Deloitte Data Analytics Job Simulation Internship Project Report

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# Project Overview

This report summarizes the work completed as part of the Deloitte Data Analytics Virtual Internship Program hosted by Forage. The internship simulated real-world tasks performed by data analysts and forensic technology teams at Deloitte, split into two key projects:

1. **Task 1: Telemetry Data Analysis**
2. **Task 2: Forensic Technology - Pay Equality Investigation**

## Task 1: Telemetry Data Analysis Dashboard

### 1. Objective

The objective of this task was to analyze telemetry data collected from Daikibo Industrials’ factories to answer two main business questions:

1. **In which location did machines break the most?**
2. **Which machines broke most often in that location?**

### 2. Dataset Used

* Format: JSON
* Content: Machine telemetry data for May 2021 from 4 factories:
  + Meiyo (Tokyo, Japan)
  + Seiko (Osaka, Japan)
  + Berlin (Germany)
  + Shenzhen (China)

### 3. Tools Used

* **Tableau Public** (Data Visualization)
* JSON File (Telemetry Data)

### 4. Methodology

* **Imported** the JSON file into Tableau.
* Created a **calculated field** called Unhealthy:
  + Formula: IF [Status] = 'Unhealthy' THEN 10 ELSE 0 END
  + Reason: Each message represents 10 minutes of machine activity. If the status is “Unhealthy”, it adds to potential downtime.
* Developed two key visualizations:
  1. **Bar Chart 1:** “Down Time per Factory” (Total downtime per factory)
  2. **Bar Chart 2:** “Down Time per Device Type” (Total downtime per machine type)
* Created a **Dashboard** with interactive filtering:
  + Clicking on a factory in Bar Chart 1 filters Bar Chart 2 to show only machines from that factory.

### 5. Outcome

* The dashboard clearly identified **which factory experienced the most machine downtime**.
* Identified **specific device types responsible for most of the downtime** in that factory.

### 6. Key Learnings

* Data connection and import techniques for JSON files in Tableau.
* Creating calculated fields and interactive dashboards.
* Data-driven decision-making using visualization.

### 7. Benefits of This Task

* Hands-on experience with **data visualization and dashboard creation**.
* Improved ability to extract **insights from operational data**.
* Enhanced skills in **Tableau Public**, a critical tool for data professionals.

## Task 2: Forensic Technology - Pay Equality Investigation

### 1. Objective

The goal was to investigate **gender pay equality** at Daikibo Industrials by classifying the “Equality Score” of each job role in each factory.

### 2. Dataset Used

* **Equality Table.xlsx**
* Columns:
  1. Factory
  2. Job Role
  3. Equality Score (Range: -100 to +100)

### 3. Tools Used

* **Microsoft Excel**

### 4. Methodology

* Added a new column `` using the following formula:

=IF(ABS(C2)<=10, "Fair", IF(ABS(C2)<=20, "Unfair", "Highly Discriminative"))

* Classification:
  + **Fair**: -10 to +10
  + **Unfair**: <-10 or >10 but within -20 to +20
  + **Highly Discriminative**: <-20 or >20
* Used conditional formatting and filtering to visually highlight areas of concern.

### 5. Outcome

* The dataset was successfully classified into **Fair, Unfair, and Highly Discriminative**.
* Provided valuable insight into where the company may need to address **potential gender pay inequality**.

### 6. Key Learnings

* Writing logical formulas in Excel.
* Use of absolute values (ABS) to simplify classification logic.
* Translating raw numerical scores into meaningful **categories for business decision-making**.

### 7. Benefits of This Task

* Enhanced Excel skills, especially in **formula creation** and **data classification**.
* Real-world experience with **forensic data analysis**.
* Understanding of how data can support **corporate social responsibility** efforts.

# Summary of Tools Used

| Tool | Purpose |
| --- | --- |
| Tableau | Data visualization and analysis |
| Excel | Data transformation and classification |

## What I Learned

* **Data visualization best practices**
* **Data-driven problem-solving**
* **Analytical thinking applied to real business problems**
* The importance of **fairness and equality in the workplace**

## Conclusion

Completing this Deloitte Data Analytics Virtual Internship simulation provided hands-on exposure to how analytics supports **operational efficiency** and **social justice in organizations**. I developed technical skills in **Tableau** and **Excel** while building a strong understanding of how data can drive strategic business decisions.

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