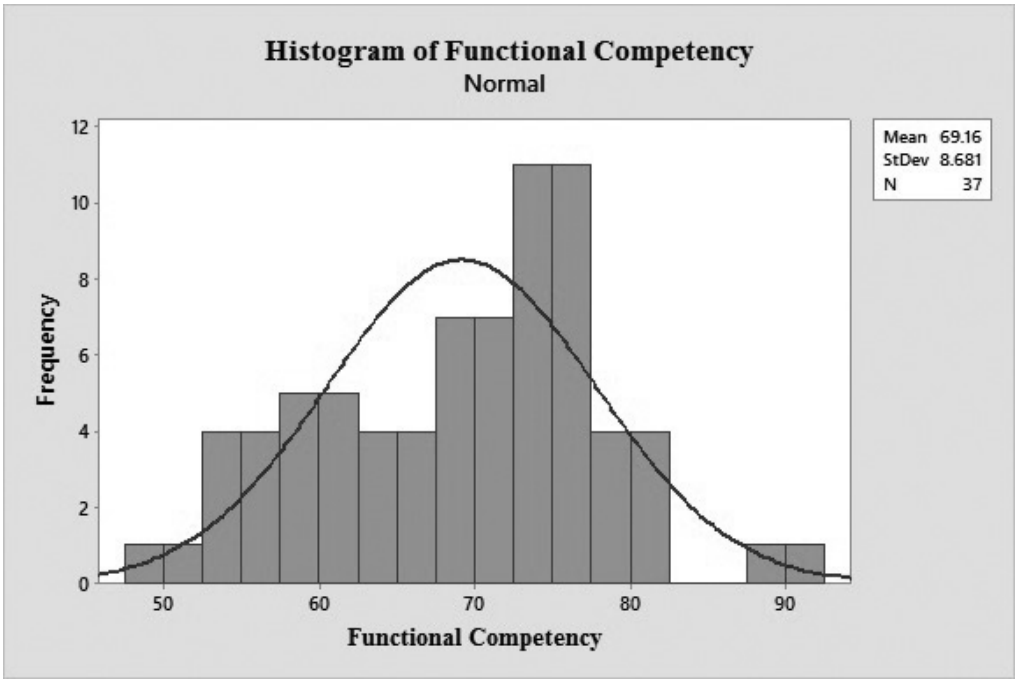
Graph 2. Normal Distribution of Managerial Competency

The histogram indicates that most of the employees had scored 48 percent and below, thus the skills under those competencies were in critical condition and employees were not capable of coping with deficiencies in managerial competency. There were serious lacunae in the skill inventory of operations department and indicates a wide competency gap. Hence immediate action plan of managerial training was implemented to bridge the gap as soon as possible.

Stem-and-leaf of Functional Competency; N = 37

Leaf Unit = 1.0	
3	5 034
6	5 779
11	6 12224
15	6 5678
(12)	7 001112334444
10	7 5556799
3	8 00
1	8 9

- Cumulatively nineteen employees were in seventy percent range and median for the sample was 72.5.
- There were no employees who had scored below 50 percent, indicating no competency gap.
- Therefore, no employee was recommended for training on functional competency



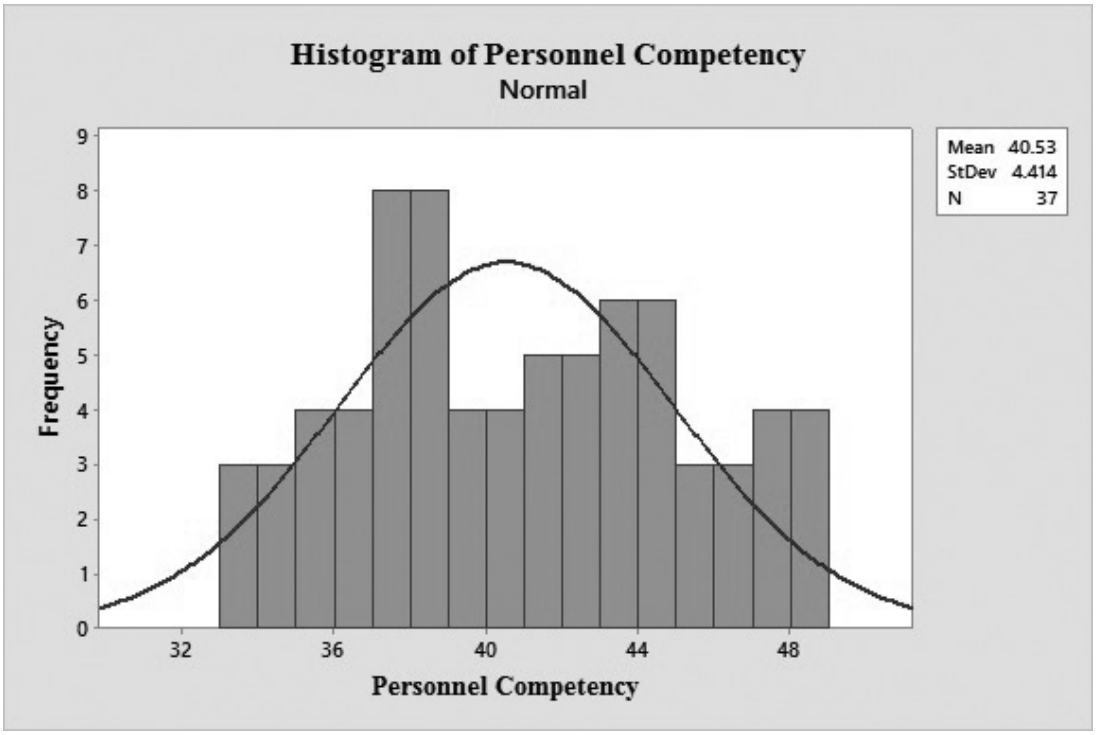
Graph 3. Normal Distribution of Functional Competency

The histogram indicates that most of the employees had scored 69 percent and above and none of the employees scored below 50 percent with low deviation. Thus, the skills under those competencies were not in critical condition and employees were capable of handling functions independently.

Stem-and-leaf of Personnel Competency; N = 37

Leaf Unit = 0.10	
1	2 9
1	3
2	3 3
5	3 455
12	3 6677777
17	3 88899
(6)	4 011111
14	4 223
11	4 44555
6	4 6777
	2 4 88

- The leaf unit was 0.10. Twenty employees were in between forty to fifty percent range.
- Six employees were in the forties with median for sample as 41, so the seventh rows had cumulative count of 6.
- Since the unit of leaf was taken as 0.10, employees falling below the score 40 percent will be considered for the training recommendation.
- 18 employees were below 40 percent score, therefore all of them needed to undergo training. 48.64 percent of employees were not having clarity about their personnel competency leading to a gap between standard and actual performance.

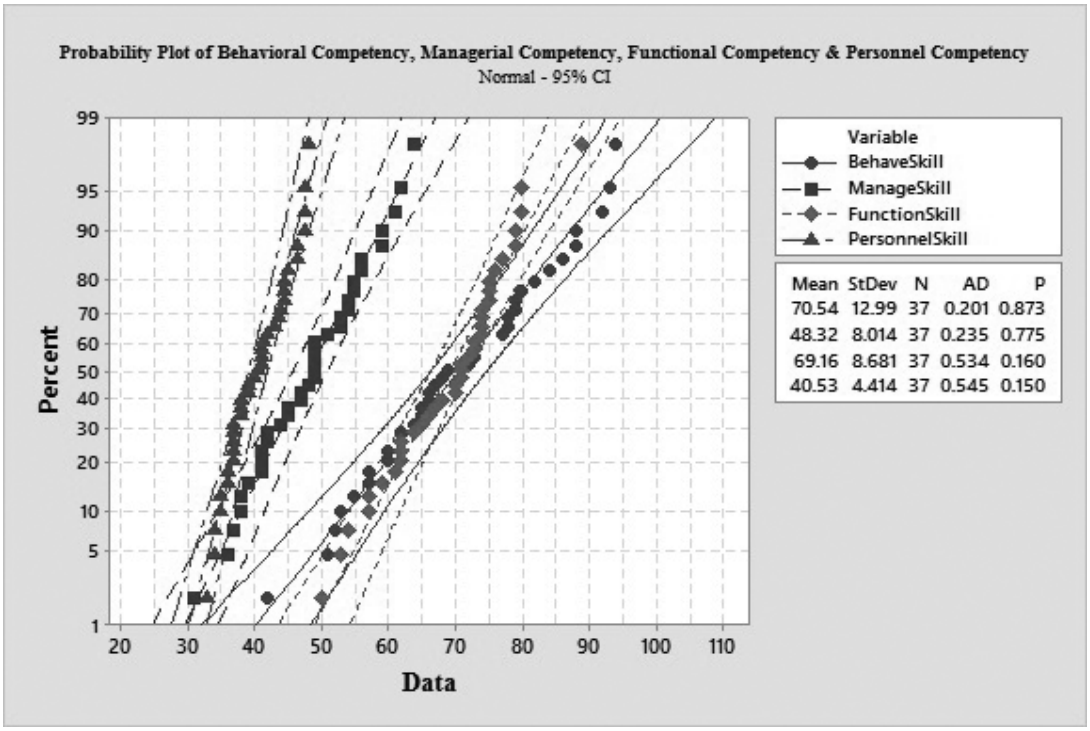


Graph 4. Normal Distribution of Personnel Competency

The histogram indicates that most of the employees had scored 40 percent. There were some employees who scored below 40 percent thus the skills under those competencies were not in much critical conditions and approximately 48.64 percent of employees needed to undergo personnel competency training for clarity and understanding of norms and procedure. This showed that there was a gap in the skill inventory of the operations department. Therefore, employees were sent for personnel training and counseling from time to time to bring clarity about policies and procedures, awareness about personal grooming and approach towards work.

Probability Plot

Graph 5 of probability plot evaluates the fit of a distribution to performance data, estimate percentiles, and compare different sample distributions.



Graph-5. Cumulative Probability plot for competency parameters

- The graph plots the value of each observation against its estimated cumulative probability. The scales were transformed to form a straight line of fitted distribution. In the Graph 5, behavioral, functional and personal competencies were assumed to have a good distribution fit, as plots indicate less outliers and most observations were near to fitted line. For functional competency, there were plots much away from the fitted line and numbers of outliers were high with inconsistency in plotting, indicating that the managerial competency needs immediate attention. The graph displays the approximate 95% confidence intervals for the percentiles. The confidence intervals were calculated separately point-wise on the fitted distribution without controlling for family-wise error.

Sample of Individual Employee Assessment

The 37 employees' competencies were mapped and clustered through application of capability index. Three employees' sample assessment scores are displayed below to indicate analytic procedure of training need.

Mr. SS (Assistant Manager). The required standard score for behavioral competency was 25/50 and Mr. SS had scored 35. For managerial, functional and personnel competencies his score was 18, 22, 23 out of 40 respectively, whereas standard required score was 20. Overall assessment score of the employee is indicated Table 4:

Table 4: Competency matrix of Mr. SS

S. No.	Competencies	Total Scores	Standard Scores	Achieved Score	Capability Index	Indicator
1.	Behavioral competency	50	25	35	5	Always exceed expectations
2.	Managerial competency	40	20	18	2	Meets expectations sometime
3.	Functional competency	40	20	22	4	Exceed expectation most of the time
4.	Personnel competency	40	20	23	4	Exceed expectation most of the time

The average competency score for Mr. SS was 3.75 out of 5 which was above average assessment scale of 2.5, thus he comes under the cluster of better performer. However, since he had scored low in managerial competency, he needed to undergo training for enhancing managerial competency only.

Mr. AD (Deputy Manager). Mr. AD scored 37 out of 50, for behavioral competency where minimum standard score was 25. For managerial, functional and personnel competencies his score was 20.1, 20.5, 21 out of 40 respectively, where standard required score was 20. Overall assessment score of the employee indicated Table 5.

Table 5: Competency Matrix of Mr. AD

S. No.	Competencies	Total Scores	Standard Scores	Achieved Score	Capability Index	Indicator
1.	Behavioral competency	50	25	37	5	Always exceed expectations
2.	Managerial competency	40	20	20.1	2	Meets expectations sometime
3.	Functional competency	40	20	20.5	2	Meets expectations sometime
4.	Personnel competency	40	20	21	2	Meets expectations sometime

The average competency score for Mr. AD was 2.75 out of 5 which was above average assessment scale of 2.5, thus he comes under the cluster of medium performer. Since he had scored marginal in managerial, functional and personnel competencies, he would be given another chance in his next performance. Therefore, he was not recommended to undergo any training.

Mr. BK (Assistant Supervisor). Mr. BK scored 28 out of 50 in behavioral competency, where minimum standard score was 25. For managerial, functional and personnel competencies his score was 15, 16, 17 out of 40 respectively, where standard required score was 20. Overall assessment score of the employee indicated Table 6.

Table 6: Competency Matrix of Mr. BK

S. No.	Competencies	Total Scores	Standard Scores	Achieved Score	Capability Index	Indicator
1.	Behavioral competency	50	25	28	4	Exceeds expectation most of the time
2.	Managerial competency	40	20	15	1	Never meets expectations
3.	Functional competency	40	20	16	1	Never meets expectations
4.	Personnel competency	40	20	17	1	Never meets expectations

The average competency score for Mr. BK was 1.75 out of 5 which was much below average assessment scale of 2.5, thus he comes under the cluster of low performer. Since he had scored low in managerial, functional and personnel competencies, he had been recommended for training in all three competencies. After training he needs to perform and secure his position.

Eminent Indian studies by researchers like Koripadu & Subbiah (2014); Sarkar (2013) & Balaji & Vimala (2012) attempted to map skills for different companies in South India which would strengthen the employee performance capability, scalability, consistency across geographies along with quality work. Some authors suggested training to minimise competency gap, while others paper had proved that competency gap could be minimised through training. But this study was done to develop skill inventory for a manufacturing unit. The competency gap here did not mean that employees were lacking in those skills, rather the motto was to enhance the multi-skilled dimension among the employees to minimise production defeats and enhance service quality.

Conclusion

The competency frame work was developed for operational department of an automobile company of India. The company is well known for its best research & development of its products. It is also known for caring for its employees. The findings above indicate that the company needs serious attention of enhancing managerial competency of the operations department. Compressed result for employees recommended for training is indicated in Table 7 below:

Table 7: Training Recommendation Chart

S. No.	Competencies n = 37	Number of employee score above average	Number of employee score average	Number of employee score below average	Number of employee recommended for training	Percentage of employees under scan
1.	Behavioral competency	0	10	28	2	5.4
2.	Managerial competency	6	28	3	24	64.86
3.	Functional competency	0	6	31	0	0
4.	Personnel competency	1	18	18	18	48.64

Table 7 clearly indicates that functional competency requires no attention for time being, behavioral competency needs minor attention and personal counselling session have been already conducted to improve the behavior and attitudes of two employees. These employees were recommended for training after misconduct in work place. Later on, their supervisors reported that after counselling session, two employees had improved a lot in their attitude and approach towards work. In spite of recommending only 24 employees for managerial training, the company had taken the issue very seriously and implemented job rotation training. A group

of 5-6 employees were trained on managerial competency regularly after their shift got over. The training had improved their working efficiency; as a result the company was able to gain much through implication of lean process of six sigma and elimination of waste. The employees were also able to optimise the raw material and time for effective defect-less production. The personnel competency training was recommended for 18 employees. For this company developed a web page for employees where all the employees can access information about themselves and company. The web page was developed on the concept of developing Standard of Procedure (SOP) for employees as a ready reckoner. All employees were trained to use the webpage and a computer with internet facility was installed in the working area of operations department, so that any employee who was willing to check SOP information can access it any time during working hours. This helped in gaining confidence of employees and use of SOP helped company for positive reinforcement among employees, which finally motivated employees to contribute more towards accomplishment of organizational goals.

Scope for Future Research

The analysis procedure applied for study was based on stem and leaf analysis which could be applied for clustering any number of employees for any industrial sectors or business units and the application did not require much complicated knowledge of statistics. So HR executives from any domain background (operation, general management, psychology etc.) could be trained for using stem and leaf analysis for clustering employees into groups such as highly competent, competent, below average (need training), conscious incompetent (need training) and unconscious incompetent (could be considered for downsizing) as per the standard recognized by the company. Thus, similar methodology could be used for further competency mapping research at various other sectors.

Critical to cost analysis of the study indicated that application of present research does not required much investment in terms of purchasing software and training HR executives in using the same. The model could be simply build with the help of either R programme (open source software) or Minitab (user friendly software). Microsoft Excel could be of help in determining central tendency and kind of data distribution of employees. Employees once clustered as per competency standards, would help the company to develop skill inventories for forecasting future demand and supply of manpower and at the same time, it would be cost effective as well, as separate and further survey or research would not be required for conducting Training Need Analysis.

Employees were always considered as intangible assets for company, thus their performance would support the performance of a company. The main role of HR department should be to support employees and company to do better than their present level of performance. Identifying training needs and providing adequate training to employees to make them competent to perform, ensures employees' future growth, and in turn would help the company to match employee's competency with particular job description. That would predict superior job performance and satisfaction among employees with application of equal employability opportunity (EEO) without credential biases and building strong employer brand in the job market. The competency approach applied for the study was fair and cost and time effective. Competency mapping could be considered as one of the gem of all techniques applied for understanding Training Need and Performance Evaluation simultaneously; as it focuses on aligning need of a company with different HR approaches.Over all the study would be of great help for those human resource managers who would like to design and implement competency framework for Training Need Analysis and could be useful for micro to large numbers of employees.

Limitations of the Research

Every study in spite of best efforts has some drawbacks that need to be taken care of in next research. The competency frame work developed was based on only Principle Component Analysis. But for validating the frame work it was also important to test the validity through Confirmatory Factory Analysis. This kind of testing requires more number of employees but this study was restricted to 37 employees only. Reliability would be another component needed to test the internal consistency of the competency framework. To test reliability, employees should be tested before implementing a competency frame work or training session and a retest of those employees should be conducted after training is over, to understand the effectives of competency gap minimization. Due to some due diligence and compliance issues, the names of the company and employees who participated in this study were not mentioned. The study was conducted at an industrial manufacturing unit, where HR department believed that whatever measures were followed were satisfactory and did not intend to attempt any new methodology. They believed that external consultant measuring employees might cause negative impact on employee's attitude towards company.

Company had called for consultancy, because they did not develop any systematized Training Need Assessment. To implement the same, HR department faced resistance from employees in developing skill inventory for the company. That was specially observed during administration of questionnaires for rating by supervisor, where the employees came up with questions like, "Will our scores be disclosed to our departmental head?" and "What kind of action will be taken if we have low scores?". Company allowed researchers/consultants to use limited number of tools to identify competencies and level of proficiency.

Last but not the least, organizations do not disclose information externally, so the name of the company was not disclosed, even according to company policy, they were not supposed to disclose information of one department to another.

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