E-commerce Analysis – Sales & Operations Strategy

1. Exploratory Analysis: Structure & Characteristics of the Dataset

Insights:

- Customers table consists 5 columns with the data types INT64 for customer_zip_code_prefix and string for remaining 4 columns as mapped in the above screenshot.
- Zip codes are not used for any calculations, and storing them in a number format might cause issues like losing leading or preceding zeroes.
- Orders were placed between 4th Sep, 2016 and 17th Oct, 2018.
- The order table consists of customer purchase data of around 2 years.
- Customers from 27 different states and 4119 different cities have ordered between 4th Sep, 2016 and 17th Oct, 2018.

Recommendation:

- Use VARCHAR(6) to store zip codes.
- Identify the states and cities where no orders were placed from and improve the marketing strategy.

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2. In-depth Exploration

Insights:

- Growing trend observed in the orders placed over the past years.
- Orders increased from 329 in 2016 to 54,011 in 2018.
- Peak order months: Nov 2017 (7,544 orders), Jan 2018 (7,269 orders), Mar 2018 (7,211 orders).
- Brazilian customers placed most orders in the Afternoon, followed by Night and Mornings.

Recommendation:

- Ensure products are stocked up in inventory.
- Expand delivery services to meet the increasing order demand.
- Analyze products ordered during these months and launch variants accordingly.
- Plan new product launches during Afternoon hours.
- Ensure additional customer support resources during peak order times.

3. Evolution of E-commerce Orders in Brazil

Insights:

- Most orders placed from SP, with peak in Aug 2018.
- 99,441 customers distributed across 27 states; SP has 41,746 customers, followed by RJ (12,852) and MG (11,635).

Recommendation:

- Offer state-wide sales to increase orders in SP.
- Expand business in next-highest orders state: RJ.
- Focus on customer engagement in SP, RJ, and MG.
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4. Impact on Economy

Insights:

- 57.8% increase in order costs from Jan–Aug 2017 to Jan–Aug 2018.
- Top 3 states by total and average order price: SP, RJ, MG.
- High freight value in SP due to large orders and customer base.
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Recommendation:

- Continue efforts to improve growth.
- Focus on customer engagement and service optimization in these states.
- Group order shipments to minimize freight costs.

5. Analysis Based on Sales, Freight, and Delivery Time

Insights:

- 8 orders without actual delivery date despite status “delivered.”
- 7,307 orders delivered later than estimated delivery time.
- States RR, PB, RO, AC, PI have the highest average freight value.
- States RR, AP, AM, AL, PA have highest average delivery time.
- Top 5 states with actual delivery faster than estimated delivery time.

Recommendation:

- Validate data for accuracy.
- Focus on late deliveries and improve speed in affected cities.
- Group shipments to reduce freight costs.
- Identify delivery blockers and improve delivery speed in these states.
- Partner with efficient delivery services in other states.

6. Analysis Based on Payments

Insights:

- Majority of orders placed via credit card.
- Customers mostly use 1–4 installments for payments.

Recommendation:

- Ensure credit card payment gateway is always available.
- Offer 4 installments for all applicable products.

Key Skills Demonstrated: SQL (BigQuery), EDA, Data Analysis, Trend Analysis, Reporting