

# Marketing and Retail Analytics

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# Agenda

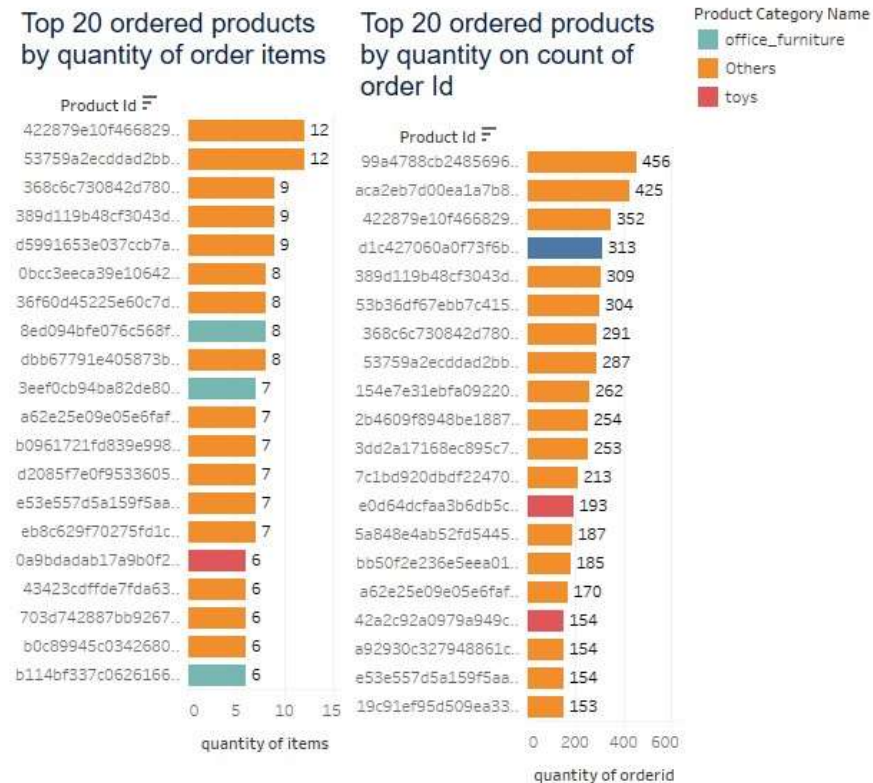
1. Objectives
2. Visualizations
3. Insights
4. Recommendations
5. Appendix –
  - Data Sources
  - Data Methodology
  - Data Assumptions

# Objective

- ▶ OList, an e-commerce company facing losses, predict product in demand with greater accuracy, minimizing unnecessary inventory storage costs
- ▶ Identify top revenue-generating products based on revenue and order item count using Pareto Analysis and analyze
- ▶ Analyze products bought together frequently and customer purchase (individual and joint purchases) behavior using market basket analysis.

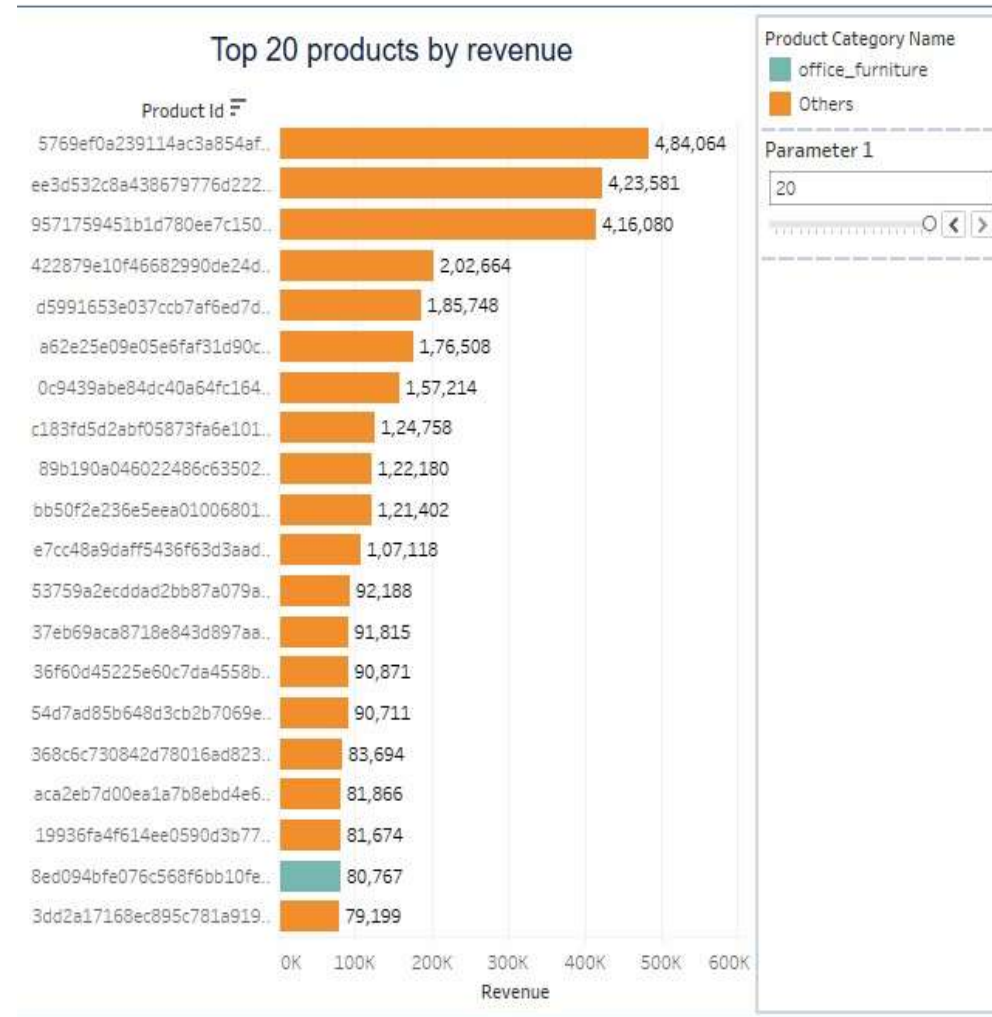
# The top 20 quantitatively dominant products

- Office furnitures, toys and computer accessories are the most bought products from customer in large quantities



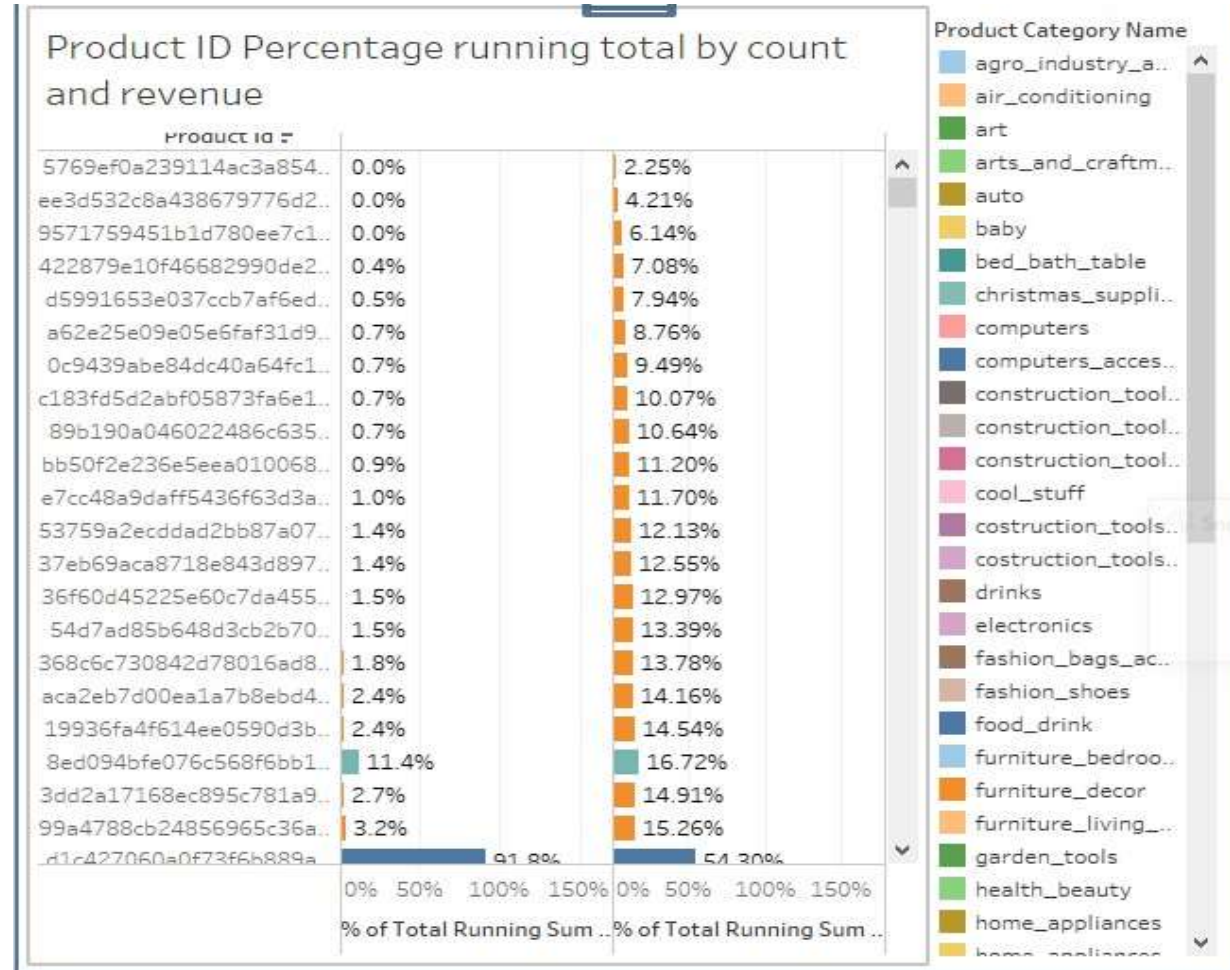
# Top 20 Revenue Generator Products

- Office furniture's is one of the most profit generated product in Olist basket



# % Running totals by revenue and number of orders by products

- ▶ Products like Toys, computer accessories, home appliance, house wares, computes are the most revenue generators across the product categories.
- ▶ The Percentage of Total Running Revenue and Quantity Ordered has been broken down by Product Id.
- ▶ The contribution of each product towards the total revenue can be identified.





Contd

Full Data  
10,000 rows 5 fields

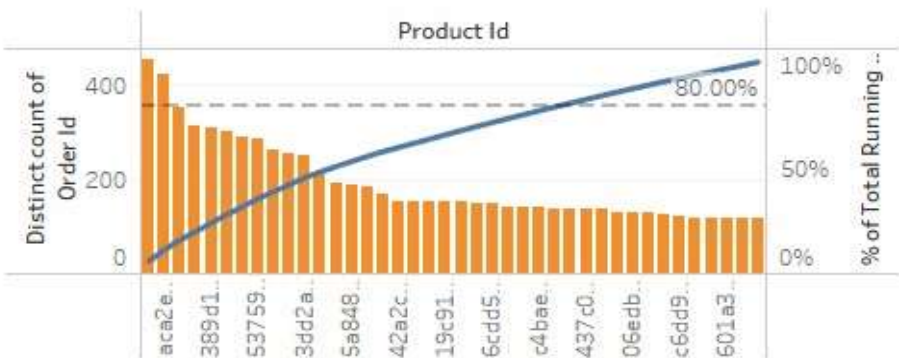
|                                  |                       |                                   |                                   |             |
|----------------------------------|-----------------------|-----------------------------------|-----------------------------------|-------------|
| Abc<br>Sheet1                    | Abc<br>Sheet1         | Abc<br>Sheet1                     | Abc<br>Sheet1                     | #<br>Sheet1 |
| Product Id                       | Product Category Name | Order Id                          | order id (Sheet11)                | Revenue     |
| 32bcebd1122da0e45ac11739dd7a1cad | toys                  | 53be479f3b3486d26abed234b365a3... | 53be479f3b3486d26abed234b365a3... | 17,568      |
| e72e59338050d312832e22ea7aedc0fd | toys                  | 897d215bbe78c235bc0008784a15ac78  | 897d215bbe78c235bc0008784a15ac78  | 16,084      |
| 1e5428c428e0f783acd6e3d94ba4ee2a | computers             | a23f4025d60af6199b5eb5631b070e7f  | a23f4025d60af6199b5eb5631b070e7f  | 10,878      |
| 152397b614be35e54106663bd5671f7d | Others                | 01a0013ddc7cd129e350e8671b56a263  | 01a0013ddc7cd129e350e8671b56a263  | 10,494      |
| d9894482fba41f536a273ba2276d951f | Others                | ad1aeeb1a99c9f021e38a49865bb812c  | ad1aeeb1a99c9f021e38a49865bb812c  | 9,984       |
| 810cfa5dd36b001cfc186499381f72ab | Others                | 3e6f06c624c7f67d6a0710e39ca97f2b  | 3e6f06c624c7f67d6a0710e39ca97f2b  | 9,688       |
| a5215a7a9f46c4185b12f38e9ddf2abc | Others                | 694e3d121f16bcbb9b4595b6c6ab3baf  | 694e3d121f16bcbb9b4595b6c6ab3baf  | 8,092       |
| 27535386be7362e36d9e78c2afb8c0e5 | Others                | d3e20e12dd625bc8aa36a78636912b0f  | d3e20e12dd625bc8aa36a78636912b0f  | 7,288       |
| f3720bc68555b1bff49b9ffd41b017ac | Others                | 31b855608ca69e4146b737745506f2d5  | 31b855608ca69e4146b737745506f2d5  | 7,104       |
| a5647c44af977b148e0a3a4751a09e2e | office_furniture      | a2a53e824841856d25e9fe22467e42... | a2a53e824841856d25e9fe22467e42... | 6,948       |
| 42bf9ee410b1247f0223626107834b87 | Others                | ca0400dec2c292340c373e63b1c2c5... | ca0400dec2c292340c373e63b1c2c5... | 6,876       |
| 1bb0f142789375f5709d08b2f2355c2b | Others                | 61a4e749e6975384980e883fc5653d... | 61a4e749e6975384980e883fc5653d... | 6,846       |
| 1bb0f142789375f5709d08b2f2355c2b | Others                | 61a4e749e6975384980e883fc5653d... | 61a4e749e6975384980e883fc5653d... | 6,846       |
| 56d45b2c27871322801134f57d1b9dfb | Others                | 448795135b904d057254f5fd0d5a6a... | 448795135b904d057254f5fd0d5a6a... | 6,628       |

# Quantity Pareto Analysis

**Pareto Analysis on Contribution of Distinct Products Categories by Number of Distinct Orders in olist**



**Pareto Analysis on Contribution of Distinct Products Id by Number of Distinct Orders in olist**

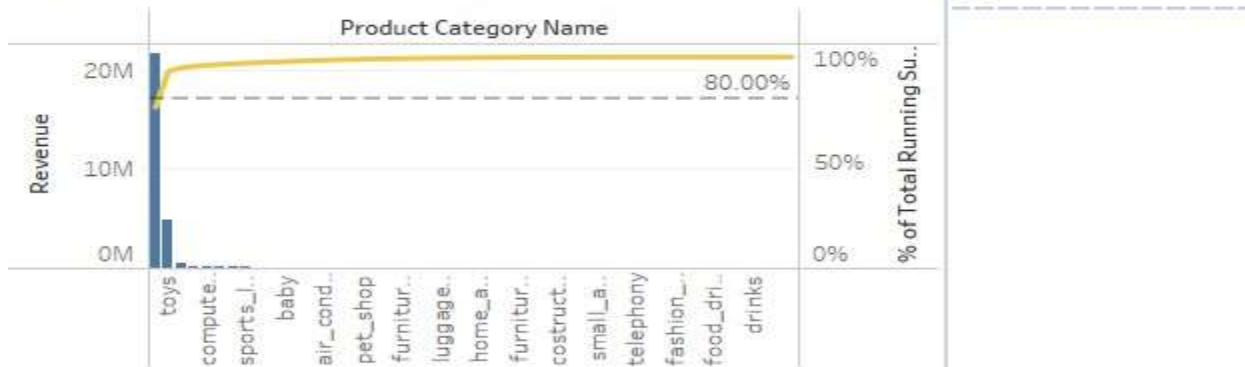


- ▶ Toys, houseware auto cool stuff stationeries health & beauty are frequently ordered product categories at order id level quantitvely
- ▶ Olist should stock these products based on pattern seen over last 2 years



# Revenue Pareto Analysis

**Pareto Analysis on Contribution of Distinct Products Categories by revenue**



**Pareto Analysis on Contribution of Distinct count of Products Id by Number of Distinct Orders in olist**

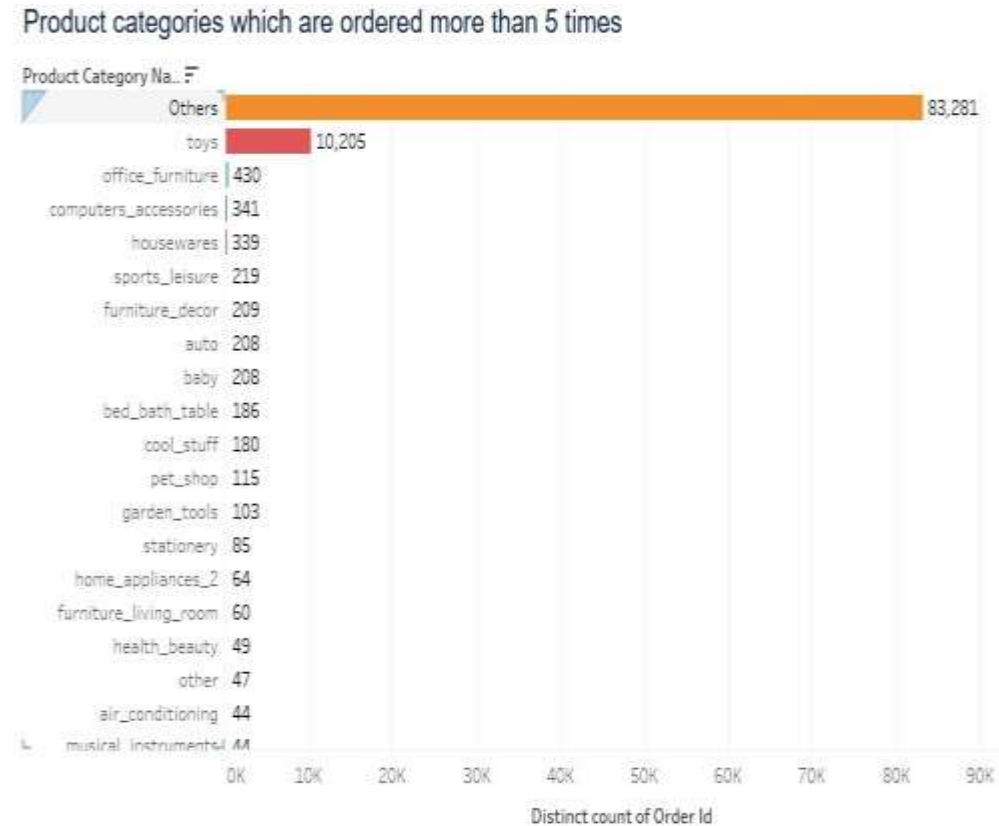


- Toys , computers\_accessories , wares ,sports leisure are the major product categories where Olist will have the biggest payoff.

# Market Basket Analysis -1

## Product Categories Repurchased Over 5 Times

- Focus on these product categories to manage inventory, as they generate large revenue and continue to be in high demand among customers
- An example, these are the product categories which are frequently ordered together with 'toys'.



# Market Basket Analysis -2

## Shopping Synergies

- Customers who purchase toys also purchase other items. Toys should be offered in conjunction with new offers

Combinations of product categories bought together

| Product Category Name | toys | Others | furnitur.. | auto | sports_l.. | baby | bed_bat.. | cool_ |
|-----------------------|------|--------|------------|------|------------|------|-----------|-------|
| toys                  |      | 256    | 11         | 24   | 1          | 1    | 5         |       |
| Others                | 256  |        | 11         | 3    | 3          | 6    | 6         |       |
| sports_leis..         | 1    | 3      |            |      | 219        |      |           |       |
| furniture_d..         | 11   | 11     | 209        |      |            |      |           |       |
| auto                  | 24   | 3      |            | 208  |            |      |           |       |
| baby                  | 1    | 6      |            |      |            | 208  |           |       |
| bed_bath_t..          | 5    | 6      |            |      |            |      | 186       |       |
| cool_stuff            | 2    |        |            |      |            |      |           |       |
| pet_shop              | 4    | 5      |            |      |            |      |           |       |
| garden_too..          | 1    | 3      |            |      |            |      |           |       |
| stationery            | 2    | 5      |            |      |            |      |           |       |
| home_appli..          |      |        |            |      |            |      |           |       |
| furniture_li..        | 2    |        |            |      |            |      |           |       |
| health_bea..          | 1    | 2      |            |      |            |      |           |       |
| other                 | 2    | 3      |            |      |            |      |           |       |
| air_conditi..         |      |        |            |      |            |      |           |       |
| musical_ins..         |      | 2      |            |      |            |      |           |       |
| industry_c..          | 1    |        |            |      |            |      |           |       |
| luggage_ac..          | 2    | 1      |            |      |            |      |           |       |
| constructio..         | 3    | 2      |            |      |            |      |           |       |
| computers             |      |        |            |      |            |      |           |       |
| small_appli..         |      | 1      |            |      |            |      |           |       |
| kitchen_din..         |      |        |            |      |            |      |           |       |
| home_appli..          |      |        |            |      |            |      |           |       |

# Insights

- ▶ Olist even with a 0.63% cancellation rate, 99.37% of orders proceed through to delivery, signifying customer trust and commitment to purchase
- ▶ Over a two-year period, the maximum number of orders per month occurs between the months of March and August.
- ▶ Olist's journey has been remarkable! From 285 orders in 2016, they scaled to over 9610 orders by 2018. (Showcases the platform's growth trajectory)
- ▶ October and September may be quieter months for Olist compared to the peak seasons of May, July, and August, offering potential opportunities for targeted marketing campaigns. ,monday tuesday olist website will be busy because maximum num of orders are seen on these day over past 2 years compared to weekend
- ▶ 75.24% Customers prefer credit\_card as preferred payment method followed by wallet (19.46%customer) compared to other available methodsGood news for fashionistas! Olist's lower shipping charges on watches and shoes make online shopping even more enticing.
- ▶ Olist's hefty shipping charges for health and beauty, computers, and construction tools can be a hurdle for some shoppers.
- ▶ More than 75% of products sold are toys and rest products categories constitutes 25% of olist business.
- ▶ More than 50% , 12 % of customers has made their payments by opting for 1 month and 2 month installment respectively using their credit card.
- ▶ OList customers predominantly hail from Sao Paulo state (41.93%), while Rio de Janeiro (12.88%) and Minas Gerais (11.71%) make up significant portions of the customer base

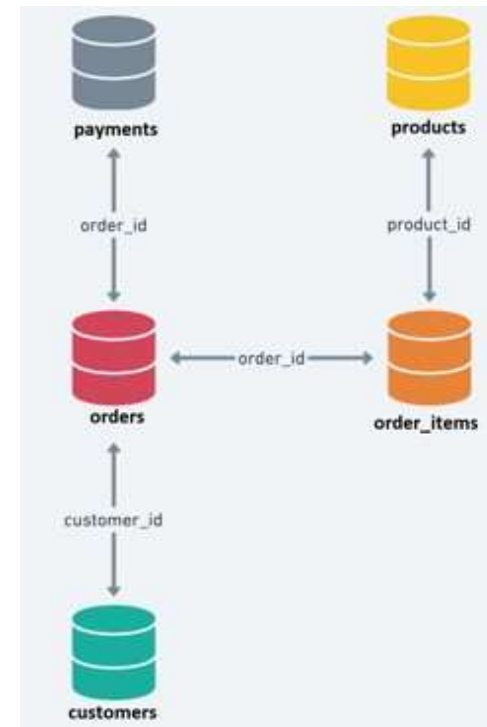
# Recommendations

- The company should focus on the categories that generate more than 80% of the revenue by always keeping them in stock.
- The company should target customers who are more likely to buy 'other' and 'toys' to boost sales as the category toys is the most ordered category.
- Offer promo codes or discounts on the frequently ordered category associations to encourage cross-selling among the products.
- The company can reduce some of the subcategories which have very low sales.

# Appendix – Data Sources

- OList Retail dataset containing order-related information for the year 2016 to 2018.
- Here is a snapshot of our data dictionary:

| Dataset name | Column Name                | Description  |
|--------------|----------------------------|--|
| orders       | order_status               | Indicates the status of an order, for example: delivered, cancelled, processing etc.             |
| orders       | order_purchase_timestamp   | Timestamp when the order was made from the customer  |
| orders       | order_approved_at          | Timestamp when the order was approved from the sellers' side                                     |
| orders       | order_delivered_timestamp  | Timestamp when the order was delivered at customer's location                                    |
| orders       | order_estimated_delivery_d | Estimated date of delivery shared with the customer while placing the order                      |
| order_items  | order_id                   | Unique identifier for an order   |
| order_items  | order_item_id              | Item number in each order. Order_id along with this column acts as the primary key of this table |
| order_items  | product_id                 | Unique identifier for a product  |
| order_items  | seller_id                  | Unique identifier for the seller   |
| order_items  | price                      | selling price of the product   |
| order_items  | shipping_charges           | charges associated with the shipping of the product  |
| customers    | customer_id                | Unique identifier for a customer, acts as the primary key of this table                          |
| customers    | customer_zip_code_prefix   | Customer's Zip code  |
| customers    | customer_city              | Customer's Zip city  |
| customers    | customer_state             | Customer's Zip state   |
| payments     | order_id                   | Unique identifier for an order, this table can have duplicates in this column                    |
| payments     | payment_sequential         | Provides the info of the sequence of payments for the given order                                |
| payments     | payment_type               | Type of payment like credit_card, debit_card etc.  |
| payments     | payment_installments       | Payment installment number in case of credit cards   |
| payments     | payment_value              | Trasaction value   |
| products     | product_id                 | Unique identifier for each product, acts as the primary key of this table                        |
| products     | product_category_name      | Name of the category the product belongs to  |
| products     | product_weight_g           | Product weight in grams  |
| products     | product_length_cm          | Product length in centimeters  |
| products     | product_height_cm          | Product height in centimeters  |
| products     | product_width_cm           | Product width in centimeters   |





# Appendix – Data Methodology

- ▶ Retail Data set “Retail\_dataset” is provided in the form of excel with orders ,order\_items,customer,product,payment worksheet .
- ▶ Jupiter Python is used for Data Understanding, Pre-processing ,Merging of tables,Exploratory data analysis .
- ▶ Cleaned data frame is saved in the form of excel “Cleaned\_Retail\_dataset”
- ▶ Further Analysis done in Tableau desktop using “Cleaned\_Retail\_dataset”

# Appendix – Data Assumptions

- ▶ Only the cases having order status as ‘delivered’ are considered.
- ▶ Instead of building bigger, OList is building smarter: their innovative inventory strategy to save on warehouse costs.
- ▶ The company's strategies are built around sustained sales growth.
- ▶ Revenue column was created using price and order\_item\_id.
- ▶ Missing value in product category is categorized as “other”

Thank You