SBM 2017 Analytics Challenge

This challenge is designed to challenge prospective candidates to show their data management skills, analytical ability, business strategy and communication skills. This challenge has two separate components. Please be prepared to explain your thought process and implementation steps.

Once completed, please send your work in Microsoft Word and Microsoft Excel format to your recruiter and copy sbm@chegg.com.

Part 1. Analytics and Data

The attached CSV contains actual data that we have retrieved from our partners. This data has not been altered in anyway and no calculations have been made. The data has not been scrubbed, meaning there may be inconsistent naming conventions for partners or sites. You can assume that no data in the CSV is double counted. When a cell is empty or contains "0", you can assume that there was no reported value for that corresponding cell. The data contains the following:

Sites (3):

- Easybib.com
- CitationMachine.net
- Bibme.org

Ad Partners (7):

- Abra
- Arbok
- Diglett Media
- Ivysaur
- Onix
- Snorlax/Snorlax Tagless
- Spearow

Metrics and definitions provided per Ad Partner and per Site (5):

- Mth
  - Month
- Date
- Site
- DFP Imp
  - Impressions reported by our ad server
- Paid Impressions
  - Impressions that were served and paid for as reported by our ad partners
- DFP Revenue
  - Revenue reported by our ad server.
- Ad Revenue
  - Revenue for the impressions served as reported by our ad partners

Task

Create a calculator that measures specific metrics based on a dataset. The workbook titled, "calculator_template" should be the format of the calculator output. The calculator should be using data provided in the "yield_project_dataset" workbook.

Logic Requirements

1. Weekly Aggregation should be the total sum inclusive of the date entered into "Date for end of week" in the calculator minus 6 days back vs the previous week.
    1. EX. If you enter 1/9/2017, the output of the calculator should reflect an aggregation of data from 1/3/2017-1/9/2017.
2. Impression and revenue discrepancy should be calculated by weekly aggregation inclusive of the date entered into "Date for end of week" in the calculator minus 6 days back.
    1. EX. If you enter 1/9/2017, the output of the calculator should reflect an aggregation of data from 1/3/2017-1/9/2017.
    2. *This should not be a WoW calculation. Discrepancy is described below.*
3. Discrepancy is defined as the percentage difference between the following for any corresponding partner and date range:
    1. 'DFP Imp' vs 'Paid Impressions'
    2. 'DFP Revenue' vs 'Ad Revenue'
    3. For the purposes of this calculator, you will need to calculate discrepancy based on weekly aggregations as described in Logic Requirement #2.
4. WoW (Week over Week) is percentage difference between an aggregation inclusive of the date entered into "Date for end of week" in the calculator minus 6 days back vs the previous week.
    1. EX. if 1/9/2017 is input, let week over week be 12/27/2016 – 1/2/2017 versus 1/3/2017 – 1/9/2017.
5. CPM should be calculated by using 'Ad Revenue' and 'DFP imp'. The equation for CPM is:
    1. CPM = 'Ad Revenue' / ('DFP imp'/1000)
6. There are three sites within the data. You may assume all calculations should be based on the cumulative totals of all sites.

Calculator Metric Requirements:

1. Cell C1, "Date of Week" serves as the input variable for the calculator. The format of this input should be MM/DD/YYYY. Once this cell is populated, the metrics below should automatically populate.
2. Cell B4, Weekly aggregation of 'DFP Imp'
3. Cell C4, Weekly aggregation of 'Ad Revenue'
4. Cell D4, Weekly aggregation of CPM= 'Ad Revenue' / ('DFP imp'/1000)
5. Cell E4 "Imp discrepancy" = Discrepancy between 'DFP Imp' and 'Paid Impressions'. This should not be a WoW calculation. This should be calculated with
6. Cell F4 "Revenue discrepancy" = Discrepancy between 'DFP Revenue' and 'Ad Revenue'
7. Cell G4 "WoW rev %Δ" = "week over week revenue percent change"
    1. Example - If 1/9/2017 were plugged into cell "C1", "WoW rev %Δ" would be the percent change of the sum of the revenue from 12/27/2016 – 1/2/2017 as compared to 1/3/2017 – 1/9/2017.
8. Cell H4 "WoW impressions %Δ" = "week over week impression percent change"
9. Cell I4" "WoW CPM %Δ" = "week over week CPM percent change"

10. Row 18 "Total" = Aggregation of all available data per metric. This field is not a "sum" value for the data in the table, but should be calculated per metric with all the available data for the corresponding date.

Notes and considerations:

1. You are not required to use or reference the "yield_project_dataset" as your database for your calculator. You are free to scrub, transform and transfer the data to best suit your system. You are also allowed to use programs other than excel to manage this data, provided that the calculator is still functional as an excel file.

Analysis

1. Using your calculator and the "yield_project_dataset" workbook, retrieve data for the date for end of week of 1/27/2017. Present an analysis of the data given the following scenario:
    1. The advertising business leaders of Chegg are meeting to plan for the upcoming week. Using data from your calculator, present one partner they should cut as well as one partner they should prioritize and why.

Finished Product

1. Please submit the following:
    1. Dataset used by calculator (any version of the "yield_project_dataset" that was used for the calculator). This does not have to be in excel format if another program was used.
    2. Calculator in Microsoft Excel format.
    3. Analysis in Microsoft Word format.

Part 2 – Business Strategy and Communication

Scenario
You've received an internal notice from finance that a direct deposit from 'Glossed Over Media' for $175,000 has failed to post at the scheduled payment time.

You have a three year working relationship with 'Glossed Over Media', they represent 8% of your header bidding revenue (5% of total revenue) and are generally very responsive with communication.

However, after reaching out to touch base on the recent payment issue, you haven't heard back in 24 hours. StudyBreak Media policy dictates that a partner who's late for payment is paused immediately.

Challenge
Please address the following:

1. How would you handle this situation? Describe your next steps both internally and externally.
2. Please send an example email to Amy at 'Glossed Over Media' as you attempt to communicate and rectify this situation.
3. Briefly explain why you decided to communicate what was communicated in the email.

There are no right or wrong answers, we're looking to better understand your communication style and problem solving abilities. Please submit your email response with a subject line. You can write the email in Microsoft Word.