REPORT ON ANALYSIS OF 'EXTENDED EMPLOYEE PERFORMANCE AND PRODUCTIVITY DATA'

INTRODUCTION

This dataset contains 100,000 rows of data capturing key aspects of employee performance, productivity, and demographics in a corporate environment. The dataset is designed for various purposes such as HR analytics, employee churn prediction, productivity analysis, and performance evaluation.

DATA SOURCES

The primary dataset used for this project existed as the "Extended_Employee_Performance_and_Productivity_Data.csv" file, containing details related to the employee's job, work habits, education, performance, and satisfaction.

TOOLS

1. Python – Data Cleaning and EDA
2. Power BI – Data visualization, Creating of report and Dashboard

EXPLORATORY DATA ANALYSIS (EDA)

EDA involved exploring the extended employee performance and productivity data to answer key questions, such as

1. What are the departments operated in this company?
2. What are the total numbers of employees in each department?
3. What are the Performance score by each department?
4. Which department usually works remotely?
5. What are the employee's salaries by Job title?
6. What are the educational levels by Job title?
7. What are the age distributions of employees in the company?
8. What are the numbers of projects handled by each department?
9. What are the job satisfaction score by job title?
10. What are the training hours by educational level?

FINDINGS AND RECOMMENDATIONS

After analysis of the above dataset, here are my findings and their corresponding recommendations:

1. The company operated under nine departments and the number of each department was fairly distributed. Below are the numbers of employee by department :

Department	Number of Employees
Marketing	11216

Finance	11200
Operations	11181
IT	11131
Sales	11122
Legal	11118
Customer Support	11116
HR	10960
Engineering	10956
TOTAL	**100000**

2. The company has categorized its employees into seven job titles, whose number is also fairly distributed.

Job Title	Number
Specialist	14507
Manager	14325
Technician	14285
Analyst	14261
Engineer	14217
Consultant	14210
Developer	14195

3. The employees are in four major educational level categories. The counts of each category are as follows

Education Level	Count
Bachelor	50041
High School	30004
Master	14904
PhD	5051

4. Each employee's performance was rated on the scale of 1.0 to 5.0. Below are the counts of employees with their performance rating scores.

Performance Score	Count
1.0	20120
2.0	20013
3.0	19999
4.0	19940
5.0	19928

5. Employees' ages were in the ranges of 22 to 60 years.

6. Employees were subjected to different hours of training, each have spent different number of years in the company; have handled various numbers of projects and have received several 'Employee satisfaction scores' , also on the scale of 1.0 to 5.0 .

7. Some employees have varying records of working remotely while others have no record at all. Below are the records of percentage remote work frequency:

Remote Work Frequency (%)	Count
25	20235
75	20173
100	20049
0	19837
50	19706

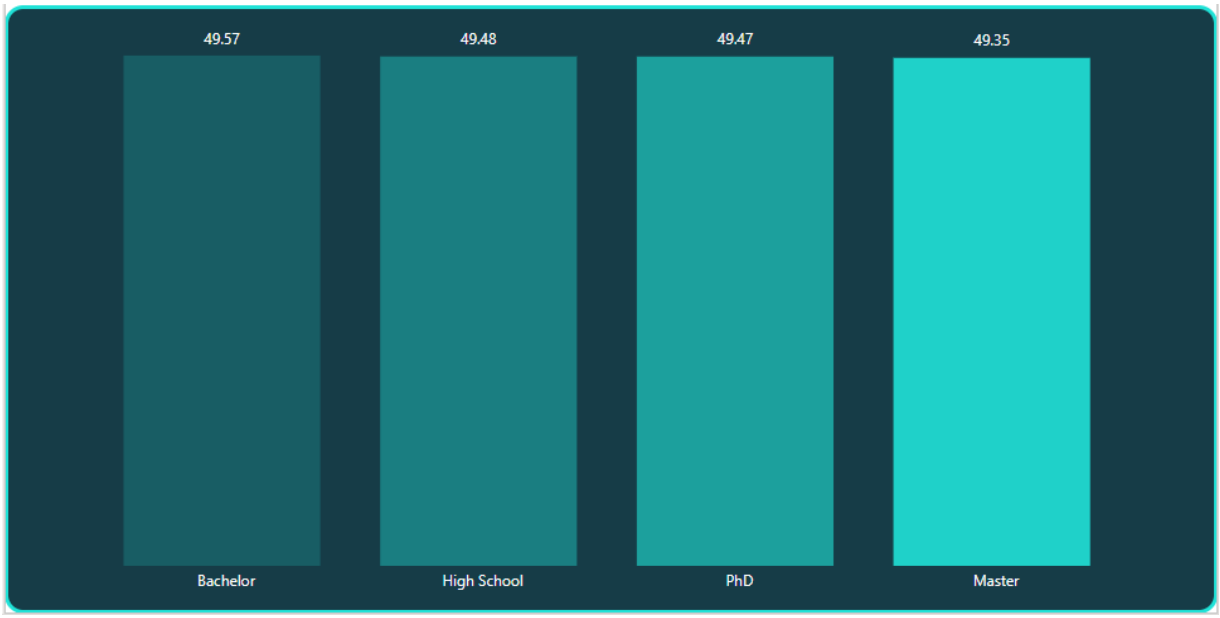
8. Employees have also received a number of promotions during their tenure.

Number of promotions received	Count
1	33436
0	33296
2	33268

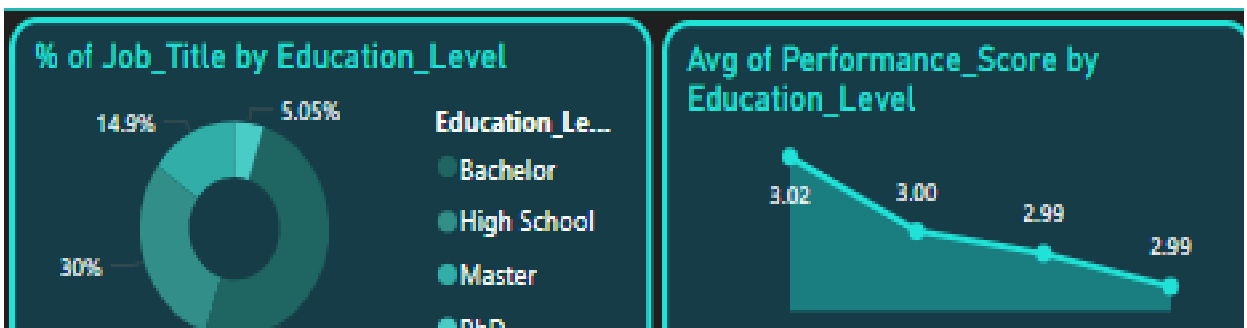
9. During the period under consideration, few of the employees have resigned while many of them are still active employees at the company. Below are the data for resigned and active employees.

Resigned	Count
False	89990
True	10010

10. All levels of education in the company have received fairly equal number of training hours.



11. Employees with Bachelor's educational level constitute more than 50% of the entire



12. i) This means that employees with Bachelor's educational level have been assigned much lesser amount of duties than their number could handle; they are being under-utilized.

    ii) Employees with master's educational level though they have much lesser percentage of job title by educational level (14.9%), have the highest average performance score by educational level (3.02).This also could mean that employees with master's educational level are being load with more duties than their number could handle or their capacities are being stretched. Probably, the few employees who resigned from the company may come from the master's educational level category, those who could not bear the pressure associated with the workload.

    iii)The work load for employees with high school level has work load comparable to their capacity and each one of them is performing as they should.

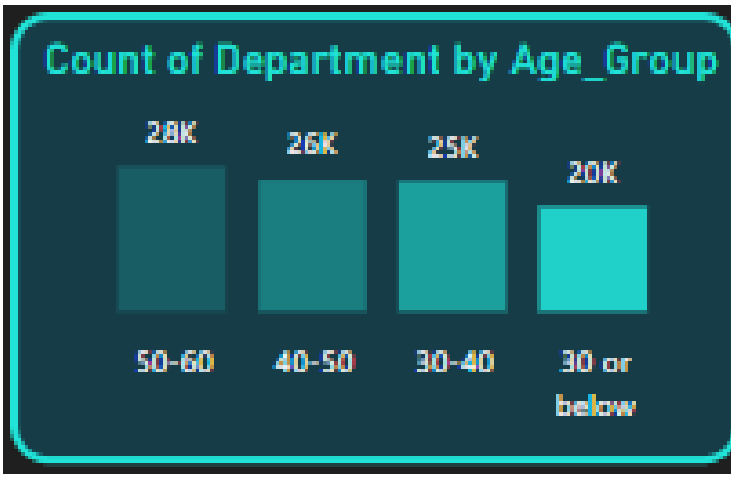
RECOMMENDATION:

The bachelor's educational level category must be assigned more duties comparable to their numbers in order to raise their average performance score.

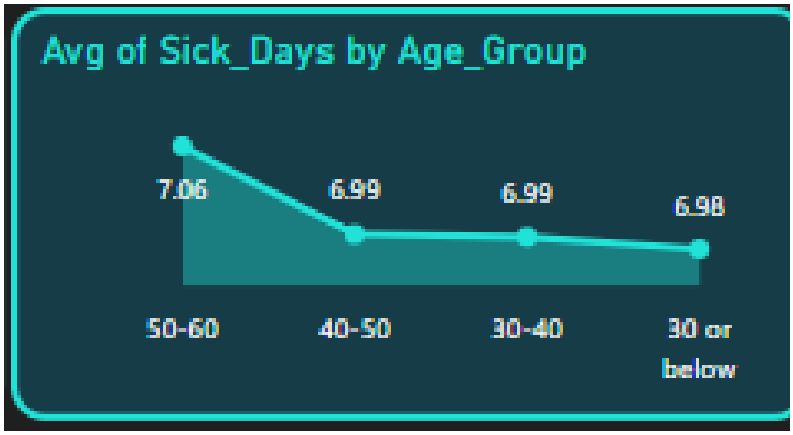
13. The finance department has the highest average remote work frequency while the HR departments have the least average remote work frequency.

Department	Avg of Remote_Work_Freq
Finance	50.44
Engineering	50.35
Customer Support	50.32
Legal	50.24
Operations	50.11
Marketing	50.08
Sales	49.98
IT	49.78
HR	49.51
Total	**50.09**

14. Analysis on the count of department by age group data reveals that most of the employees are between the ages of 50-60 years old, while the count of the young and energetic employees (40 years and below) are less. This group of 50-60 years old are near retiring and their contribution to the company's performance is greatly reduced.



15. The '50-60 years age group' category has the highest average of sick days (7.06). This comes to reinforce the fact that the employees in this year group are not contributing much towards the goals of the company.



RECOMMENDATION:

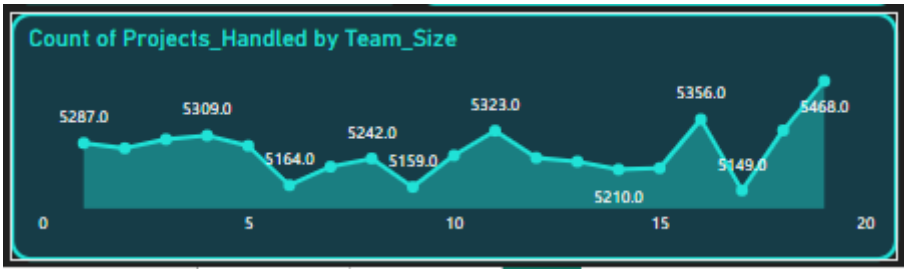
HR should consider hiring young and energetic employees from the ages of 40 years and below to reinforce the company's work force.

16. Analysts have the highest average sick day by job title. If majority of the analysts does not fall within the ages of 50-60 years old then it could possibly be due to work related hazards which could make them call in sick most of the times.

RECOMMENDATION:

HR should investigate the cause of this occurrence and review their working conditions to solve issues relating to analysts calling in sick most of the times.

17. Analysis of count of projects handled by team size reveals that teams with sizes 6, 9 and 17 are handling lower numbers of projects which is below their team capacity. This could mean that these teams are either not proactive or are being assigned fewer tasks than their number could handle.

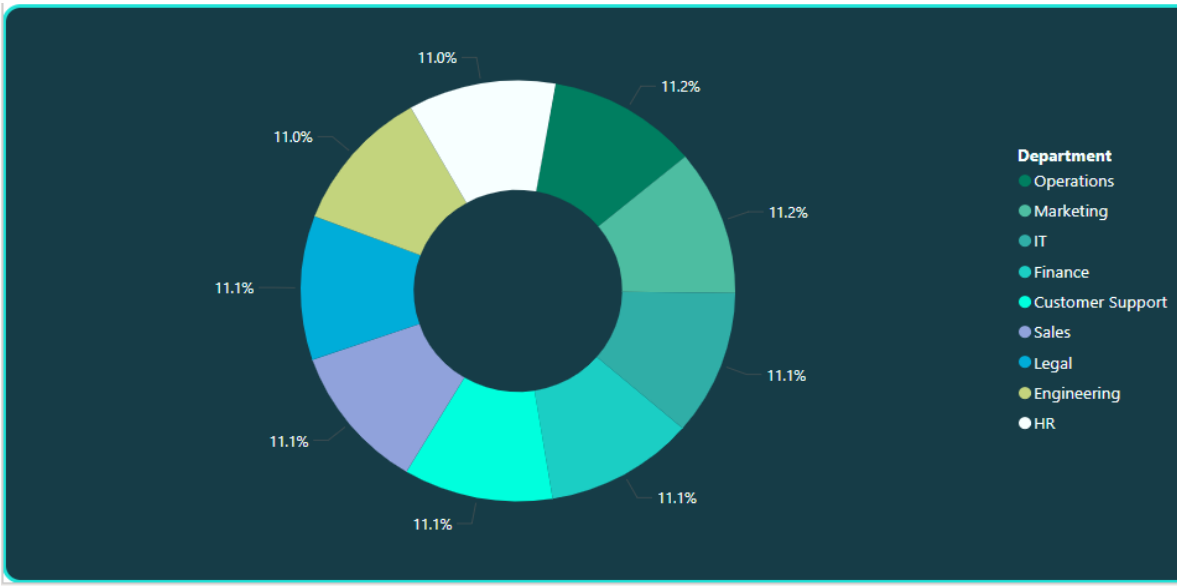


RECOMMENDATION:

i) HR should investigate to know the cause of the lower project output of these teams. If it is the team not being proactive, HR should consider organizing remedial training programs for them or reshuffle the team to bring on new members with fresh minds and energy to make them more proactive; but if it is the issue of job allocation, HR should also consider allocating more project tasks to the team to much up to the team size.

ii) Team sizes of 12, 13, 14 and 15 should be encouraged to take up little more projects to match up their team capacity.

18. Department-wise performance score analysis reveals that all the 9 departments in the company performed equally at the same rate.



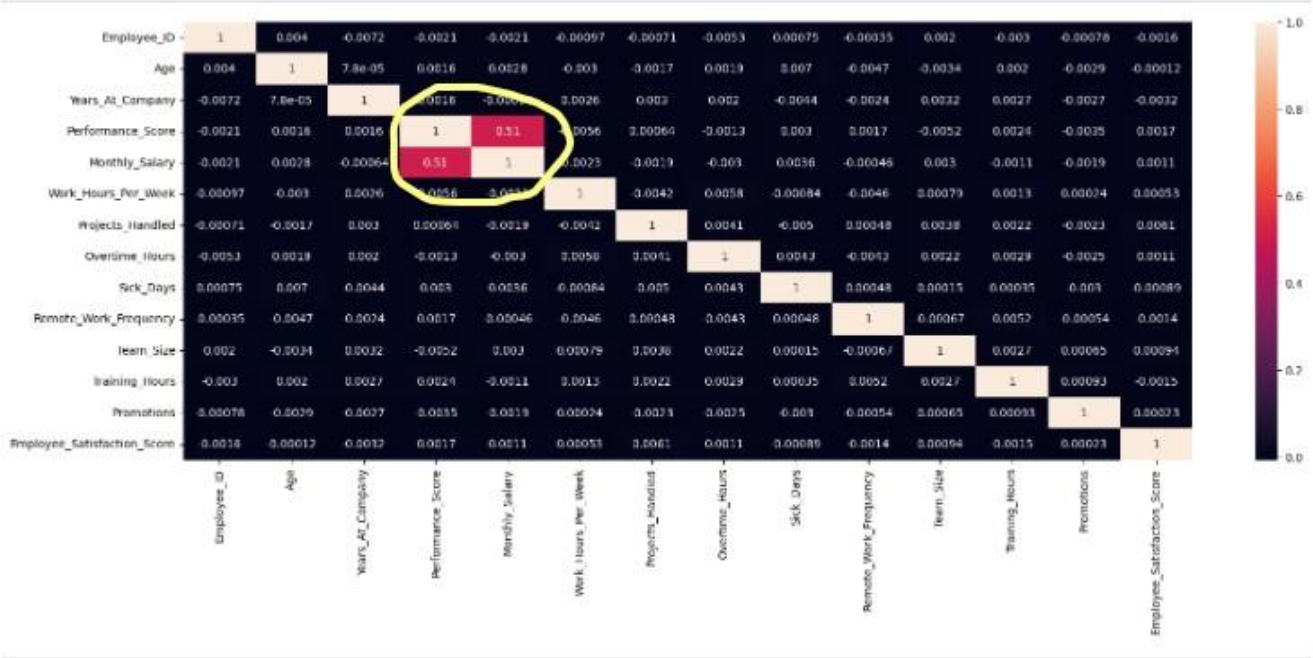
RECOMMENDATION:

HR in collaboration with the managements/executives of the company should institute something like a yearly or quarterly friendly competition among the departments of the company to know which department will perform better. An agreed prize reward should be given to the winning department. This will encourage the other departments to give in their all towards the goals of the company.

19. Analysis of the average monthly salary by job title reveals that engineers are the highest paid staffs with an average salary of **$7799.32**, while technicians are the least paid with an average salary of **$4545.15**.

Job_Title	Avg of Monthly_Salary
Engineer	$7,799.3248
Manager	$7,798.3246
Consultant	$7,152.0901
Developer	$6,490.1374
Specialist	$5,855.3354
Analyst	$5,195.8208
Technician	$4,545.1488
Total	**$6,403.211**

20. It was also observed that the performance score is quiet correlated to the monthly salary of the employees. This means that the employees with higher performance score is likely to receive a higher monthly salary.



Thank you.