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INNOVATION. AUTOMATION. ANALYTICS

PROJECT ON

AmbitionBox

Title: **"Workforce Insights from AmbitionBox: A Data-Driven Analysis"**

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About Us

- I am Sowmya B.Tech graduates passionate about Data Science and data-driven problem solving.
- Hands-on experience with Python for data analysis, visualization, and web data extraction.
- Strong understanding of data preprocessing and exploratory analysis.
- Actively upskilling in machine learning and advanced analytics tools.

Sowmya

- GITHUB - https://github.com/SowmyaKona
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Project Overview

- INTRODUCTION
- PROBLEM STATEMENT
- OBJECTIVE
- WEB SCRAPPING
- TOOLS USED FOR SCRAPPING
- DATA CLEANING STEPS
- DATA VISUALIZATION
- CONCLUSION

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Introduction

What is AmbitionBox?

AmbitionBox is an employee intelligence platform which Provides insights on:

- *Company culture*
- *Salaries & benefits*
- *Interview experiences*
- *Career growth*

It is w*idely used by job seekers and HR teams .However, it is difficult to manually identify hiring trends, salary patterns, and industry performance across different locations.*

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Problem Statement:

Online platforms like AmbitionBox generate large volumes of company-level data including salaries, reviews, ratings, interviews, and job listings.
Job seekers lack transparent, data-driven insights to identify the best work environments. There is a need for data-driven analysis to summarize company performance, highlight industry trends, and visualize satisfaction levels effectively.

Goal:

To analyze AmbitionBox data across industries and locations to identify patterns in:

- Salary distribution
- Hiring activity (Interviews & Jobs)
- Employee reviews and ratings
- Industry-wise and location-wise trends

Need of Ambition Box

Why to Analyze AmbitionBox Data?

- *Employee opinions influence employer branding*
- *Job seekers depend on reviews before joining*
- *Companies want to:*
  - *Improve retention*
  - *Compare themselves with competitors*
- *Raw web data needs structuring for insights*

Objective:

- Collecting company-level data from AmbitionBox to analyze and compare companies using

  Employee reviews

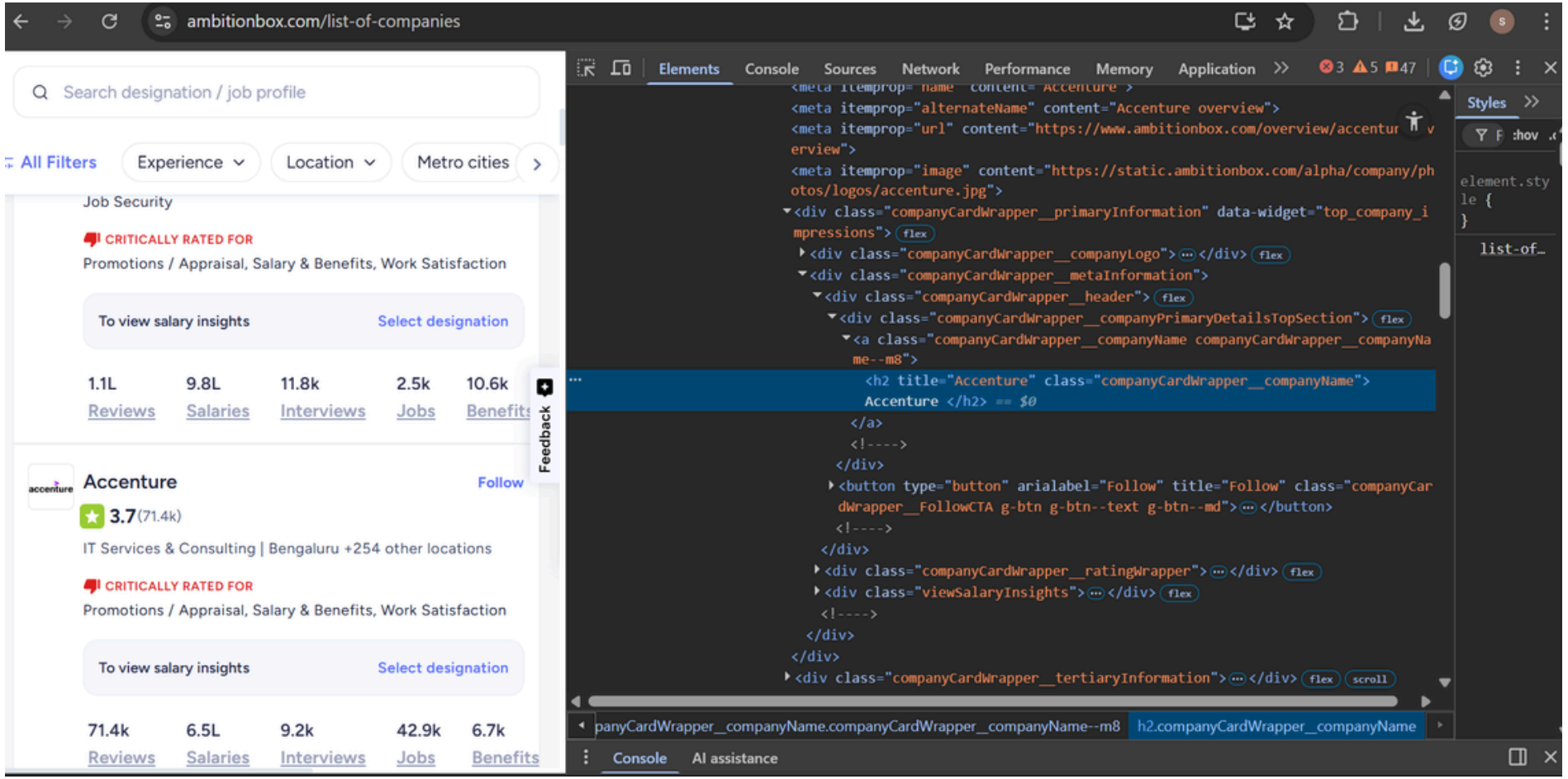
  Ratings

  Salaries
- Clean and standardize inconsistent web data to provide data-driven insights that help job seekers make informed career decisions based on real employee experiences and industry trends. To explore career growth patterns and work culture trends across different sectors.
- Visualize trends for decision-making

Web Scraping

- AmbitionBox served as the core data source for this analysis.
- Web page structures were analyzed using browser developer tools to locate required data elements.
- Automated HTTP requests enabled efficient data retrieval.
- Python-based web scraping was implemented using Requests and BeautifulSoup.
- EDA techniques were applied to transform raw data into actionable insights.

Web Page Inspection for Data Extraction



- *HTML elements containing company information were identified using browser developer tools*

Libraries Used:

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Raw Dataset

	company	ratings	types	location	reviews	salaries	interviews	jobs	benefits	photos	high	low	tots_oper
0	['TCS']	['3.4']	IT Services & Consulting	Bangalore	1.1L	9.5L	11.6k	1.1k	10.6k	87	Job Security	Promotions / Appraisal, Salary & Benefits, Wor...	434
1	['Accenture']	['3.7']	IT Services & Consulting	Bangalore	68.4k	6.3L	9k	27k	6.7k	48	NaN	Promotions / Appraisal, Salary & Benefits, Wor...	249
2	['Wipro']	['3.7']	IT Services & Consulting	Hyderabad	61.3k	4.7L	6.4k	4.4k	4.6k	99	Job Security	Promotions / Appraisal, Salary & Benefits, Wor...	368
3	['Cognizant']	['3.7']	IT Services & Consulting	Hyderabad	58.2k	5.9L	6.2k	778	5.5k	82	NaN	Promotions / Appraisal, Salary & Benefits, Wor...	229
4	['Capgemini']	['3.7']	IT Services & Consulting	Bangalore	49.9k	4.7L	5.3k	1.9k	3.6k	41	Work Life Balance, Job Security	Promotions / Appraisal, Salary & Benefits, Wor...	182
...	...	...	...	...	...	...	...	...	...	...	...	...	...
495	['NCR', 'Corporation']	['3.6']	IT Services & Consulting	Hyderabad	1.8k	9k	142	48	173	6	NaN	Promotions / Appraisal, Job Security, Skill De...	89

Data Cleaning Steps:

- Removed unwanted characters such as [ ], ', and extra spaces from scraped text fields.
- Separated combined columns (e.g., “IT Services & Consulting | Bengaluru”) into Type and Location columns.
- Converted string-based ratings (like '[4.2]') into numeric float values for analysis.
- Converted textual numeric values such as '1.1L' and '9.3K' into actual numbers (110000, 9300).
- andled missing values by replacing NaN entries with Unknown in columns like types, location, high, and low and with Zeros in columns like job and photos.
- Standardized salary, review counts ,etc. by converting text with suffixes like K and L into numerical values.
- Exported the cleaned dataset into a structured CSV/Excel format for further
- Exploration and visualization using Python

Cleaned Data

	Company	Rating	Industry	Location	Reviews	Salaries	Interviews	Jobs	Benefits	Photos	Highly_Rated_For	Critically_Rated_For	Total_Operations_Spread
0	TCS	3.3	IT Services & Consulting	Bengaluru	110000.0	980000.0	11800.0	2500.0	10600.0	93.0	Job Security	Promotions / Appraisal, Salary & Benefits, Wor...	440
1	Accenture	3.7	IT Services & Consulting	Bengaluru	71700.0	650000.0	9200.0	37700.0	6700.0	49.0	Not Mentioned	Promotions / Appraisal, Salary & Benefits, Wor...	257
2	Wipro	3.6	IT Services & Consulting	Hyderabad	63700.0	480000.0	6700.0	7200.0	4600.0	107.0	Not Mentioned	Promotions / Appraisal, Salary & Benefits, Wor...	371
3	Cognizant	3.6	IT Services & Consulting	Hyderabad	60100.0	600000.0	6300.0	638.0	5500.0	86.0	Not Mentioned	Promotions / Appraisal, Salary & Benefits, Wor...	231
4	Capgemini	3.7	IT Services & Consulting	Bengaluru	51700.0	480000.0	5500.0	2100.0	3700.0	42.0	Work Life Balance, Job Security	Promotions / Appraisal, Salary & Benefits, Wor...	183
5	HDFC, Bank	3.8	Banking	Mumbai	50900.0	150000.0	3000.0	326.0	3200.0	86.0	Job Security, Skill Development / Learning	Promotions / Appraisal, Salary & Benefits	1835
6	Infosys	3.5	IT Services & Consulting	Bengaluru	47500.0	520000.0	8300.0	2500.0	4800.0	118.0	Job Security	Promotions / Appraisal, Salary & Benefits, Wor...	249

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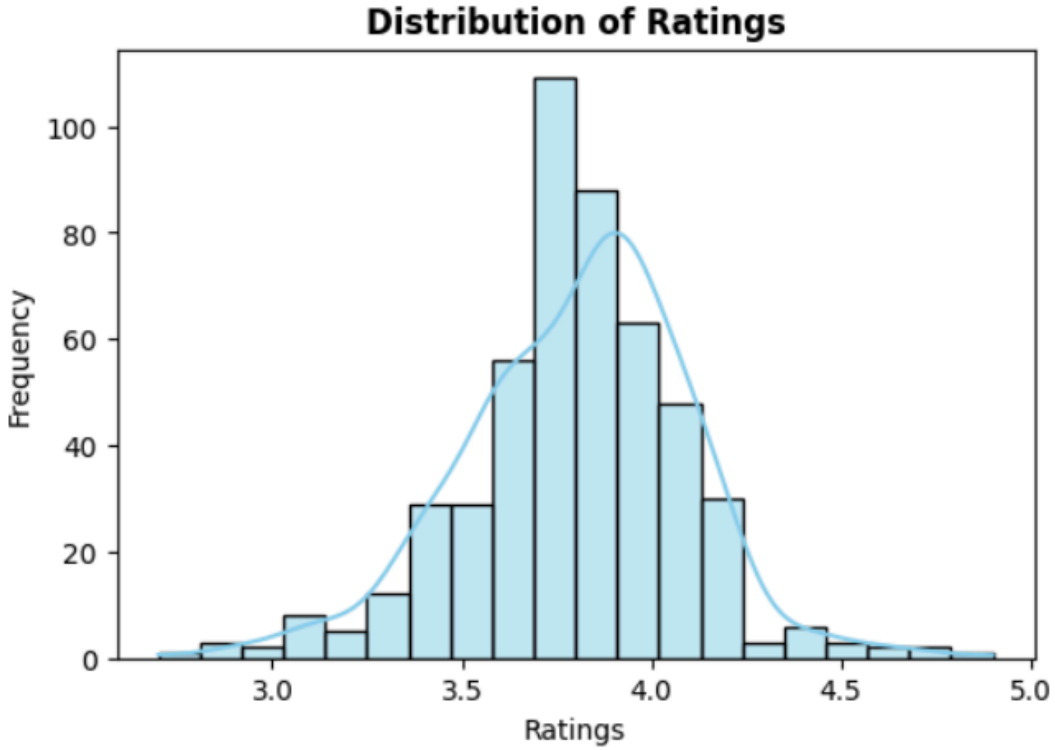
Histogram for "Ratings" Column

This plot helps visualize how company ratings are spread across different score ranges.

- It groups rating values into intervals and displays how frequently each range occurs.
- It highlights whether ratings are concentrated in a specific range or evenly distributed.
- It helps identify skewness whether ratings lean more toward higher or lower values.



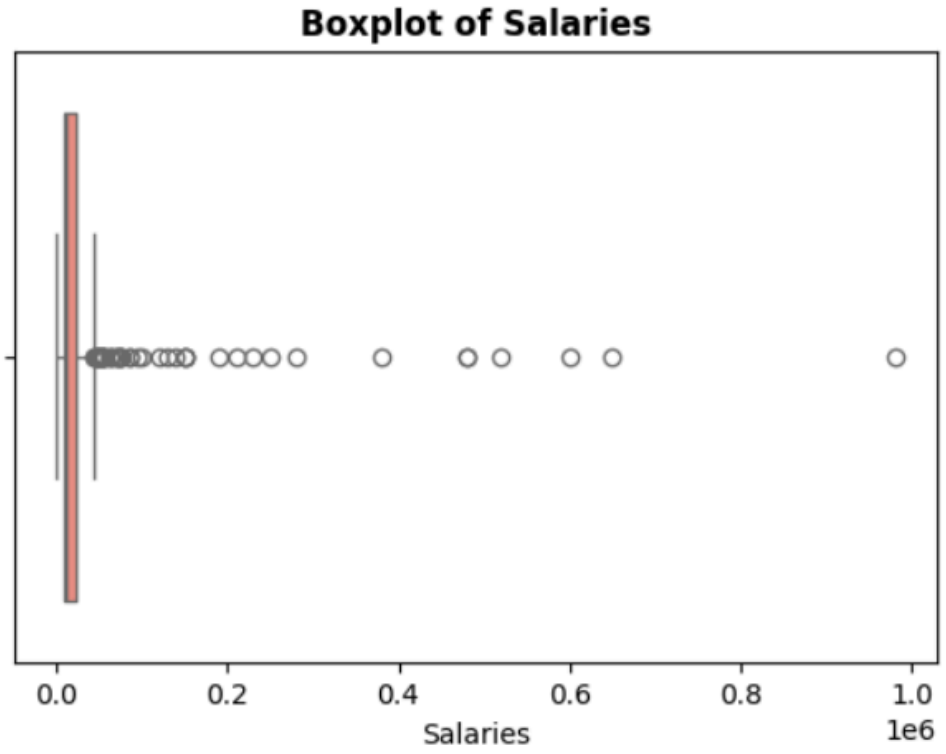
Boxplot for "Salaries" Column

This plot helps visualize how salary values are distributed and identifies extreme variations.

- It displays the median, quartiles (Q1 and Q3), and overall spread of salary data.

- It highlights the interquartile range (IQR), showing where most salary values are concentrated.

- It clearly identifies outliers unusually high or low salary values.



Bar Chart for "Industry" Column

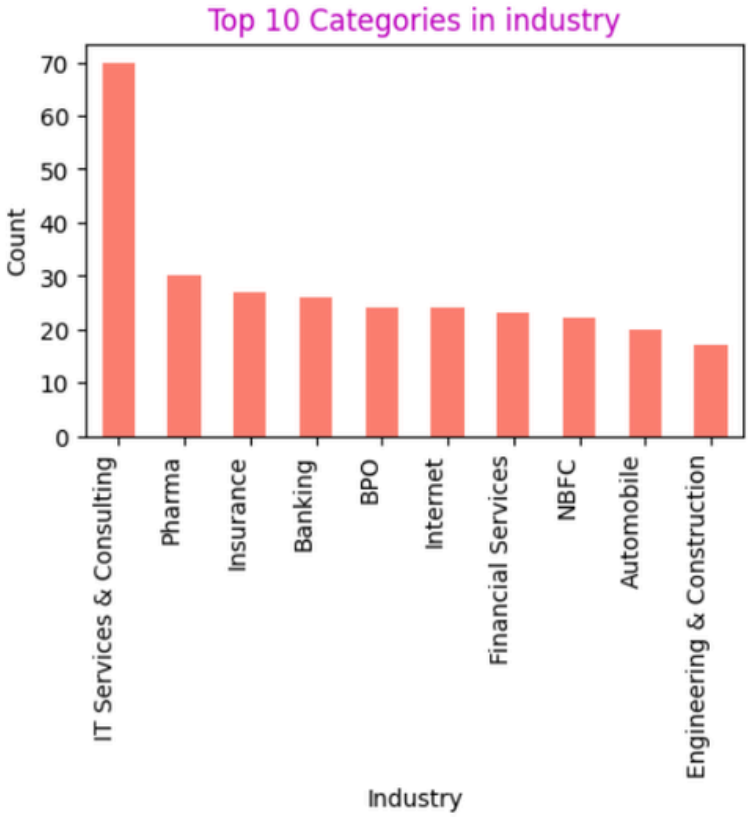
- Bar Chart of Top 10 Categories in Industry

This plot shows the frequency distribution of the top industries present in the dataset.

• It displays the count of companies belonging to each industry.

• It helps identify which industry dominates the dataset.

• It highlights variations in representation across different sectors.



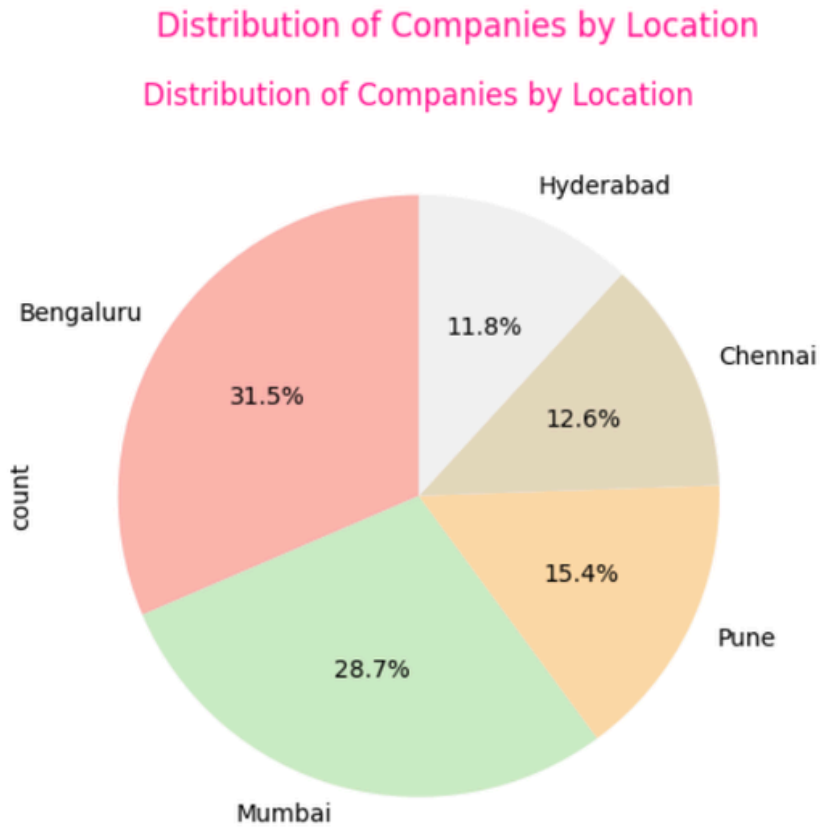
Pie Chart for "Location" Column

This chart shows the percentage distribution of companies across different cities.

- It represents how companies are geographically distributed in the dataset.

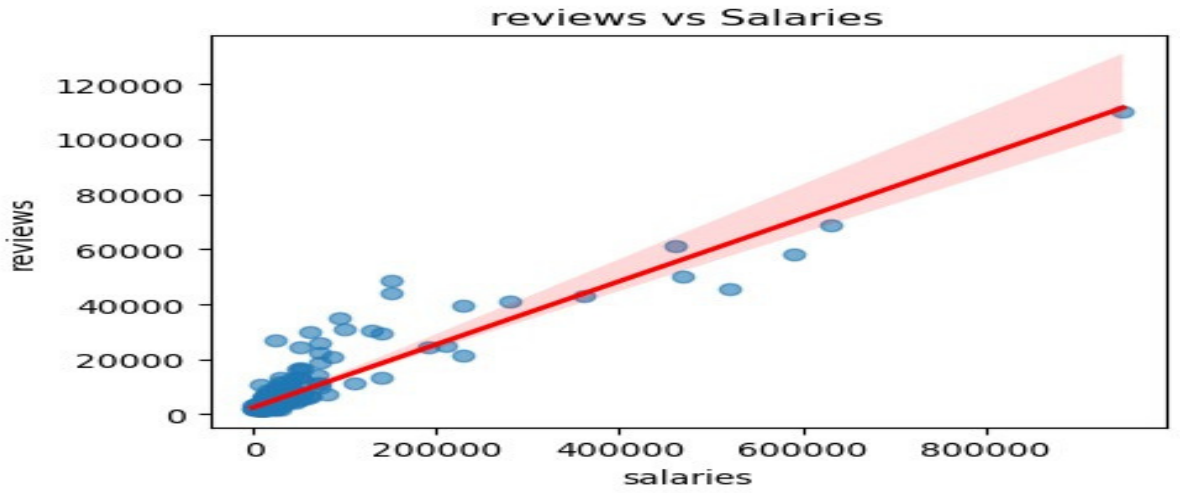
- Each slice indicates the proportion of companies in a specific location.

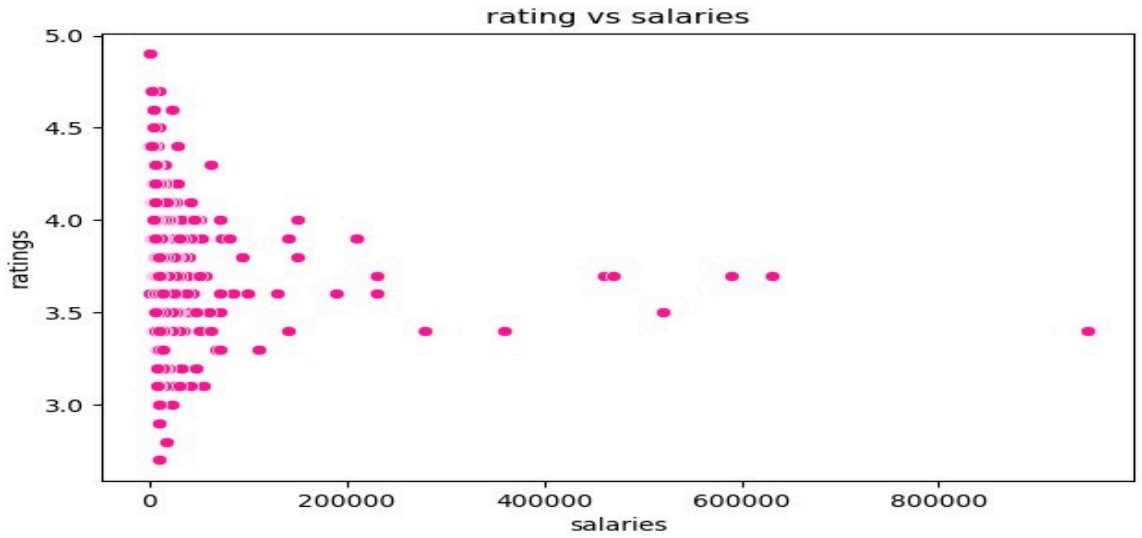
- It helps identify which city has the highest company concentration.



Scatter Plot and Regression plot

- The regression plot of reviews vs salaries shows a clear positive correlation — companies offering higher salaries tend to receive more reviews, indicating strong employee engagement.
- The scatter plot of rating vs salaries reveals that most ratings remain between 3.0 and 4.5 regardless of salary range, suggesting that pay alone does not significantly affect overall ratings





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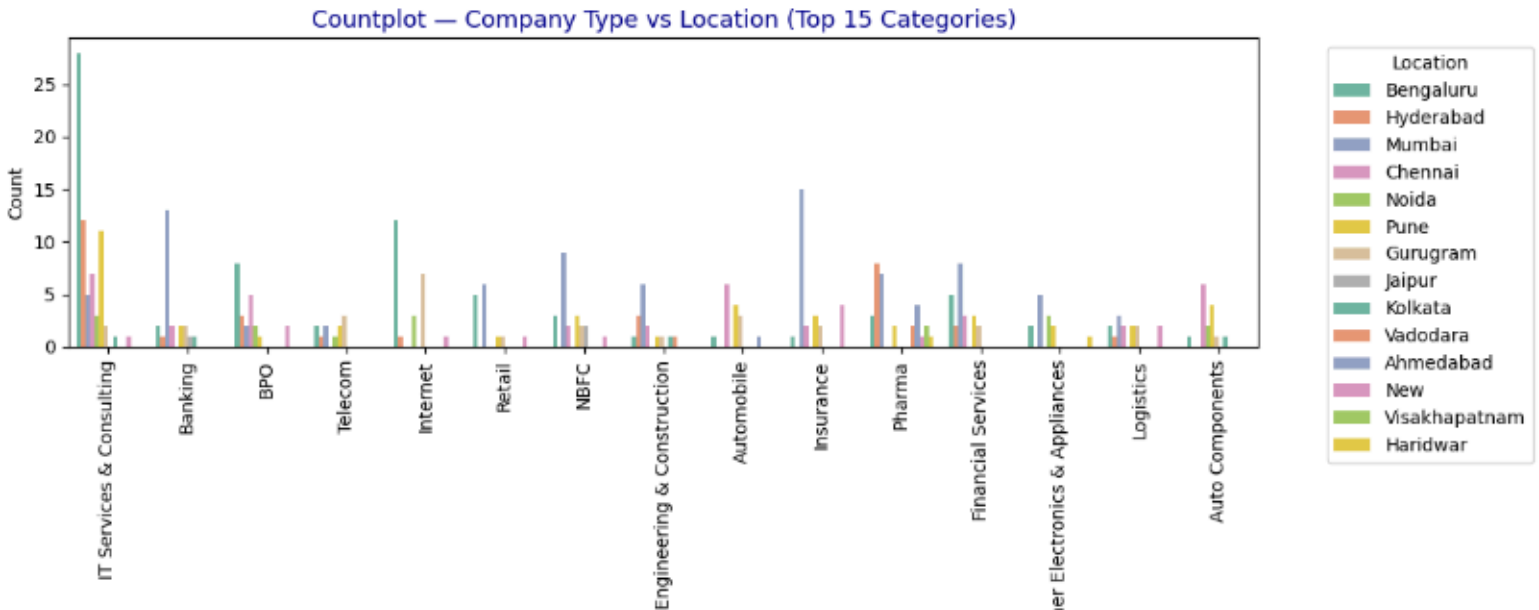
Count Plot for "Industry" and "Location"

- Graph Shows the Distribution of company types across different locations..
- IT Services dominates across most major cities.
- Bengaluru and Hyderabad show strong industry concentration.
- Metro cities have diversified industry presence.
- Smaller cities have limited representation in certain sectors.



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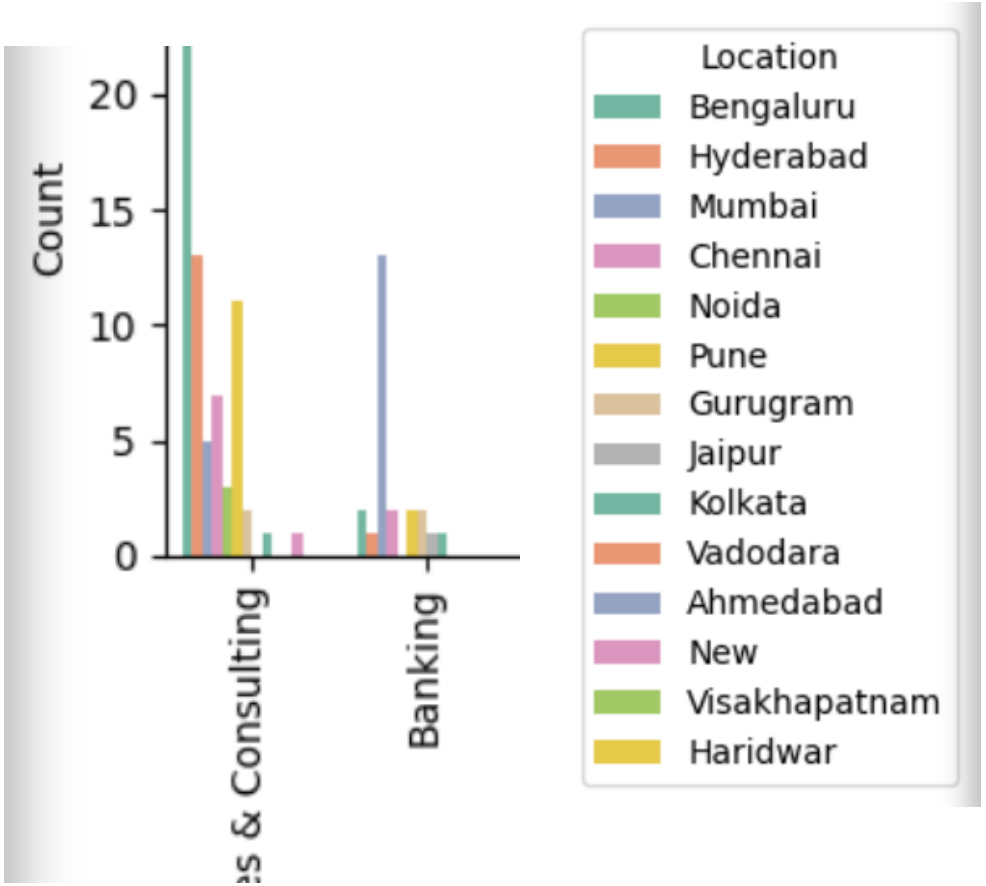
Detailed Analysis of Count Plot

IT Services & Consulting vs Location

- Bangalore dominates IT Services & Consulting.
- Hyderabad shows the second strongest presence.
- Pune and Chennai have moderate representation.
- Other cities like Mumbai,Noida, have smaller counts

Banking vs Location

- Mumbai has the tallest bar (highest count).
- Hyderabad and Chennai show moderate presence.
- Bangalore has relatively fewer banking companies compared to IT.
- Most other cities have smaller numbers.



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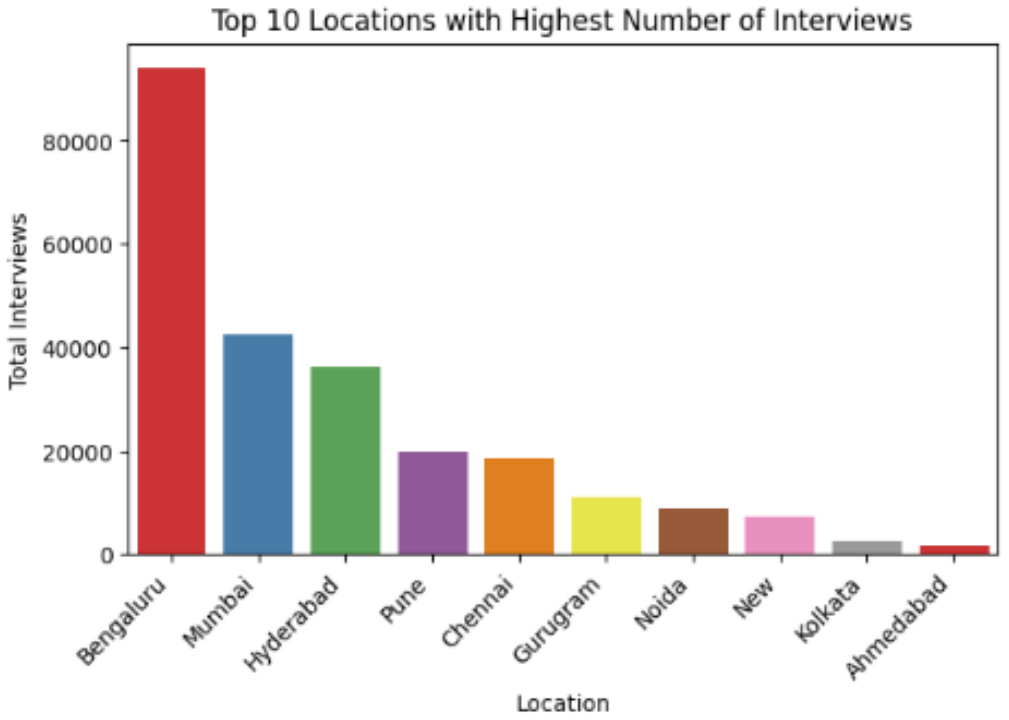
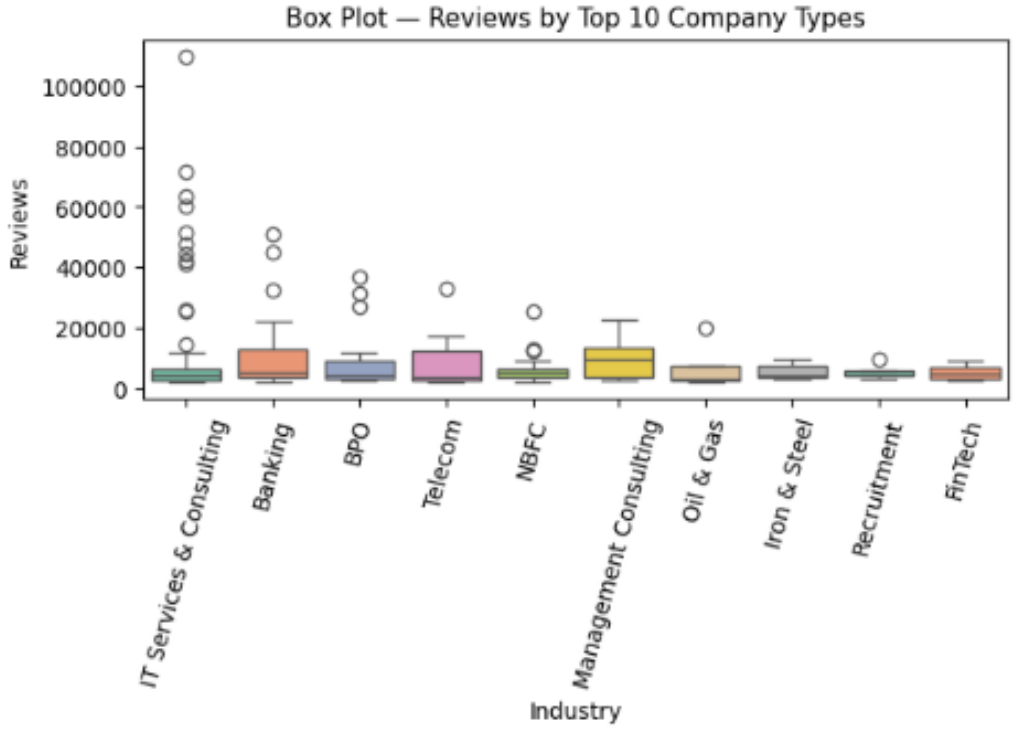
Bar Plot for Location and Total Interviews

- Bengaluru leads with the highest number of interview opportunities, indicating strong hiring activity.
- Mumbai and Hyderabad emerge as the next major recruitment hubs.
- Interview activity is largely concentrated in metro cities.
- A significant gap exists between top-tier cities and lower-ranked locations.
- This suggests that employment opportunities are geographically concentrated in major urban centers.



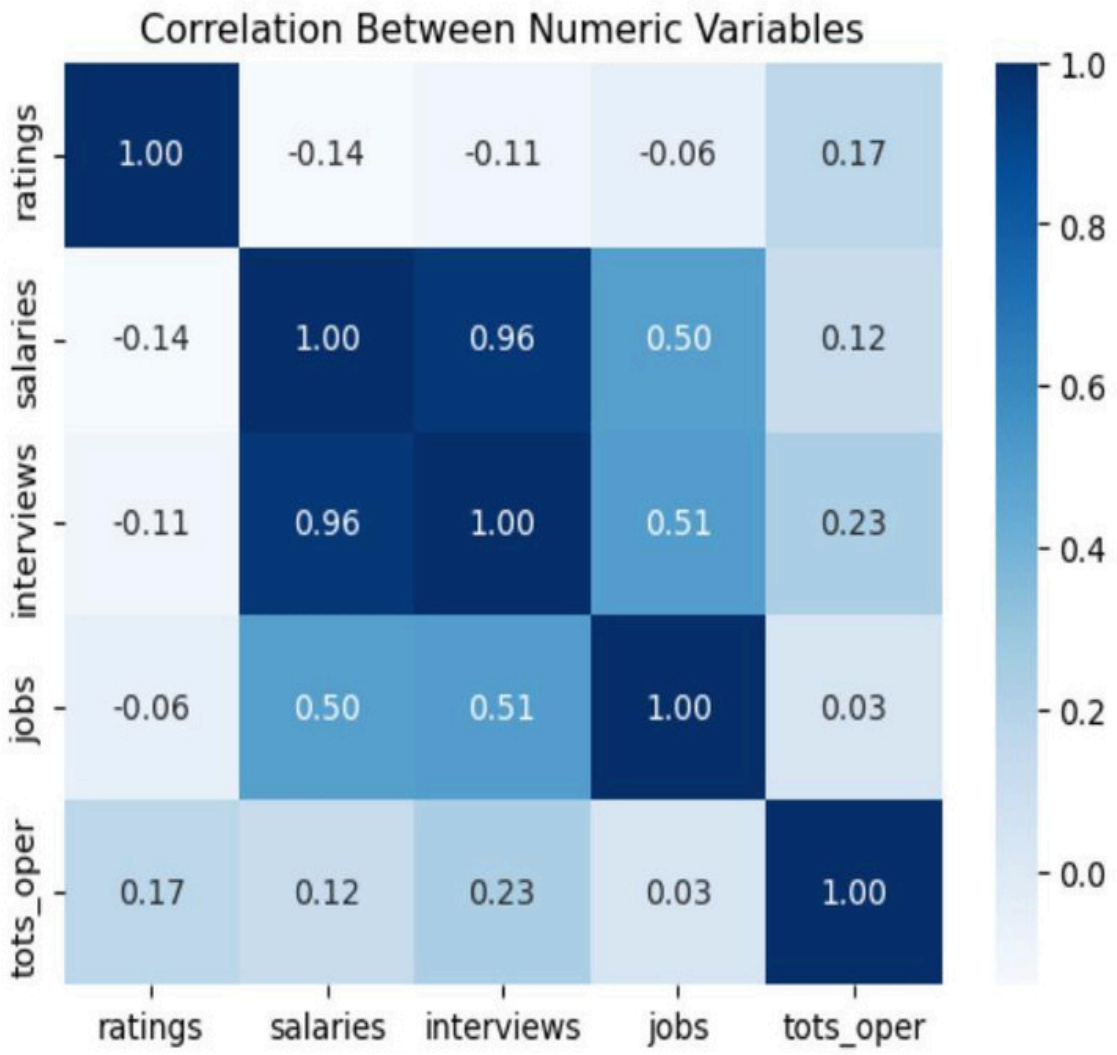
Box Plot for Reviews and Industry

- This box plot shows the distribution of reviews across top 10 industries.
- IT Services & Consulting and Banking show higher review variability.
- Some industries have extreme outliers, indicating very high review counts.
- Median reviews differ across industries, showing variation in employee engagement.



Correlation Heatmap

- Salaries and Interviews (0.95) show a very strong positive correlation.
- Jobs and Interviews (0.50) have moderate positive correlation.
- Salaries and Jobs (0.49) also show moderate relationship.
- Rating has weak correlation with most variables.
- Total_Operations_Spread has low correlation with other features.



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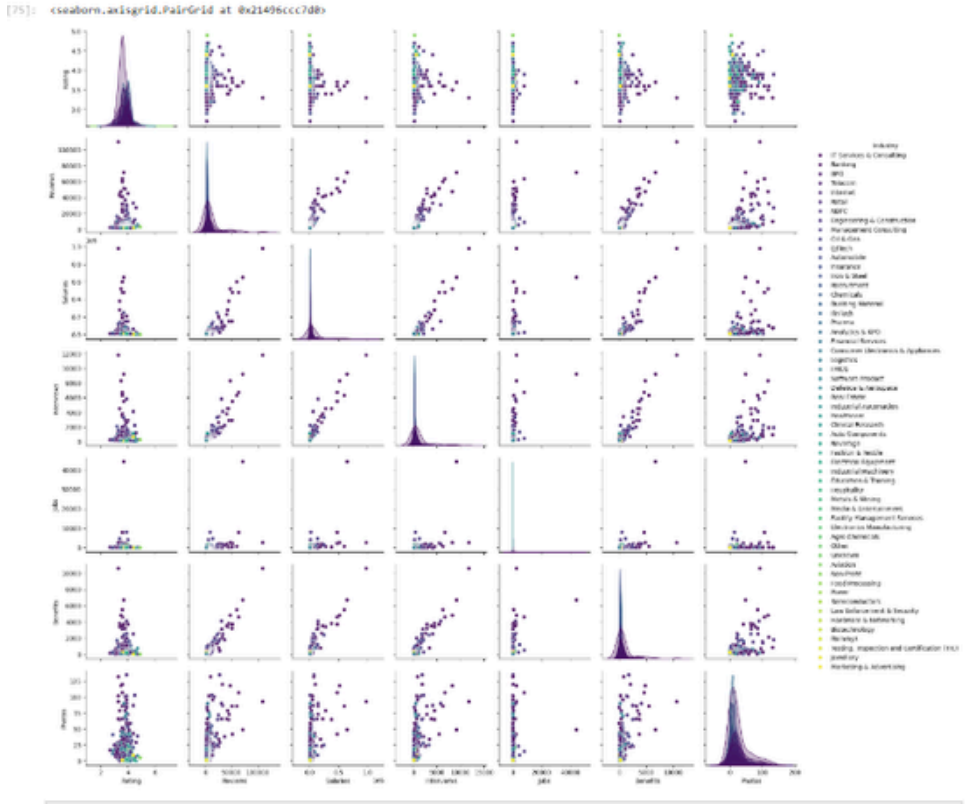
Pair Plot

- Salaries, Interviews, and Reviews show strong positive relationships.
- Higher salary companies tend to have more interviews and reviews.
- Ratings show weak correlation with salary and hiring metrics.
- Most variables are right-skewed (many low values, few very high values).
- Presence of outliers in salary and review counts.



Analytical Questions & Insights

Q1. Which Company Has the Highest Rating?

```
[60]: df.sort_values(by="Rating", ascending=False)[["Company","Rating"]].head(1)
```

[60]:

	Company	Rating
267	Marpu Foundation	4.9

Q2. Top 5 Highest Rated Companies

```
[61]: df.sort_values(by="Rating", ascending=False)[["Company","Rating"]].head(5)
```

[61]:

	Company	Rating
267	Marpu Foundation	4.9
177	Kogta Financial India Limited	4.7
93	Indian Army	4.7
16	Ienergizer	4.6
261	Indian Air Force	4.6

Q3. Which Company Has the Most Reviews?

```
[62]: df.sort_values(by="Reviews", ascending=False)[["Company","Reviews"]].head(1)
```

[62]:

	Company	Reviews
0	Tcs	622.5

Q4. Which Location Has the Highest Hiring Activity?

```
[63]: df.groupby("Location")["Interviews"].sum().sort_values(ascending=False).head(1)
```

[63]:

```
Location
Bengaluru    41708.0
Name: Interviews, dtype: float64
```

Q5. Which Industry Has Highest Average Rating?

```
[64]: df.groupby("Industry")["Rating"].mean().sort_values(ascending=False).head(5)
```

[64]:

```
Industry
Jewellery               4.400000
Defence & Aerospace     4.333333
Non-Profit              4.250000
Railways                4.200000
Electrical Equipment    4.200000
Name: Rating, dtype: float64
```

Q6. Which Industry Has Highest Average Salary?

```
[65]: df.groupby("Industry")["Salaries"].mean().sort_values(ascending=False).head(5)
```

[65]:

```
Industry
Agro Chemicals          622.5
NBFC                    622.5
Industrial Automation   622.5
Industrial Machinery    622.5
Insurance               622.5
Name: Salaries, dtype: float64
```

Q7. Is Salary Strongly Related to Rating?

```
[66]: df[["Salaries","Rating"]].corr()
```

[66]:

	Salaries	Rating
Salaries	1.000000	-0.103849
Rating	-0.103849	1.000000

Insight:

- Correlation value is low.
- Salary is not strong predictor of satisfaction.

Q8. Which Company Has Maximum Operations Spread?

```
[67]: df.sort_values(by="Total_Operations_Spread", ascending=False)[["Company","Total_Operations_Spread"]].head(1)
```

[67]:

	Company	Total_Operations_Spread
88	Cholamandalam Investment Finance	622.5

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Analytical Questions & Insights

Q9. Which Industry Receives Most Criticism?

```
df["Critically_Rated_For"].value_counts().head(5)
```

```
Critically_Rated_For
Promotions / Appraisal                                    166
Not Mentioned                                              92
Promotions / Appraisal, Salary & Benefits, Work Satisfaction    37
Promotions / Appraisal, Salary & Benefits                  35
Promotions / Appraisal, Company Culture, Work Satisfaction    13
Name: count, dtype: int64
```

Q10. Top 10 Companies with Most Job Openings

```
df.sort_values("Jobs", ascending=False)[["Company","Jobs"]].head(10)
```

	Company	Jobs
0	Tcs	622.5
124	Cgi Group	622.5
48	Maruti Suzuki	622.5
52	Paytm	622.5
30	Ernst Young	622.5
54	Bajaj Finance	622.5
342	Fortis Healthcare	622.5
58	Ext Service	622.5
380	Adani Group	622.5
407	Apollo Pharmacy	622.5

Q11. Which Location Offers Highest Average Salary?

```
df.groupby("Location")["Salaries"].mean().sort_values(ascending=False).head()
```

```
Location
Ahmedabad     622.5
Jaipur        622.5
Jamnagar      622.5
Jamshedpur    622.5
Kanpur        622.5
Name: Salaries, dtype: float64
```

Q12: Most Frequently Highly Rated Aspects ?

```
df['Highly_Rated_For'].value_counts().head(5)
```

```
Highly_Rated_For
Not Mentioned                                  161
Job Security                                    36
Job Security, Company Culture, Work Life Balance    24
Salary & Benefits                               22
Work Life Balance                               18
Name: count, dtype: int64
```

Q13: Most Common Industries ?

```
df['Industry'].value_counts().head(5)
```

```
Industry
IT Services & Consulting    71
Pharma                      30
Insurance                   27
Banking                     26
Internet                    24
Name: count, dtype: int64
```

Q14: Most Frequently Criticized Aspects ?

```
df['Critically_Rated_For'].value_counts().head(10)
```

```
Critically_Rated_For
Promotions / Appraisal                                    166
Not Mentioned                                              92
Promotions / Appraisal, Salary & Benefits, Work Satisfaction    37
Promotions / Appraisal, Salary & Benefits                  35
Promotions / Appraisal, Company Culture, Work Satisfaction    13
Promotions / Appraisal, Job Security                       11
Promotions / Appraisal, Job Security, Work Satisfaction    11
Promotions / Appraisal, Salary & Benefits, Company Culture    10
Job Security, Promotions / Appraisal, Company Culture       9
Promotions / Appraisal, Salary & Benefits, Skill Development / Learning    9
Name: count, dtype: int64
```

```
df['Company'].value_counts()
```

```
Company
Tcs                                          1
Elasticrun                                   1
Fortis Healthcare                            1
Nobroker                                     1
Movate                                       1
                                            ..
Oppo                                         1
Dell                                         1
Havells                                      1
Cars24                                       1
Motherson Automotive Technologies And Engineering    1
```

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Challenges

1.**403 Forbidden Error During Scraping**

- Website blocked automated requests.
- Required adding proper headers (User-Agent).

2.Inconsistent Data Formats

- Salary values in “K” and “L” format.
- Mixed data types (object instead of numeric) and Special characters like [ ] '.

3.Hidden Missing Values

- Some nulls were not visible before type conversion.
- Conversion exposed additional missing values.

4.Extreme Outliers

- Salary and review columns were highly skewed.
- Required IQR-based outlier detection

Conclusion

- **Strong Salary–Interview Relationship**

  Salaries and interviews show the highest positive correlation, indicating that companies conducting more interviews generally offer higher pay.

- **Bangalore as the Key Employment Hub** Bangalore leads in both salary range and interview volume, followed by Hyderabad and Mumbai as major recruitment centers.

- **IT Services Dominate the Market** IT Services & Consulting holds over 60% industry share and ranks among the top salary-paying sectors, followed by Management Consulting and NBFCs.

- **Positive Company Reputation and Ratings** Most companies maintain ratings between 3.5 and 4.2; TCS, Accenture, and Wipro lead with the highest positive reviews and strong employee approval.

Thank You

For Your Attention!

Any Questions

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