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# A STUDY OF PERFORMANCE REVIEW DISCUSSION (PRD) ON MID-LEVEL SCIENTISTS: A CASE STUDY OF PREMIER DEFENCE R&D LABORATORY LOCATED IN VISAKHAPATNAM

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**ABSTRACT**

*Performance Review Discussion (PRD) as a part of Annual Performance Assessment Report (APAR) plays very crucial role while assessing the performance of individual. It is carried out by examining three (03) parameters viz. performance/targets, demonstrated aptitudes and training and development needs and personality traits /attributes and corrections in the present context. Basically, PRD is nothing but potential appraisal of an individual. By this parameter, the Initiating Officer (IO) is supposed to identify strengths and weaknesses of individuals periodically and corrective measures are suggested to the individuals as to how he/she can perform in better ways, even individuals are advised to rectify their temperament, attitude and behavior. Even, some of the areas of training are supposed to be suggested so that individuals can be imparted the required training wherever he/she is weak or even more responsibilities are assigned for future after training them as per PRD. In this current paper, a case study of a premier research and development study located in Visakhapatnam, on the topic, based on empirical study, using statistical tools viz. descriptive tests, Chi-Square test and factor analysis and using primary and secondary data suggests that steps or suggestions, for further improvement in existing PRD system, may be adopted on recommendations/suggestions for individuals and the laboratory.*

***KEYWORDS:*** *Performance, Personality Traits, Strengths, Attitude, Required Training.*

## Introduction

A premier Defence research and development laboratory located in Visakhapatnam, hereafter, called as lab, has been tasked with design and development activities for underwater guided and unguided vehicle systems and other related projects for Indian Armed Forces for boosting indigenous manufacturing and self-reliance under ***make in India*** programme. It has mainly civilian Defence personnel for under taking its charter of duties. These civilian personnel consist of three Cadre viz. DRDS, DRTC and Admin and allied services. Annual performance and assessment report (APAR) is raised for scientists every year for DRDS Cadre apart from appraising the performance for other two Cadre. DRDS Cadre has scientists from scientists 'B to H' category.

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The basic objective of this study is to improve PRD parameters of APAR system for scientist 'D' so that his/ her performance could be enhanced further. APAR is rendered every year for scientists of Defence R&D organization in month of January. With this instrument, the organization realizes its mission and objectives, therefore, every individual of the organization needs to perform best of his / her potential. In this instrument, value based assessment system of the organization has tremendous motivational impact on personnel through goal setting, meaningful feedback and recognition. Therefore, the present assessment system has been crafted to integrate individual goals with organizational mission and objectives. Hence, the feedback for assesses is expected at all levels through Performance Review Discussions (PRD) after disclosing grades/points with a view to facilitate individual's development and enhance their performance. PRD plays very crucial role while assessing the performance of individual. It is carried out by examining three (03) parameters viz. performance/targets, demonstrated aptitudes and training and development needs and personality traits /attributes and corrections.

Basically, PRD is nothing but potential appraisal of an individual. By this parameter, the Initiating Officer (IO) is supposed to identify strengths and weaknesses periodically and corrective measures are suggested to the individual as to how he/she can perform in better ways, even individuals are advised to rectify their temperament, attitude and behavior. Even, some of the areas of training are suggested so that individuals can be imparted the required training wherever he/she is weak or even more responsibilities are assigned for future after training them as per PRD. The individual is given grades/points on scale of 100. This means that there is a linkage between PRD and these points. Therefore, PRD has to be improved in all aspects. Hence, this will lead to better performance of individual and performance of the organization. There is a scope of further improvement in PRD by knowing of what all parameters are being emphasized / stressed more or given less importance and for that purpose, a questionnaire has been structured, consisting of 5 - point scale - questions on PRD, that is, on potential appraisal. Even one open ended question has been catered to give open suggestions for improvement on PRD.

**Historical Perspective**

Prem Chadha[1] in 2008 stated that review discussions give the benefit of one-to-one interaction by structured opportunities to managers if given every two or three months in a year. He considered these opportunities as inadequate but important and emphasized that as part of ongoing processes. He also differentiated that walking together is different from meeting at mile stones. These meetings are helpful only when pause, reflect, take stock and strategized activities are under taken. Michael Armstrong & Angela Baron[2] in 2008 brought out that development reviews and performance could be considered, formally or informally, as learning events. Because, it gives learning opportunities before, during and after formal/informal meetings. Periodic review fulfills this task. This activity can also be acquired while assigning the job by a manager and monitoring its progress in parallel. John M Ivancevich[3] in 2008 enumerated various effective performance evaluation systems like continuing process and two way communication making employees comfortable and stress free for counter claiming including explaining individual and organizational goals. He also emphasized on inadequate training of raters leading to problems like halo effect, leniency, etc. Robert L. Mathis / John H. Jackson[4] in 2005 pointed out that performance appraisal process can be used for assessing training needs of the individual. With the help of formal performance review discussions using good HR information system, employee's performance inadequacies are determined. Depending on these inadequacies, employee's weaknesses are overcome by designing training.

Defence Research and Development organization has issued the guidelines regarding raising of APAR and completing PRD that Initiating Officers at all levels shall discuss with the assesses their performance vis-à-vis their targets and factors that contribute to the performance favorably or otherwise and training and development needs of the assessee. He/she shall also share with the assessee his specific observations on the assessee's personality and suggest corrections wherever required.

Most important component of the performance review discussion is the target setting for the following calendar year. Targets are primarily to be spelt-out by the IO which are only fine tuned with the consultation of assessee. While setting the targets, both the IO and the assessee should take into consideration the available resources and constraints, if any. The principle of 'SMART' is followed for setting targets where, 'S' stands for Specific, 'M' stands for Measurable, 'A' stands for Agreed (Mutually), 'R' stands for Realistic, 'T' stands for Time bound. Initiating officer should keep the following points in mind during the Performance Review Discussion viz. i) This is to help the scientist to realize his/her full

potential ii) It should help the scientist to appreciate his/her strengths and understand weaknesses iii) Focus on individual's behavior and not the individual as such, iv) Encourage the individual to continuously improve his/her performance through planning and seeking guidance v) Provide an empathic atmosphere for individual to share his/his tensions, conflicts, concerns and hardships, regular communications and mutual feedback at workplace between an individual and his/her superior which is an important component in an organization's performance management system. Performance Review Discussion (PRD) is an effort to formalize this process once in a year.

**Review of Literature**

McGregor (1957)[5] suggested that managers have natural reluctance or inertia to evaluate the value which are worth of other human being. This is another one step which works as hindrance in improving performance appraisal. He also brought out that managers have tough time for acting as inspirers and motivators to judicial evaluators. *Whisler* in 1958 stated that performance appraisal have limitations for measuring accurate performance of an individual due to various reasons like hesitancy of raters for being completely honest for fear of negative repercussions. As noted by Murphy and Denisi[6] (2008) for motivating employees to perform better, most of the performance management interventions are crafted carefully. But sometimes, it has been observed that performance problems are given less priority to motivation than ability. Solution for such type of cases can be given by using training. *Schaufeli and Salanova* in 2007 suggested that by allowing employees for continuing their development throughout their career, they should be engaged which can be considered as a key point.

**Colvin and Boswell**[7] described that each individual employee must have motivation, ability and opportunity to engage these employees in actions for achieving strategic goals by linking their behavior with strategic objectivities. Two points have emerged here, one is action alignment and other is interest alignment. A function of an individual's capabilities (KSA) as well as opportunities is defined as action alignment effectively. It is apparent that each individual should have KSA which are mandatory to enable the organization's capabilities including job specific group competency. These are also aligned with strategic priorities. Apart from this, individuals should have the opportunities for applying their KSA for achieving of strategic goals. Without disturbing organizational constraints, organizational policies, culture and group level rules and norms, it can act as function for opportunities. Employee's skills, motivation including opportunities can become function of employee's performance for applying their skills in day-to- day job activities (Appelbaum et al., 2000).

**Jean-Marie Hiltrop**[8] stated that PRD provide enough space for self development and learning, integrated career planning and mentorship. Generally, promotion has been seen as motivational currency of old era. Now a days job enrichment, employability and providing the opportunity for individuals only matter for developing skills and taking care of themselves in perspective manner (Noer, 1993). Therefore, in present situation career of managers as professionals are carried in the way as an olden days. Therefore, training and development should be structured in a way that individuals are promoted based on their actual potential not as per their status, position and level.

**Anastasia A. Katou & Pawan S. Budhwar**[9] explained in this study that employees skills have direct and strong positive effect on organizational development (0.90), attitudes of employees have direct and positive effect on organizational performance (0.48) also employee's behavior also have direct positive effect (0.44) on organizational performance. These parameters indicate that HRM outcomes meditate the relationship between organizational performance and HRM systems.

**Fiona Wilson**[10] suggested that appraisal could have concern with either judgment or development. Therefore, conflicting requirements of appraisals have been considered by appraisers and appraisee which were found during interviews of candidates, however, it was not recognised as contract. More clearly, it can be inferred that appraisal should be concerned with individual's development, hence, non judgmental approach could be taken, however, on the other hand what is required from appraise and what is criteria are being used to judge their performance by appraisee. In this study, in university for a lecturer (A011) felt that objectivity could be used in the appraisal for improving the quality, research performance in the department by stressing on what people need to get what they want in terms of ROI.

**Ebrahim Soltani, Robert Van Der Meer, John Gennard & Terry Williams**[11] in their study with objectives like identifying training needs, impact on employee motivation and useful guidance for future performance considered that training needs of many organizations is most critical output of performance appraisal system. During the survey, it was found that 30% of the organizations indicated that their performance evaluation system with respect to positive impact on employee motivation was successful.

In contrast, the remaining 70% assesses their performance neither effective nor ineffective (27%). The study has shown that attempts to design the current performance evolution systems to resolve, the problem of employee motivation towards quality programs have not been successful.

**Sequoia Star, Darlene Run – Eft, Marc T. Braverman & Rager Levine**[12] brought out that for identifying progress towards the success of organization goals and initiatives performance management system can be used as powerful tool. This progress can be seen as an identification of various strengths and weaknesses including understanding of organizational resources. In fact, HRD interventions can be designed taking stock of these areas which have been mentioned in PMS which in long run can serve as vital support for good achievement.

**Sumi Jha, Somsekhar Bhattacharyya & Christo Fernandes**[13] stressed on technical knowledge which is supposed to be domain knowledge for establishing at individual level own capabilities (Raja dhyaksha 2005) which comes through commitment of top management that too availability of trained human resources which helped in clear definition, communication and aligning of manufacture strategy with corporate strategy (Griffin & Hauser, 1992 Swink Narasimham and Kim 2005, Hayes and pisano, 1994).

**PRK Raju**[14] in the study of Deepak Fertilizers and petro chemical corporation ltd, the author appreciated praise AIMS at directing organizational goals using measuring and improving the actual performance of employees including potential of the employees in this study the praise AIMS measures regarding not only what employees does but also ***how he performs***. In 'what' part of Key result areas (**KRA**) and 'how' part demonstrated in leadership values in action are discussed.

**Arunima Shrivastava & Pooja Purang**[15] considered that problems in performance appraisal area get affected due to inaccuracy of ratings because of guidelines used in generating ratings are unclear which lead to unfair ratings behavior of employees does not get changed as they are not motivated based on feedback of ratings (Denisi & Sonesh, 2011). The study reveals that procedural justice leads to highest variance (58%) in performance appraisal satisfaction, informational justice 45% and distributed justice 45%. It leads to that procedural and informational justice have highest influence on job satisfaction. In the study, it was also found that performance appraisal is the process which influence the motivation and enhances productivity therefore, appraisal can be considered as pivotal in various employees related decisions such as promotions, transfers, retentions and employee development.

**C V Kannaji Rao**[16] while studying HSL stated that social and psychological aspects of the appraisee apart from physical performance should be considered to enable their better performance. Moderate PAS has been found in HSL due to errors or bias of appraisal and inadequate time are observational performance. He also stated that appraisal procedure must be known to appraise, and brought out that 65% of the respondents favor development of appraisee.

**Prakash Jupudi**[17] brought out that grades or points in appraisal system in Visakhapatnam Port Trust(VPT) for executives is carried out after investigation of descriptive assessment and self appraisal annually. Descriptive assessments is nothing but potential appraisal which is written based on various qualities or traits of executives like proficient knowledge, creativity and innovativeness, inter personal relationship, etc. The author has also stated that top management of the organization makes efforts to identify and utilize the potential of employees under category of executives as (some time true) 102(57.2) rarely true 46(78.0).

**V.D. Dudeja**[18] stated that periodical appraisal i.e., frequency of parameter if increased can have better judge for effectiveness of subordinates. Because during this process assistance can be rendered to make subordinates more effective on their job to perform their tasks. This can be achieved measuring past performance based on set performance standard and assessing the factors which affect their job which are predicted for future potential.

**Objectives of the Study**

The paper aims that implementing various steps/points, wherever/whatever applicable, effectiveness of PRD system could further be enhanced for improvement of individuals and the organization. However, the following objectives have been charted out for empirical study on Performance Review Discussions in the lab:

- To examine critically present PRD system.
- To study various PRD parameters in existing system.

- To evaluate the prevailing PRD systems and thereby to assess the merits and demerits of the systems in the practical implementation.
- To examine linkage between part III (PRD) and part IV (grading/point system) of APAR.

**Hypotheses**

The following hypotheses have been designed based on objectives of the study to ascertain the facts in the lab:

- H01 There is no significant relationship between exhaustive analysis or completeness of PRD and its effectiveness.
- H02 There is no relationship between accomplishments of targets, performance, etc. and grooming the scientist for the next promotion/higher responsibilities.
- H03 There is no significant relationship between the content of demonstrated aptitudes and training and development needs and grooming the scientist for the next promotion/higher responsibilities.
- H04 There is no relationship between the content of personality traits and grooming the scientist for the next promotion/higher responsibilities".
- H05 There is no significant relationship between strengths as per PRD and assigning present/ future assignments.
- H06 There is no relationship between improving of weaknesses as per PRD and imparting training in those areas/content.
- H07 There is no significant relationship between better PRD analysis and enhancing performance of individual.
- H08 There is no relationship between training for minimum formal managerial-cum-leadership course/training apart from technical training/courses and PRD content?
- H09 There is no significant relationship between imparting training to scientist 'D' and imparting training as per PRD content.
- H10 There is no relationship between the trained scientists as per PRD and utilization in their domain field?
- H11 There is no significant relationship between quantification of PRD parameters and bringing objectivity in the PRD.
- H12 There is no relationship between equal importance of PRD parameters and its effectiveness.
- H13 There is no significant relationship between frequency of PRD and its effectiveness.
- H14 There is no relationship between part-III write-up and part-IV scale/grading of APAR provided by IO.
- H15 There is no significant relationship between encouragement by IO and improving performance of individual.
- H16 There is no relationship between creating empathic atmosphere by IO and sharing of tensions and conflicts, concerns and hardships.
- H17 There is no relationship between demographic variables (experience and sex) and completeness of PRD.

**Research Methodology**

The following research methodology has been adhered to for under taking the case study:

- **Population:** Total population of scientists in the lab is 190. These scientists are from DRDS Cadre. They vary from scientist 'B' to scientist 'H'. These scientists are working on various projects while posted internally in different divisions.
- **Sampling & Sample Size:** The study has been undertaken between the period from Oct 16 to Jan 17 on middle level scientists who are known as scientist 'D'. This category is selected for the study because after this post or category they are assigned higher responsibilities/duties or

posts where in both qualities like professional skills and leadership qualities are expected from them. As long as they are scientist 'B' to 'D' they concentrate on professional/technical skills/jobs. Therefore, this category has been taken for the study. In this lab, total 57 scientist 'D' are available. The sample size is 53. Total 57 questionnaires were distributed but only 53 responses were received. Therefore, total response rate is 93% which is acceptable. The selection of sample is random one and convenience method has been used.

- **Questionnaire:** A 5-point Likert scaled questionnaire consisting of 22 questions covering demographic information(Q(i) to Q(v)) and information on PRD from Q1 to Q16. These questions encompasse various variables viz. mission, goals, objectives. meaningful feedback. One Q17 has been made as open and various steps of suggestions have been sought. The questionnaire has been structured which is placed at last part of Appendix 'A'. Such 57 questionnaires were distributed among respondents known as scientists 'D' of the lab for collection of data. Out of these, 53 respondents only replied. Data collected is both primary and secondary. The reliability of the questionnaire was tests using Cronbach's alpha test which was found as 0.834. The questionnaire was also tested on same category of scientists for its language, framing of question and understanding of question so that each respondent could understand the same.
- **Study Variables:** Each question in the questionnaire has indicated the special meaning, requirement and utility which is called study variable**.** The following study variables have been targeted and designed in the questionnaire as mentioned against each question:-

| | | | |
|---|---|---|---|
| (i) | Name | Q7. | Better PRD Analysis Vs Performance |
| (ii) | Total service | Q8. | Leadership Training Vs PRD Training |
| (iii) | Division | Q9. | Imparting Training Vs PRD Training |
| (iv) | Gender | Q10. | Trained Scientists Vs Utilization |
| (v) | Educational Qualification | Q11. | PRD Quantification Vs PRD Objectivity |
| Q1. | Completeness Vs Effectiveness | Q12. | Equal importance of PRD parameters Vs Effectiveness |
| Q2. | Target Vs Promotion | Q13. | Frequency of PRD Vs Effectiveness |
| Q3. | Aptitude, Training & Development Vs Promotion | Q14. | Part III Write-up Vs Part IV Points |
| Q4. | Personality Traits Vs Promotion | Q15. | Encouragement Vs Performance |
| Q5. | Strengths Vs Assignments | Q16. | Empathetic atmosphere Vs Sharing Concerns |
| Q6. | Weaknesses Vs Training | | |

- **Procedure of data collection:** The data have been collected in the following manner:
  - **Primary Data:** Structured questionnaire was distributed to respondents personally. Accordingly, data have been collected and analyzed. Informal discussions with respondents was conducted for knowing insights of Performance Appraisal Discussions in the lab.
  - **Secondary Data:** The following secondary data have been collected for study from the sources given below:
    - ✓ Existing APAR blank formats /forms.
    - ✓ Published and unpublished records.
    - ✓ Published research journals.
    - ✓ Internet web sites.
- **Statistical tools and analysis Techniques:** Chi-Squre test, Factor analysis and descriptive analysis with version of SPSS 20.0 have been used as statistical package for analyzing the data.

**Scope of the Study**

The following scope of the study was encountered while undertaking the study:

- Data have been collected only from one premier laboratory located in Visakhapatnam.
- Category of respondents from the laboratory has been taken from middle level Scientists from DRDS Cadre.

**Limitations of the Study**

- Only 11 questions out of 17, have been presented in this paper for study.
- Cross analysis amongst the questions including demographic variables has not been carried out.

- Limited statistical tools like descriptive analysis, chi-square test and factor analysis have been used in the study.
- Data for ***neutral*** respondents has been adjusted based on input received against Q17, which is open ended question. During study, it has been observed some of the respondents were contradicting while responding first half, second half and open ended questions.

**Data Analysis and Interpretation**

21 questions have been analyzed using descriptive statistics, Chi-square test and Factor Analysis as statistical tools using SPSS 20.0. However, only 11 questions /Study variables have been provided in this paper due to paucity of space in the succeeding paragraphs. All the related tables and charts for the tests related to these 11 study variables are placed at Appendix 'B'. Inputs from Q17 which is open ended question have been kept at Appendix 'C' of this paper.

**Results and Discussions**

The following variables have been discussed and interpreted based on results obtained from statistical analysis:

- **Content of demonstrated aptitudes, training and development Vs Promotions (Q3):** 60.4% (Table 3C) of the respondents disagree that demonstrated aptitudes, training and development needs of the assesses are utilized for grooming the scientists for the next higher responsibilities. This percentage includes neutral respondents also. Mean 2.98 and standard deviation 1.083 (Table 3A) shows that majority of the respondents agree with this perception and less spread of observations are visible. There is a relationship between demonstrated attitude training and development and grooming the scientist for higher responsibilities (Null hypothesis is rejected as significant value is less than 0.05 (Table 3B).
- **Content of personality attributes Vs Promotion (Q4):** 56.6% (Table 4C) of the respondents disagree that content of personality attributes are utilized for grooming the scientist for the next promotion/higher responsibilities. This percentage includes neutral respondents also. Mean 3.19 and standard deviation 0.982 (Table 4A) shows that majority of the respondents agree with this perception and less spread of observations are visible. There is a relationship between content of personality attributes and grooming the scientist for the next promotion/higher responsibilities (Null hypothesis is rejected as significant value is less than 0.000 (Table 4B).
- **Improving of weaknesses Vs imparting training (Q6):** 56.6% (Table 6C) of the respondents disagree that improving of weaknesses as per PRD is under taken by imparting training in those areas/content. This percentage includes neutral respondents (18.9%) also. 39.6% of the respondents do agree with this statement also. Mean 3.02 and standard deviation 1.083 (Table 6A) shows that majority of the respondents agree with this perception and less spread of observations are visible. There is a relationship between improving of weaknesses as per PRD and imparting training in those areas/content (Null hypothesis is rejected as significant value is less than 0.000 (Table 6B).
- **PRD analysis and enhancing performance of individual Vs Performance (Q7):** 66.0% (Table 7C) of the respondents agree that better PRD analysis will enhance performance of individual. 18% of the respondents strongly agree with this statement also. Mean 4.09 and standard deviation 0.861 (Table 7A) shows that majority of the respondents agree with this perception and very less spread of observations are visible. There is a relationship between better PRD analysis and enhancing performance of individual (Null hypothesis is rejected as significant value is less than 0.000 (Table 7B).
- **Training for minimum formal managerial-cum-leadership course/training Vs PRD content apart from technical training (Q8):** 52.8% (Table 8C) of the respondents agree that training for minimum formal managerial-cum-leadership course/training should be imparted as per PRD content apart from technical training. 47.2% of the respondents strongly agree with this statement also. Mean 4.15 and standard deviation 1.116 (Table 8A) shows that majority of the respondents agree with this perception and less spread of observations are visible. There is a relationship between training for minimum formal managerial-cum-leadership course/training and PRD content apart from technical training (Null hypothesis is rejected as significant value is less than 0.000 (Table 8B).

- **Imparting training Vs PRD Training (Q9):** 79.2% (Table 9C) of the respondents strongly disagree that imparting training to scientist 'D' and imparting training as per PRD content. 50.9% cumulative of the respondents disagree with this statement also. Mean 2.58 and standard deviation 0.949 (Table 9A) shows that majority of the respondents agree with this perception and less spread of observations are visible. There is a relationship between imparting training to scientist 'D' and imparting training as per PRD content (Null hypothesis is rejected as significant value is less than 0.028 (Table 9B).
- **Trained Scientists Vs Utilization (Q10):** 67.9% (Table 10C) of the respondents disagree that the trained scientist as per PRD are utilized in their domain field. 41.5% of the respondents show neutrality with this statement also. Mean 3.02 and standard deviation 0.971 (Table 10A) shows that majority of the respondents disagree with this perception and very less spread of observations are visible. There is a relationship between the trained scientist as per PRD and utilization in their domain field (Null hypothesis is rejected as significant value is less than 0.000 (Table 10B).
- **PRD Quantification Vs PRD Objectivity (Q11):** 88.7% (Table 11C) of the respondents agree that quantification of PRD parameters are required in bringing objectivity in the PRD. Only 17.0% of the respondents disagree with this statement also. Mean 3.60 and standard deviation 0.906 (Table 11A) shows that majority of the respondents agree with this perception and very less spread of observations are visible. There is a relation between quantification of PRD parameters and bringing objectivity in the PRD (Null hypothesis is rejected as significant value is less than 0.000 (Table 11B).
- **Equal importance of PRD parameters Vs Effectiveness (Q12):** cumulatively 58.5% (Table 12C) of the respondents strongly disagree that equal importance of PRD parameters and its effectiveness. 32.1% of the respondents disagree with this statement also. Mean 3.06 and standard deviation 0.908 (Table 12A) shows that majority of the respondents agree with this perception and very less spread of observations are visible. There is a relationship between equal importance of PRD parameters and its effectiveness (Null hypothesis is rejected as significant value is less than 0.000 (Table 12B).
- **Frequency of PRD Vs effectiveness (Q13):** 67.9 % (Table 13C) of the respondents strongly agree that frequency of PRD should be one month for its effectiveness. 50.9% of the respondents agree with this statement also. Mean 3.26 and standard deviation 1.211 (Table 13A) shows that majority of the respondents agree with this perception and more spread of observations are visible. There is a relationship between frequency of PRD and its effectiveness (Null hypothesis is rejected as significant value is less than 0.000 (Table 13B).
- **Part III Write-up Vs Part IV Points (Q14):** 62.3% (Table 14C) of the respondents agree that part-III write-up and part-IV scale/grading provided by IO has a direct linkage. 13.2% of the respondents shows neutrality with this statement also. Mean 3.42 and standard deviation 1.027 (Table 14A) shows that majority of the respondents agree with this perception and more spread of observations are visible. There is a relation between part-III write-up and part-IV scale/grading provided by IO (Null hypothesis is rejected as significant value is less than 0.000 (Table 14B).
- **Factor Analysis:** Total 16 questions except Q13 were grouped into four factors/Components viz. Factor1: Q1,Q2,Q15,Q16 ; Factor2:Q3,Q4,Q5,Q6,Q9,Q10,Q14;Factor3: Q7,Q11,Q12; and Factor4: Q8. KMO measure of sampling adequacy was found greater than 0.7 hence factor analysis is adequate to fore factor analysis. This means all 16 variables were reduced to four major variables.

**Conclusion**

Based on results and discussions above, the following are hereby concluded:

- Content of demonstrated aptitudes and training and development needs and grooming the scientist are not being utilized fully for the next promotion/higher responsibilities.
- Content of personality attributes/traits are not being utilized fully for grooming the scientist for the next promotion/higher responsibilities.

- Improving of weaknesses in areas/contents as per PRD and imparting the current training are not matching.
- Better PRD analysis will enhance performance of individual.
- Minimum formal managerial-cum-leadership course/training for Scientist 'D' is required as per PRD content apart from technical training/courses.
- Training to scientist 'D' is not being imparted fully as per PRD content.
- Trained scientist are not being utilized fully in their domain field.
- Quantification of PRD parameters is required for bringing objectivity in the PRD system.
- Equal importance to PRD parameters is not being given for making it more effectiveness.
- Frequency of PRD is required to be changed to make it more effectiveness.
- Part-III write-up and part-IV scale/grading provided by IO have linkage with each other.

**Suggestions/Recommendations**

These suggestions / recommendations have been made based on conclusions made above for further improvements in PRD of APAR:

- In PRD section of APAR, training needs for individual as per his aptitudes and interest are mentioned by IO, as per this the individual is supposed to be trained in those areas as mentioned by him, however, individuals are not being imparted training fully as per PRD content. Therefore, it is suggested that scientists should be imparted training in the areas mentioned by his or her IO in PRD section of APAR. It is also suggested that training needs requirement of the individual should also be considered by IOs based on long term integrated perspective plan conceived by Top-Down approach
- Content of personality attributes/traits should be mentioned in details so that all the attributes of individual's personality are depicted and accordingly he or she could not only be groomed for the next promotion/higher responsibilities but also to be considered for job rotation.
- Every individual has some weaknesses and some strengths which are mentioned in PRD by IO. These weaknesses can further be improved if training is imparted in those weak areas for improvement of an organization.
- IO should be encouraged to write better PRD write-up as it enhances performance of an individual and in turn performance of organization will be increased.
- After promotion from scientist 'D' to 'E', he/she is assigned managerial responsibilities apart from his/her technical work, therefore, a minimum formal managerial-cum-leadership course/training for Scientist 'D' is required as per PRD content apart from technical training/ courses.
- Whatever training is imparted whether this is CEP/M.TECH or orientation programme, once these scientists are trained, they are not being utilized completely in their domain field. As far as possible, these scientists should be posted or placed in the same areas where he/she have been trained.
- PRD in APAR is written by IO with subjectivity since it has direct linkage with grades or points system therefore, quantification of PRD parameters is required for bringing objectivity in the PRD. This can be achieved by giving 60%, 20% & 20% for giving weight age for targets/performance achieved, Training & development and personality traits respectively.
- This study reveals that equal importance to all three parameters is not being given by IO whereas these parameters have its relevance which are required for carrying out higher responsibilities, therefore, equal importance while writing PRD should be given to these parameters to make it more effectiveness.
- PRD is undertaken while completing APAR annually. Studies suggest that frequency of PRD is required to be changed to make it more effectiveness. Because after increasing frequency, there are ample opportunities for taking corrective measures for overcoming weaknesses in time. In this way, lots of opportunities are also offered to the appraisee. This can be achieved, if frequency of PRD is increased even once in month and PRD proceedings can be recorded in performance register which can be kept with IO.

- Consistency should be maintained between part-III write-up (PRD) and part-IV scale points /grading provided by IO as these have linkage with each other. Also if there happens to be more than two or three IOs due to some reasons like external and internal transfers of appraise or appraiser, than HRD should ensured that APAR should be written by all IOs in order to have more consistency in while writing PRD.

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**Appendix-C**

**SUGGESTIONS/RECOMMENDATIONS BASED ON INPUTS FROM OPEN ENDED QUESTION**

These suggestions have been offered against Q 17 (open ended question) of questionnaire in which respondents have suggested or recommended the following points for further improvements in PRD of APAR:-

1. Actions or points mentioned in PRD should be executed seriously.
2. Standing Operating Procedures(SOP) for PRD be adopted. Feedback from projects also be considered by IO. More weightage for trials/firings related works, punctuality and discipline to be given.
3. Frequency of PRD be enhanced and its quantification be carried out.
4. Suggestions on training needs by IO & RO to be implemented to the extent possible manner.
5. PRD should not be considered mere, o matching with final marketing, APAR to be digitalized, PRD outputs are more or less generic in nature.
6. IO needs to be frank enough to discuss the relevant parameters with assesses.
7. The very system of APARs is getting defeated because there is no way to link all assessments like PRD and APAR marks objectively across all accepting authorities.
8. Appropriate weightage to personality traits to be given.
9. CEP course should be made mandatory for every scientist as per his/her subject line.
10. $360^0$ assessment system may be adopted.
11. Interaction with IO be enhanced.
12. PRD to be used as a tool to identify career path of scientist.
13. Regular feed back to set performance expectation to be conducted.
14. Periodical motivation by IO to build up moral support to be carried out.
15. (i) Involvement of scientist 'D' in technical discussion along with IO & RO can improve the gaps in PRD system.

    (ii) Timely guidance and delivery/sharing technical lectures from seniors in the same group can improve candidates performance.
16. More involvement from both sides (assesses and IO) in assigned task is required to be enhanced.

**Appendix-A**

**QUESTIONNAIRE**

**"A STUDY OF PERFORMANCE REVIEW DISCUSSION (PRD) ON MID-LEVEL SCIENTISTS: A CASE STUDY OF PREMIER DEFENCE R&D LABORATORY LOCATED IN VISAKHAPATNAM**".

**(A) Demographic information**

(i) Name of the scientist (Optional) _____

(ii) Total service in the organization (Years) _____

(iii) Name of the division in the laboratory_____

(iv) Gender of the scientist (a) Male (b) Female

(v) Educational Qualification of the scientist (Tick (√) one option only)

(a) Graduate (b) Post Graduate (c) PhD (d) Others

**(B) Performance Review Discussion (PRD) information. Please tick** (√) **one option only while expressing your extent of opinion on the following questions/statements:-**

Q1. The PRD writing, while raising APAR, is carried out by IO with complete analysis in all aspect to make it more effective.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q2. The content of performance viz. accomplishments of targets, facilitating factors/ impediments to performance, etc. as mentioned in PRD are being utilized for grooming the scientist for the next promotion/level/ higher responsibilities.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q3. The content of demonstrated aptitudes and training and development needs of the assesses as mentioned in PRD are being utilized for grooming the scientist for the next promotion/level/ higher responsibilities.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q4. The content of personality attributes and corrections suggested as mentioned in PRD are being utilized for grooming the scientist for the next promotion/level/ higher responsibilities".

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q5. Strengths of PRD filled in APAR for the scientist are utilized for assigning his/her present assignments / future assignments.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q6. The weaknesses mentioned in PRD are improved by imparting training in the areas/ content of PRD

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q7. Better PRD analysis or justifications will enhance performance of the scientist.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q8. Scientist 'D' should be trained for minimum formal managerial-cum-leadership course/training as per PRD content apart from technical training/ courses?

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q9. Presently, training to scientist 'D' is imparted as per content mentioned in PRD of APAR.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q10. The trained scientist as per PRD is being utilized in his/her domain field?

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q11. PRD can be quantified by giving percentage (%) weightage for parameters like performance (40%), demonstrated aptitudes and training and development needs (30%) and personality attributes and corrections (30%) to bring objectivity in the PRD.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q12. Equal stress/analysis/importance is being given on all three parameters of PRD viz. Performance, Demonstrated aptitudes and training & development needs and Personality attributes and corrections by reporting / initiating officer while completing PRD to make it more effective.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q13. Formally, PRD is undertaken by Initiating Officer annually while completing APAR. It should also be undertaken informally by IO every month to make it more effective.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q14. Analysis or write-up given by IO (in part-III of APAR) has direct linkage with point scale/grading provided by IO (in part-IV of APAR).

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q15. The individual is encouraged to improve his /her performance continuously through planning and seeking guidance by IO.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q16. An empathic atmosphere is provided for individual by IO to share his / her tensions, conflicts, concerns and hardships.

(a) Strongly disagree (b) Disagree (c) Neutral (d) Agree (e) Strongly agree

Q17. Please suggest some points / steps for further improvements on PRD. If points are more, you may write those ones on separate A4 size paper.

**APPENDIX-'B'**

**Q3.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 2.98 |
| Std.Div | | 1.083 |

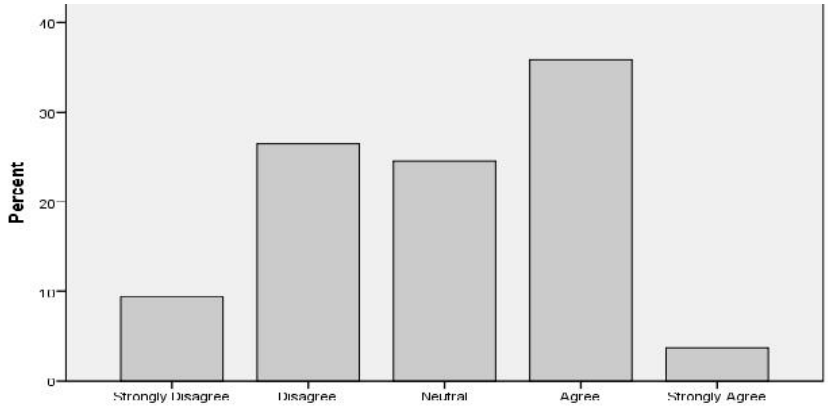
**Tab -3A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 18.226 |
| Degrees of Freedom | 4 |
| Asymptotic Sig.(2-Sided test) | .001 |

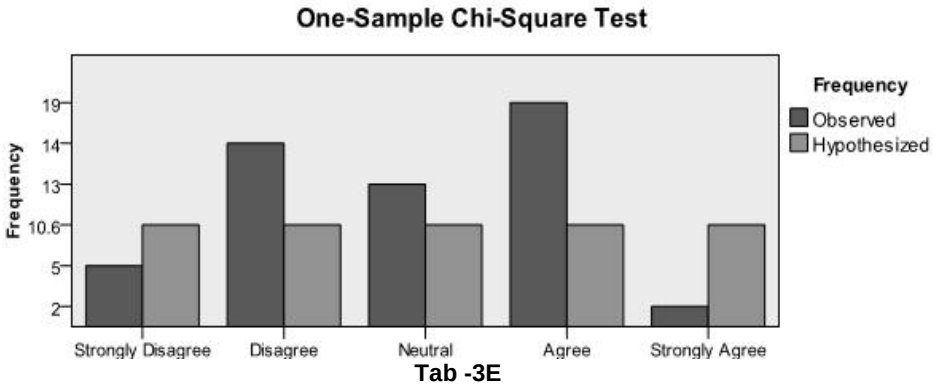
**Tab -3B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 5 | 9.4 | 9.4 | 9.4 |
| | Disagree | 14 | 26.4 | 26.4 | 35.8 |
| | Neutral | 13 | 24.5 | 24.5 | 60.4 |
| | Agree | 19 | 35.8 | 35.8 | 96.2 |
| | Strongly | 2 | 3.8 | 3.8 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -3C**




**Tab -3D**




**Tab -3E**

**Q4.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 3.19 |
| Std.Div | | .982 |

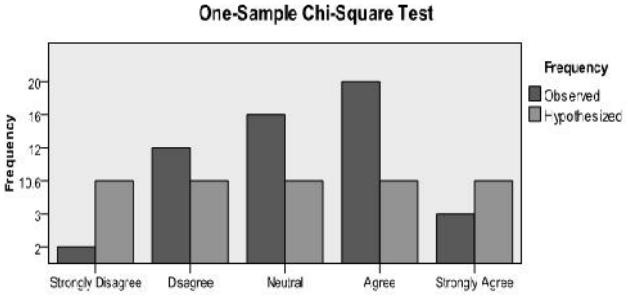
**Tab -4A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 23.698 |
| Degrees of Freedom | 4 |
| Asymptotic Sig.(2-Sided test) | .000 |

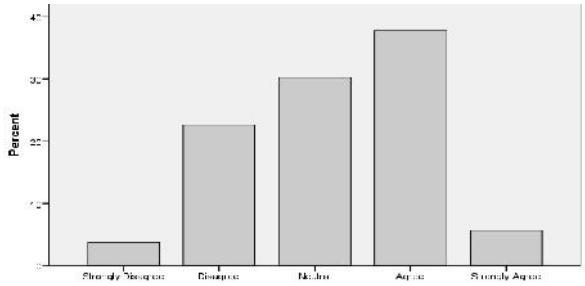
**Tab -4B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 2 | 3.8 | 3.8 | 3.8 |
| | Disagree | 12 | 22.6 | 22.6 | 26.4 |
| | Neutral | 16 | 30.2 | 30.2 | 56.6 |
| | Agree | 20 | 37.7 | 37.7 | 94.3 |
| | Strongly | 3 | 5.7 | 5.7 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -4C**




**Tab -4D**




**Tab -4E**

**Q6.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 3.02 |
| Std.Div | | 1.083 |

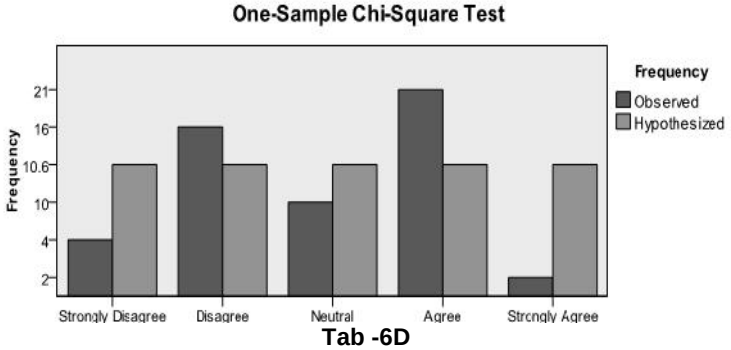
**Tab -6A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 24.075 |
| Degrees of Freedom | 4 |
| Asymptotic Sig.(2-Sided test) | .000 |

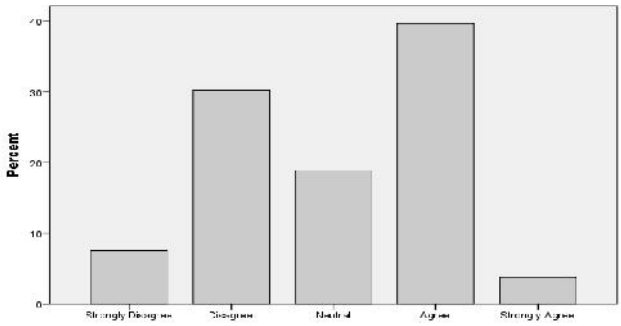
**Tab -6B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 4 | 7.5 | 7.5 | 7.5 |
| | Disagree | 16 | 30.2 | 30.2 | 37.7 |
| | Neutral | 10 | 18.9 | 18.9 | 56.6 |
| | Agree | 21 | 39.6 | 39.6 | 96.2 |
| | Strongly | 2 | 3.8 | 3.8 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -6C**




**Tab -6D**




**Tab -6E**

**Q7.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 4.09 |
| Std.Div | | .861 |

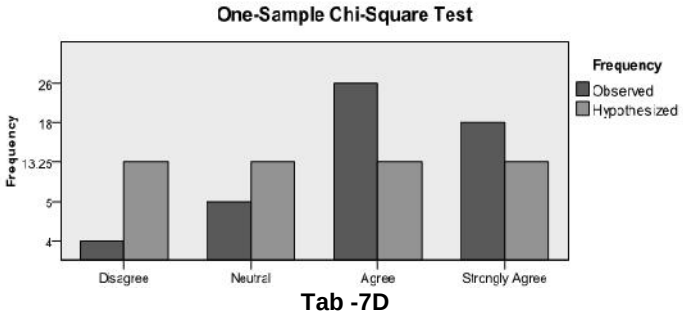
**Tab -7A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 25.566 |
| Degrees of Freedom | 3 |
| Asymptotic Sig.(2-Sided test) | .000 |

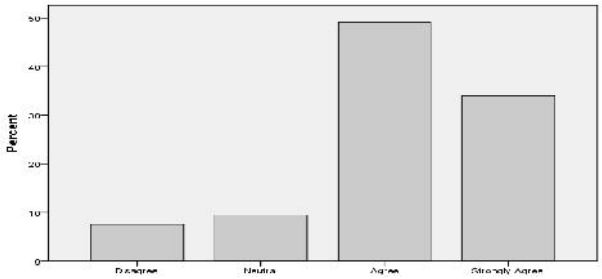
**Tab -7B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Disagree | 4 | 7.5 | 7.5 | 7.5 |
| | Neutral | 5 | 9.4 | 9.4 | 17.0 |
| | Agree | 26 | 49.1 | 49.1 | 66.0 |
| | Strongly | 18 | 34.0 | 34.0 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -7C**




**Tab -7D**




**Tab -7E**

**Q8.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 4.15 |
| Std.Div | | 1.116 |

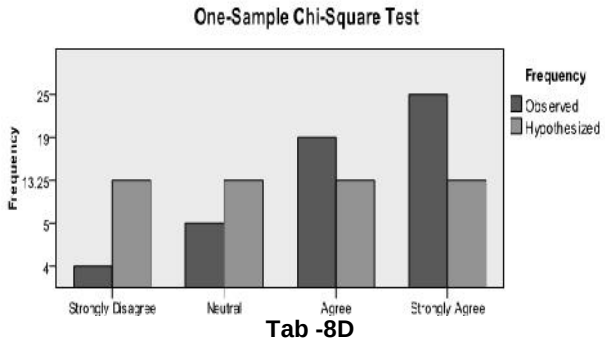
**Tab -8A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 24.509 |
| Degrees of Freedom | 3 |
| Asymptotic Sig.(2-Sided test) | .000 |

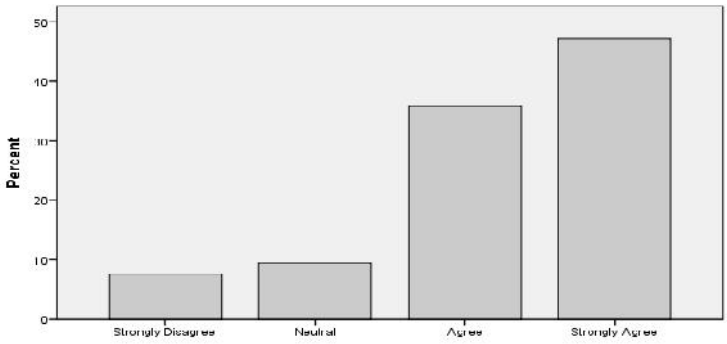
**Tab -8B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 4 | 7.5 | 7.5 | 7.5 |
| | Neutral | 5 | 9.4 | 9.4 | 16.9 |
| | Agree | 19 | 35.8 | 35.8 | 52.7 |
| | Strongly Agree | 25 | 47.3 | 47.3 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -8C**




**Tab -8D**




**Tab -8E**

**Q9.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 2.58 |
| Std.Div | | .949 |

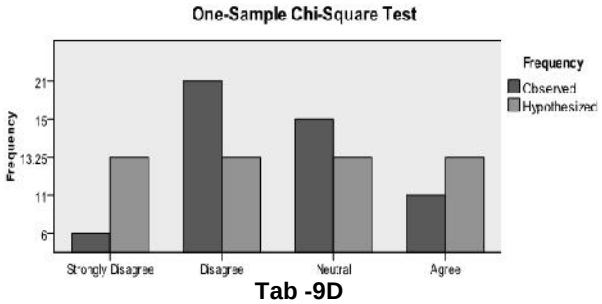
**Tab -9A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 9.119 |
| Degrees of Freedom | 3 |
| Asymptotic Sig.(2-Sided test) | .028 |

**Tab -9B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 6 | 11.3 | 11.3 | 11.3 |
| | Disagree | 21 | 39.6 | 39.6 | 50.9 |
| | Neutral | 15 | 28.3 | 28.3 | 79.2 |
| | Agree | 11 | 20.8 | 20.8 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -9C**

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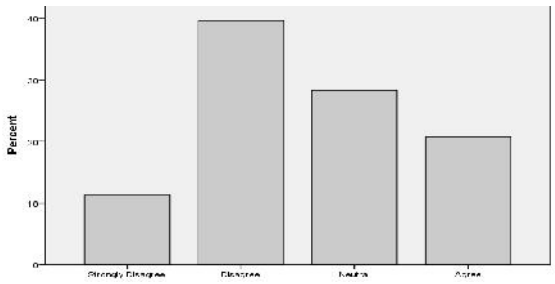



**Tab -9E**

**Q10.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 3.02 |
| Std.Div | | .971 |

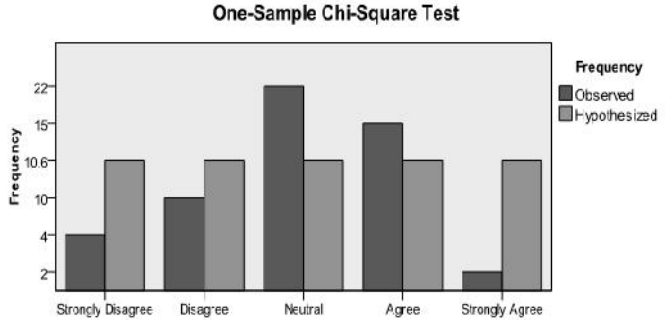
**Tab -10A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 25.208 |
| Degrees of Freedom | 4 |
| Asymptotic Sig.(2-Sided test) | .000 |

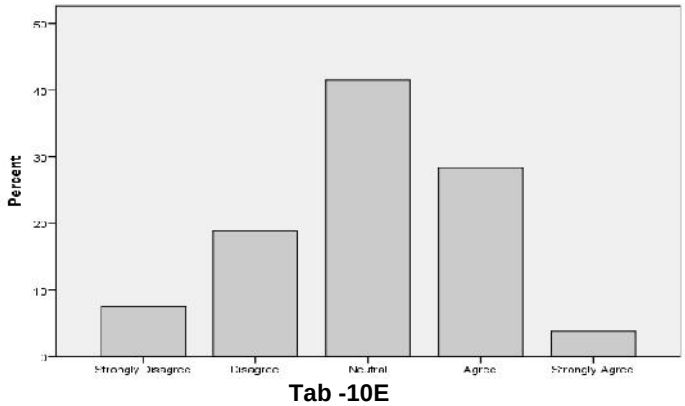
**Tab -10B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 4 | 7.5 | 7.5 | 7.5 |
| | Disagree | 10 | 18.9 | 18.9 | 26.4 |
| | Neutral | 22 | 41.5 | 41.5 | 67.9 |
| | Agree | 15 | 28.3 | 28.3 | 96.2 |
| | Strongly Disagree | 2 | 3.8 | 3.8 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -10C**




**Tab -10D**




**Tab -10E**

**Q11.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 3.60 |
| Std.Div | | .906 |

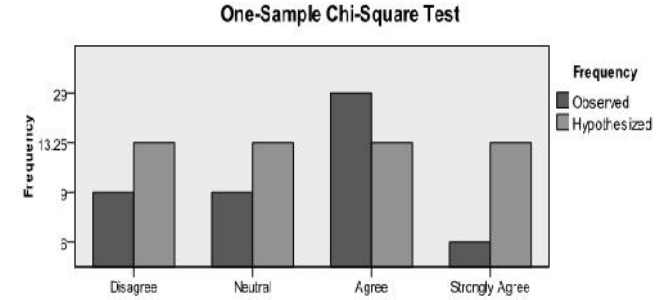
**Tab -11A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 25.415 |
| Degrees of Freedom | 3 |
| Asymptotic Sig.(2-Sided test) | .000 |

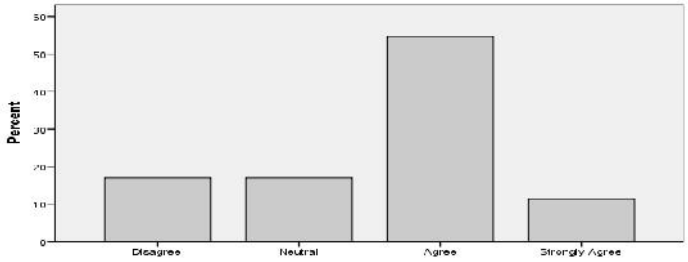
**Tab -11B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Disagree | 9 | 17.0 | 17.0 | 17.0 |
| | Neutral | 9 | 17.0 | 17.0 | 34.0 |
| | Agree | 29 | 54.7 | 54.7 | 88.7 |
| | Strongly agree | 6 | 11.3 | 11.3 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -11C**




**Tab -11D**




**Tab -11E**

**Q12.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 3.06 |
| Std.Div | | .908 |

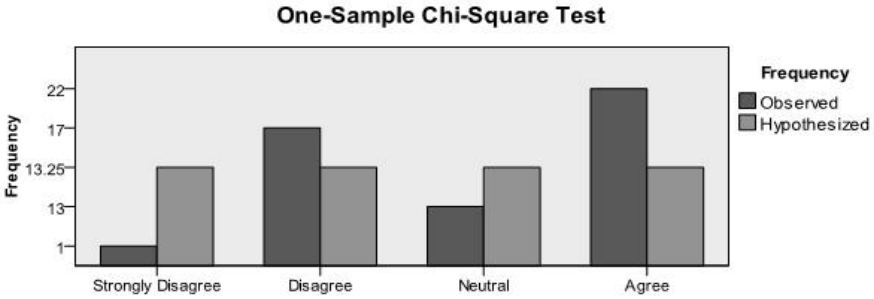
**Tab -12A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 18.17 |
| Degrees of Freedom | 3 |
| Asymptotic Sig.(2-Sided test) | .000 |

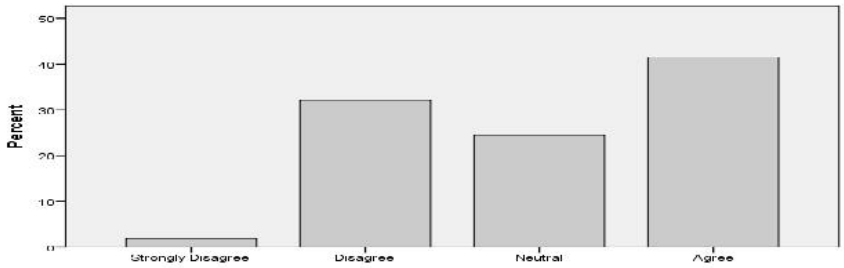
**Tab -12B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 1 | 1.9 | 1.9 | 1.9 |
| | Disagree | 17 | 32.1 | 32.1 | 34.0 |
| | Neutral | 13 | 24.5 | 24.5 | 58.5 |
| | Agree | 22 | 41.5 | 41.5 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -12C**




**Tab -12D**




**Tab -12E**

**Q13.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 3.26 |
| Std.Div | | 1.211 |

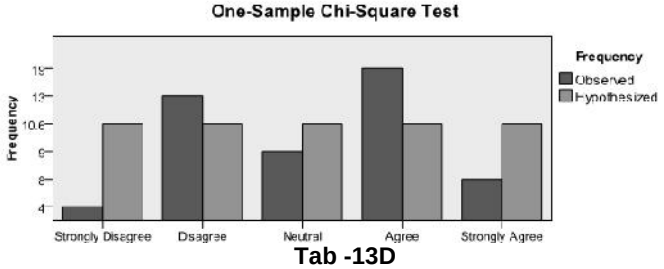
**Tab -13A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 12.189 |
| Degrees of Freedom | 4 |
| Asymptotic Sig.(2-Sided test) | .016 |

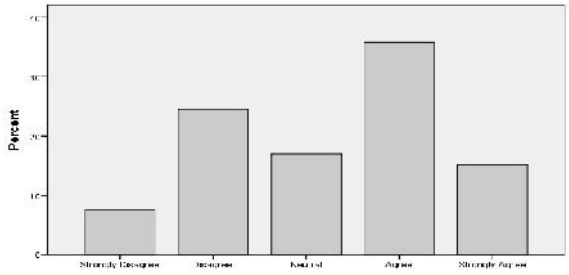
**Tab -13B**

| | | freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 4 | 7.5 | 7.5 | 7.5 |
| | Disagree | 13 | 24.5 | 24.5 | 32.1 |
| | Neutral | 9 | 17.0 | 17.0 | 49.1 |
| | Agree | 19 | 35.8 | 35.8 | 84.9 |
| | Strongly Agree | 8 | 15.1 | 15.1 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -13C**




**Tab -13D**




**Tab -13E**

**Q14.**

| | | |
|---|---|---|
| N | Valid | 53 |
| | Missing | 0 |
| Mean | | 3.42 |
| Std.Div | | 1.027 |

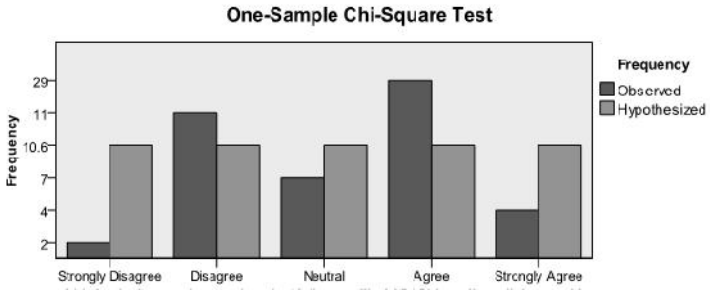
**Tab -14A**

| | |
|---|---|
| Total N | 53 |
| Test Statistic | 44.264 |
| Degrees of Freedom | 4 |
| Asymptotic Sig.(2-Sided test) | .000 |

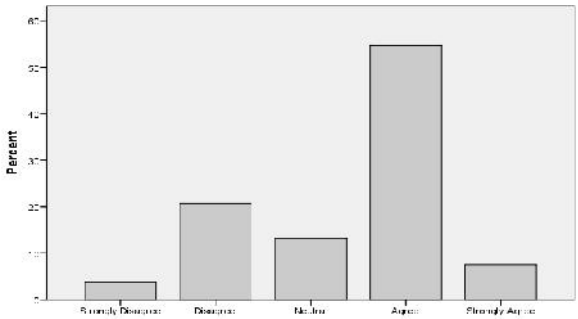
**Tab -14B**

| | | Freq | % | Valid % | Cum % |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 2 | 3.8 | 3.8 | 3.8 |
| | Disagree | 11 | 20.8 | 20.8 | 24.5 |
| | Neutral | 7 | 13.2 | 13.2 | 37.7 |
| | Agree | 29 | 54.7 | 54.7 | 92.5 |
| | Strongly Agree | 4 | 7.5 | 7.5 | 100.0 |
| | Total | 53 | 100.0 | 100.0 | |

**Tab -14C**




**Tab -14D**




**Tab -14E**

**Factor Analysis**

| KMO and Bartlett's Test | | |
|---|---|---|
| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** | | .777 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 381.565 |
| | df | 120 |
| | Sig. | .000 |

| Rotated Component Matrix[a] | | | | |
|---|---|---|---|---|
| | Component | | | |
| | 1 | 2 | 3 | 4 |
| Q1.Completeness | | .832 | | |
| Q2. Target | | .751 | | |
| Q3. Aptitude, Training & Development | .730 | | | |
| Q4. Personality Traits | .706 | | | |
| Q5. Strengths | .532 | | | |
| Q6. Weaknesses | .787 | | | |
| Q7. Better PRD Analysis | | | .805 | |
| Q8. Leader Training | | | | .778 |
| Q9. Imparting Training | .649 | | | |
| Q10. Training Scientists | .748 | | | |
| Q11. PRD Quantification | | | .652 | |
| Q12. Equal importance of PRD parameters | | | .530 | |
| Q13. Frequency of PRD | | | | |
| Q14. Part III Write-up | .699 | | | |
| Q15.Encouragement | | .740 | | |
| Q16. Empathetic atmosphere | | .574 | | |

| Total Variance Explained | | | | | | |
|---|---|---|---|---|---|---|
| | Initial Eigenvalues | | | Extraction Sums of squared Loadings | | |
| Component | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 5.760 | 35.999 | 35.999 | 5.760 | 35.999 | 35.999 |
| 2 | 1.819 | 11.368 | 47.367 | 1.819 | 11.368 | 47.367 |
| 3 | 10633 | 10.208 | 57.575 | 1.633 | 10.208 | 57.575 |
| 4 | 1.143 | 7.144 | 64.719 | 1.143 | 7.144 | 64.719 |
| 5 | .983 | 6.146 | 70.865 | | | |
| 6 | .890 | 5.560 | 76.424 | | | |
| 7 | .741 | 4.631 | 81.055 | | | |
| 8 | .580 | 3.626 | 84.682 | | | |
| 9 | .522 | 3.260 | 87.942 | | | |
| 10 | .440 | 2.753 | 90.695 | | | |
| 11 | .379 | 2.369 | 93.064 | | | |
| 12 | .322 | 2.013 | 95.077 | | | |
| 13 | .290 | 1.815 | 96.892 | | | |
| 14 | .222 | 1.388 | 98.280 | | | |
| 15 | .164 | 1.028 | 99.308 | | | |
| 16 | .111 | .692 | 100.000 | | | |

Extract Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 7 iterations.
Total 16 questions have been grouped into four factors/components as follows: (Q13 is eliminated from the Analysis)
Factor 1: Q1,Q2,Q15,Q16
Factor 2: Q3,Q4,Q5,Q6,Q9,Q10,Q14
Factor 3: Q7,Q11,Q12
Factor 4: Q8

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