RSM 222 - Managerial Accounting 1
Data Analytics Assignment
Summer 2022

Ubor Technologies

Case Objective:

This case illustrates how data analytics can be performed using Tableau. As you analyze this case, you will learn how to drill down into a company's sales and cost data to gain a deeper understanding of the company's performance and how this information can be used for decision-making.

Once the data has been analyzed, you will be asked to prepare a short PowerPoint presentation to highlight and explain your findings to the Board of directors of the company. **This aims to develop your ability to visualize data and effectively communicate with your audience**.

Background

Ubor is a ride-hailing company founded in 2022. In March 2022, it launched its ride-hailing app for the first time in New York City, and currently, all sales are made in New York City. The company's management has hired you as an accounting consultant to help them better understand the profitability of their operations in New York City.

Data – Ubor Technologies March 2022.twbx

- Each row represents a single trip dispatched by Ubor in March 2022.
- Two datasets are joined by the Zone ID of the pick-up location:
  - Ubor Technologies March 2022.csv
  - NYC Taxi Zones.geojson.
- **Ensure that you unzip and place these three datasets (Tableau Workbook, CSV file, and Geojson file) in the same folder.**

Data dictionary

Variable Name	Description
Variables from Ubor Technologies March 2022.csv	
Trip Id	Unique id associated with each trip
Pick-up Datetime	The date and time of the trip pick-up (e.g., 3/4/2022 10:44:32 PM)
Dropoff Datetime	The date and time of the trip drop-off (e.g., 3/4/2022 10:50:22 PM)
PU Location ID	NYC Taxi Zone in which the trip began (i.e., pick-up location)
DO Location ID	NYC Taxi Zone in which the trip ended (i.e., drop-off location)
Request Datetime	date/time when passenger requested to be picked up
Trip Miles	total miles for passenger trip
Trip Time	total time in seconds for passenger trip
Base Passenger Fare	base passenger fare before tolls, tips, taxes, and fees
Tolls	total amount of all tolls paid in trip
Bcf	total amount collected in trip for Black Car Fund
Sales Tax	total amount collected in trip for NYS sales tax
Congestion Surcharge	total amount collected in trip for NYS congestion surcharge
Airport Fee	$2.50 for both drop off and pick up at LaGuardia, Newark, and John F. Kennedy airports
Tips	total amount of tips received from passenger
Driver Pay	total driver pay (not including tolls or tips and net of commission, surcharges, or taxes)
Variables from NYC Taxi Zones.geojson	
Borough	Borough in which the trip began. New York City has six boroughs (Bronx, Brooklyn, EWR, Manhattan, Queens, and Staten Island)
Location Id or Objectid	Unique taxi zone ID in which the trip began. There are 265 taxi zones in New York City. For taxi zone maps, see here.
Zone	Taxi zone name in which the trip began (e.g., JFK Airport)
Shape Area or Shape Leng	Geometry information (area and length) of Taxi Zone

Requirements & Instructions

The following steps should be completed directly in the Tableau Workbook "Ubor Technologies March 2022.twbx"

- **Step 1 – Prepare Data**
  - Import "Ubor Technologies March 2022.twbx" into your Tableau Desktop.
    - **Important: Make sure that all three files (Tableau Workbook, CSV file, and Geojson file) are in the same folder.**

- **Step 2 – Create Worksheets**
  - Go to Sheet 1 and rename it "Volume Analysis 1".
    Hint: Right-click (or Double-click) Sheet 1 (located at the bottom) and Click "Rename."
  - Create a new sheet by clicking  at the bottom and rename it "Volume Analysis 2."

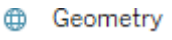
- **Step 3 – Analyses of Ride Volumes**

  Management would like to know ride volumes by location. Prepare plots that will help you determine:

  - Which *Borough* had the largest number of pick-ups?
    - Work on "Volume Analysis 1"
  - Which *Zone* had the largest number of pick-ups?
    - Work on "Volume Analysis 2"

  Hint:

  1. Drag and Drop the "Borough" variable (located on the left side) to "Columns" (located on the top panel).
  2. Drag and Drop the "Trip Id" variable (located on the left side) to "Rows" (located on the top panel below "Columns").
     - This may prompt a warning message – click "Add all members."
  3. Click "Trip Id" on "Rows" and Go to "Measures." Choose "Count."
     - You may find the "Null" item on the plot. Click "Null" and Click "Exclude."
  4. Click "Show Me" (located in the top-right corner) and choose the view you believe is the most intuitive to show the pattern. Alternatively, you can choose different views on the "Mark" panel (located on the left side of the plot).
     - For more information on how to use Mark, refer to this page.
  5. Repeat the above steps using the "Zone" variable for Zone-level analysis. You can replace "Borough" in Step 1 with "Zone."

- **Step 4 – Analyses of Ride Volumes with Maps**
    - Create a duplicate sheet of "Volume Analyses 2" by right-clicking "Volume Analyses 2" at the bottom and Clicking "Duplicate."
    - Rename it "Volume Analysis 3."
    - To activate Map View on the "Show Me," Drag and Drop the "Geometry" variable (located on the left-side, 

) to the plot you created in Step 3.
    - Click "Show Me" (located in the top-right corner) and choose the Map view you believe is the most intuitive to show the pattern. You can refine the Color on the "Mark" panel (located on the left side of the plot, 

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- **Step 5 – Analyses of Seasonality**

Management would like to assess if demands are stable across days or if there is seasonality. Create a new worksheet. Name it "Seasonality Analysis 1."

Prepare plots that will help you determine:

- Is there any seasonality in ride volumes? In other words, can you observe any repeated pattern?
    - Work on "Seasonality Analysis 1"

Hint:

1. Drag and Drop the "Pick-up Datetime" variable (located on the left side) to "Columns" (located on the top panel).
2. Click "Pick-up Datetime" on "Columns" and Choose "Day."
    - Note that there are two Days. Choose the second "Day (May 8, 2015)" on the dropdown list.
3. Drag and Drop the "Trip Id" variable (located on the left side) to "Rows."
    - This may prompt a warning message – click "Add all members."
4. Click "Trip Id" on "Rows" and go to "Measures." Choose "Count."

Management finds that a certain pattern repeats every week. Create a new worksheet. Name it "Seasonality Analysis 2."

Prepare plots that will help you determine the following:

- Which Day of Week had the largest number of pick-ups?
    - Work on "Seasonality Analysis 2"

Hint:

1. Drag and Drop the "Pick-up Datetime" variable (located on the left side) to "Columns" (located on the top panel).
2. Click "Pick-up Datetime" on "Columns" and Choose "More – Weekdays."

- Note that there are two “More”s. Choose the first “More” on the dropdown list.

3. Drag and Drop the “Trip Id” variable (located on the left side) to “Rows” (located on the top panel below “Columns”).
   - This may prompt a warning message – click “Add all members.”
4. Click “Trip Id” on “Rows” and go to “Measures.” Choose “Count.”

- **Step 6 – Analyses of Seasonality by Time**

  Management would also like to assess if demands are stable within a day or if a demand surge occurs at a certain time. Create a new worksheet. Name it “Seasonality Analysis 3.”

  Prepare plots that will help you determine the following:

  - What time had the largest number of pick-ups?
    - Work on “Seasonality Analysis 3”

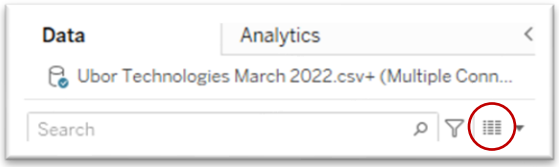
  Hint:

  1. Drag and Drop the “Pick-up Datetime” variable (located on the left side) to “Columns” (located on the top panel).
  2. Click “Pick-up Datetime” on “Columns” and Choose “More - Hour.”
     - Note that there are two Mores. Choose the first “More” on the dropdown list.
  3. Drag and Drop the “Trip Id” variable (located on the left side) to “Rows” (located on the top panel below “Columns”).
     - This may prompt a warning message – click “Add all members.”
  4. Click “Trip Id” on “Rows” and Go to “Measures.” Choose “Count.”

- **Step 7 - Create Variables for Analyses of Profitability**

  Next, management would like to analyze the profitability of the operation. Create two new worksheets. Name them “Profitability Analysis 1” and “Profitability Analysis 2” respectively.

  - Create the following seven new variables.
    Hint: You will need to use a “Create Calculated Field” under the “Analysis” menu (located on the top) to create the variables listed below.
    Hint: You can check whether variables are correctly defined by clicking located in the top-left corner (see below). Click Ubor Technologies March 2022.csv under Tables.



1. Covert "Trip Miles" from miles to kilometers and name this variable "**Trip Km**." The mile is equal to 1.6 km.

2. Calculate fuel consumption for each trip and name the variable "**Fuel Consumption**." The fuel consumption per km is 0.071L/km.
    - Use the "Trip Km" created in the previous step.

3. Calculate the fuel cost for each trip and name the variables "**Fuel Cost**." The fuel cost per liter is $1.8/L.
    - Use "Fuel Consumption" created in the previous step.

4. Covert "Trip Time" from seconds to hours and name this variable "**Trip Hour**." An hour is equal to 3600 seconds.

5. Calculate the labor cost per trip and name the variables as "**Labor Cost**." Ubor drivers are paid $30/driving hour. Assume that the driving hour equals the Trip Hour calculated in the previous step.
    - Use the "Trip Hour" created in the previous step.

6. Calculate the profit margin for each trip and name the variable "**Profit Margin**." Profit margin per trip is defined as "Driver Pay" – "Fuel Cost" – "Labor Cost".

7. Calculate the profit margin ratio for each trip and name the variable "**Profit Margin Ratio**." The profit margin ratio is defined as "Profit Margin/Driver Pay."
    - Use the "Profit Margin" created in the previous step.

- **Step 8 – Analyses of Profit Margin**

  Prepare a plot that will help you determine the following:

  1. Which *Zone* had the highest <u>average Profit Margin Ratio</u> per trip?
     - Work on "<u>Profitability Analysis 1</u>"

  2. Which *Hour* had the highest <u>average Profit Margin Ratio</u> per trip?
     - Work on "<u>Profitability Analysis 2</u>"

  Hint for 1:

  1. Drag and Drop the "Zone" variable (located on the left side) to "Columns" (located on the top panel).
  2. Drag and Drop the "Profit Margin Ratio" variable (located on the left side) to "Rows" (located on the top panel below "Columns").
  3. Click "Profit Margin Ratio" on "Rows" and go to "Measures." Choose "<u>Average</u>."
     - You may find the "Null" item on the plot. Click "Null" and Click "Exclude."

4. Click “Show Me” (located in the top-right corner) and choose the view you believe is the most intuitive to show the pattern. You may want to activate Map view - refer to Step 4. You can also refine the Color on the “Mark” panel (located on the left side of the plot, 

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Hint for 2: You can repeat the above steps for 1 by replacing “Zone” with “Pick-up Datetime.” For how to convert datetime to time format, refer to Step 6.

- **Step 9 – Create a Dashboard**

Prepare an interactive Dashboard that can show relationships between ride volumes and profit margin for each zone by time:

1. Click  at the bottom.
2. Drag and Drop the “Volume Analysis 2” sheet (located on the left side) to the center.
3. Drag and Drop the “Seasonality Analysis 2” sheet (located on the left side) to the right side of the page.
4. Click  of the “Seasonality Analysis 2” sheet to activate filtering.
5. Drag and Drop the “Profitability 1” sheet (located on the left side) to the bottom-left corner of the page.
6. Click each point on the “Seasonality Analysis 2” sheet and check if other sheets change accordingly.
7. You may want to rearrange the sheets. Find the layout you believe is the most intuitive to show the relationship.
   For more information on how to create Dashboard, see here.

- **Step 10 – Save and Upload**

Go to “File.” Click “Save As.” Your team’s file name should be “**Group # Ubor Technologies March 2022**.” Make sure that the file type is “*.twbx.” Upload the file on Quercus Dropbox by August 3.

PART II – BOARD PRESENTATION - PPT

Communication:

Cleaning and visualizing data in Tableau requires significant effort. However, the value of the data diminishes if it cannot be effectively communicated. The ability to communicate data to management, the Board of Directors, or other stakeholders is a crucial skill for a professional accountant and consultant.

In this phase of the project, your team will have the opportunity to present the analysis findings in Tableau to the Board of Directors of Ubor Technologies during their oversight meeting. **The purpose of this meeting is for the Board to review the company's performance as outlined in PART 1 and gather additional information that was not covered in that section. Ultimately, the Board aims to evaluate if there are any significant concerns or if there is a need for strategic initiatives to be undertaken.**

Instructions:
Prepare a PowerPoint slide presentation for the Board of Directors of Ubor Technologies. Use the Ubor Technologies – Board Presentation ppt file as your reference.

There are no restrictions on the number of slides you can use. Please refer to the provided reference slides for guidance on **the information that should be included**, but feel free to unleash your creativity in presenting the data.

Keep in mind that the **Ubor Technologies – Board Presentation ppt. file** serves as a reference only. You can modify the background and add colors, images, graphs, text, tables, and other visual elements. Your team should determine the key data to highlight and the most effective way to present it to the Board. It is recommended to use concise text on slides and ensure that the audience can easily comprehend the key findings you wish to convey. Avoid overcrowding the slides, as this may confuse the audience.

The notes section of the slides can be utilized to list additional talking points for your presentation.

Please note that in PART 1 of this assignment, the accuracy of the presented data has already been assessed. In PART 2, your presentation will be evaluated based on how well the information is conveyed rather than its accuracy. You will not be doubly penalized for incorrect information that was already deducted in PART 1.

Format of Deliverable

- You must submit a PDF format of your PowerPoint presentation printed in the notes format so that I can see the slide that would be presented and your main talking points.