



glassdoor

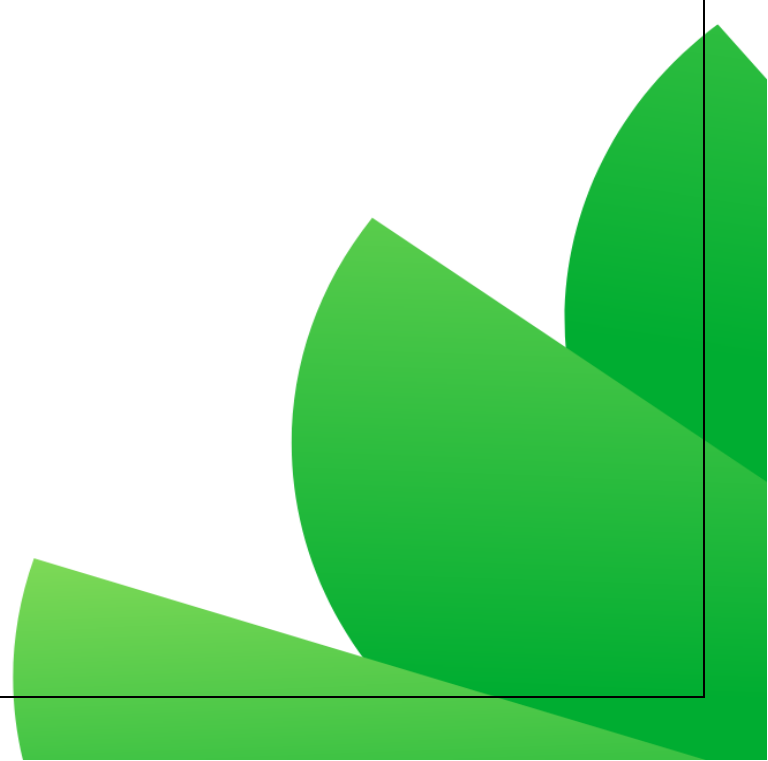
# EXPLORATORY ANALYSIS

MGMT - 58600: Python Programming

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# **Introduction**

## **1.1 Background and Motivation**

In this highly competitive job market, employee satisfaction is believed to be one of the key factors that influence business and economic success, along with organizational reputation. Till today, most companies have attempted to enhance the quality of the experiences so their employees can carve a better talent niche in one's company and also reduce turnover. Websites like Glassdoor have cropped up and become vital points where current and former employees can voice their experiences and provide some inkling to the outside world regarding that company's culture, management quality, and workplace environment.

Glassdoor reviews comprise ratings across different organizational dimensions and are uncensored reflections of employee feelings. Needless to say, the scrutiny of such reviews is cardinal to understanding the drivers of employee satisfaction and complaints, let alone best practices across industries. From these, some invaluable insight can be gained that will help companies shape their human resource strategies, improve managerial practices, and contribute toward fashioning a better working environment.

However, these reviews are unstructured, and multiple factors such as Work-Life Balance, Career Opportunities, Compensation, Culture & Values have been reviewed by the employees. Thus, actionable insights might not be readily available. Only a structured and comprehensive method of data analysis will be able to find meaningful patterns and trends within these reviews.

## **1.2 Significance of the Study**

Employee dissatisfaction and poor workplace culture have far-reaching ramifications on organizations through reduced productivity, lower profitability, and increased attrition rates. For this reason, assessing employee opinions has ceased to be a purely human resources domain and has acquired the significance of a strategic business issue. According to research by the Society for Human Resource Management, high-engagement employees deliver a 17% higher productivity in companies and a 21% higher profitability level compared to low engagement. Also, based on data from Glassdoor, an increase in one star for the overall company rating propels applications and positive brand perception.

This study will explore the rich database of Glassdoor in order to pinpoint the influential factors that determine these ratings and allow organizations to take a cue from such factors to improve employee satisfaction and Employer Branding.

## **1.3 Research Questions**

Provided are some of the key research questions that the study intends to answer:

1. What are the major factors influencing overall employee satisfaction on Glassdoor?
2. How do the different organizational attributes- e.g., Work-Life Balance, Career Opportunities, Senior Management-relate to one another?
3. Are there significant divergences between the satisfaction trends across industries and firm sizes?
4. What inferences could be drawn from the time series analysis of employee reviews?
5. Which companies are the best and worst performers by category, and what drives this differentiation?

## **Objectives**

The report aims to analyze a massive dataset of employee reviews from Glassdoor for important patterns and trends that may assist in organizational decision-making. Where specific objectives that are to lead this analysis are understood to be:

### **2.1 Describe High-Level Factors Influencing Employee Satisfaction**

- Identify Key Drivers - Highlight which of the sets of attributes, in particular, such as Career Opportunities, Work-Life Balance, and Compensation, have the most influence over overall satisfaction.
- Study Relationship - Analyze the interactive effect of those relationships on employee perceptions.
- Sentiment Analysis - Text analysis on pros and cons to understand the expressed sentiments of qualitative feedback.

### **2.2 Benchmark Performance Key Comparative Displays Across Firms**

- Top Versus Bottom Performers - Top and bottom 10 Firms in Overall Rating, Work-Life Balance, Career Opportunities, and Senior Management.
- Benchmarks - High and low performance benchmarks on all categories to provide actionable targets against firms.

## 2.3 Find Time Trends

- Times-Series Analysis - Study the changes in sentiments of employees over time and try to ascertain reasons for ups and downs, for example, due to economic events or management changes.
- Find out Emerging Issues - Perform trend analysis to identify the emerging issues and changing priorities of employees.

From the insights obtained, suggest specific recommendations on enhancing employee satisfaction and organizational performance. Highlight successful practices from top-performing firms that can be emulated by others to help raise their Glassdoor ratings and attract better talent. By doing so, one will be able to indicate an all-inclusive review of employee experiences at work and enable firms to practice evidence-based methods to improve their workplace initiatives.

## Data acquisition and cleaning

The data was collected from two CSV files:

- **Dataset #1 (D1):** containing job reviews
- **Dataset #2 (D2):** containing company specific details.

The following steps were performed to clean the data:

Handling missing values - Columns with significant missing data such as advice and diversity and inclusion were cleaned by dropping rows with missing values.

Data transformation - Company names were extracted from URLs using regular expressions to create a matching firm column between the datasets.

Outlier removal - Outliers in numeric columns such as ratings, culture and diversity were handled using the Interquartile range method to make sure there is accuracy in the analysis.

Merging - The cleaned datasets were merged to create a complete dataset of job reviews with firm level information.

## **Data Exploratory Analysis (EDA)**

### **3.1 Overview of the Dataset**

The dataset comprised over 3.1 million reviews, making it a robust source of employee feedback across a wide range of industries and firm sizes. Such a large sample size allows for detailed subgroup analysis and the identification of general trends that might not be visible in smaller datasets. With employees evaluating their companies on factors such as work-life balance, career opportunities, compensation, and senior management, this dataset provides a holistic view of workplace culture across organizations.

### **3.2 Descriptive Statistics**

Summary Statistics for Key Variables:

**Mean Overall Rating:** 3.68

**Work-Life Balance:** 3.46

**Culture & Values:** 3.62

**Diversity & Inclusion:** 3.84

The average overall rating of 3.68 indicates that most firms receive positive feedback from employees, though the distribution skews towards slightly favorable ratings. A deeper analysis reveals that most reviews are between 3 and 5 stars, suggesting that extreme dissatisfaction or high satisfaction is less common. This finding aligns with studies that indicate employees are more likely to provide feedback when their experiences are either exceptionally good or bad, leading to a natural polarization in review data.

### **Graphical Representations**

#### **Distribution of Ratings (Histogram Analysis):**

The histogram shows a right-skewed distribution, indicating that a substantial portion of companies have received ratings above the midpoint of 3. This skewness is typical in employee satisfaction datasets where satisfied employees are generally more inclined to share positive reviews, while dissatisfied employees might exit the organization without leaving feedback.

**Insight:** The prevalence of ratings above 3 suggests a generally positive employee experience across firms, but there may be room for improvement in pushing more companies towards a 4 or 5-star experience.

### **Boxplot of Work-Life Balance vs. Rating:**

The boxplot revealed a positive association between work-life balance scores and overall ratings. Firms that received higher work-life balance scores tend to have higher overall ratings, emphasizing that work-life balance is a key determinant of employee satisfaction.

**Insight:** Companies focusing on improving work-life balance (through policies like flexible hours, remote work, and employee well-being programs) are more likely to see improvements in their overall employee ratings.

### **Correlation Heatmap:**

The correlation matrix showed strong positive correlations between multiple satisfaction variables:

Career Opportunities and Overall Ratings: 0.74

Work-Life Balance and Overall Ratings: 0.66

Culture & Values and Overall Ratings: 0.72

These high correlations suggest that improvements in specific areas such as career development and culture can significantly influence how employees rate the company overall.

**Insight:** Career growth opportunities and a supportive work culture are the most influential factors for employee satisfaction. Companies that invest in leadership training, employee development programs, and cultural initiatives can expect notable gains in their overall ratings.

### **Hypothesis Testing: Work-Life Balance**

To statistically validate whether the average work-life balance rating was significantly different from a neutral score of 3, a one-sample t-test was conducted:

**Null Hypothesis (H0):** The average work-life balance score is equal to 3.

**Alternative Hypothesis (H1):** The average work-life balance score is different from 3.

The t-test produced the following results:

**T-Statistic:** 596.51

**P-Value:** 0.000

Given the very high t-statistic and a p-value of 0.0, we reject the null hypothesis, indicating that the average work-life balance score (3.46) is significantly higher than 3. This finding suggests that, on average, employees perceive their work-life balance positively, though there is still room for improvement.

Implication: Companies should continue investing in policies that promote work-life balance, as it is a statistically significant contributor to overall employee satisfaction.

### **Time-Based Trend Analysis**

A time-series analysis of ratings revealed notable fluctuations in employee sentiment over different periods, suggesting that external factors (e.g., economic downturns, industry shifts) or internal changes (e.g., management restructuring, policy changes) can have a pronounced impact on employee satisfaction.

Trend Analysis: Some companies experienced a decline in ratings during specific periods, potentially due to organizational restructuring or poor crisis management. Conversely, periods of increasing ratings often correlated with positive company announcements, expansions, or the introduction of employee-friendly policies.

Implication: Continuous monitoring of employee feedback and ratings is crucial for companies to detect and address dissatisfaction before it escalates into higher attrition rates or reputational damage.

## Top Companies Analysis

The firms with the most reviews included:

- Amazon: 82,390 reviews
- Tata Consultancy Services: 42,841 reviews
- Walmart: 34,310 reviews

While these large firms dominate in terms of review volume, smaller firms often have higher average ratings, suggesting that boutique companies may provide better, more personalized employee experiences. Companies such as "Instituto Brasileiro de Petróleo" and "12 Hour Massage" received perfect 5.0 ratings, though with fewer reviews.

**Implication:** High ratings in small firms could be due to stronger company culture and tighter management-employee relationships. Larger firms should focus on decentralizing management practices and enhancing team cohesion to replicate this success.

## Scatter Plot Analysis

**Work-Life Balance vs. Overall Rating:** A scatter plot analysis demonstrated a strong positive correlation (0.66) between work-life balance and overall ratings. Companies with better work-life balance policies tend to receive higher overall ratings.

**Recommendation:** Firms struggling with low ratings should prioritize initiatives that improve employee well-being, such as implementing flexible working hours and encouraging work-life balance.

## Career Opportunities vs. Overall Rating

An even stronger correlation of 0.74 was found between career opportunities and overall ratings, indicating that employees place a high value on their professional growth and development.

**Recommendation:** Companies should invest in career development programs, internal mobility, and training to enhance employee perceptions of career opportunities, which would, in turn, boost their overall satisfaction.



## Insights from Firm-Level Analysis

**Top Performers in Career Opportunities:** Firms like "121 Marketing" and "1Leisure" received the highest scores in career opportunities, suggesting that these companies provide clear career paths and prioritize employee development.

**Bottom Performers:** Companies like "20's Hideout Steakhouse" scored poorly, indicating issues such as limited advancement, lack of mentorship, or poor HR practices.

**Recommendation:** Low-performing firms should conduct internal surveys to understand employee concerns and implement targeted changes such as mentorship programs, skill development initiatives, and clearer career progression pathways.

## Business Insights and Recommendations

1. Correlation between work life balance and ratings:
  - Insight: Companies with higher work life balance scores tend to receive higher overall ratings.
  - Recommendation: Companies should prioritize worklife balance initiatives such as flexible hours or remote work to improve employee satisfaction.
2. Career opportunities and ratings:
  - Insight: Career opportunities show a strong positive correlation with overall ratings.
  - Recommendation: Firms should focus on providing clear career paths, mentorship and promotion opportunities to boost employee morale.
3. Best and worst firms for work life balance and career opportunities:
  - Insight: Smaller firms like 121 Marketing and "1Leisure" excel in both categories while companies like "1987 Masters" struggle.
  - Recommendation: Companies with low ratings should conduct employee surveys and focus on providing job flexibility and career training.
4. Diversity and inclusion:
  - Insight: Diversity scores were relatively high with an average of 3.84.
  - Recommendation: Firms should continue to focus on diversity programs and equal opportunity policies to further improve employee satisfaction.
5. Senior management and leadership:
  - Insight: Senior management ratings were lower compared to other categories.
  - Recommendation: Leadership training and better communication between employees and management could improve perceptions of senior leadership.

## Libraries:

1. Pandas:
  - Used for data manipulation and analysis. It helps in loading the dataset, data cleaning and performing operations such as merging datasets, handling missing values and summarizing data.
2. NumPy:
  - Used for numerical computations particularly when working with arrays and performing mathematical functions.
3. Matplotlib:
  - Used for creating static, interactive and animated visualizations in Python. Several visualizations such as histograms and line charts were plotted using this library.
4. Seaborn:
  - Built on top of Matplotlib, Seaborn is used for more advanced statistical visualizations such as scatter plots and heatmaps.
5. Scipy.stats:
  - Used for statistical tests and analysis, such as performing hypothesis tests

## Conclusion

This analysis provides insights into the factors that contribute to employee satisfaction. By focusing on worklife balance, career growth and leadership, companies can majorly improve their Glassdoor ratings and overall employee satisfaction. Firms are encouraged to take actionable steps to address the highlighted areas to attract and retain talent effectively

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