BUSINESS UNDERSTANDING

MTN Ivory coast is a telecommunication company that offers telecommunication services in Ivory Coast. **MTN** is a South African company that that expanded to over 21 countries and Ivory Coast was one of the countries. They offer voice data and digital services to their customers. These other digital services include services such as mobile money, mobile advertising etc. In Ivory Coast, MTN serves the commercial purpose of selling cellphones, offering voice calls, data bundles and SMS.

BUSINESS OBJECTIVE

Cote d'Ivoire would like to upgrade its technology infrastructure for its mobile users

BUSINESS CRITERIA SUCCESS

To find ways and justifications of upgrading technology infrastructure to its mobile users.

ASSESSING THE SITUATION

1. Resource inventory
   Datasets:
   1. cells_geo_description.xlsx (Links to an external site.)
   2. cells_geo.csv (Links to an external site.)
   3. CDR_description.xlsx(Links to an external site.)
   4. CDR 20120507 [http://bit.ly/TelecomDataset1]
   5. CDR 20120508 [http://bit.ly/TelecomDataset2]
   6. CDR 20120509 [http://bit.ly/TelecomDataset3]

- It is assumed that the data is correct and up -to date
- There are no constraints available.

Data Mining goals

The goals for this project are as follows:

- ❖ Calculate the most used cities
- ❖ Discover the most used product
- ❖ Discover the prices of the products

Data mining success criteria:

- ❖ We will be able to determine our success if we know the most used product, the timing/prices and the most used cities.

DATA UNDERSTANDING

We are dealing with 6 datasets as mentioned above two of which are descriptions of the columns.

DATA DESCRIPTIONS

We have six data sets

- cells_geo_description.xlsx (Links to an external site.) - This is a description of the geographical data which includes VILLES, STATUS, LOCALIZATION, DECOUPZONE, ZONENAME, LONGITUDE, LATITUDE, REGION, AREA, CELL_ID, SITE_CODE
    - VILLES - city
    - STATUS - In Service or not
    - LOCALIZATION - in ABIDJAN or not
    - DECOUPZONE - Geographical zone
    - ZONENAME - Name of Zone
    - LONGITUDE - Longitude
    - LATITUDE-Latitude
    - REGION - Region
    - AREA - Area
    - CELL_ID - ID of the cell
    - SITE_CODE - Site
- cells_geo.csv (Links to an external site.)
- CDR_description.xlsx(Links to an external site.) This is a description of the Telecom Datasets which includes PRODUCT ,VALUE, DATE_TIME, CELL_ON_SITE, DW_A_NUMBER_INT,DW_B_NUMBER_INT,COUNTRY A,COUNTRY B,CELL_ID,SITE_ID
    - Product is either voice or SMS
    - Value is the billing price
    - Date time is Time in format yyyy-MM-dd hh:mm:ss.0
    - CELL_ON_SITE Which cell in the site was used (not needed here)
    - DW_A_NUMBER_INT Anonymized phone number of the person
    - DW_B_NUMBER_INT Anonymized number for the counterparty
    - COUNTRY A Country of party A (useless here)
    - COUNTRY B Country of party B (useless here)
    - CELL_ID ID of the cell
    - SITE_ID ID of the SITE
- CDR 20120507 [http://bit.ly/TelecomDataset1]
- CDR 20120508 [http://bit.ly/TelecomDataset2]
- CDR 20120509 [http://bit.ly/TelecomDataset3]

VERIFYING DATA TYPES

None of our datatypes had missing values however some duplicates were present in the telecom datasets after merging.

DATA PREPARATION

The following steps were followed in data preparation

- **Loading of our datasets** - I loaded all of my CSV files.
- **Cleaning up my data** - Here I standardized column names since there were spelling mistakes and other discrepancies in the column names. I also dropped columns of the duplicates that were available.
- **Merging of the datasets** - I merged all the telecom datasets and later on merged the telecom datasets to the geo dataset.

DATA ANALYSIS

According to the analysis conducted I was able to deduce that the most used product was SMS according to the dataset provided. Also, the most used city was Cocody.
Further analysis can be found here
https://colab.research.google.com/drive/1Qayoa1hNj5HHHCPlp1r2cBJi5H_5vcwB?authuser=1#scrollTo=ZTtCCwPEYvLF

RECOMMENDATIONS

From my analysis, I would recommend that MTN should invest their technology infrastructures on SMS. Create more offers and packages for the SMS, followed by voice then data. However, it is not the one that makes the most money. Voice calls make the most money. In terms of cities, MTN Ivory coast should invest more in COCODY and YAMOUSSOUKRO. These are the cities that are top in service as the most used cities. Therefore MTN should invest in those two cities and SMS services. To, make a profit, they should find a better way of improving voice calls since they make the most money.

Link to GitHub repository:
https://github.com/Luvandale/Moringa-school