Summary :

Central Tendency and Dispersion:

- **Mean Age**: The average age of employees is approximately 34.78 years, indicating a relatively young workforce.
- **Length of Service**: The average length of service is about 5.81 years, with a standard deviation of 4.21 years, indicating a moderate level of variation in tenure among employees.
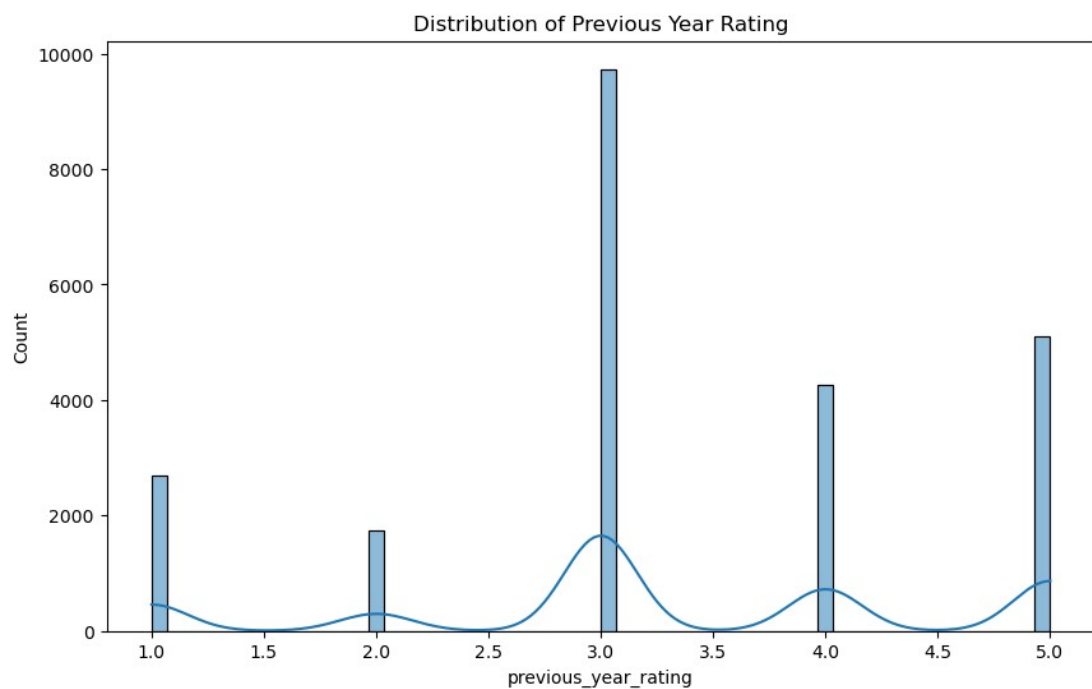
Variability:

- **Previous Year Rating**: The mean previous year rating is 3.31 with a standard deviation of 1.22. This suggests that the majority of ratings cluster around the average, but there is still significant variability.

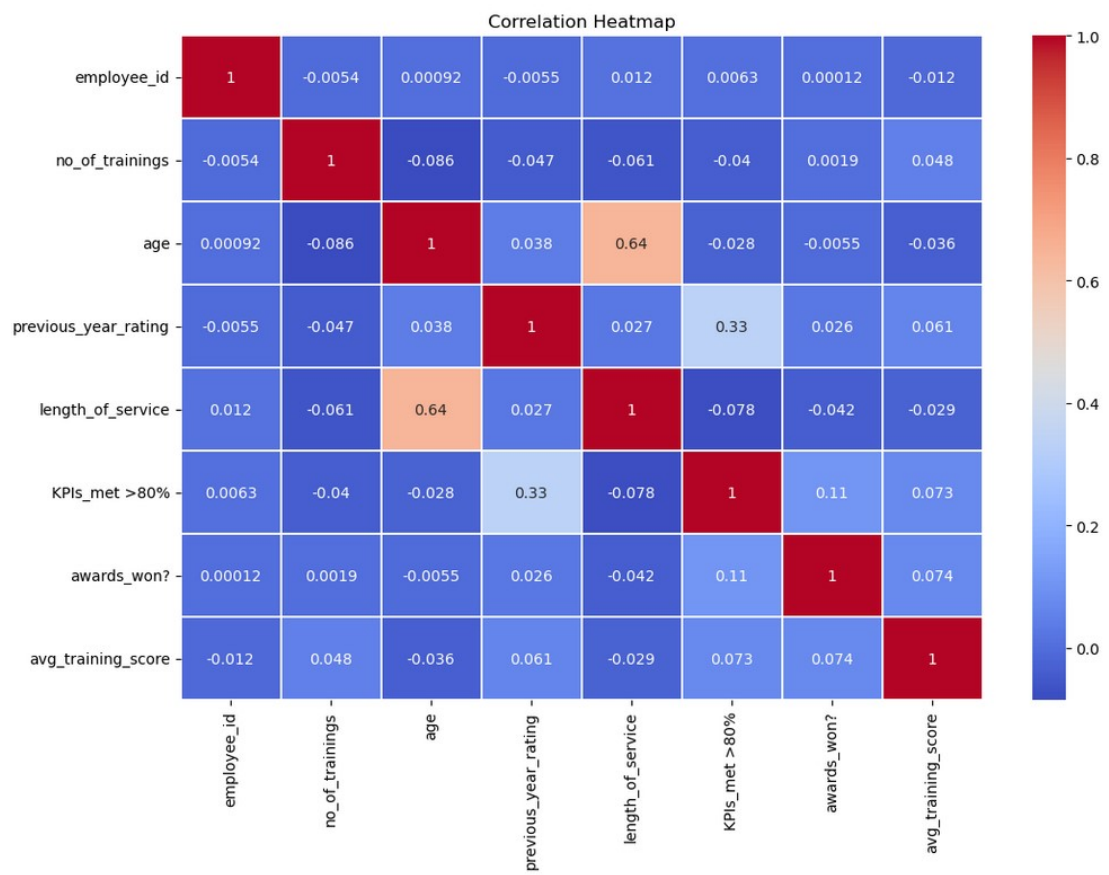## (1) Distribution of Target Variable

- **Previous Year Rating Distribution:**

  - The distribution of previous year ratings shows a prominent peak around the rating of 3, indicating that most employees receive an average rating.

Distribution of Previous Year Rating
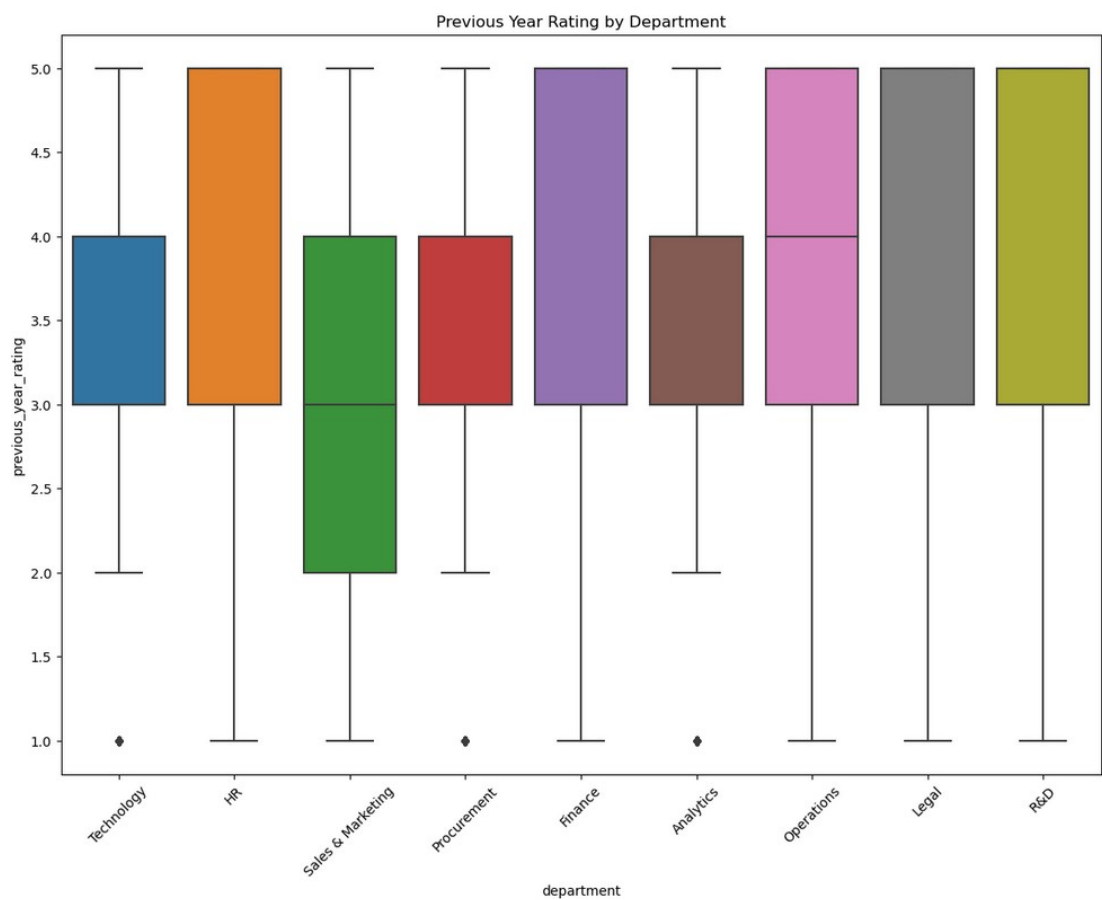
(2)Correlation Heatmap

- **Strong Correlations:**

    - **KPIs_met >80%**: There is a moderate positive correlation between `KPIs_met >80%` and `previous_year_rating`, suggesting that meeting key performance indicators is associated with higher ratings.
    - **Avg_training_score**: The `avg_training_score` also shows a moderate positive correlation with `previous_year_rating`, indicating that higher training scores are linked to better performance ratings.

Correlation Heatmap

(3)Box Plots for Categorical Features

- **Department vs. Previous Year Rating:**

    o   The box plot indicates some variability in the previous year ratings across different departments. For example, the Technology department might have a wider range of ratings compared to other departments.
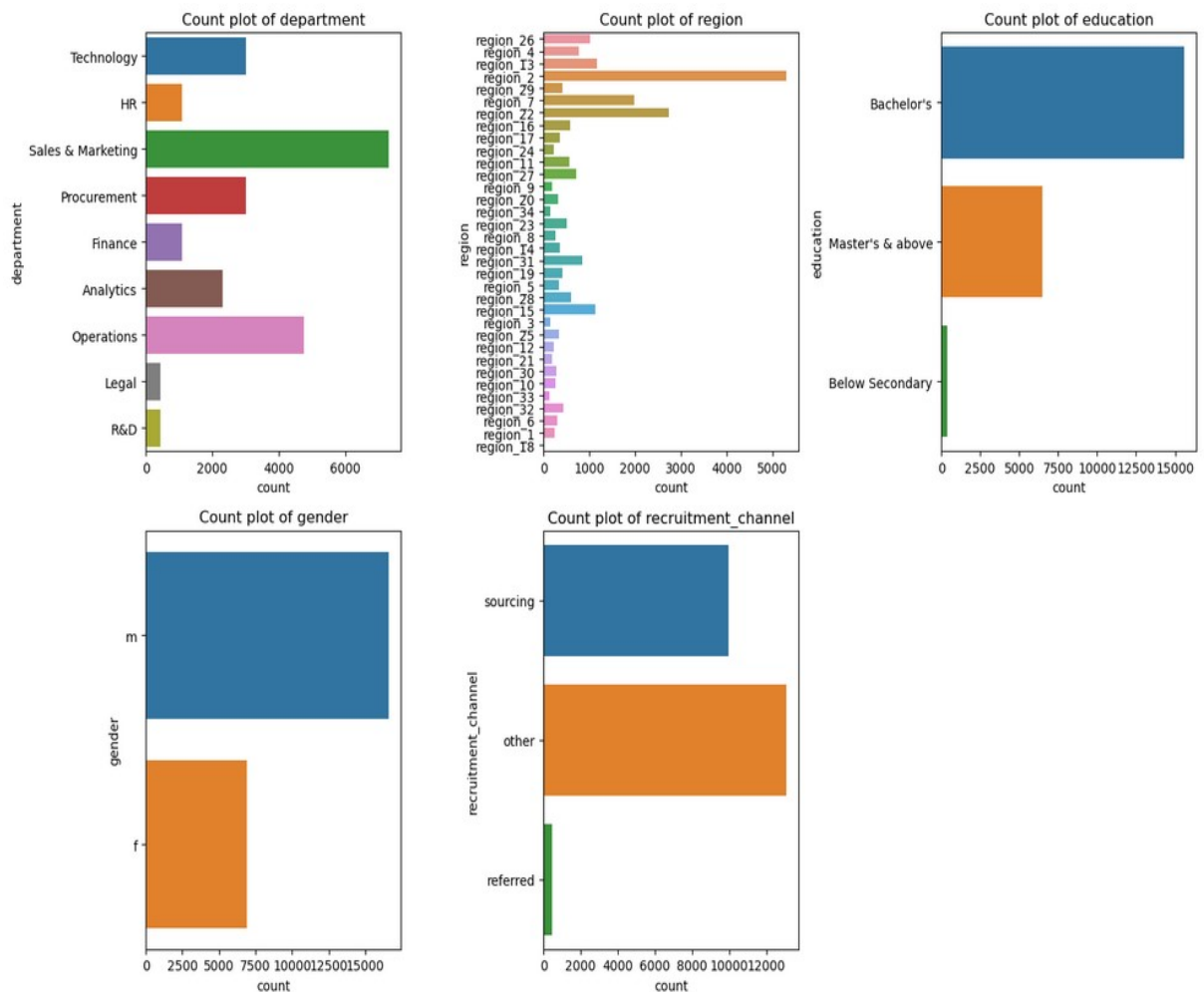

Previous Year Rating by Department

(4)Count Plots for Categorical Features

Gender Distribution:

- o   The count plot shows that the dataset has a balanced distribution of male and female employees.

Department Distribution:

- o   The Sales & Marketing department appears to have the highest number of employees, suggesting that the company has a significant focus on sales and marketing activities.
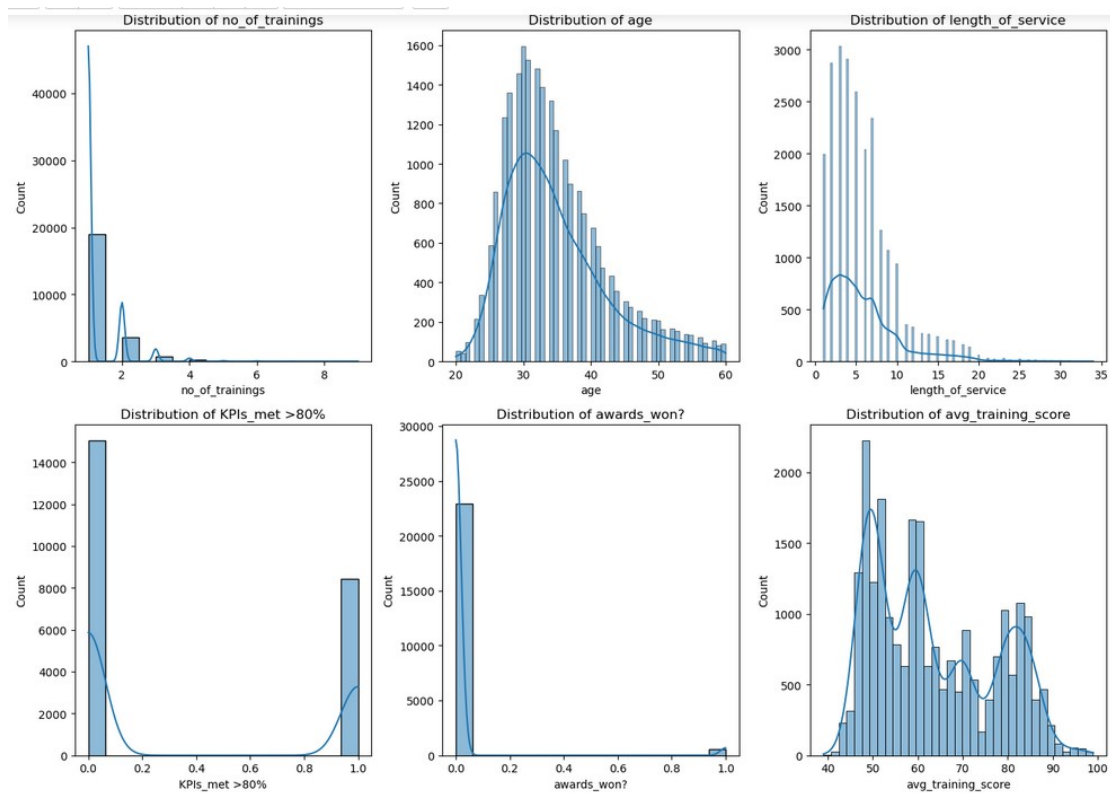
(5)Distribution Plots for Numerical Features

Age Distribution:

- o The age distribution shows a right-skewed pattern, indicating that there are more younger employees in the dataset.

Length of Service Distribution:

- o The length of service distribution indicates that most employees have been with the company for less than 10 years, with a peak around 3 to 5 years.

Key Insights

1. **Age and Tenure:** The workforce is relatively young with a significant proportion having less than 10 years of service.
2. **Performance Ratings:** Most employees receive an average performance rating of around 3, with a small number receiving the highest rating of 5.
3. **Training and KPIs:** Higher training scores and meeting key performance indicators are associated with better performance ratings.
4. **Departmental Differences:** There are noticeable differences in performance ratings across departments, suggesting potential variations in departmental performance or evaluation criteria.