Q1. Business Case: Target SQL

Context

Target is one of the world's most recognized brands and one of America's leading retailers. Target makes itself a preferred shopping destination by offering outstanding value, inspiration, innovation and an exceptional guest experience that no other retailer can deliver.

This business case has information of 100k orders from 2016 to 2018 made at Target in Brazil. Its features allow viewing an order from multiple dimensions: from order status, price, payment and freight performance to customer location, product attributes and finally reviews written by customers.

Dataset: https://drive.google.com/drive/folders/1TGEc66YKbD443nslRi1bWgVd238gJCnb

Data is available in 8 csv files:

1. customers.csv

2. geolocation.csv

3. order_items.csv

4. payments.csv

5. reviews.csv

6. orders.csv

7. products.csv

8. sellers.csv

Each feature or columns of different CSV files are described below:

The **customers.csv** contain following features:

Features	Description
customer_id	Id of the consumer who made the purchase.
customer_unique_id	Unique Id of the consumer.
customer_zip_code_prefix	Zip Code of the location of the consumer.
customer_city	Name of the City from where order is made.
customer_state	State Code from where order is made (Ex- sao paulo-SP).

The **sellers.csv** contains following features:

Features	Description
seller_id	Unique Id of the seller registered
seller_zip_code_prefix	Zip Code of the location of the seller.
seller_city	Name of the City of the seller.
seller_state	State Code (Ex- sao paulo-SP)

The **order_items.csv** contain following features:

Features	Description
order_id	A unique id of order made by the consumers.
order_item_id	A Unique id given to each item ordered in the order.
product_id	A unique id given to each product available on the site.
seller_id	Unique Id of the seller registered in Target.
shipping_limit_date	The date before which shipping of the ordered product must be completed.
price	Actual price of the products ordered.
freight_value	Price rate at which a product is delivered from one point to another.

The **geolocations.csv** contain following features:

Features	Description
geolocation_zip_code_prefix	first 5 digits of zip code
geolocation_lat	latitude
geolocation_lng	longitude
geolocation_city	city name
geolocation_state	state

The **payments.csv** contain following features:

Features	Description
order_id	A unique id of order made by the consumers.
payment_sequential	sequences of the payments made in case of EMI.
payment_type	mode of payment used. (Ex-Credit Card)
payment_installments	number of instalments in case of EMI purchase.
payment_value	Total amount paid for the purchase order.

The **orders.csv** contain following features:

Features	Description
order_id	A unique id of order made by the consumers.
customer_id	Id of the consumer who made the purchase.

order_status	status of the order made i.e delivered, shipped etc.
order_purchase_timestamp	Timestamp of the purchase.
order_delivered_carrier_date	delivery date at which carrier made the delivery.
order_delivered_customer_date	date at which customer got the product.
order_estimated_delivery_date	estimated delivery date of the products.

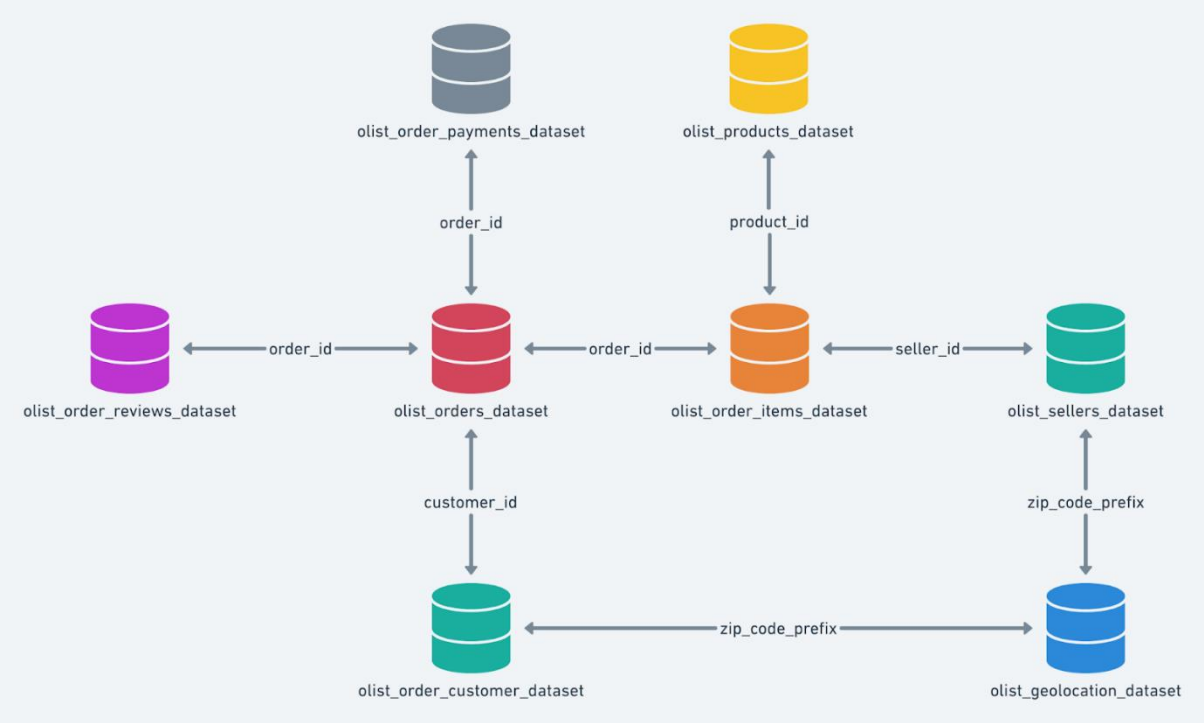
The **reviews.csv** contain following features:

Features	Description
review_id	Id of the review given on the product ordered by the order id.
order_id	A unique id of order made by the consumers.
review_score	review score given by the customer for each order on the scale of 1–5.
review_comment_title	Title of the review
review_comment_message	Review comments posted by the consumer for each order.
review_creation_date	Timestamp of the review when it is created.
review_answer_timestamp	Timestamp of the review answered.

The **products.csv** contain following features:

Features	Description
product_id	A unique identifier for the proposed project.
product_category_name	Name of the product category
product_name_lenght	length of the string which specifies the name given to the products ordered.
product_description_lenght	length of the description written for each product ordered on the site.
product_photos_qty	Number of photos of each product ordered available on the shopping portal.
product_weight_g	Weight of the products ordered in grams.
product_length_cm	Length of the products ordered in centimeters.
product_height_cm	Height of the products ordered in centimeters.
product_width_cm	width of the product ordered in centimeters.

High level overview of relationship between datasets:



Assume you are a data scientist at Target, and are given this data to analyse and provide some insights and recommendations from it.

What does 'good' look like?

1. Import the dataset and do usual exploratory analysis steps like checking the structure & characteristics of the dataset
    1. Data type of columns in a table
    2. Time period for which the data is given
    3. Cities and States of customers ordered during the given period
2. In-depth Exploration:
    1. Is there a growing trend on e-commerce in Brazil? How can we describe a complete scenario? Can we see some seasonality with peaks at specific months?
    2. What time do Brazilian customers tend to buy (Dawn, Morning, Afternoon or Night)?
3. Evolution of E-commerce orders in the Brazil region:
    1. Get month on month orders by states
    2. Distribution of customers across the states in Brazil
4. Impact on Economy: Analyse the money movement by e-commerce by looking at order prices, freight and others.
    1. Get % increase in cost of orders from 2017 to 2018 (include months between Jan to Aug only) - You can use "payment_value" column in payments table
    2. Mean & Sum of price and freight value by customer state

5. Analysis on sales, freight and delivery time

    1. Calculate days between purchasing, delivering and estimated delivery

2. Find time_to_delivery & diff_estimated_delivery. Formula for the same given below:
    - time_to_delivery = order_delivered_customer_date-order_purchase_timestamp
    - diff_estimated_delivery = order_estimated_delivery_date-order_delivered_customer_date
3. Group data by state, take mean of freight_value, time_to_delivery, diff_estimated_delivery
4. Sort the data to get the following:
5. Top 5 states with highest/lowest average freight value - sort in desc/asc limit 5
6. Top 5 states with highest/lowest average time to delivery
7. Top 5 states where delivery is really fast/ not so fast compared to estimated date

6. Payment type analysis:

1. Month over Month count of orders for different payment types
2. Count of orders based on the no. of payment instalments