

School Of Informatics
Department Of MCA
Project Presentation
Business intelligence

HR DATA ANALYSIS

Under the guidance of...

Dr.V.Harsha Shastri

Department of MCA, HOD
Aurora Deemed to be University

Presented By...

K. Ranga Sai – 232P4R2059

HR DATA ANALYSIS



Abstract

This Power BI project analyzes workforce data, including demographics, performance, and compensation. Features like filters and interactive visuals make exploring data easy.

It highlights key insights like gender gaps, pay differences, and departmental contributions.

Regional comparisons and trends help HR leaders improve strategies.

Key insights highlight workforce distribution, gender gaps, pay disparities, and departmental contributions to financials. Visualizations include histograms, scatterplots, and scorecards, offering actionable data on trends and performance. Regional comparisons (e.g., India vs. New Zealand) and growth trends enhance understanding, promoting diversity, productivity, and fairness. The dashboard empowers HR leaders to optimize workforce strategies effectively.

INTRODUCTION

This Power BI project focuses on creating an intuitive dashboard to analyze the company's workforce, covering areas like departmental distribution, gender balance, salary details, and performance levels.

The dashboard highlights regional comparisons, such as between India and New Zealand, to identify patterns or differences.

There are 182 employees in 5 departments (procurement, website, finance, Sales, HR)

Using charts, graphs, and scorecards, it simplifies complex data to provide actionable insights.

This aids HR teams and managers in making informed decisions to enhance fairness, productivity, and workforce management.

MOTIVATION



This project is essential because, in today's competitive world, organizations must use data effectively to stay ahead. Workforce dynamics play a crucial role in a company's success, yet managing and understanding large volumes of employee data can be overwhelming without the right tools. This project transforms raw data into actionable insights, helping businesses make smarter decisions.

It addresses key challenges like identifying performance gaps, ensuring fair pay, promoting diversity, and understanding regional differences. By creating an interactive Power BI dashboard, we not only simplify complex data but also empower HR leaders and managers to plan strategically, optimize resources, and build a stronger, more inclusive workforce. This project is a step toward using data as a powerful tool to drive growth, efficiency, and fairness in the workplace.

LITERATURE SURVEY

+ Workforce analytics is essential for modern organizations to make informed, data-driven decisions about their employees. Traditional methods like spreadsheets are inadequate for analyzing large datasets, often leading to missed insights. This has driven the adoption of advanced tools like Power BI, which offer dynamic filtering, interactive visualizations, and drill-through analytics.

Power BI excels in critical areas such as diversity analysis, salary trends, performance metrics, and regional comparisons. For example, it can reveal gender gaps, correlate performance with salary, and track workforce growth over time. Case studies by Gartner and Forbes show that Power BI helps identify patterns, optimize resources, and promote equity. By transforming raw data into actionable insights, Power BI supports HR teams in addressing disparities, improving fairness, and aligning workforce strategies with organizational goals. Its intuitive dashboards empower decision-makers to foster a more efficient, inclusive, and growth-oriented workforce.

METHODOLOGY

1. Data Collection:

Gather data from HR systems (payroll, performance reviews, employee records).

+ Key details: age, gender, department, salary, performance scores.

2. Data Preparation:

◁ Clean data by fixing errors, handling missing values, and ensuring consistency.

3. Data Integration and Transformation:

Upload data into Power BI.

Calculate metrics (e.g., average salary, turnover rates).

Structure data to show trends (monthly/yearly).

4. Dashboard Development:

Create visualizations (bar charts, scatter plots, line graphs).

Add filters for focused analysis (e.g., gender by department).

METHODOLOGY

5. Predictive Analytics:

Use machine learning for predictions (e.g., turnover, performance-salary link).

6. Testing and Deployment:

Test for accuracy and usability.

Train HR teams to use the dashboard effectively.

7. Maintenance:

Regular updates with new data and user feedback for continuous relevance.

REQUIREMENTS SPECIFICATION

- PROCESSOR: 12th Gen Intel Core i5 with Graphics
- SYSTEM PROCESSOR SPEED: 1.30 GHz
- INSTALLED RAM: 8.00 GB
- EDITION: Windows 11 Home Single Language
- System type 64-bit operating system, x64-based processor

SOFTWARE REQUIREMENTS

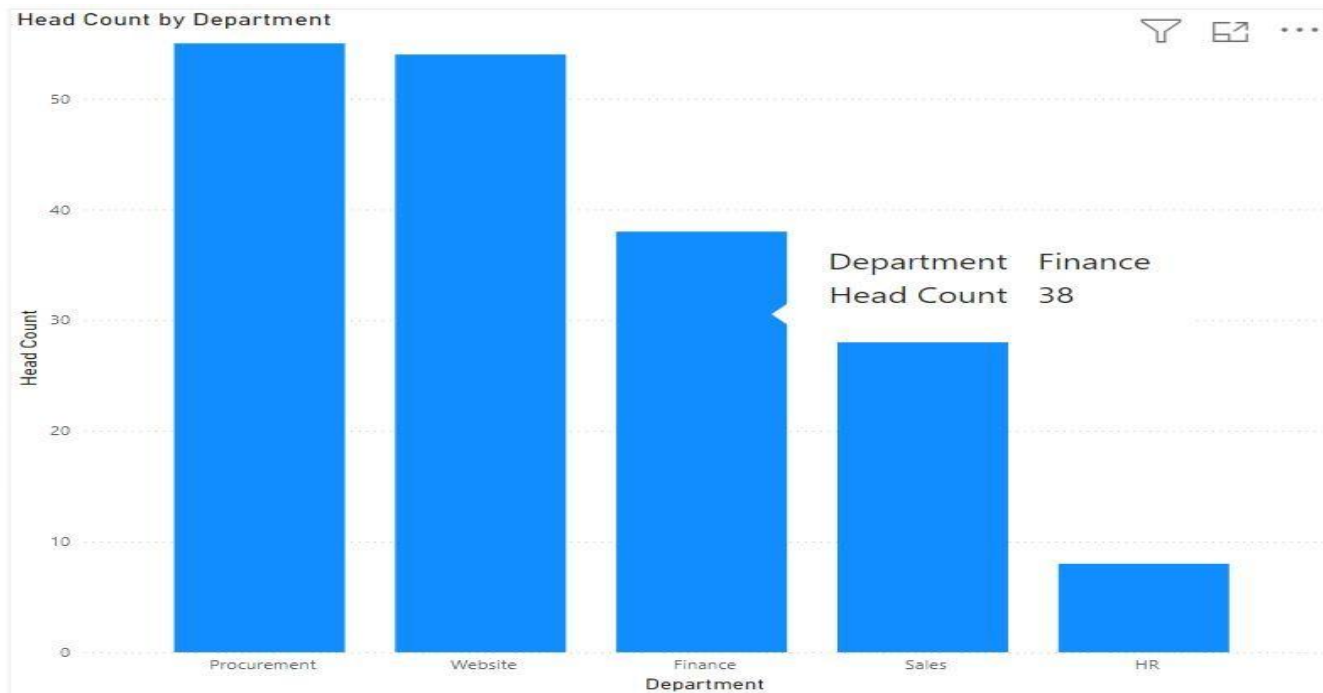
- Power BI
- Data set

IMPLEMENTATION

- + The implementation of this HR analytics project involves several key steps to ensure an effective and insightful dashboard. First, data is collected from HR systems and cleaned to eliminate inconsistencies and ensure accuracy. Once cleaned, the data is uploaded into Power BI, where calculated fields and aggregations are applied to summarize important metrics such as salary, performance, and turnover. Visualizations like bar charts, histograms, and scatter plots are then developed to display these metrics clearly, with drill-down options for detailed analysis by department or gender. Predictive analytics, powered by machine learning models, are used to forecast employee turnover and analyze the impact of diversity on team performance. After testing for accuracy and usability, the dashboard is deployed, and HR teams are trained on how to use it effectively. To keep the tool relevant, regular updates are made based on new data and evolving trends.

RESULT

1. How many people are there in each department?

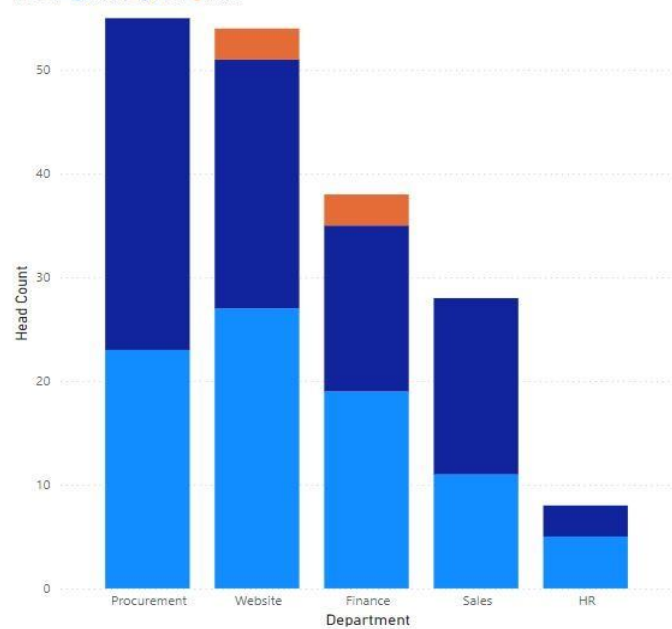


RESULT

2. Gender distribution by department

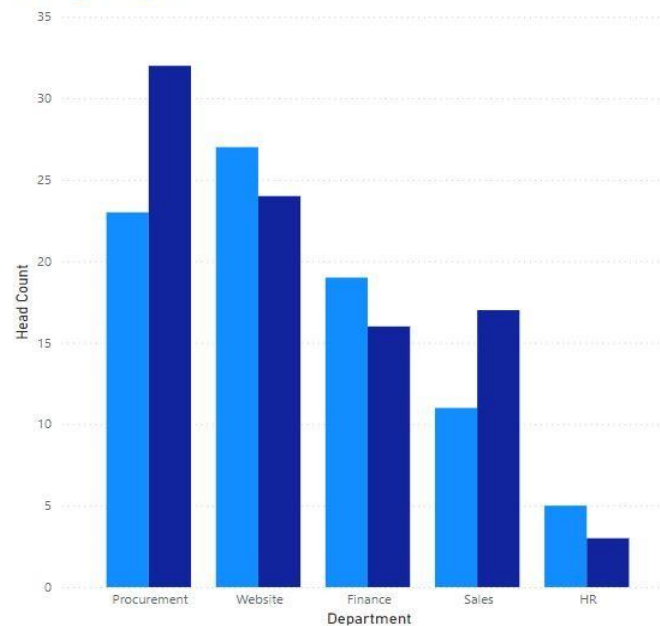
Head Count by Department and Gender

Gender ● Female ● Male ● Other



Head Count by Department and Gender

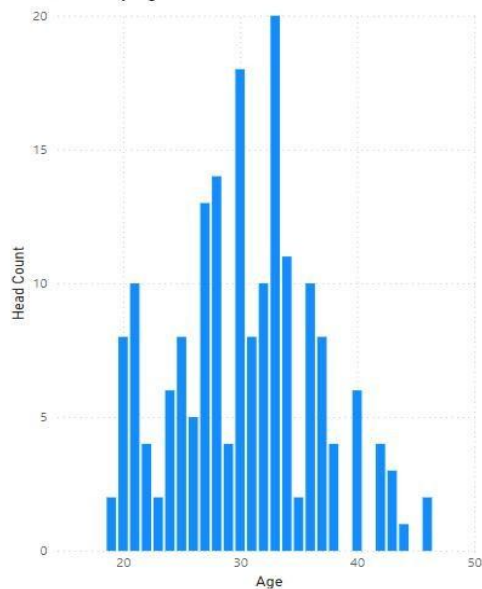
Gender ● Female ● Male



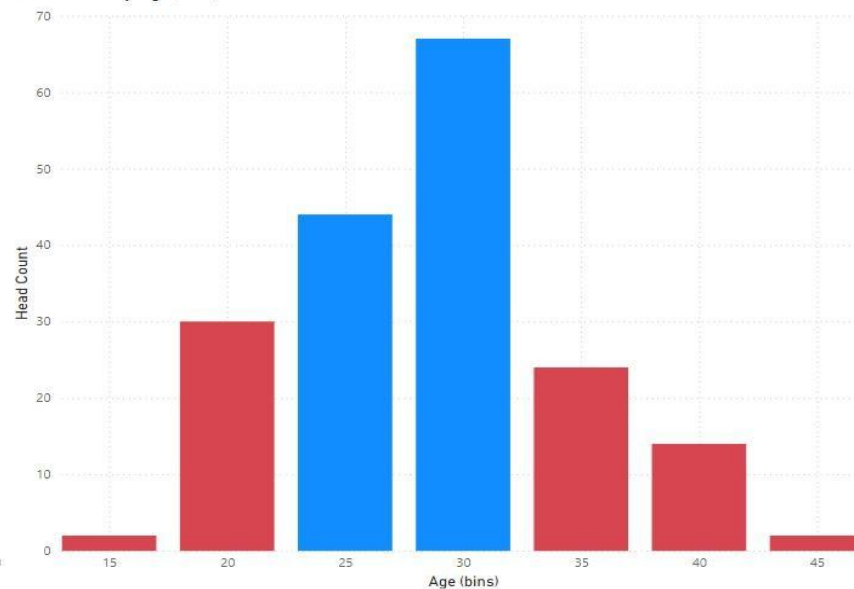
RESULT

3. Age spread of our staff (histogram)

Head Count by Age



Head Count by Age (bins)



RESULT

4. Min / max / average salary in each department

Department	min salary	max salary	avg salary
Finance	48170	115440	72,472.63
HR	45510	119110	89,650.00
Procurement	37920	115920	82,345.00
Sales	36040	112780	67,866.43
Website	33920	118840	78,753.70
Total	33920	119110	77,366.52

Country

☒ IND

☐ NZ

+ RESULT



5. Top earners in each country

Name	Sum of Salary
Anjushri Chandiramani	\$1,19,110
Lalitchandra Vadali	\$1,18,840
Kaishori Harathi Kateel	\$1,18,100
Sarayu Ragunathan	\$1,15,920
Vasavi Veeravasarpapu	\$1,15,440
Total	\$5,87,410

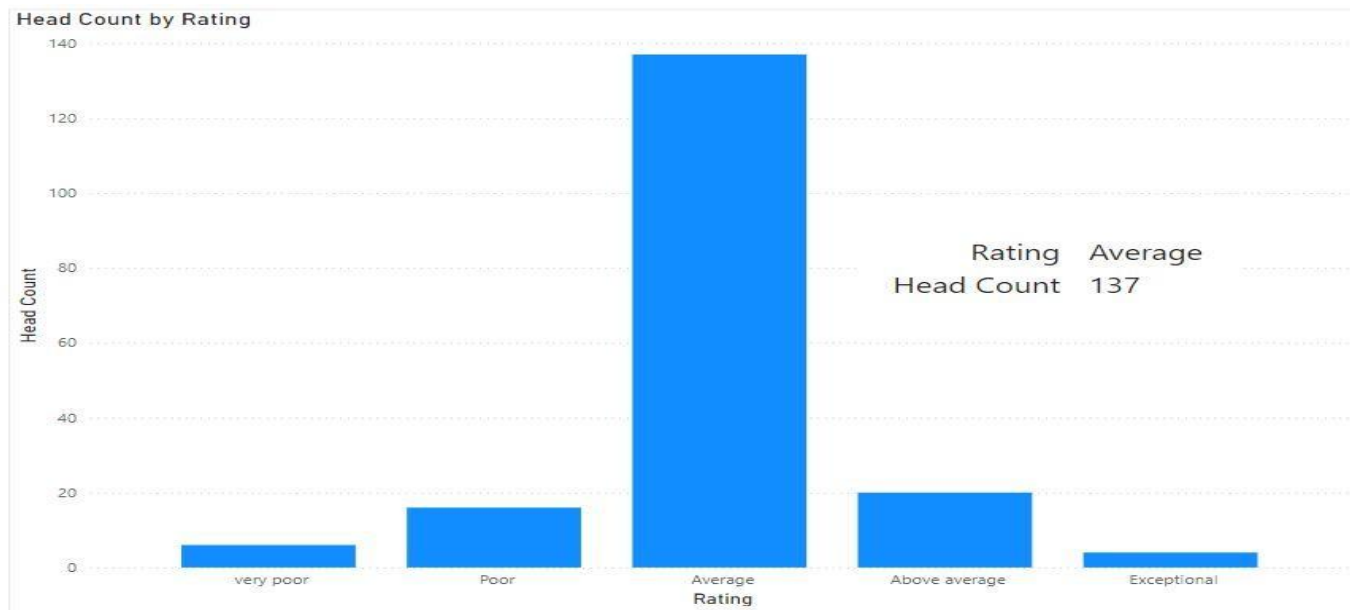
Name	Sum of Salary
Benny Karolovsky	\$1,15,440
Ewart Laphorn	\$1,19,110
Roddy Speechley	\$1,15,920
Tawnya Tickel	\$1,18,840
Valentia Etteridge	\$1,18,100
Total	\$5,87,410

+

RESULT



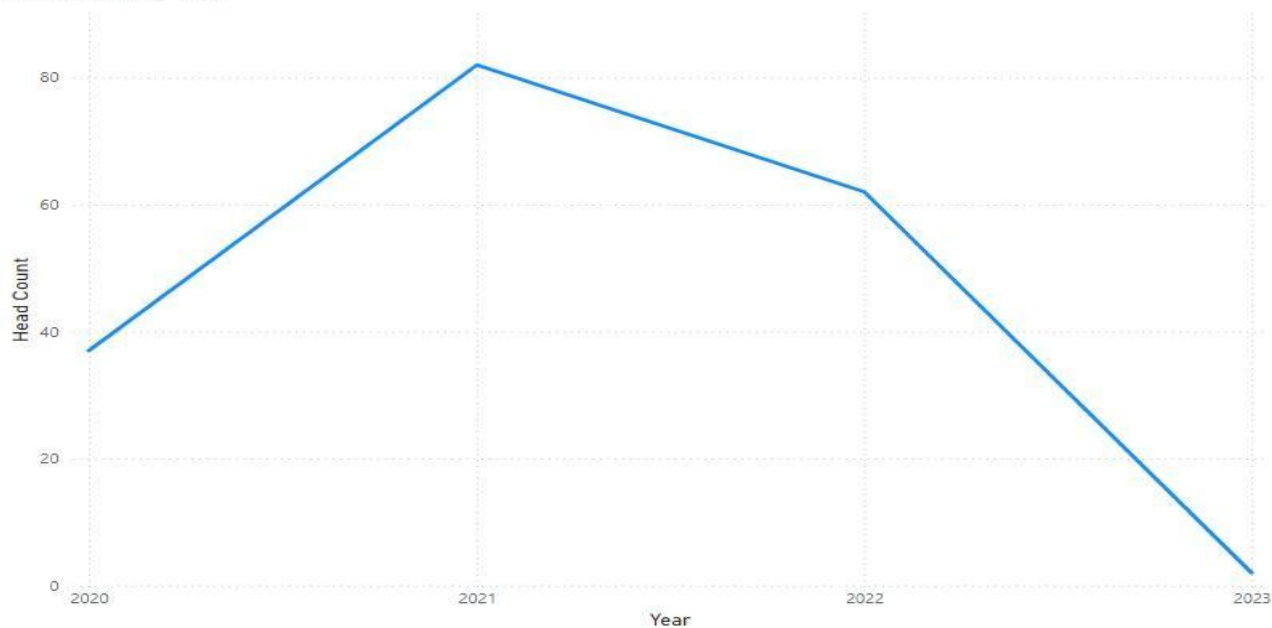
6. Performance spread (sort by column)



RESULT

7. Company growth trend

Head Count by Year



RESULT

8. Employee filter (by starting letter)

First lett... ▼

☒ A

☐ B

☐ C

☐ D

☐ E

☐ F

☐ G

☐ H

☐ I

☐ J

☐ K

☐ L

☐ M

☐ N

☐ O

☐ P

☐ R

☐ S

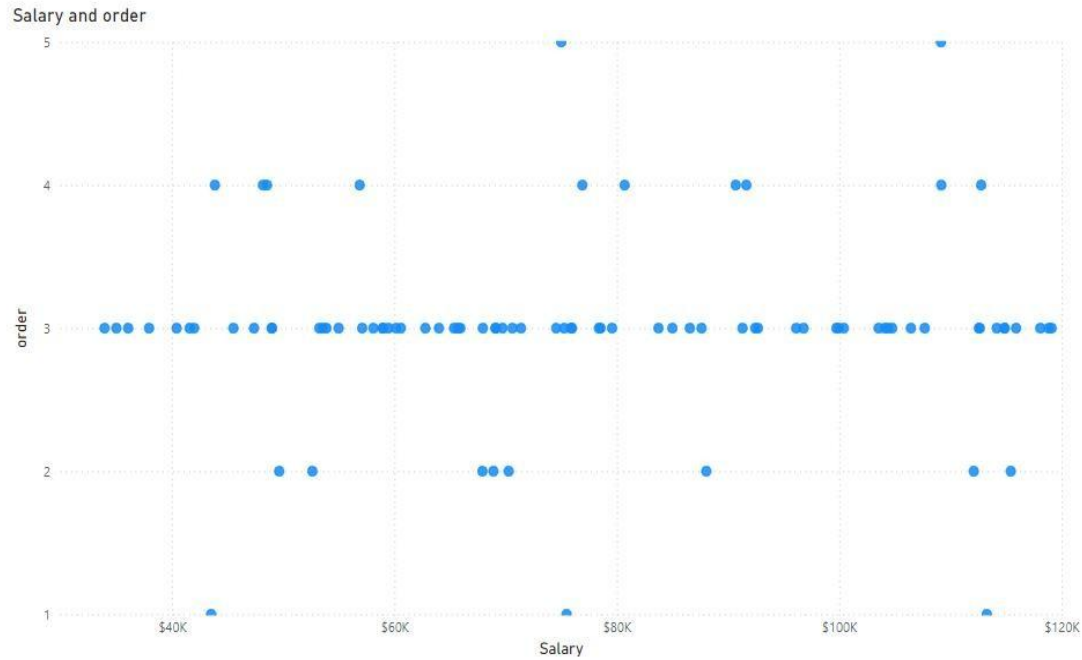
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Name	Rating	Date Joined	Sum of Salary
Abhaya Priyavardhan	Average	06 May 2021	\$65,700
Agnes Collicott	Average	05 May 2022	\$83,750
Agrata Rajarama	Average	01 March 2021	\$65,920
Allene Gobbet	Average	29 November 2021	\$78,390
Alta Kaszper	Average	30 October 2020	\$54,970
Amal Nimesh	Average	11 September 2021	\$48,950
Ambros Murthwaite	Average	16 July 2022	\$70,610
Amlankusum Rajabhushan	Average	05 March 2022	\$1,00,420
Andria Kimpton	Average	18 March 2021	\$69,120
Anjushri Chandiramani	Average	18 August 2020	\$1,19,110
Anumati Shyamari Meherhomji	Average	10 April 2021	\$53,240
Archibald Filliskirk	Average	15 June 2022	\$40,400
Asija Pothireddy	Average	16 December 2020	\$59,430
Avoo Chakrabarti	Very poor	27 April 2021	\$75,480
			35,490

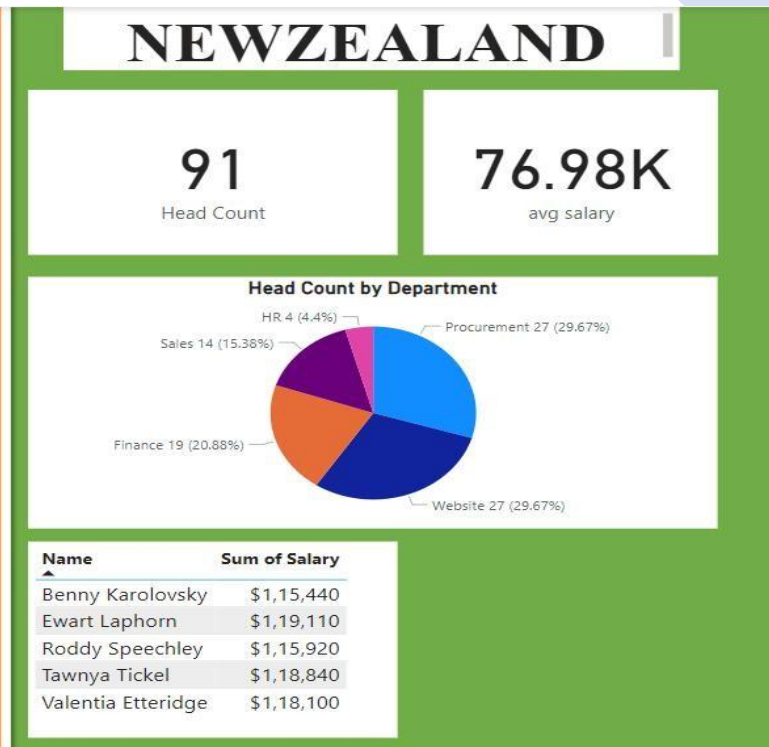
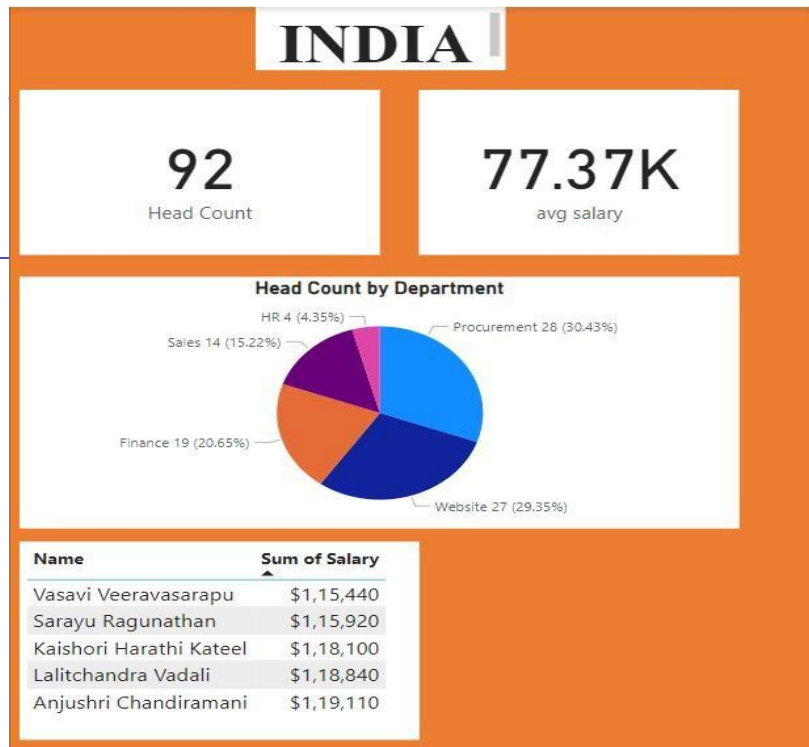
14

Head Count

9. Performance vs. salary – Is there any relationship?



10. India vs. New Zealand – Quick scorecard



COMMUNITY IMPACT



- ❖ Helps the company see where it can improve in hiring people from different backgrounds, genders, and age groups.
- ❖ Leads to fairer and more equal opportunities for everyone.
- ❖ Makes sure employees are paid fairly based on their work and performance.
- ❖ Creates a workplace where hard work and talent are appreciated.
- ❖ Provides ideas to improve working conditions, pay, and growth opportunities.
- ❖ Helps keep employees motivated and loyal to the company.
- ❖ Helps the company make fair and responsible decisions for its employees.
- ❖ Inspires other businesses to follow similar ethical practices.

CONCLUSION

This project successfully used Power BI to analyze key employee data, uncovering important trends in staff count, gender distribution, age demographics, salary trends, and performance. It created an interactive dashboard that allowed users to easily explore data, answer critical questions, and compare workforce trends across regions like India and New Zealand. Challenges like data quality and complex visualizations were addressed through careful cleaning and advanced Power BI techniques. The final product is a dynamic, user-friendly tool that provides deeper insights into workforce data, supporting informed decisions in hiring, compensation, and employee development.

FUTURE SCOPE



- ❖ **Advanced Predictive Analytics:** Integrating machine learning models for more accurate forecasting of turnover, performance, and workforce needs.
- ❖ **Employee Engagement Analysis:** Incorporating feedback data to measure employee satisfaction and engagement for improved retention.
- ❖ **Real-Time Data Integration:** Enabling real-time updates to monitor workforce metrics and make quicker decisions.
- ❖ **Expanded Data Sources:** Including data from training, wellness programs, and external market trends for a more holistic view.
- ❖ **Customizable Dashboards:** Tailoring dashboards for different HR roles to improve usability and decision-making.

REFERENCES

1. Dahlbom, Pauli, Noora Siikanen, Pasi Sajasalo, and Marko Jarvenpää. "Big data and HR analytics in the digital era." *Baltic Journal of Management* 15, no. 1 (2020): 120-138.
2. Mondore, Scott, Shane Douthitt, and Marisa Carson. "Maximizing the impact and effectiveness of HR analytics to drive business outcomes." *People and Strategy* 34, no. 2 (2011): 20.
3. Marler, Janet H., and John W. Boudreau. "An evidence-based review of HR Analytics." *The International Journal of Human Resource Management* 28, no. 1 (2017): 3-26.
4. Edwards, Martin R., Kirsten Edwards, and Daisung Jang. *Predictive HR analytics: Mastering the HR metric*. Kogan Page Publishers, 2024.

