Organizational Analysis of Employee Data

Overview

This dataset encompasses detailed information about employees across various teams and positions within a professional sports league. The dataset includes demographic data, salary information, and team affiliations, providing a rich source of insights for organizational analysis and strategic planning. Rigorous data pre-processing steps were undertaken to address missing values and correct any inconsistencies, ensuring the integrity and reliability of the analysis. The analytical tasks conducted offer a comprehensive understanding of employee distribution, demographic patterns, salary expenditures, and correlations within the dataset.

Data Pre-Processing

I. Loading the Dataset:

- The dataset was meticulously imported from an Excel file utilizing the Pandas library in Python, ensuring that all data points were accurately captured for analysis.

II. Handling Missing Values:

- Null values in the 'Salary' column were identified and replaced with the mean salary to maintain consistency and avoid biases in salary-related analyses.
- Missing entries in the 'College' column were substituted with the placeholder "Not Specified," ensuring completeness of the educational background information without distorting the dataset.

III. Correcting Misleading Values:

- The 'Height' column contained erroneous entries, such as dates. These misleading values were detected and corrected by assigning random, plausible heights ranging from 150 to 180 cm, thereby preserving the dataset's validity.

Analytical Outcomes

I. Employee Distribution by Team:

- **Objective:** To determine the distribution of employees across each team and calculate the percentage split relative to the total number of employees.
- **Findings:**
  - The New Orleans Pelicans emerged as the team with the highest number of employees (19), representing approximately 4.15% of the total workforce.
  - Teams like the Orlando Magic and Minnesota Timberwolves were at the lower end of the spectrum, each accounting for about 3.06% of the workforce with 14 employees.
  - **Visualization:** The distribution was effectively illustrated using a pie chart, which provides a clear, visual representation of the employee spread across teams, highlighting the proportional differences.

II. Employee Segregation by Position:

- **Objective:** To categorize employees based on their positions within the organization.
- **Findings:**
  - The most prevalent position among employees is Shooting Guard (SG) with 102 employees, followed closely by Power Forward (PF) with 100 employees.
  - The Centre (C) position has the fewest employees, numbering 79.
  - **Visualization:** A horizontal bar chart was utilized to depict this segregation, allowing for an easy comparison of the number of employees in each position.

III. Predominant Age Group:

- **Objective:** To identify the most common age group among the employees.
- **Findings:**
  - A significant majority of employees fall within the 20-30 age group, with 346 employees. This is indicative of a youthful workforce.
  - The 31-40 age group consists of 91 employees, while there are no employees in the 41-50 and 51-60 age groups.
  - **Visualization:** This age distribution was represented using a histogram, which clearly demonstrates the concentration of employees within specific age ranges.

IV. Highest Salary Expenditure:

- **Objective:** To determine which team and position account for the highest salary expenditure.
- **Findings:**
  - The Los Angeles Lakers have the highest salary expenditure for Small Forwards (SF), totaling $31,866,445.
  - Other significant expenditures include the Miami Heat's Power Forwards (PF) at $31,538,671, and the Houston Rockets' Shooting Guards (SG) at $28,122,883.
  - **Visualization:** A stacked bar chart was employed to display these expenditures, offering a comparative view of salary distributions across teams and positions.

V. Correlation Between Age and Salary:

- **Objective:** To investigate any potential correlation between employee age and salary.
- **Findings:**
  - The correlation coefficient was found to be 0.21, suggesting a weak positive correlation between age and salary. This implies that as age increases, salary tends to increase slightly, but the relationship is not strong.
  - **Visualization:** A scatter plot was used to visually represent this correlation, plotting individual data points to highlight the overall trend.

Explore key outcomes

I. Employee Distribution by Team

- **Summary:** The distribution of employees across each team shows that the New Orleans Pelicans have the highest number of employees (19), representing approximately 4.15% of the total workforce. Teams like the Orlando Magic and Minnesota Timberwolves have the fewest employees, each with 14 employees, representing about 3.06% of the workforce.

Team	Employee Count	Percentage Distribution (%)
New Orleans Pelicans	19	4.15
Memphis Grizzlies	18	3.93
Utah Jazz	16	3.49
New York Knicks	16	3.49
Milwaukee Bucks	16	3.49
Brooklyn Nets	15	3.28
Portland Trail Blazers	15	3.28
Oklahoma City Thunder	15	3.28
Denver Nuggets	15	3.28
Washington Wizards	15	3.28
Miami Heat	15	3.28
Charlotte Hornets	15	3.28
Atlanta Hawks	15	3.28
San Antonio Spurs	15	3.28
Houston Rockets	15	3.28
Boston Celtics	15	3.28
Indiana Pacers	15	3.28
Detroit Pistons	15	3.28
Cleveland Cavaliers	15	3.28

Chicago Bulls	15	3.28
Sacramento Kings	15	3.28
Phoenix Suns	15	3.28
Los Angeles Lakers	15	3.28
Los Angeles Clippers	15	3.28
Golden State Warriors	15	3.28
Toronto Raptors	15	3.28
Philadelphia 76ers	15	3.28
Dallas Mavericks	15	3.28
Orlando Magic	14	3.06
Minnesota Timberwolves	14	3.06

II. Employee Distribution by Position

- **Summary:** The Shooting Guard (SG) position has the highest number of employees (102), followed by Power Forward (PF) with 100 employees. The Center (C) position has the fewest employees, with 79.

Position	**Employee Count**
SG	102
PF	100
PG	92
SF	85
C	79

III. Predominant Age Group Distribution

- **Summary:** The 20-30 age group is the most predominant, with 346 employees, indicating a youthful workforce. The 31-40 age group has 91 employees, while there are no employees in the 41-50 and 51-60 age groups.

Age Group	Employee Count
20-30	346
31-40	91
41-50	0
51-60	0

IV. Salary Expenditure by Team and Position

- **Summary:** The highest salary expenditure is for Small Forwards (SF) in the Los Angeles Lakers, totaling $31,866,445. Other significant expenditures include Power Forwards (PF) in the Miami Heat and Shooting Guards (SG) in the Houston Rockets.

Team	Position	Salary Expenditure ($)
Los Angeles Lakers	SF	31,866,445
Miami Heat	PF	31,538,671
Houston Rockets	SG	28,122,883
Phoenix Suns	PG	28,002,998
Denver Nuggets	SF	27,982,771

V. Correlation Between Age and Salary

- **Summary:** The correlation coefficient between age and salary is 0.21, indicating a weak positive correlation. This suggests that as age increases, salary tends to increase slightly, but the relationship is not strong.

Correlation Coefficient
0.21

Conclusion

The dataset provides a granular view of the employee landscape within the sports league, revealing critical insights into team compositions, demographic trends, and financial allocations. The analysis underscores the predominance of younger employees, the distribution of roles within teams, and identifies key areas of salary expenditure. The visualizations employed, including pie charts, bar charts, histograms, and scatter plots, enhance the interpretability of the data, making it accessible to stakeholders for informed decision-making. This comprehensive analysis serves as a foundational resource for optimizing team structures, managing salary budgets, and strategizing organizational development within the league.