Faculty of Management
Osmania University
Practical Question Bank
BBA (Business Analytics)
Semester VI w.e.f. 2021
COURSE CODE: DSE - 603
COURSE: (C) HR ANALYTICS – II (HR)

Total Marks : 35

Record   : 10 Marks
Practical's: 15 Marks
Viva Voice: 10Marks

Record Work:
1. **Input: Students must write the procedure/steps for the given question /problem.**
2. **Process: Students must write Steps/ Navigations to execute**
3. **Output: Students must show the Result/Output and interpret the results.**
4. **Use Excel**
5. **Data File links are given at the end of the document.**

The following is the Employee data of a company.

Employee ID	Name	Date of Birth	Joining Date	Last Promotion Date	Contract End Date
101	Alice Johnson	3/15/1990	6/1/2015	5/15/2022	12/31/2025
102	Bob Smith	7/22/1985	4/15/2010	11/20/2021	3/31/2024
103	Carol Lee	1/8/1992	9/10/2018	7/30/2023	9/10/2026
104	David Brown	11/25/1988	12/20/2013	8/1/2020	6/30/2027
105	Eve Davis	6/10/1995	1/5/2020	1/15/2023	11/1/2025

1.   Use Date functions and calculate
   (i)   Current age of the Employee
   (ii)   Service in the organization
   (iii)   Next work Anniversary
   (iv)   Days to contract End
   (v)   Days since last promotion

2.   (i)   Extract year of Joining
      (ii)   Extract Month of Promotion
      (iii) First Day of Next Month
      (iv)   Find week day of joining
      (v)   Add 6 Months to promotion

3.   (i)   Find the quarter of joining
      (ii)   Is today a weekend?
      (iii) Time between Joining and promotion
      (iv)   Generate Custom date format
      (v)   Highlight upcoming Contract expirations.

4.   (i)   Identify the employee with the longest tenure in the organization.
      (ii)   Identify the employees who might be eligible for a contract extension based on tenure criteria.
      (iii) Calculate the average time between promotions for the employees listed.
      (iv)   based on a hypothetical retirement age of 60, calculate how many years each employee has until retirement.

5.   (i)   predict the expected date of the next promotion for each employee based on the average time between their joining and last promotion.
      (ii)   Find employees who have not been promoted in the last 5 years.

From the HR Analytics data file answer questions 6 to 15.

6.   Use historical data on employee attrition to forecast the head count for the next year.
      - Apply linear regression or trendlines in Excel.
      - Use FORECAST or TREND functions to predict future employee requirements.
      -
7.   Analyze the recruitment source effectiveness by comparing the performance scores of employees recruited through different sources.
      - Create a pivot table.

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- Calculate average performance scores for each recruitment source.

8. Calculate the correlation between training hours and performance improvement.
   - Use the CORREL function in Excel
   - Visualize the relationship with a scatter plot.

9. Identify the top 10% of employees based on their performance scores.
   - Use the PERCENTILE function to determine the cutoff score.
   - Apply filters or conditional formatting.

10. Create a dashboard to monitor key metrics like attrition rate, average performance score and engagement score.
    - Use Pivot tables, slicers and charts for visualizations.

11. Compare engagement scores across departments and identify the most engaged department.
    - Use a PivotTable to calculate average engagement scores by department.
    - Create a bar chart for visualization.

12. Analyze the relationship between salary and job satisfaction scores.
    - Use the SCATTER plot and trend lines in Excel.
    - Add a regression equation for better insights.

13. Determine the attrition rate by department and visualize it.
    - Calculate attrition rate as No. of employees who left/ total employees
    - Use a column chart to display attrition rate by department.

14. Assess the impact of training by comparing pre and post training performance scores.
    - Calculate the improvement percentage.
    - Use conditional formatting to highlight employees with significant improvement.

15. Determine if overtime impacts job satisfaction scores.
    - Create a Pivot table to calculate average job satisfaction scores for employees with and without overtime.
    - Visualize with a bar chart.

Use Updated HR Analytics Data set to solve questions 16 to 25.

16. Calculate the overall attrition rate and determine the department with the highest attrition.

17. Analyze and visualize the most common reasons for attrition.

18. Calculate the correlation between learning hours and performance score. Interpret the results.

19. Compare diversity scores across departments and identify the most diverse team.

20. Identify the factors that have the strongest correlation with employee satisfaction.

21. Analyze the relationship between employee satisfaction and attrition, identifying any patterns or thresholds.

22. Use descriptive statistics to predict which employees are at the highest risk of attrition (based on satisfaction, engagement, and manager ratings).

23. Identify employees whose performance score increased significantly after attending a training program.

24. Compare the average attrition rate, satisfaction score, and diversity score across departments.

25. Determine if employees with higher exit interview scores were more likely to leave for specific reasons (e.g., compensation, career growth).

    Employee Attrition Dataset
    https://www.kaggle.com/datasets/pavansubhasht/ibm-hr-analytics-attrition-dataset

26. Using the employee attrition dataset, develop an HR scorecard that evaluates key HR metrics such as employee turnover, satisfaction, training hours, and retention. Explain how each metric influences the overall HR performance and contributes to business outcomes.

27. Build a predictive model to forecast employee attrition using features like job satisfaction, salary, work environment, and training. Evaluate the model's performance and explain which features are the most significant in predicting employee attrition.

28. Analyze how HR analytics is integrated into decision-making processes within the organization. Based on the dataset, identify the metrics that could help build a data-driven HR culture and support decision-making at various levels of the organization.

29. Conduct an analysis of employee engagement scores and their relationship with employee attrition. Discuss how engagement affects retention rates and propose strategies to improve employee satisfaction and reduce turnover.

30. Use the dataset to perform a cost-benefit analysis of HR retention programs. Consider metrics like training hours, salary, and job satisfaction. How would you assess the effectiveness of HR interventions in reducing attrition?

31. Explore the relationship between HR metrics such as attrition rate, employee satisfaction, and productivity (if available). How do these metrics contribute to the overall performance and profitability of the business?

32. Based on the data, propose prescriptive strategies for HR to improve retention rates. Focus on factors such as job role, salary, work-life balance, and training. Suggest HR programs or interventions that could positively influence these factors.

33. Perform a detailed analysis of employee turnover using the dataset. Identify trends, patterns, and factors that lead to higher turnover rates. Discuss how these insights can guide HR policies to improve employee retention.

34. Create data visualizations (bar charts, heat maps, etc.) to represent key HR metrics such as employee attrition, job satisfaction, and compensation. Analyze the visualizations to derive actionable insights for HR decision-making.

35. Develop a framework for HR decision-making using the employee attrition dataset. How can HR data influence decisions regarding recruitment, compensation, training, and performance management? Provide strategic recommendations based on your findings.

36. Using the HR dataset (Employee Attrition dataset or any other relevant HR data), create a set of visualizations (e.g., bar charts, pie charts, and line graphs) to represent key HR metrics such as employee turnover,

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retention, and satisfaction levels. Explain the significance of each visualization.

37. Using the HR dataset (Employee Attrition dataset or any other relevant HR data), create a set of visualizations (e.g., bar charts, pie charts, and line graphs) to represent key HR metrics such as employee turnover, retention, and satisfaction levels. Explain the significance of each visualization.

38. Create a dashboard in Excel to visualize employee retention over time. Include metrics like average tenure, turnover rate, and the number of employees in each department. Use Pivot Tables and Pivot Charts to create a dynamic dashboard that updates with new data.

39. Visualize the salary distribution across various employee categories (e.g., departments, gender, age groups). Use Excel's histogram and box plots to display how salary varies within these groups and interpret the results.

40. Use Excel to create a dashboard showing the attrition rate by various factors like job role, department, and tenure. Use a combination of slicers, Pivot Tables, and charts to dynamically filter and explore the data.

41. Using a combination of Excel charts (e.g., column, line, and scatter), compare the performance of different HR departments based on key metrics such as recruitment success, training effectiveness, and employee satisfaction scores. Create a comprehensive dashboard for performance comparison.

42. Create an Excel dashboard that visualizes employee engagement levels. Include metrics such as engagement scores, satisfaction ratings, and their correlation with attrition. Use heat maps and trend lines to identify patterns in employee engagement.

43. Using Excel, calculate and visualize the cost per hire for various recruitment methods. Create a dashboard that includes visual elements like pie charts, bar charts, and line graphs to represent the breakdown of recruitment costs over time.

44. Using Excel, create a correlation matrix to explore the relationship between different HR metrics, such as job satisfaction, training hours, salary, and attrition. Visualize the correlation results using a heat map and discuss how these correlations can help HR decision-making.

45. Based on an HR dataset, analyze and visualize the factors influencing the adoption of HR analytics within an organization. Use Excel to create charts (e.g., bar graphs, pie charts) that represent the impact of factors such as technology readiness, HR department support, and organizational culture on the adoption of analytics.

46. Create a dashboard in Excel that tracks the progress of HR analytics adoption as part of a change management process. Include metrics such as employee training hours on analytics, engagement with HR data, and the number of HR decisions influenced by data analytics over time.

47. In Excel, create a table that outlines the responsibilities of the HR department in the adoption of HR analytics. Use conditional formatting and a heat map to highlight areas of strength and areas that need improvement for successful analytics adoption.

48. Using the dataset, analyze the influence of HR analytics on the job market. Create Excel charts to show trends in hiring, job role evolution, and skills required based on HR analytics. Discuss how HR analytics can forecast future job market trends and skill requirements.

49. Using Excel, analyze the role of HR analytics in recruitment effectiveness. Create a dashboard that tracks metrics like time-to-hire, cost-per-hire, and quality-of-hire. Use Pivot Tables and charts to visualize how analytics impacts recruitment outcomes.

50. Build a predictive model using historical HR data (such as employee tenure, satisfaction, salary, and performance) to predict employee turnover. Visualize the model results in Excel, and create charts to show the factors with the highest predictive power for attrition.

51. Use Excel to correlate employee performance with HR analytics metrics such as training hours, job satisfaction, and promotion rates. Create scatter plots and trend lines to visualize how analytics can drive better performance management and employee development.

52. Develop an Excel-based dashboard to analyze the impact of HR analytics on organizational change. Include data points such as employee engagement during change processes, the effectiveness of new HR programs, and employee feedback. Use slicers to filter data based on different departments or time periods.

HR Analytics Data Set

https://drive.google.com/file/d/1fEx3ZBMlthoArCtxw_H0qZbXxn9Fpudc/view?usp=sharing

Updated HR Analytics Data Set:

https://drive.google.com/file/d/1Zh5hHyNVOmfHbbeBvbRX7BUaxue7xElj/view?usp=sharing