**Data Analysis Report**

**For Deloitte Australia Virtual Experience Projects**

**INTRODUCTION**

This project is based on the Deloitte Australia Virtual Job Simulation conducted via Forage. It involves two separate data analysis tasks: one focused on identifying patterns in machine breakdowns across locations using Tableau, and the other on gender pay equality analysis using Excel. The goal was to simulate real-world consulting tasks by uncovering insights from raw data and presenting them visually and analytically.

**DATA EXPLORATION**

**How The Data Was Collected**

The datasets were provided as part of Deloitte’s simulation modules. The first dataset contained records of machine breakdowns as a JSON file and their associated locations, while the second focused on salary equality scores across job roles in various Daikibo Industrial factories. The machine breakdown data was used to create a Tableau dashboard, and the gender pay data was explored using Microsoft Excel.

**Features Identified for Analysis**

**For Machine Breakdown (Tableau):**

* **Location** – Where the machines are placed
* **Machine Type** – The specific machine that broke down
* **Break Count or Frequency** – Used to analyze volume of breakdowns

**For Gender Equality (Excel):**

* **Factory Name** – Daikibo factory locations
* **Job Role** – Different employment levels (e.g., VP, Manager)
* **Equality Score** – Quantitative value representing gender pay fairness
* **Equality Class** – Categorization of the score into descriptive classes (e.g., Fair, Unfair)

These features were selected to evaluate operational risks in the manufacturing environment and to assess fairness in corporate compensation practices.

**PROCEDURE FOLLOWED**

**Machine Breakdown Analysis**

1. Loaded raw data into Tableau.
2. Created visualizations to answer:
   * Which locations experienced the most machine breakdowns?
   * Which machines were most problematic in those locations?
3. Used filters and visual mapping (bar charts) to highlight concentration of breakdowns.

**Gender Pay Equality Analysis**

1. Loaded the dataset into Microsoft Excel for structured analysis.
2. Used Excel functions such as ABS() to handle score values and IF() to classify each job role into categories like *Fair*, *Unfair*, and *Highly Discriminative* based on the equality score.
3. Analyzed the classified data to identify patterns indicating systemic pay inequality, particularly at senior-level positions.

**FINDINGS**

* **Machine Breakdown (Tableau)**:
  + Certain factory locations consistently reported higher breakdown incidents, particularly in **Seiko Daibiko factory.**
  + Machines such as **Laser Welder** were flagged as high-risk due to repetitive failures.
  + These insights suggest a need for preventive maintenance or supplier reassessment at those sites.
* **Gender Pay Equality (Excel)**:
  + Factories like **Daikibo Meiyo** showed high inequality at senior levels such as **C-Level** and **VP**, marked as “Highly Discriminative.”
  + Lower-level roles tended to have fairer pay structures in comparison.
  + The data highlights systemic bias at the top of the corporate ladder, with actionable implications for HR and leadership reviews.

**CONCLUSION**

Both tasks reflected the importance of data in business decision-making:

* The **machine breakdown analysis** can drive targeted maintenance programs and reduce downtime.
* The **gender equality audit** offers transparency into compensation practices and suggests critical areas for policy intervention.