R2 Analytics_ Assignment (Analysis on Cough and cold Medication Brand Dataset)

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1) Problem Description:

Use dataset for a **Cough medicine and Cold Medication Brand** that spans from 2018-2020. Giving some interesting insights you can find from this data.

Some Ideas to get you started:

Q. Do we see any seasonality in the data?

Q. Are we seeing any growth/decline trends for this brand?

2) Objective:

Getting interesting Visualizations from given dataset and come to some conclusions and insights that will help business to enhance their sales and services.

Tools Used:

Language: Python (For Data cleaning)

IDE: Google Collab

Business intelligence tool: Tableau

For data Understanding, cleaning and feature engineering purpose only google collab has been used while the Dashboard has been created on tableau Public (2022.1).

3) Conclusions after Statistical Analysis on Dataset:

- The shape of the dataset is 2444*13 i,e It is having 2444 Rows and 13 columns.
- The Data Column "Form" is having 388(36.3%) Missing Values.
- There is no duplicate record.
- Missing values imputation has been done, Nan value has been replaced by "Unknown" and "Spray" according to condition.
- Only single value is there in "Market", "Category", "Brand" columns.
- $, Units, TDP, no. of Stores column are highly skewed.
- Market has constant value "Total Country".
- Category has constant value "Respiratory".
- Brand has constant value "Nytel".
- Week has a high cardinality: 134 distinct values.
- [$] is highly correlated with Sub Brand and 2 other fields.
- [Units] is highly correlated with Sub Brand and 2 other fields.

- [TDP] is highly correlated with Age Target and 5 other fields.

- [Number of Stores] is highly correlated with Form.

- Week is uniformly distributed.

- [$] has 59 (2.4%) zeros.

- [Units] has 59 (2.4%) zeros.

- [TDP] has 78 (3.2%) zeros.

- [Number of Stores] has 59 (2.4%) zeros.

- company "Nytel" is targeting only 2 Age groups: ADULTS and PEDIATRIC.

3) Insights Gained after Analysis on Tableau:

- **Total Money Earned ($)** through sales of Medicine is 9,123,129,391 $.

- **Total TDP** is 287,025.

- Targeted Audience is Adults and Pediatric.
  - 92.62% of total $ earned is due to Adult targets.
  - 7.38% total $ earned is due to Pediatric targets.

- **Highest $ earned:**
  Adults:

  Segment: Cough chest congestion, Sub-Brand: Nytel DM and it is 1,922,122,190 $.

  Pediatric:
  Segment: Cold Flu, Sub-Brand: Nytel CHLDNS MLT SYMPTM and it is 338,953,780$.

- **Lowest $ earned:**
  Adults:
  Segment: Cold Flu, Sub Brand: Nytel FAST MAX(Powder) and it is 822 $.
  Pediatric:
  Segment: Nasal Sprays, Sub Brand: Nytel CHLDNS BASE and it is 3,630,729 $.

- In Age Target "Pediatric" there is no product in segment SINUS.

- **The Trend line in $ earning** can be seen in both the Targeted Age (Adult and Pediatric).
  Adults:
  - **For Year 2018:** December and January Sales was on the peak and high $ earned by the company can be seen.
  - **For Year 2019:** March and November Sales was on the peak and high $ earned by the company can be seen.
  - **For Year 2020:** March Sales was on the peak and Broke the record of all previous years (May be due to COVID).

- o For Nasal Segment sales and $ earned is constant throughout the years.

  Pediatric:

- o March, November and December are the peak months for every year.
- o For Nasal Segment, sales and $ earned is constant throughout the years.

- **Highest Units sold:**
  Adults:

  Segment: Cold Flu, sub-brand: Nytel FAST MAX (113,130,130).
  Pediatric:

  Segment: Cold Flu, sub-brand: Nytel CHLDNS MLT SYMPTM (18,277,271).

- **Lowest Units sold:**
  Adults:
  Segment: Nasal Sprays, sub-brand: Nytel SINUS MAX (6,028,190).
  Pediatric:

  Segment: Nasal Sprays, sub-brand: CHLDNS BASE (177,245).

- November, December and March are the peak months for every year for highest sales.

- Nasal Spray sales is constant throughout the year for both Target ages.

- **Highest number of stores selling the product:**
  - o Age target: Adult, Segment: Cold Flu, sub-brand: Nytel FAST MAX (77,745,739) followed by
  - o Age target: Adult, Segment: SINUS, sub-brand: Nytel SINUS MAX (72,726,979).

- **Highest TDP:**
  Adults:

  - o Segment: Cold Flu, sub-brand: Nytel FAST MAX (91,481 Stores) followed by
  - o Segment: SINUS, sub-brand: Nytel SINUS MAX (47,072 Stores).
  Pediatric:
  Segment: Cold Flu, sub-brand: Nytel CHLDNS MLT SYMPTM (17,670)

- **Seasonality** can be seen around Winter (Near December Month) and Summer (Near March Month) for both the target ages.