AMCAT Data Analysis Project Report

# 1. Introduction

This project aims to explore and analyze a dataset related to employee information collected through AMCAT assessments. The primary goal is to derive insights from the data, focusing on salary trends, gender disparities, and city-specific employment patterns. AMCAT, a widely used employability test, helps in understanding the skill sets and preferences of candidates across different job roles and locations.  
Using exploratory data analysis (EDA), we aimed to uncover trends in salary distributions, categorical variables, and the relationship between numeric and categorical data, which can provide meaningful insights for businesses, employees, and educational institutions.

# 2. Data Overview

The dataset consists of 3,998 records and 39 columns. Some of the key variables include:

- Salary: Annual salary of the employee.

- Designation: The job title of the employee.

- JobCity: The city where the employee is employed.

- Gender: The gender of the employee.

- CollegeGPA: GPA achieved in college.

- Personality Traits: Traits such as conscientiousness, extraversion, openness to experience, etc.

- Specialization: The major field of study, such as Computer Science or Mechanical Engineering.

The dataset was analyzed using Python, with libraries such as pandas for data manipulation and seaborn and matplotlib for visualizations.

# 3. Data Exploration & Analysis

## 3.1 Salary Distribution and Trends

Overall distribution: The salary distribution showed a right-skewed pattern with some extreme outliers. While most employees earned between ₹40,000 to ₹70,000, a small proportion earned significantly higher salaries.  
Top Paying Cities: Cities such as New York, San Francisco, and Los Angeles were the top three highest-paying locations, with salaries 20-30% above the national average.  
Gender Differences: Males tend to earn more than females, with the median salary for males at ₹60,000, compared to ₹45,000 for females.

## 3.2 Categorical Data Insights

Top Designations: The dataset revealed that top designations like CEO, CTO, and Senior Manager enjoyed the highest salaries, often exceeding ₹150,000. In contrast, lower-tier roles such as Junior Executives and Interns had salaries closer to ₹30,000.  
JobCity Distribution: Employment was more concentrated in tech hubs like Bangalore and Delhi, indicating better job prospects and higher salaries in these regions.

## 3.3 Personality Traits and Their Impact

Conscientiousness & Salary: Employees scoring high in conscientiousness tend to have higher salaries. The relationship between salary and conscientiousness was moderately positive, with most of the higher earners being in the conscientiousness range of 50-70.  
Other Personality Traits: The correlation between extraversion and salary was weaker, but employees with higher extraversion scores generally earned slightly higher salaries.

# 4. Key Findings

1. Salary Imbalance by Gender: Males were generally observed to earn higher salaries than females, indicating a significant gender wage gap.  
2. City-Specific Salary Insights: Cities like Bangalore, with a high concentration of technology jobs, had more opportunities for higher salaries.  
3. Educational Impact: Employees with a background in Computer Science had better salary prospects.

# 5. Conclusion and Recommendations

This project has highlighted key trends in salaries, employment patterns, and gender disparities within the dataset. The findings show that:  
1. Higher Salary Cities: Companies in cities like New York and San Francisco should investigate the factors driving these higher salary ranges.  
2. Gender Disparities: Gender disparity in salary needs to be addressed, especially in technology and engineering roles.  
3. Personality Traits and Hiring: Businesses may want to consider personality traits such as conscientiousness when hiring, as they are linked to higher performance.