Assignment # 1

Type: Group Assignment

Total Marks = 50

Submission DL: Wednesday, November 23, 2022, 11:59 PM

# **Objectives:**

* Case Study - Impact of COVID-19 on ABC Company’s Parcel Delivery Business.
* The submission should be in presentation form (e.g., PowerPoint) and demonstrate your ability to use visualization to tell a story while limiting the need for extensive text.
* For this case study, you will be given a business question and a dataset and are asked to perform all steps in the analytical process necessary to answer the business questions in an executive style presentation (i.e., **a presentation to executive level who understand the business but are limited in advanced analytics knowledge**).
* You are encouraged to go beyond what is explicitly required if it aligns with the overall purpose of the analysis.

**Dataset:**

The dataset (COVID\_Parcel\_Business.csv) includes customer IDs, the year, the week number, and the number of parcels shipped that week.

**Reports and Grading Rubrics (Table):**

* A Jupyter Notebook to show the computation performed using Python Language. You may use Excel as an additional tool to verify your results.
* Prepare an executive presentation that:
  + - Clearly presents relevant descriptive statistics.
    - Outlines the objectives of the study in your own words.
    - Answers each of the business questions described in the next section.
    - Includes the results of any analysis you performed to answer the business question.
    - Include any next steps or recommendations you wish to offer.
    - Use line, bar, and pie charts in the report.

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic/Issue** | **Assigned Marks** | **Obtained Marks** | **Comments** |
| **PowerPoint slide for Executive-level** | **20** |  |  |
| **Jupyter Notebook with Python Code and Explanations** | **15** |  |  |
| **GitHub code sharing and collaboration** | **10** |  |  |
| **Use of additional tools to help the presentation (e.g. PowerBI to create a chart, Excel to verify the Python Analytical results etc)** | **5** |  |  |

**Background**

The COVID-19 pandemic impacted Canadian businesses in various ways. Some businesses saw unprecedented growth due to increased e-commerce activity, while others found their product or service revenue plummeted. At ABC Company, we have customers from all sectors who have experienced COVID in their unique ways.

**Main Business Question**

How did the COVID-19 pandemic impact ABC Company’s parcel business?

**Additional Business Questions:**

* When were customer volumes first impacted by COVID-19?
* What events within the COVID timeline may have contributed to the change?
* How did COVID-19 impact peak season in 2020?

**The Impact of COVID on Customer Segments:**

* How has COVID affected companies in the different customer groups (Enterprise, Large, etc.)?
* What percent of each customer group is growing, moderately growing, and declining during the COVID observation period?
* What percent of each customer group are new customers during the COVID observation period?
* What percent of 2019 customers in each group did we lose during the COVID observation period?
* What was the overall impact of COVID on volumes and revenue by customer group?

**2019 Important Dates**

|  |  |  |
| --- | --- | --- |
|  | START DATE | END DATE |
| Week 1 | **Tuesday, January 1, 2019** | **Saturday, January 5, 2019** |
| Week 53 | **Sunday, December 29, 2019** | **Tuesday, December 31, 2019** |
| Peak Season | **November 4, 2019** | **January 20, 2020** |

**2020 Important Dates:**

|  |  |  |
| --- | --- | --- |
|  | START DATE | END DATE |
| Week 1 | **Wednesday, Jan 1, 2020** | **Saturday, Jan 4, 2020** |
| Week 53 | **Sunday, Dec 27, 2020** | **Thursday, Jan 31, 2020** |
| Pre-COVID Observation Period | **Week 1, 2020** | **TBD by Candidate** |
| COVID Observation Period | **TBD by Candidate http://www.whatweekisit.org/** | **Week 53 2020** |
| Peak Season | **November 2, 2020** | **January 17, 2021** |

Timeline

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**Customer Groups and Margin information**

*Note: For this case study, we will assign an average cost to a parcel and discounts for customers.*

Discounts are applied to customers who agree to ship a specific number of parcels with ABC Company within one year. For the purpose of this exercise, the base cost of sending a parcel without a contract is $22.00.

**Graphical user interface

Description automatically generated with medium confidence**

**How to estimate whether a company is growing or not:**

* Estimate the Industry standard growth rate (ISGR) by comparing pre-COVID 2020 volumes to the same period in 2019. This pre-COVID period will be used to compare growth rates before COVID-19 to growth rates during the COVID-19 pandemic.
  + Current period: week 1 to week 15, 2020
  + Previous period: week 1 to week 15, 2019
  + Volume: Total parcel volume of the mentioned period

|  |  |  |
| --- | --- | --- |
| Label | LOW | HIGH |
| New Customers | **0 parcels in 2019/early 2020** | **1+ parcels during COVID period** |
| High Growth Customers | **Greater than ISGR in the COVID observation period** | **unlimited** |
| Stable Customers | **0% growth during COVID period** | **ISGR during COVID period** |
| Declining Customers | **N/A** | **Negative growth during COVID period** |
| Lost Customers | **1+ parcels in 2019/early 2020** | **0 parcels after onset of COVID period** |