Assignment 5: Data Visualization Using Tableau 3

(Performance Dashboards)

You can complete this assignment <u>individually</u> or <u>with one or two partners</u> from your team or other teams. In other words, each submission should be associated with 1 to 3 students.

<u>*Theme:*</u> ***Sales, Marketing, and Profit Analysis*** **----** *Dataset: Dataset_ Vending Machines.xlsx*

This assignment is related to the vending machine company that you have worked on before.

The management team has recently decided to use business intelligence and analytics tools and technologies to measure and manage their performance systematically and effectively. Their ultimate goal is to increase sales at the vending machines and reduce the number of stales. They ask you to develop a dashboard for them to visually and interactively monitor and manage their business performance. They mainly want to use the dashboard to draw insights about the company's profitability, which is one of their main performance indicators. More specifically, they want to be able to compare net profits associated with different vending machines, locations, product categories, and products in an interactive and visually appealing way. They also want to see profit trend lines on the dashboard. To do so, you will create three worksheets/graphs and put them on a dashboard as follows:
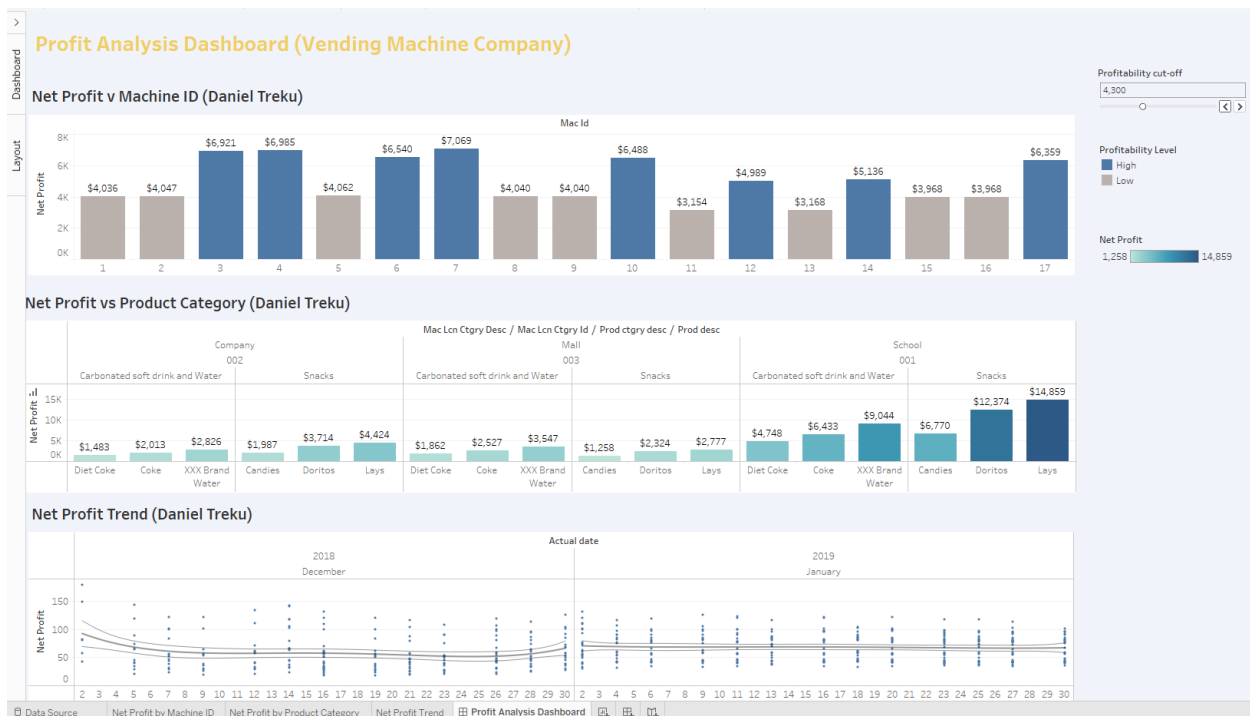
1) **Net Profit vs. Machine ID:** This chart is used to visualize and compare the profitability of the 17 vending machines. The main point about this chart is that each machine will be considered either *highly profitable* or *not highly profitable* depending on whether the net profit of that machine is (or is not) greater than the *profitability cut-off* point. *Profitability cut-off* is a value that can be dynamically set by the user. In other words, *Profitability cut-off* is a <u>parameter </u>that the user sets to distinguish between highly profitable and lowly profitable vending machines. To add this feature to the chart, you should work with sets and parameters. To learn about these concepts, first, please read the tutorials provided by Tableau on how to create <u>sets</u> and <u>parameters</u>. Next, watch the video that I have prepared for you to gain a better understanding of how to use these features in Tableau. The video, titled "Exercise (2): Using Parameters and Sets in Tableau (video)", has been uploaded to Canvas.

Profitability cut-off is a float number with the display format of currency. It can be any value between $2,500 and $7,500, both inclusive (step size: 100). The user will use a slider to change the value of that cut-off point.

For example, if the user sets the cut-off at $4,300, all machines with a net profit at or greater than $4,300 will be considered profitable (indicated by dark blue bars), while the remaining machines will be classified as unprofitable and displayed in a different color, such as gray or light pink.

Please use appropriate mark types, axis labels, etc. to create a chart similar to the one provided to you in the figure above. The colors that you use, however, do not have to be the same as the ones that I have used.

2) **Net Profit vs. Product Category:** This chart presents the net profit for each product under each category for each location. When creating the chart (on the worksheet), be sure to build hierarchies such as *product category description* → *product description*. To learn about (or review) the concepts of hierarchies, drill down, and roll up, please read this tutorial.

   Moreover, use appropriate mark types as well as an interactive filter so that the user can select the locations (i.e., company, mall, school) that they want to see on the chart. Also, sort the products based on their net profit (see the screenshot above). Do not forget to customize the title of the chart to show what the chart presents and who has created it.

3) **Trend Analysis:** The third chart shows how the total profit has changed over time. The scatterplot includes a trend line (in my case, it is a polynomial function of degree 4, but you can change it to improve the performance or goodness of fit of the line). It also includes confidence bands. Again, use an appropriate title for the chart. To learn how to use trend lines, please read this Tableau tutorial.

What to submit: You will submit two files:

1. A Word or PDF document that contains a screenshot of the dashboard and three screenshots associated with the three sheets/charts. They should clearly present what features, columns, rows, marks, etc., you have used for each chart. You can also provide explanations on what you have done, if needed.

2. A Tableau packaged workbook file (.twbx) that includes the final dashboard. Do not submit the .twb file.

Make sure to include your name on the dashboard and in the Word/PDF document.