Cross-Currents: An International Peer-Reviewed Journal on Humanities & Social Sciences
Abbreviated Key Title: Cross Current Int Peer Reviewed J Human Soc Sci
ISSN: 2394-451X (Print) & Open Access
DOI: https://doi.org/10.36344/ccijhss.2024.v10i08.001

Volume-10 | Issue-8 | Oct-2024 |

Original Research Article

An Examination of the Effectiveness of Various Performance Appraisal Objectives in the Indian Mining Industry

Dr. Nalla Bala Kalyan[1*]
[1]Professor, Department of Management Studies, Sri Venkateswara College of Engineering, (Autonomous), Karakambadi Road, Tirupati-517507, India
***Corresponding author:** Dr. Nalla Bala Kalyan
| **Received:** 29.08.2024 | **Accepted:** 07.10.2024 | **Published:** 10.10.2024 |

Abstract: Mining plays a vital role in Indian industry. In the 1990s it accounted for around 3% of GDP, but now it is around 2%. The Indian state of Goa has a thriving mining industry as it has a billion tonnes of iron ore reserves. It exports around 30 million tonnes of iron ore per year. Mineral-based industries include the steel industry and heavy machinery industry. These industries also use minerals and metals as raw materials. Performance appraisal systems have become an important tool for companies to evaluate and maximize employee performance. The purpose of this study is to examine the effectiveness of performance appraisal systems. Performance appraisal has become increasingly part of a more strategic approach to integrating HR activities with company policies and is now regarded as a general term covering a range of activities through which companies attempt to evaluate their employees and develop their capabilities to improve performance and reward.
Keywords: Employees, Human Resource Management, India, Mining Industry, Performance Appraisal.

1. INTRODUCTION

Human Resource Management: Human resources are the most important part of an organization. The success of an organization obviously depends on the performance of its employees. Hence, employee performance needs to be monitored regularly and feedback should be given. Performance appraisal involves periodically evaluating an employee's work performance and contribution to the organization. These appraisals are typically used to assess an employee's contribution to the company's production, promotion, recognition and rewards. It also helps employees process the feedback they receive during the review. Performance appraisal is one of the talent development mechanisms used by HR departments.

Performance Appraisal: Performance appraisal is considered one of the most complex human resource management activities. It is often a difficult and emotional process. Performance appraisal has become a part of organizational life. Every organization has a way of evaluating the performance of its staff. Performance appraisal is one of the oldest and most common management techniques. The result is an appraisal system in which employees are compared against others on strengths such as their initiative, reliability, and personality. A performance appraisal is a formal, structured system in which an employee's performance is compared against established standards. The job performance evaluation is communicated to the employee, who is then rated using one of several primary performance appraisal methods. Elements of the performance appraisal method are tailored to the employee, the job, and the company structure.

Performance appraisals are important for motivating employees, aligning individual and organizational goals, and fostering positive relationships between management and employees. Appraisals should consider the development of the whole person, not just job skills or the skills needed for the next promotion. Appraisals should not discriminate against anyone on the basis of age, gender, sexual orientation, race, religion, disability, etc. Performance Appraisal is the systematic evaluation of the performance of employees and to understand the abilities of a person for further growth and development.

Performance appraisal is generally done in systematic ways which are as follows:

1. The supervisors measure the pay of employees and compare it with targets and plans.
2. The supervisor analyses the factors behind work performances of employees.
3. The employers are in position to guide the employees, for a better performance.

Quick Response Code

Journal homepage:
https://saspublishers.com/

Copyright © 2024 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-comm ercial use provided the original author and source are credited.

Citation: Nalla Bala Kalyan (2024). An Examination of the Effectiveness of Various Performance Appraisal Objectives in the Indian Mining Industry. *Cross Current Int Peer Reviewed J Human Soc Sci*, *10*(8), 148-163.

Objectives of Performance Appraisal

Performance Appraisal can be done with following objectives in mind:

- To maintain records in order to determine compensation packages, wage structure salaries raise, etc.
- To identify the strengths and weaknesses of employees to place right men on right job.
- To maintain and assess the potential present in a person for further growth and development.
- To provide feedback to employees regarding their performance and related status.
- To provide feedback to employees regarding their performance and related status.
- It serves as a basis for influencing working habits of the employees.
- To review and retain the promotional and other training programs.

2. Mining Industry

India holds a fair advantage in production and conversion costs in steel and alumina. Its strategic location enables export opportunities to develop as well as fast-developing Asian markets. As of FY22, the number of reporting mines in India were estimated at 1,319, of which reporting mines for metallic minerals were estimated at 545 and non-metallic minerals at 774. Minerals are precious natural resources that serve as essential raw materials for fundamental industries, so the growth of the mining industry is essential for the overall industrial development of a nation.

The vast resources of numerous metallic and non-metallic minerals that India is endowed with serve as a foundation for the expansion and advancement of the nation's mining industry. India is largely self-sufficient in metallic minerals including bauxite, chromite, iron ore, and lignite as well as mineral fuels like coal and lignite. The industry has the potential to significantly impact GDP growth, foreign exchange earnings, and give end-use industries like building, infrastructure, automotive, and electricity, among others, a competitive edge by obtaining essential raw materials at reasonable rates.

Rise in infrastructure development and automotive production are driving growth. Power and cement industries are also aiding growth for the sector. Demand for iron and steel is set to continue given the strong growth expectations for the residential and commercial building industry.

Market Size

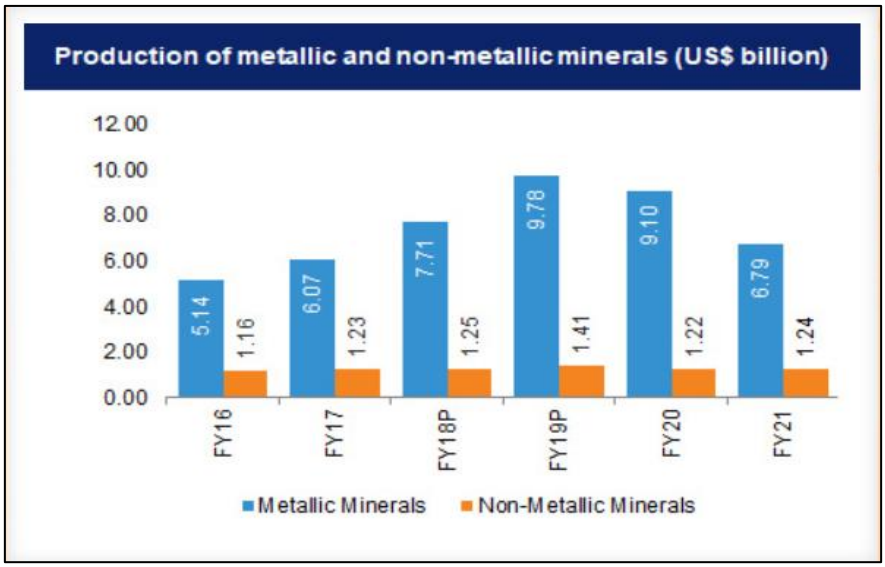


Figure-1

Source: Indian Brand Equity Foundation (IBEF)

Production level of important minerals in February, 2024 were: Coal 966 lakh tonne, Lignite 42 lakh tonne, Natural gas (utilized) 2886 million cu.m., Petroleum (crude) 23 lakh tonne, Bauxite 2414 thousand tonne, Chromite 400 thousand tonne, Copper conc. 11 thousand tonne, Gold 255 kg, Iron ore 244 lakh tonne, Lead conc. 27 thousand tonne, Manganese ore 295 thousand tonne, Zinc conc. 149 thousand tonne, Limestone 387 lakh tonne, Phosphorite 218 thousand tonne, and Magnesite 10 thousand tonne.

Important minerals showing positive growth during February, 2024 over February, 2023 include: Gold (86%), Copper Conc. (28.7%), Bauxite (21%), Chromite (21%), Phosphorite (19%), Limestone (13%), Coal (12%), Natural gas (U) (11%), Petroleum(crude) (8%), Manganese Ore (6%), Magnesite (3%), Lignite (2.8%), and Zinc Conc. (2.8%). Other important minerals showing negative growth include Iron Ore (-0.7%) and Lead Conc. (-14%).

- The index of mineral production of the mining and quarrying sector for the month of February 2024 at

139.6, was 8% higher compared to the level in the month of February 2023.

- India's overall coal production has seen a quantum jump to 893.08 MT in FY23 as compared to 728.72 MT in FY19 with a growth of about 22.6%.
- In FY24, the coal production stood at 997.25 MT, registering a growth of 12% from last year.
- In April FY25, the production of crude steel stood at 1.838 MT and that of finished steel was 11.215 MT.
- In FY23, production of crude steel stood at 125.32 million tonnes (MT), finished steel at 121.29 MT and consumption of finished steel at 119.17 MT has exceeded their respective levels achieved over the corresponding period of not only COVID affected last two years but also pre COVID years as well.
- India's iron ore production is estimated to stand at 257.85 MT in FY23, while it stood at 253.97 MT in FY22 - a sharp increase of 23% compared with 205.04 MT in FY21. India's iron ore production stood at 202.64 MT during April-December 2023.
- In 2022-23, exports of iron ore stood at US$ 1.75 billion as compared to US$ 3.18 billion in 2021-22.
- The production of aluminium was 4.07 MT in FY23.
- The index of mineral production of mining and quarrying sector for the month of December 2023 (Base: 2011-12=100) stood at 139.4, 5.1 % higher compared to the level in the month of December 2022. According to provisional data from the Indian Bureau of Mines (IBM), the cumulative growth for the period April- December, 2023-24 over the corresponding period of previous year is 8.5 % percent.
- In FY23, mineral production is estimated at Rs. 1,18,246 crore (US$ 14.37 billion). In FY22, mineral production was estimated at Rs. 1,32,747 crore (US$ 16.04 billion). India ranks fourth globally in terms of iron ore production. India's iron ore production is estimated to stand at 257.85 MT in FY23, while it stood at 253.97 MT in FY22, up 23% from FY21. In FY22, India had a total number of 901 steel plants producing crude steel. In April-January FY24, the production of crude steel stood at 118.372 MT and that of finished steel was 113.848 MT. India’s steel production is estimated to grow 4-7% to 123-127 MT in FY24. In April-January FY24, production of hot metal, crude steel and saleable steel by SAIL stood at 16.97 MT, 15.94 MT and 15.30 MT, respectively. Aluminium production in India stood at 3.47 MT between April-January FY24. The world production of primary Aluminium during the same period was about 59.562 MT. The share of India in the world primary Aluminium production was around 5.8% during this period.

Overall Mineral Production Increases by 6.8% in November 2023

The index of mineral production of mining and quarrying sector for the month of November, 2023 (Base: 2011-12=100) at 131.1, is 6.8 % higher as compared to the level in the month of November, 2022. As per the provisional statistics of Indian Bureau of Mines (IBM), the cumulative growth for the period April- November, 2023-24 over the corresponding period of previous year is 9.1 % per cent.

Production level of important minerals in November, 2023 were: Coal 845 lakh tonne, Lignite 33 lakh tonne, Natural gas (utilized) 2991 million cu. m., Petroleum (crude) 24 lakh tonne, Bauxite 2174 thousand tonne, Chromite 135 thousand tonne, Copper conc. 9 thousand tonne, Gold 85 kg, Iron ore 250 lakh tonne, Lead conc. 29 thousand tonne, Manganese ore 287 thousand tonne, Zinc conc. 136 thousand tonne, Limestone 352 lakh tonne, Phosphorite 101 thousand tonne, and Magnesite 98 thousand tonne. Important minerals showing positive growth during November, 2023 over November, 2022 include: Magnesite (14.1%), Coal (11%), Iron Ore (8%), Natural gas (U) (7.6%), Limestone(6.5%), Manganese Ore (4.7%), Lignite(2%) and Zinc Conc.(1.7%) and Other important minerals showing negative growth include: Petroleum(crude) (-0.4%), Bauxite (-2.4%), Lead Conc.(-4.6%), Copper Conc.(-5.3%), Gold (-35.6%), Chromite (-44.6%), Phosphorite (-50.7%) and Diamond (-92.9%).

APMDC- Andhra Pradesh Mineral Development Corporation

The Andhra Pradesh Mineral Development Corporation Ltd. (APMDC), formerly known as A.P. Mining Corporation Limited, was established on February 24, 1961 and is a wholly owned undertaking of the Government of Andhra Pradesh. APMDC started its mining activity with iron ore mining in Krishna District, in 1961, and its operations were extended by undertaking the mining of other minerals such as baryte, limestone, plastic clay, ball clay and quartz.

The company is engaged in exploration, commercial exploitation, conservation, processing of various minerals and promotion of mineral-based industries. APMDC is one of the largest producers and suppliers of baryte globally since 1975. Baryte mining and selling has been the main stay of the company contributing nearly 90% of the total revenue.

The baryte deposit at Mangampet in Kadapa district of Andhra Pradesh is the single-largest baryte deposit in the world with estimated balance reserves of about 32.2 million Tonnes (MT) (as on June 30, 2022). The other two States having Baryte resources in India are Rajasthan and Telangana. APMDC is the sole producer of baryte in Public Sector and contributes nearly 98% of the baryte production in the country and nearly 20-30% of the world’s baryte production. The company also has mining reserves for limestone, plastic clay, ball clay, quartz, calcite & iron ore, and going forward, APMDC also plans to venture into mining of other minerals such as Bauxite, Iron ore, Heavy Mineral Beach Sands (HMBS) and Fullerene, but is awaiting clearance.

Recently, the company has diversified into coal mining and has been awarded three coal blocks in the regions of Madhya Pradesh, Jharkhand and Chhattisgarh. The company has started commercial production of coal from March 2022 in the Suliyari mine (Madhya Pradesh) and till October 2022 has recognized around ₹400 crore from sale of coal.

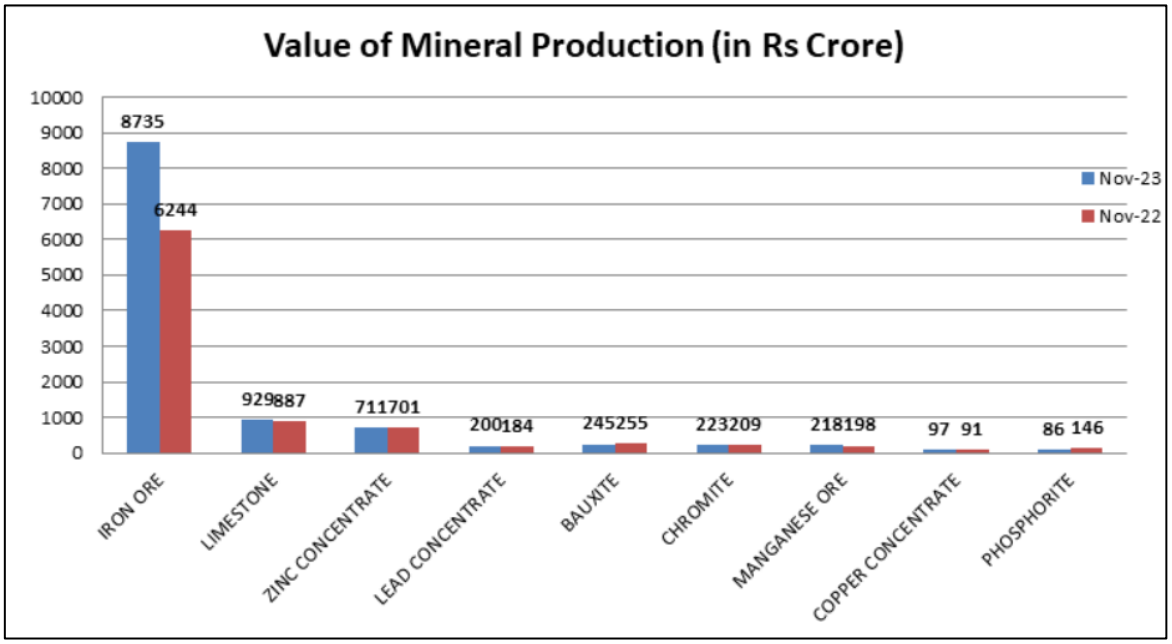


Figure-2

Source: (Ministry of Mines) https://pib.gov.in/PressReleasePage.aspx?PRID=1996976

3. RESEARCH METHODOLOGY

3.1 Need for the Study

Examining employee performance and appraisals provides insight into factors that influence productivity, job satisfaction and organizational success. It helps to identify areas for improvement, improve communication between employees and management, and support decision-making processes regarding promotion, training and compensation. Furthermore, research in this field contributes to the development of effective performance management systems and strategies tailored to the specific needs of companies and their employees.

- Performance appraisal system is an important part of effective and efficient performance of employees in many organizations.
- Organizations need to develop performance analysis and reviews that affect individual performance.
- Research helps HR departments to focus on specific elements to improve performance appraisal and prevent tackling all elements.
- The purpose of this study is to provide a comprehensive picture of employees' attitudes towards the APMDC Director's Bonus PA System.

3.2 Scope of the Study

The scope of a study on employee performance and appraisal in APMDC (Andhra Pradesh Mineral Development Corporation) as:

- Evaluation of existing performance appraisal methods.
- Analysis of factors affecting employee performance.
- Examination of the relationship between performance appraisal and employee motivation.
- Comparison of performance appraisal systems with industry best practices.
- Exploration of the impact of performance appraisal on employee satisfaction and retention.
- Assessment of the effectiveness of feedback mechanisms in the performance appraisal process.

3.3 Objectives of the Study

The objectives of a study on employee performance and appraisal in APMDC (Andhra Pradesh Mineral Development Corporation) may include:

1. To assess the effectiveness of current performance appraisal methods in APMDC.
2. To identify factors influencing employee performance within the organization.
3. To analyze the alignment of performance appraisal with organizational goals and objectives.
4. To evaluate the accuracy and fairness of performance appraisal processes in APMDC.

3.4 Database

Research is generally referred as a search for knowledge. It may be defined as "the objective and systematic method of finding solution to a problem which consist of systematic collection, recording, analysis, interpretation and reporting of information about various facts of phenomenon under study" It is

the blueprint that is followed to completing a study. Data were collected from primary and secondary data.

- **Primary Data:** The majority of the primary data came from conversations and interactions with the company executive.
- **Secondary Data:** This secondary data has been collected through various sources such as analysing various materials like Company Profile, Magazines, Journals, Past records at APMDC official websites, company brochures, reports etc.

3.5 Limitations of the Study:

Research limitations typically include factors such as sample size, study design and data collection methods, generalizability of results, possible biases, and external factors that may affect the results. These limitations must be acknowledged to provide context and transparency regarding the scope and potential impact of the study.

- Respondents' varying views and suggestions have a personal basis.
- Employees do not reveal actual facts about their organizations.
- The sample size is limited to 150 and the initiation of the study is credited to the organization as a whole.

3.6 Hypothesis

To assess the effectiveness of current performance appraisal methods at APMDC (Andhra Pradesh Mineral Development Corporation), you can formulate hypotheses to test various aspects of the appraisal system. Here are some potential hypotheses you might consider:

Hypothesis 1: The current performance appraisal methods at APMDC are positively correlated with employee satisfaction.
Rationale: If employees are satisfied with the appraisal process, it may indicate that the methods are perceived as fair and effective.

Hypothesis 2: There is a significant difference in performance outcomes between employees who receive regular feedback through the appraisal system and those who do not.
Rationale: Regular feedback might enhance performance by providing ongoing guidance and setting clear expectations.

Hypothesis 3: The performance appraisal methods used at APMDC accurately reflect employees' job performance as compared to peer reviews.
Rationale: Comparing the appraisal results with peer reviews can validate the accuracy and fairness of the appraisal system.

Hypothesis 4: There is a positive relationship between the clarity of appraisal criteria and employee perception of fairness in performance evaluations.
Rationale: Clear and well-defined appraisal criteria might lead to a perception of fairness and transparency in the evaluation process.

Hypothesis 5: Employees who receive higher ratings in performance appraisals have a higher rate of career progression compared to those with lower ratings.
Rationale: If performance ratings are linked to career advancement, this could suggest that the appraisal system is effective in identifying and promoting high performers.

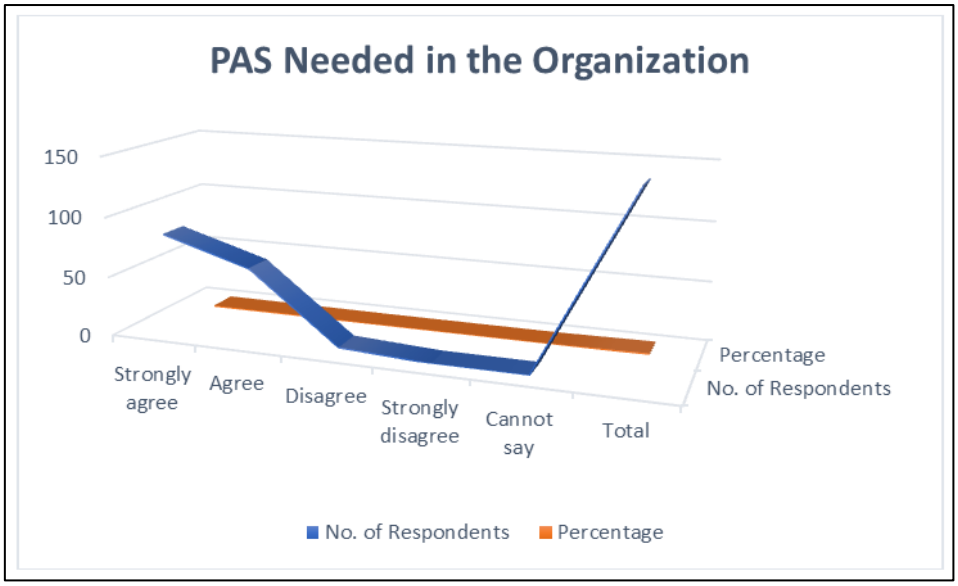
Hypothesis 6: The effectiveness of performance appraisal methods at APMDC varies significantly across different departments or job roles.
Rationale: Different departments or roles might experience varying levels of effectiveness due to differences in job functions or departmental practices.

Testing these hypotheses can help identify strengths and weaknesses in the current performance appraisal methods and guide improvements to better align with organizational goals and employee needs.

4. DATA ANALYSIS AND INTERPRETATION

Table 4.1: Role of Performance Appraisal System needed in the Organization

Opinion	No. of Respondents	Percentage
Strongly agree	84	56%
Agree	62	41.33%
Disagree	4	2.67%
Strongly disagree	0	0%
Cannot say	0	0%
Total	150	100%



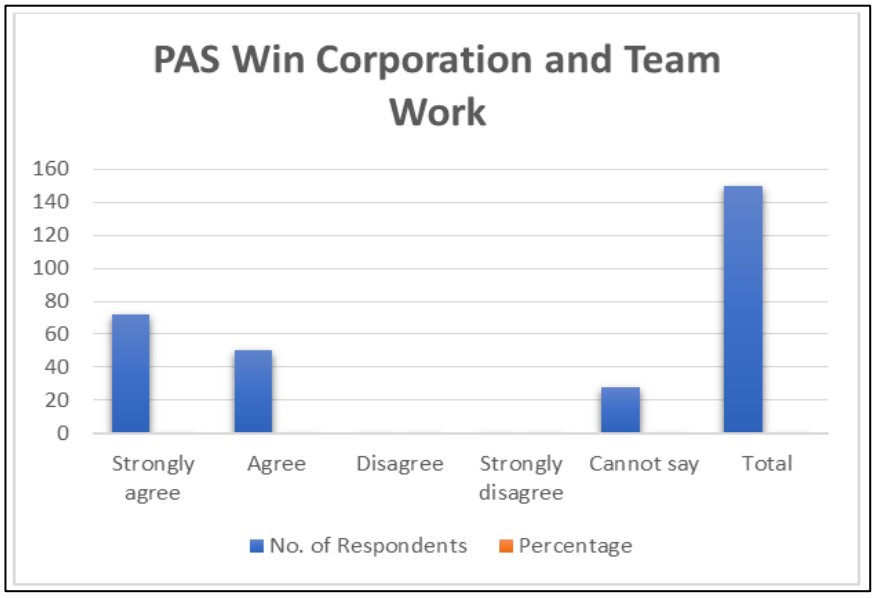
Graph 4.1: Role of Performance Appraisal System Needed in the Organization

Inference: From the above table it can be seen that 56% of the respondents strongly agree that there is a need for performance appraisal system in the organization, 41% of the respondents strongly agree and 3% of the respondents strongly disagree.

Table 4.2: Role of Performance Appraisal System to Win Corporation and Team Work

Opinion	No. of Respondents	Percentage
Strongly agree	72	48%
Agree	50	33.33%
Disagree	00	0%
Strongly disagree	00	0%
Cannot say	28	18.67%
Total	150	100%

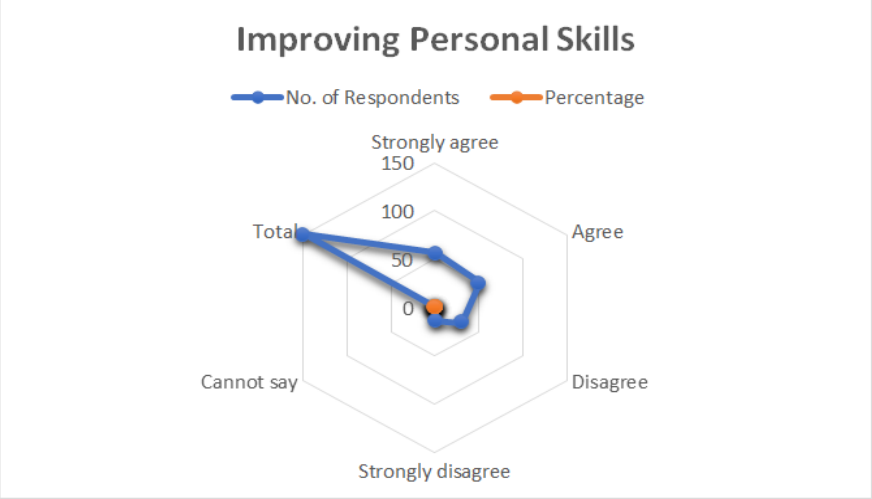
Inference: From the table above, 48% of the respondents strongly agree that the performance appraisal system helps to promote cooperation and teamwork. 33.33% of the respondents agree with this statement. The non-answered answer was 18.67%.



Graph 4.2

Table 4.3: Roll of Performance Appraisal is Improving Personal Skills

Opinion	No. of Respondents	Percentage
Strongly agree	56	37.33%
Agree	50	33.33%
Disagree	30	20%
Strongly disagree	14	9.33%
Cannot say	00	0%
Total	150	100%

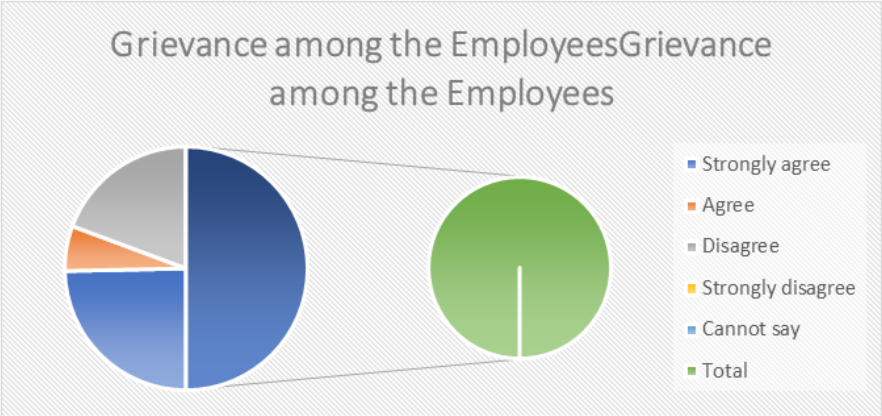


Graph 4.3

Inference: From the table above, 37.33% of the respondents strongly agree that performance appraisal system helps to improve individual skills. 33.33% of the respondents agree with this statement. 20% of the respondents strongly disagree with this statement. 9.3% of the respondents do not agree with this statement.

Table 4.4: Role of Performance Appraisal System Reducing Grievance among the Employees

Opinion	No. of respondents	Percentage
Strongly agree	74	49.03%
Agree	18	12%
Disagree	58	38.6%
Strongly disagree	00	0%
Cannot say	00	0%
Total	150	100%



Graph 4.4

Inference: From the above table, 49.3% strongly agree that performance appraisal system helps in reducing employee grievances, 38.6% agree and 12% strongly disagree.

Table 4.5: Role of Respondents Rating Help for the Management to Provide Employee Counselling

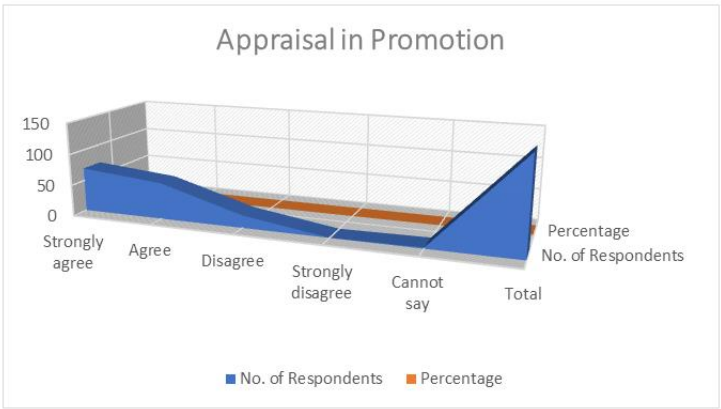
X	No. of Respondents	Percentage
Strongly agree	50	33.33%
Agree	74	49.3%
Disagree	00	00%
Strongly disagree	00	00%
Cannot say	26	17.3%
Total	150	100%

Graph 4.5

Inference: From the table above, we can see that 49.3% of the respondents strongly agree that the performance appraisal system helps managers give advice to employees. 33.3% of the respondents agree with this statement. 17.3% said they "can't say."

Table 4.6: Role of Performance Appraisal in Promotion

Opinion	No. of Respondents	Percentage
Strongly agree	70	46.7%
Agree	58	38.67%
Disagree	20	13.3%
Strongly disagree	00	00%
Cannot say	02	1.3%
Total	150	100%

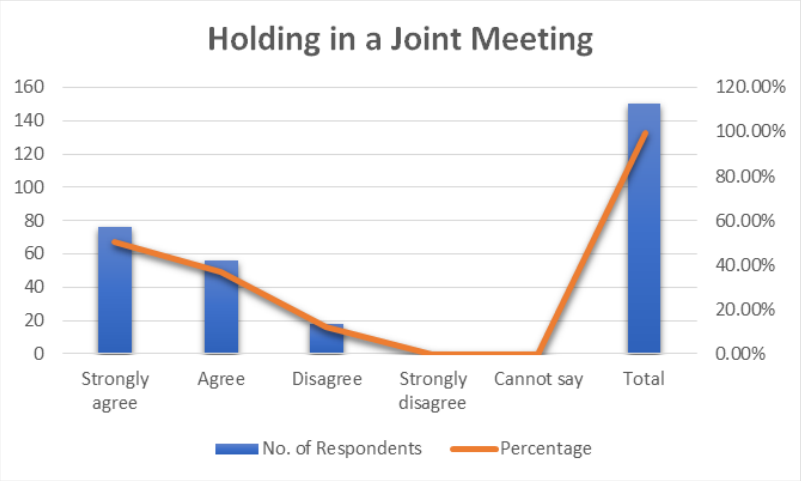


Graph 4.6

Inference: 46.7% of the respondents in the above table strongly agree that promotion is solely based on performance appraisal system, 38.6% of the respondents agreed, 33.3% of the respondents disagreed and 1.3% of the respondents could not answer.

Table 4.7: Role of Immediate Superior Involve in Appraisal Process while Holding in a Joint Meeting

Opinion	No. of Respondents	Percentage
Strongly agree	76	50.67%
Agree	56	37.33%
Disagree	18	12%
Strongly disagree	00	00%
Cannot say	00	00%
Total	150	100%

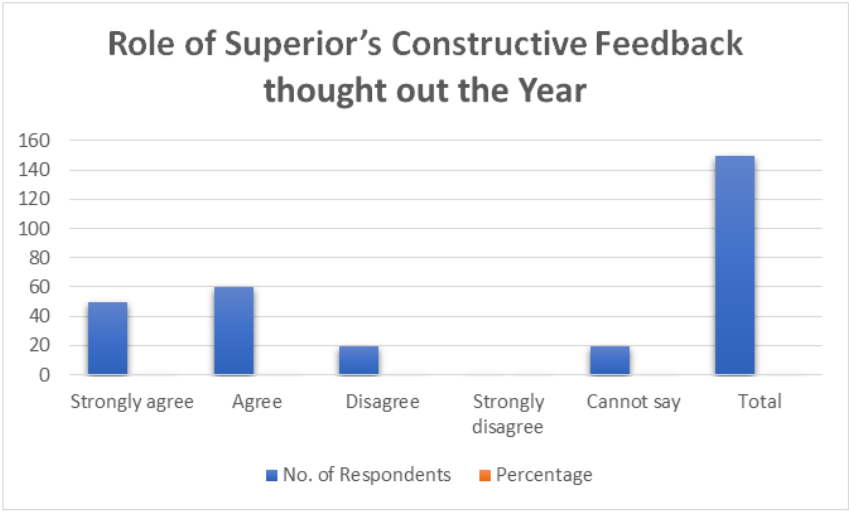


Graph 4.7

Inference: From the above table, it can be seen that 50.67% of the respondents strongly agree that the direct manager is involved in the appraisal process and a joint meeting is held. Of the respondents who are unable to answer this question, 37.33% agreed with this question and 12% strongly disagreed with this question.

Table 4.8: Role of Superior's Constructive Feedback thought out the Year

Opinion	No. of Respondents	Percentage
Strongly agree	50	33.33%
Agree	60	40%
Disagree	20	13.3%
Strongly disagree	00	00%
Cannot say	20	13.3%
Total	150	100%

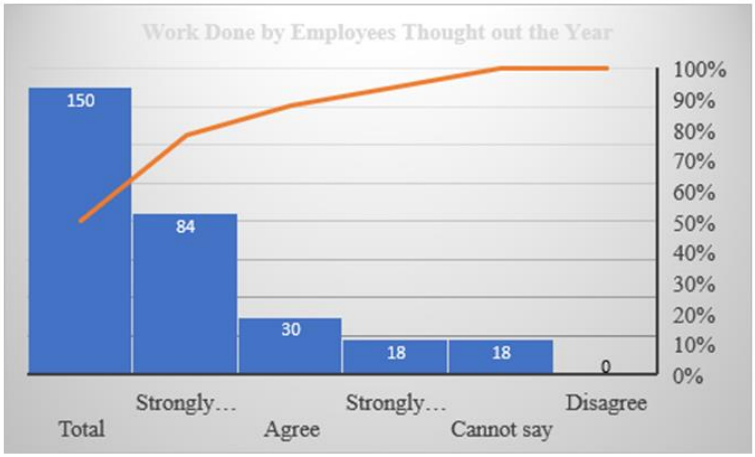


Graph 4.8

Inference: The above table shows that 33.33% of the respondents strongly agree that constructive feedback from their manager has characterized their year, 40% of the respondents agree, 13.3% of the respondents strongly disagree and 20% of the respondents are neutral.

Table 4.9: Role of the Superior's Appraisal all the Work Done by Employees Thought out the Year

Opinion	No. of Respondents	Percentage
Strongly agree	84	58.3%
Agree	30	20%
Disagree	00	00%
Strongly disagree	18	12%
Cannot say	18	12%
Total	150	100%

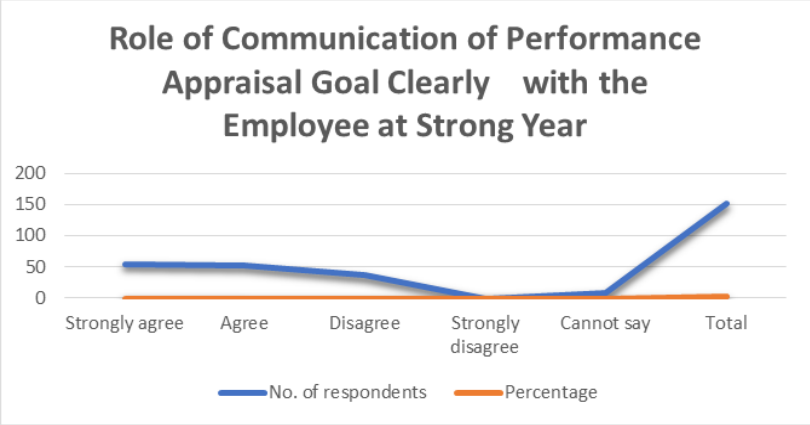


Graph 4.9

Inference: From the above table, it can be seen that 58.3% of the respondents strongly agree that their direct manager evaluates all the work done during the year, 20% of the respondents agree with this statement and 12% of the respondents are not able to give their opinion.

Table 4.10: Role of Communication of Performance Appraisal Goal Clearly with the Employee at Strong Year

Opinion	No. of Respondents	Percentage
Strongly agree	54	36%
Agree	52	34.67%
Disagree	36	24%
Strongly disagree	00	00%
Cannot say	08	5.3%
Total	150	100%

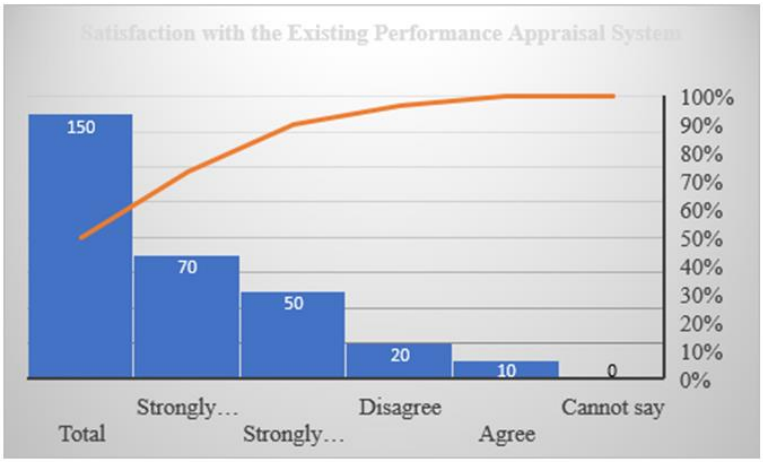


Graph 4.10

Inference: From the above table, 36% of the respondents strongly agree that performance appraisal targets were clearly communicated at the beginning of the year, 34.67% of the respondents agreed, 24% disagreed and 5.3% of the respondents were unable to comment.

Table 4.11: Satisfaction with the Existing Performance Appraisal System

Opinion	No. of Respondents	Percentage
Strongly agree	50	33.3%
Agree	10	6.67%
Disagree	20	13.33%
Strongly disagree	70	46.67%
Cannot say	00	00%
Total	150	100%

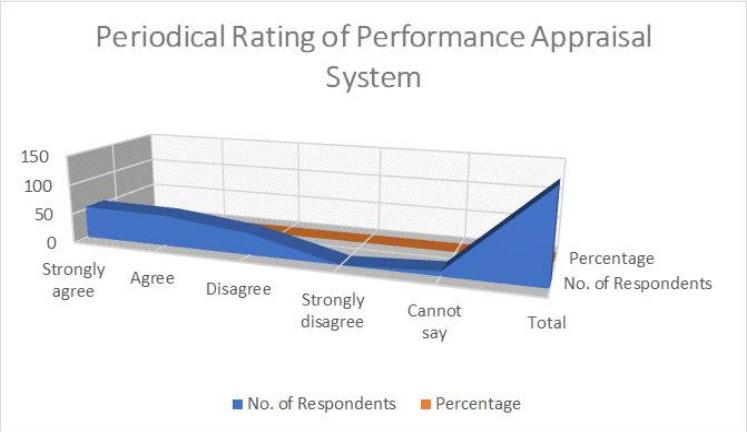


Graph 4.11

Inference: From the above table, 33.3% of the respondents are satisfied with the existing performance appraisal system. 6.67% of the respondents agree, 13.3% of the respondents disagree and 46.67% of the respondents strongly disagree.

Table 4.12: Periodical Rating of Performance Appraisal System

Opinion	No. of Respondents	Percentage
Strongly agree	54	36%
Agree	52	34.67%
Disagree	36	24%
Strongly disagree	00	00%
Cannot say	08	5.33%
Total	150	100%

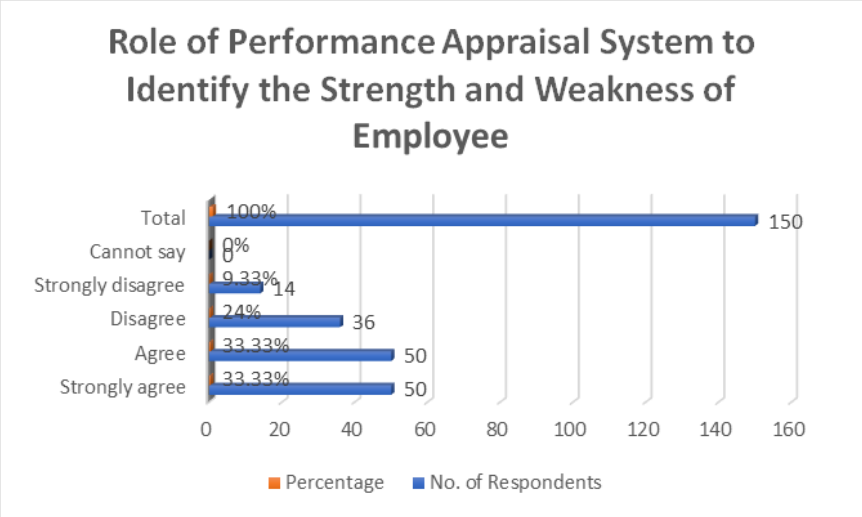


Graph 4.12

Inference: From the above table, 36% of the respondents strongly agree that performance appraisal is conducted regularly, 345.67% of the respondents agree, 24% of the respondents disagree and 5.3% of the respondents are neutral.

Table 4.13: Role of Performance Appraisal System to Identify the Strength and Weakness of Employee

Opinion	No. of Respondents	Percentage
Strongly agree	50	33.33%
Agree	50	33.33%
Disagree	36	24%
Strongly disagree	14	9.33%
Cannot say	00	00%
Total	150	100%



Graph 4.13

Inference: From the above table it can be seen that 33.3% of the respondents strongly agreed that performance appraisal helps to identify the strengths and weaknesses of employees. 33.3% of the respondents agreed with this statement, 24% of the respondents strongly disagreed with this statement and 9.4% of the respondents strongly disagreed with this statement.

4.14 Testing of Hypotheses

Role of Performance Appraisal System needed in the Organization

To determine a hypothesis related to the need for a performance appraisal system in the organization.

Define the Hypotheses:

- Null Hypothesis (H_0): There is no significant preference or need for a performance appraisal system in the organization.
- Alternative Hypothesis (H_1): There is a significant preference or need for a performance appraisal system in the organization.

Interpret the Data:
From the data provided:

- 56% of the respondents strongly agree that there is a need for a performance appraisal system.
- 41% of the respondents agree (but not strongly).
- 3% of the respondents strongly disagree.

Total respondents = 150

- Number of respondents who strongly agree = 56% of 150 = 0.56 * 150 = 84
- Number of respondents who agree (but not strongly) = 41% of 150 = 0.41 * 150 = 61.5 (approximately 62)
- Number of respondents who strongly disagree = 3% of 150 = 0.03 * 150 = 4.5 (approximately 5)

Formulate the Hypothesis Test:

To test if there is a significant need for the performance appraisal system, you can use a hypothesis test for proportions.

The proportion of respondents who strongly agree (p) = 56% or 0.56.

You can use a one-sample proportion test to test whether the proportion of respondents who strongly agree is significantly different from a hypothesized proportion (often 0.5 if you're testing against a neutral stance).

- Null Hypothesis (H_0): $p=0.5$ (The proportion of respondents who strongly agree is 50%.)
- Alternative Hypothesis (H_1): $p\neq0.5$ (The proportion

of respondents who strongly agree is different from 50%.)

Perform the Hypothesis Test:
Use the following formula for the z-test for proportions:

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

Where:

- p^ = sample proportion (0.56)
- p0 = hypothesized proportion (0.5)
- n = sample size (150)

Plug in the values:

$$z = \frac{0.56 - 0.5}{\sqrt{\frac{0.5\times(1-0.5)}{150}}}$$

$$z = \frac{0.06}{\sqrt{\frac{0.25}{150}}}$$

$$z = \frac{0.06}{\sqrt{0.0016667}}$$

$$z = \frac{0.06}{0.0408} \approx 1.47$$

Determine the P-value and Make a Decision:

Using standard normal distribution tables or software, find the p-value associated with a z-value of 1.47. For a two-tailed test, the p-value is approximately 0.141.

Typically, if the p-value is less than the significance level (commonly 0.05), you reject the null hypothesis. Here, the p-value (0.141) is greater than 0.05.

Conclusion: Since the p-value is greater than 0.05, we fail to reject the null hypothesis. This means there is not enough statistical evidence to conclude that the proportion of respondents who strongly agree that there is a need for a performance appraisal system is significantly different from 50%.

4.15 Role of Performance Appraisal in Promotion

1. Formulate Hypotheses

Null Hypothesis (H_0): The proportion of respondents who strongly agree that promotion is solely based on the performance appraisal system is equal to the proportion of respondents who agree, disagree, and could not answer.

Alternative Hypothesis (H_1): The proportion of respondents who strongly agree that promotion is solely based on the performance appraisal system is not equal to the proportions of those who agree, disagree, and could not answer.

2. Calculate Observed Proportions

From the given data:

- Strongly Agree: 46.7% of 150 respondents
- Agree: 38.6% of 150 respondents
- Disagree: 33.3% of 150 respondents
- Cannot Answer: 1.3% of 150 respondents

Convert these percentages to actual numbers:

- Strongly Agree: 0.467×150==70 respondents
- Agree: 0.386×150=58 respondents
- Disagree: 0.333×150=50 respondents
- Cannot Answer: 0.013×150=2 respondents

3. Perform Chi-Square Test (Goodness of Fit Test)

To test whether these proportions are as expected (or to test against some expected proportions if you have those), you can use a Chi-Square test for goodness of fit.

Expected proportions (if no prior expectations, assume uniform distribution for simplicity, or based on any specific hypothesis you might have).

Chi-Square Formula:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where:

- Oi = Observed frequency for each category
- Ei = Expected frequency for each category

Steps:

Calculate Expected Frequencies: If you are comparing against a uniform distribution, each category would have an expected frequency of 150/4=37.5

Calculate Chi-Square Statistic:

$$\chi^2 = \frac{(70-37.5)^2}{37.5} + \frac{(58-37.5)^2}{37.5} + \frac{(50-37.5)^2}{37.5} + \frac{(2-37.5)^2}{37.5}$$

Determine Degrees of Freedom: For this test, the degrees of freedom (df) are
Number of categories:4-1=3

Compare Chi-Square Value to Critical Value: Use a Chi-Square distribution table to find the critical value for df = 3 at your desired significance level (typically 0.05).

Decision: If the calculated Chi-Square value exceeds the critical value from the table, reject the null hypothesis.

Summary:
Null Hypothesis (H_0): The proportions of respondents in each category are equal.
Alternative Hypothesis (H_1): The proportions are not equal.
Perform the Chi-Square test using the formula and compare it against the critical value to determine whether to reject or fail to reject the null hypothesis.

4.15 Role of Performance Appraisal System to Identify the Strength and Weakness of Employee
Hypotheses Setup

1. Null Hypothesis (H0): The proportions of respondents who strongly agree, agree, strongly disagree, and disagree with the statement "performance appraisal helps to identify the strengths and weaknesses of employees" are as specified in the data. Essentially, this means that there is no significant deviation from the expected proportions.
2. Alternative Hypothesis (H1): The proportions of respondents who strongly agree, agree, strongly disagree, and disagree with the statement are different from the proportions specified in the data. This suggests that there is a significant deviation from the expected proportions.

Observed Data

- Strongly Agree: 33.3% of 150 respondents = 0.333 × 150 = 50 respondents
- Agree: 33.3% of 150 respondents = 0.333 × 150 = 50 respondents
- Strongly Disagree: 24% of 150 respondents = 0.24 × 150 = 36 respondents
- Disagree: 9.4% of 150 respondents = 0.094 × 150 = 14.1 ≈ 14 respondents (since the number of respondents should be an integer)

Testing the Hypothesis

To test the hypotheses, you would typically use a chi-square goodness-of-fit test. The chi-square test compares the observed frequencies to the expected frequencies to see if there is a significant difference.

Steps for Chi-Square Test:

1. Calculate the expected frequencies**:** If we assume the proportions provided are correct, the expected frequencies are:
    - Strongly Agree: 50
    - Agree: 50
    - Strongly Disagree: 36
    - Disagree: 14

2. Compute the chi-square statistic:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where Oi is the observed frequency and Ei is the expected frequency.

3. Determine the degrees of freedom: The degrees of freedom (df) for this test is the number of categories minus 1. Here, df = 4 - 1 = 3.
4. Compare the chi-square statistic to the critical value: You would compare the calculated chi-square value to the critical value from the chi-square distribution table at the chosen significance level (e.g., 0.05).
5. Decision: If the chi-square statistic is greater than the critical value, reject the null hypothesis; otherwise, do not reject the null hypothesis.

5. FINDINGS

- 56% of the respondents strongly agree that their organization needs a performance appraisal system, 41.4% agreed and 2.6% strongly disagreed.
- 48% of the respondents strongly agree that a performance appraisal system helps in winning contracts and promoting teamwork. 33.33% of the respondents agreed and 18.67% of the respondents did not respond.
- 37.33% of the respondents strongly agree that a performance appraisal system helps in developing individual skills. 33.33% of the respondents agreed and 20% did not respond. A vastly different figure of 9.3% of those surveyed disagreed with this statement.
- 49.3% of respondents strongly agree that performance appraisal system helps employees avoid grievances, 38.6% agree and 12% strongly disagree.
- 33.3% of respondents strongly agree that performance appraisal helps to identify employees' strengths and weaknesses, 24% of respondents strongly disagree and 9.4% strongly disagree.
- 49.3% of respondents strongly agree that the performance appraisal system helps management give advice to employees, 33.3% agree, and 17.3% are neutral.
- 46.7% of respondents strongly agree that promotions are based solely on the performance appraisal system. 38.6% of respondents agree, 13.3% disagree, and 1.3% are neutral.
- 33.33% of those surveyed completely agree that constructive feedback from their manager shaped their year. 40% of respondents agree, 13.3% strongly disagree, and 20% are neutral.
- 50.67% of respondents strongly agree that their direct manager holds joint meetings and participates in the evaluation process. 37.33% of respondents agree, 12% of respondents strongly disagree, and 33.33% of respondents strongly agree.
- 58.3% of respondents strongly agree that their direct manager's evaluation applies to all work throughout the year. 20% of respondents agree,

while 12% could not answer.

- 36% of respondents strongly agree that they were informed about performance evaluation goals before the year began. 34.67% of respondents agreed, 24% disagreed, and 5.3% could not specify.
- 33.3% of respondents strongly agreed that the current performance appraisal system meets their needs. 6.67% of respondents agreed, 13.3% disagreed, and 46.67% strongly disagreed.
- 36% of respondents strongly agreed that regular performance appraisals are conducted. 34.67% of respondents agreed, 24% disagreed, and 5.3% could not provide specific information.

6. SUGGESTIONS

- Management needed to focus on other performance appraisal methods such as BARS (Behaviorally Anchored Rating Scales).
- Management needed to focus on making employees aware of the performance appraisal methods.
- The company needed to focus on training employees after performance appraisal.
- Management needed to communicate the performance appraisal methods and criteria.

7. CONCLUSION

Performance management methods are not one-size-fits-all. Organizations must choose methods that align with their culture, goals, and resources. By implementing appropriate methods, organizations can foster excellence, drive innovation, and achieve sustainable success in today's competitive business landscape. Performance management is not just a process; it's a dynamic driver of growth and progress. Performance appraisal (PA) is a crucial technique for improving the skills of employees and organisations. Organizations have implemented performance appraisal to monitor and supervise relationships, growth, and development of individuals and organisations to increase overall productivity and job satisfaction. The mining industry in India is a major economic activity which contributes significantly to the economy of India. The gross domestic product (GDP) contribution of the mining industry varies from 2.2% to 2.5% only but going by the GDP of the total industrial sector, it contributes around 10% to 11%. "APMDCL" appears to refer to Andhra Pradesh Mineral Development Corporation. To get the latest information about APMDCL, you may need to refer to recent news articles, official announcements, or financial reports. Andhra Pradesh Mineral Development Corporation's performance appraisal system is considered good. The organization uses a checklist method to measure the performance of employees. Employees are satisfied with the rewards and recognition from the management. Good employee relations have a positive impact on the company. Achieve greater influence among employees, managers and subordinates. An organization is essentially a collection of people. Human resource management is the most important aspect of running an organization. Hence, the HRM department plays a vital role in an organization. The objective of this study is to examine the effectiveness of performance appraisal systems. Performance appraisal has become increasingly important as part of a more strategic approach to integrating human resource activities with business policies and is now considered as a general term covering a range of activities through which organizations attempt to evaluate their employees, develop their capabilities to improve their performance and distribute rewards.

REFERENCES

- Abbas, U. I., & Cross, O. D. (2019). Impact of performance appraisal on employee productivity in Nigeria breweries PLC. *The International Journal of Business & Management*, 2321– 8916.
- Abdullah, Z., & Malik, S. (2022). Perceived appraisal fairness effect on performance appraisal effectiveness and appraisal satisfaction in higher education. *Journal of Business and Social Review in Emerging Economies*, *8*(2).
- Aggarwal, A., & Thakur, G. S. M. (2013). Techniques of performance appraisal: A review. *International Journal of Engineering and Advanced Technology (IJEAT)*, *2*(3).
- Amm ons, David, N. (1995). Overcoming the Inadequacies of Performance Measurement in Local Government: Th e Case of Libraries and Leisure Services. *Public Administration Review*, *55*(1), 37-47.
- Amoako, M. (2021). Assessing the Effect of Performance Appraisal System at Kumasi Technical University, Ghana. *The International Journal of Business & Management*, *9*(11).
- Arifin, H. M. (2015). The Influence of Competence, Motivation, and Organisational Culture to High School Teacher Job Satisfaction and Performance. *International Education Studies*, *8*(1), 38-45.
- Armstrong, M., & Baron, A. (2005). Managing performance: performance management in action, CIPD, London.
- Asamoah, H. (2012). A Thesis submitted to the Department of Managerial Science, Kwame Nkrumah University of Science and Technology, Kumasi in partial fulfillment of the requirements for the degree of Master of Business Administration (Human Resource Management Option) School of Business College of Art and Social Sciences production management.
- Bar now, Burt, S. (2000). Exploring the Relationship between Performance Management and Program Impact: A Case Study of the Job Training Partnership Act. *Journal of Policy Analysis and Management*, *19*(1), 118–141.
- Bernardin, H. J., & Wiatrowski, M. (2013). Performance appraisal: psychology and policy, 257.

- Espinilla, M., De Andres, R., Martinez, J., & Martinez, L. (2013). A 360-degree performanceappraisal model dealing with heterogeneous information and dependent criteria, *Information Sciences, 222*(4), 459-471.
- Brumbark and Vincent. (1970). Jobs and Appraisal of Performance in Personnel Administration, *33*(4), p. 26-30.
- Gupta, C. B. (2009). Human Resources Management, Sultan Chand and son's publisher, New Delhi, 2nd edition, 2009.
- Aprilia, H. D., Sari, U. A., Mukti, C. I. P., Saptiani, F., & Ningtias, A. C. (2022, December). Performance Appraisal with Management By Objective. In *Iapa Proceedings Conference* (pp. 158-173).
- Hassan, O., & Ibourk, A. (2021). Burnout, self-efficacy and job satisfaction among primary school teachers in Morocco. *Social Sciences & Humanities Open, 4*(1), 100148.
- Hoffmann-Burdzińska, K., & Flak, O. (2016). Management by objectives as a method of measuring teams' effectiveness. *Journal of Positive Management, 6*(3), 67–82.
- Jude, K. A. (2023). The Relationship between recruitment and selection strategy and employee performance. *Human Resource Management Review, 1*(1), 1-2.
- Kavanagh, P., Benson, J., & Brown, M. (2007). Understanding performance appraisal fairness. *Asia Pacific Journal of Human Resources*, 45, 132.
- Mokhtar, A., Maouloud, V. M., Omowunmi, A. K., & Nordin, M. S. B. (2021). Teachers' commitment, self-efficacy and job satisfaction as communicated by trained teachers. Management in Education.
- Munguti, B. K., & Kanyanjua, D. (2017). Performance appraisals practices and employee productivity in Kenya: A case study of Savannah Cement Ltd. *International Academic Journal of Human Resource and Business Administration, 2*(4), 82-96.
- Akhter, N., Raza, H. U. M. A., Ashraf, A. Q. S. A., Ahmad, A., & Aslam, N. A. Z. I. S. H. (2016). Impact of training and development, performance appraisal and reward system on job satisfaction. *International Review of Management and Business Research*, *5*(2), 561-571.
- Okoth, A. A., & Florah, O. M. (2019). Influence of Performance Appraisal on Motivation of Public Secondary School Teachers in Gem-Sub County, Kenya. *American International Journal of Contemporary Research, 9*(4), 39-49.
- Redman, T. (2001). 'Performance appraisal', in T. Redman and A. Wilkinson, Contemporary Human Resource Management: Text and cases. Harlow: Pearson Education.
- Robert, C., & Seward, J. (2000). Australian Human Resource Management (Frame work and Practice) 3rd ed. McGraw Hill Book Company Australia Pty Limited, 4 Barcoo Street, Roseville NSW 2069, Australia.
- Robescu, O., & Iancu, A. G. (2016). The Effects of Motivation on Employees Performance in Organizations. *Valahian Journal of Economic Studies, 7*(2), 49–56.
- Sahoo, C., & Mishra, S. (2012). Performance management benefits organization and their employees. *Human Resources Management International Digest, 20*(6), 3-5.
- Scholtes, P. R. (1993). Total quality or performance appraisal: choose one. *National Productivity Review, 12*(3), 349-363.
- Selvarajan, T., & Cloninger, P. (2012). Can performance appraisals motivate employees to improve performance? A Mexican study. *International Journal of Human Resource Management, 23*(15). 10.1080/09585192.2011.637069., 3063-3084.
- Sułkowski, Ł., Przytuła, S., Borg, C., & Kulikowski, K. (2020). Performance Appraisal in Universities—Assessing the Tension in Public Service Motivation (PSM), *Education Sciences, 10*(7), 174.
- Susanto, S., & Darmasetiawan, N. (2020). Designing a performance appraisal system for management consultant office "d". Dinasti. *International Journal of Digital Business Management, 1*(3), 361-374.
- The impact of national culture on human resource management practices: the case of performance appraisal', *Advances in International Comparative Management*, 12, 157-183.