

Critical Reflection on Dashboard Development in Tableau and Power BI

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1. Introduction

This report critically reflects on the development of two dashboards created using Tableau and Microsoft Power BI, focusing on key performance indicators (KPIs) related to airline operations. The dashboards titled ***Airline Operations Dashboard*** visualized metrics such as flight delays, terminal-specific arrivals, airline performance, and timeline views. It was sourced from [Dubai Pulse – Dubai Airports Flight Information \(Arrivals\)](#).

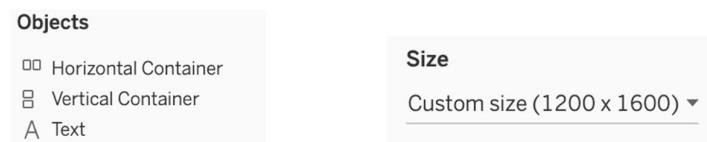
2. KPIs Visualized:

- Flight Status Breakdown
 - Arrived Flights by Terminal
 - Top 10 Airlines by Flight Count & Destinations
 - Average Delays by Destination
 - Airline-Wise Flight Timelines
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3. Comparative Reflection: Tableau vs Power BI

3.1 Dashboard Layout and KPI Stacking

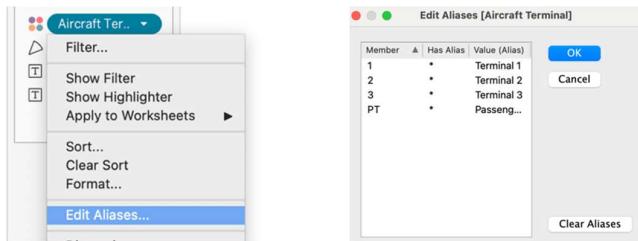
Tableau provided tools like padding, container objects, and precise alignment features that made arranging multiple visual components seamless. This enhanced the visual flow of the dashboard.



Power BI required **manual adjustments** for layout alignment. Balancing card sizes and maintaining hierarchy across visuals was more time-consuming compared to Tableau.

3.2 Legend Customization

Tableau's **Edit Aliases** feature allowed easy renaming of legend values directly within the interface.



Power BI required creating an additional calculated column to rename terminal numbers into human-readable names, which added complexity.

TerminalName

- Sort ascending
- Sort descending
- Clear sort
- Clear filter
- Clear all filters
- Text filters

Search

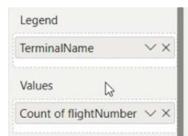
- (Select all)
- Passenger Terminal
- Terminal 1
- Terminal 2
- Terminal 3

3.3 Pie Chart Implementation

Tableau's use of angle and colour for pie charts made the creation of "Arrived Flights by Terminal" visualization intuitive and logical.



Power BI's pie chart configuration involved axis assignments that felt restrictive in design compared to Tableau.



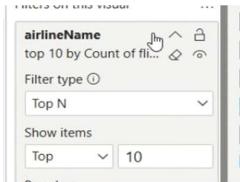
3.4 Filtering Top N Values

Both tools supported Top N filtering but differed in implementation:

- **Tableau:** Top N filtering via Sets offered an interactive and visually intuitive method.



- **Power BI:** Achieved Top N filtering using the visual filters pane, requiring more configuration steps.



3.5 Calculated Fields and Measures

For calculating delay durations:

- **Tableau:** Used calculated fields like IF [Delay] > 0 THEN 'Delayed' ELSE 'On Time' END directly within views.

```
Delay in minutes
DATEDIFF('minute', [publicScheduledDateTime_TEST], [scheduledInblockTime_TEST])
```

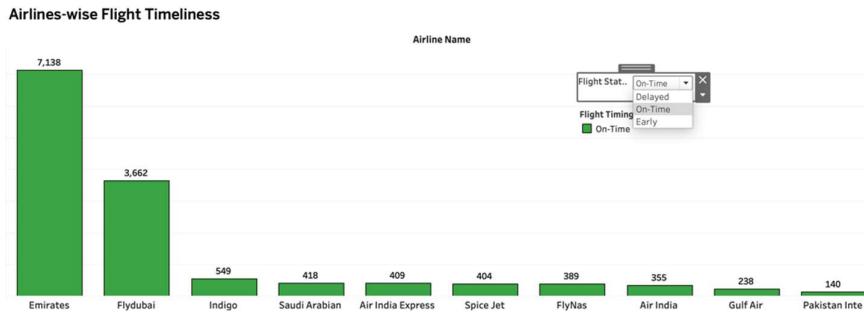
- **Power BI:** Required creating new columns using DAX formulas, introducing complexity for beginners.

```
1 FlightStatusColumn =
2 IF(
3   DATEDIFF('Flight_Information_Arrivals_editd3'[publicScheduledDateTime_TEST], 'Flight_Information_Arrivals_editd3'[scheduledInblockTime_TEST], MINUTE) > 0,
4     "Delayed",
5     IF(
6       DATEDIFF('Flight_Information_Arrivals_editd3'[publicScheduledDateTime_TEST], 'Flight_Information_Arrivals_editd3'[scheduledInblockTime_TEST], MINUTE) < 0,
7         "Early",
8         IF(
9           DATEDIFF('Flight_Information_Arrivals_editd3'[publicScheduledDateTime_TEST], 'Flight_Information_Arrivals_editd3'[scheduledInblockTime_TEST], MINUTE) = 0,
10          "On-Time",
11          BLANK()
12        )
13      )
14    )
15  )
```

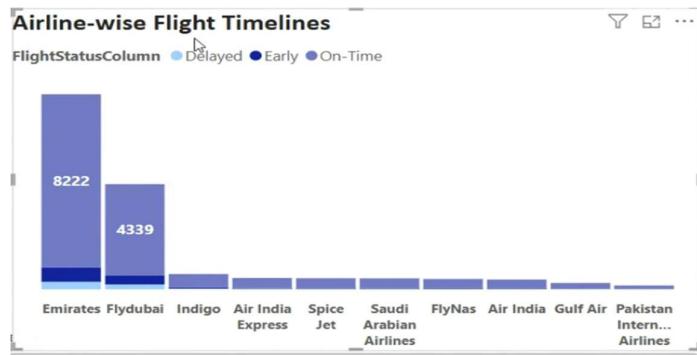


3.6 Parameter Usage and Interactivity

Tableau excelled in interactivity through parameters. For example, the Airline-wise Flight Timeline used a parameter to toggle between flight statuses (Delayed, On-Time, Early), connected to a calculated field for dynamic interaction.



Power BI lacked built-in parameter functionality. Simulating similar interactivity required static workarounds like slicers or conditional columns.



3.7 Usability and Learning Curve

Tableau's user interface was cleaner and intuitive for visualization tasks such as creating visuals, experimenting with filters, or modifying chart types.

Power BI had a steeper learning curve due to its reliance on DAX formulas and data modelling concepts. While it is powerful for complex data integration scenarios, it was less intuitive for front-end design tasks focused on KPIs.

5. Conclusion

Both Tableau and Power BI are robust platforms with unique strengths:

- **Tableau** excelled in visual storytelling and KPI-focused dashboards due to its intuitive interface.
- **Power BI** demonstrated its power in backend data handling but lacked seamless interactivity compared to Tableau.

❖ *Team Experience:* Tableau enabled cohesive design and implementation of the Airline Operations Dashboard by simplifying representation of delays, terminal traffic, and airline performance trends. For this aviation dataset, Tableau was clearly the more effective tool for delivering analytical insights.