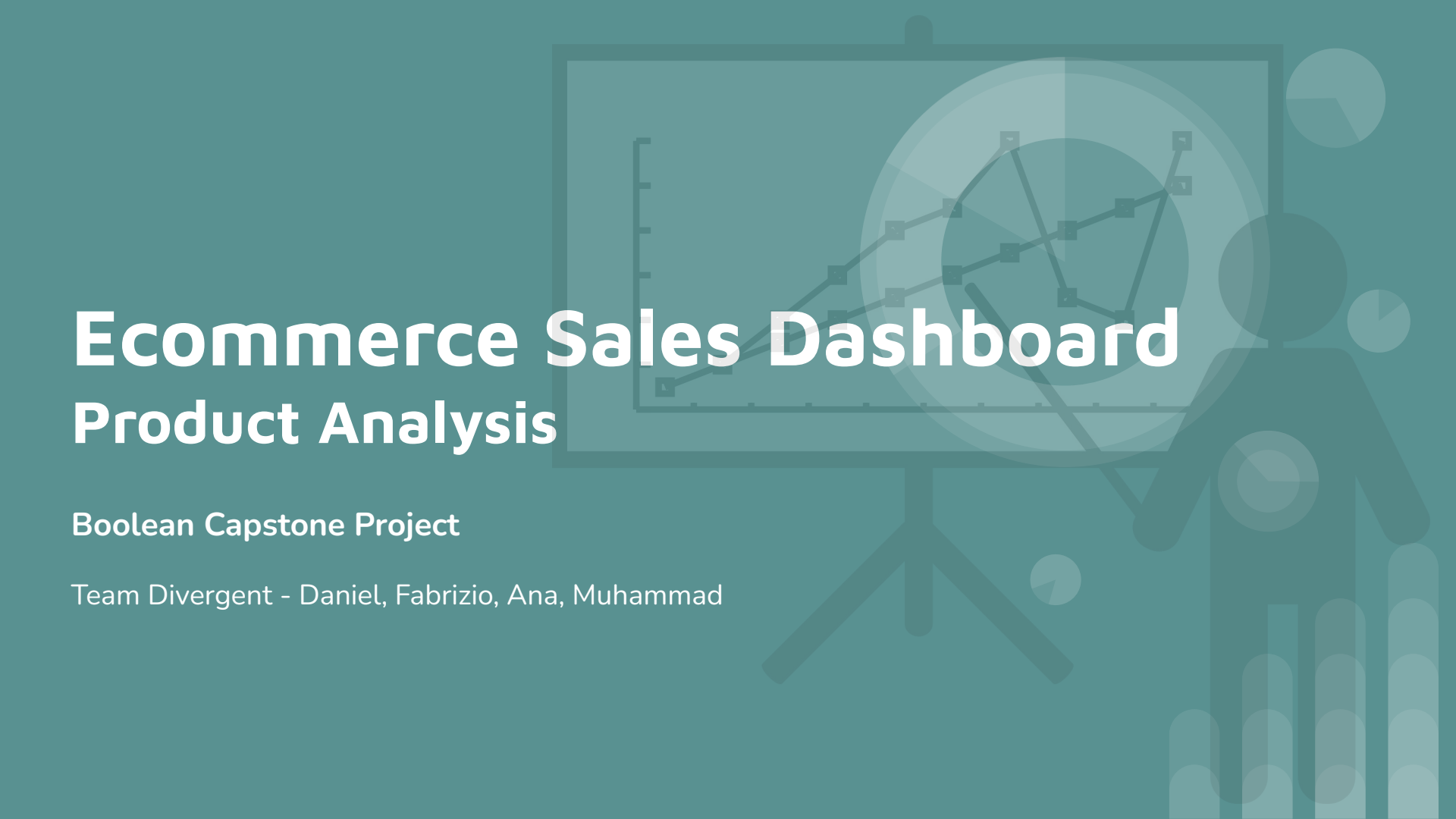

Ecommerce Sales Dashboard

Product Analysis

Boolean Capstone Project

Team Divergent - Daniel, Fabrizio, Ana, Muhammad

Objective

- To run comprehensive analysis on the progress of the ecommerce business activity over time.

- Provide a study on sales progression, products performance, distribution center performance customer behaviour and website activity of the ecommerce business.

- This study is done with the aim of gaining insights and interpreting these insights obtained from our Analytics solutions in order to make recommendations on how our solutions can be leveraged to enhance the future success of the business.

Strategic Insights on Products Performance and Other Key Metrics

- Sales and Revenue Growth
- Regional Orders Distribution and Fulfilment
- Top Selling Product Categories: Sales and Profitability
- Product Preference by Gender
- Customer Behavior; Order Volume vs Website engagement

Sales and Revenue Growth (2019–2024)

- **Overview**: The line graph provides a clear representation of the overall sales and revenue growth across a five-year span. The steep incline towards 2024 signifies robust demand and effective scaling of the business

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- **Key Insights**:
  - The results indicates steady growth in revenue, with notable acceleration post-2022. This growth trend aligns with market expansion strategies and increased online consumer activity.
  - The peak in late 2023 and early 2024 suggests successful execution of marketing campaigns during high-demand periods (likely holiday seasons).

- **Recommendations**:
  - **Capacity Planning**: Ensure operational and logistical scalability to handle increased sales volume, particularly during peak seasons.
  - **Data-Driven Campaigns**: Leverage data to design targeted marketing campaigns during the periods of observed peak sales to maximize ROI.

```sql
WITH monthly_sales AS (
 SELECT DATE_TRUNC(o.created_at, MONTH) AS month,COUNT(oi.id) AS
total_sales, SUM(oi.sale_price) AS total_revenue
FROM `bigquery-public-data.thelook_ecommerce.orders` o
JOIN `bigquery-public-data.thelook_ecommerce.order_items` oi ON
o.order_id = o.order_id
WHERE oi.status = "Complete"
GROUP BY month
ORDER BY month ASC
)
SELECT month, total_sales, total_revenue,
SUM(total_sales) OVER (ORDER BY month) AS running_total_sales,
SUM(total_revenue) OVER (ORDER by month) AS running_total_revenue,
AVG(total_sales) OVER (ORDER BY month ROWS BETWEEN 11 PRECEDING AND
CURRENT ROW) AS moving_avg_sales,
AVG(total_revenue) OVER (ORDER by month ROWS BETWEEN 11 PRECEDING
AND CURRENT ROW) AS moving_avg_revenue
FROM monthly_sales;
```

Regional Order Distribution and Fulfillment

- **Overview**: The map illustrates the geographical distribution of orders across key U.S. distribution centers, identifying high-volume hubs like **Memphis** (1,222 orders), **Los Angeles** (860 orders), and **Philadelphia** (805 orders).

- **Key Insights**:
  - **Chicago** emerges as the top distribution hub, followed by **Los Angeles** and **Philadelphia**. These regions form the backbone of the company's distribution network.
  - Smaller hubs like **New Orleans** and **Savannah** still play critical roles in regional fulfillment but represent areas of potential growth.

- **Recommendations**:
  - **Expansion of Fulfillment Centers**: Consider expanding warehouse capacity in high-demand areas like **Chicago** and **Los Angeles** to optimize shipping efficiency and reduce lead times.
  - **Supply Chain Optimization**: Assess the operational capabilities of smaller hubs to improve overall delivery speed and customer satisfaction.

```sql
SELECT dc.name AS distribution_center, COUNT(o.order_id) AS total_orders,
AVG(TIMESTAMP_DIFF(o.delivered_at, o.created_at, DAY)) AS avg_delivery_time_days
FROM `bigquery-public-data.thelook_ecommerce.orders` o
JOIN`bigquery-public-data.thelook_ecommerce.products` p ON o.user_id = p.id
JOIN  `bigquery-public-data.thelook_ecommerce.distribution_centers` dc ON p.distribution_center_id
= dc.id
WHERE o.status = 'Complete'
GROUP BY dc.name
ORDER BY avg_delivery_time_days ASC
```

Top-Selling Product Categories: Sales and Profitability

- **Overview**: The bar chart breaks down total sales and profits by product category. **Tops & Tees** and **Jeans** dominate sales volume, while categories such as **Sleep & Lounge** and **Sweaters** contribute to healthy margins

- **Key Insights**:
  - **High Volume, High Profit**: **Tops & Tees** and **Jeans** are consistent top sellers, not only driving sales volume but also contributing significantly to profit margins.
  - **Mid-Tier Opportunities**: Categories like **Swimwear**, **Accessories**, and **Intimates**—while lower in total sales—are highly profitable, indicating room for targeted growth.

- **Recommendations**:
  - **Inventory Prioritization**: Focus on ensuring optimal stock levels for high-volume categories like **Tops & Tees** and **Jeans** to meet sustained demand.
  - **Profit-Driven Promotions**: Implement targeted marketing initiatives to boost awareness and sales for profitable, smaller-volume categories like **Swimwear** and **Accessories**.

```sql
SELECT p.category, SUM(oi.sale_price) - SUM(p.cost) AS total_profit
FROM `bigquery-public-data.thelook_ecommerce.order_items` oi
JOIN `bigquery-public-data.thelook_ecommerce.products` p ON oi.product_id = p.id
WHERE oi.status = 'Complete'
GROUP BY p.category
ORDER BY total_profit DESC
LIMIT 10;
```

Gender-Based Product Preferences

- **Overview**: This visual offers an analysis of product preferences based on gender, showcasing leading brands such as **Calvin Klein**, **Diesel**, and **Carhartt**.

- **Key Insights**:
  - **Calvin Klein** demonstrates significant popularity across both genders, with **Carhartt** and **Volcom** similarly favored by a broader audience.
  - Gender-specific patterns emerge, with brands like **Columbia** and **Levi's** resonating more with male customers, while **Nautica** and **Quiksilver** display more balanced appeal.

- **Recommendations**:
  - **Targeted Campaigns**: Tailor marketing efforts to reflect the gender-based preferences identified, maximizing conversion potential by aligning with customer interests.
  - **Product Placement**: Optimize product placement on e-commerce platforms to cater to specific demographic segments, highlighting top-selling brands for both male and female consumers.

```sql
SELECT u.gender, p.brand AS product_name, COUNT(oi.id) AS total_sales,SUM(oi.sale_price) AS
total_revenue
FROM `bigquery-public-data.thelook_ecommerce.orders`o
JOIN `bigquery-public-data.thelook_ecommerce.users` u ON o.user_id = u.id
JOIN `bigquery-public-data.thelook_ecommerce.order_items` oi ON o.order_id = oi.order_id
JOIN `bigquery-public-data.thelook_ecommerce.products` p ON oi.product_id = p.id
WHERE oi.status = 'Complete'
GROUP BY p.brand, u.gender
ORDER BY total_sales DESC
LIMIT 20;
```

Customer Behavior: Order Volume and Engagement

- **Overview**: The final chart offers insights into customer behavior, particularly **order volume** and **number of clicks** per customer. Customers with high engagement (measured in clicks) also tend to generate higher order volumes.

- **Key Insights**:
  - **Customer Loyalty**: Certain customers, notably those with **ID 62527** and **39543**, exhibit high levels of engagement and purchasing behavior, representing valuable loyal customer segments.
  - **Engagement Patterns**: Customers with high click-through rates but lower order volumes suggest opportunities to improve conversion through more targeted engagement or checkout incentives.

- **Recommendations**:
  - **Loyalty Programs**: Develop exclusive loyalty programs or offers for highly engaged customers to enhance their lifetime value.
  - **Conversion Optimization**: Address engagement-conversion gaps by improving the user experience on the site and introducing time-sensitive discounts or free shipping incentives for customers with high engagement but low order volume.

```sql
SELECT u.id, COUNT(e.uri) AS number_of_clicks, COUNT(CASE WHEN oi.status = "Complete" THEN
oi.order_id END) AS order_volume
FROM `bigquery-public-data.thelook_ecommerce.users` u
LEFT JOIN `bigquery-public-data.thelook_ecommerce.events` e ON u.id = e.user_id
LEFT JOIN `bigquery-public-data.thelook_ecommerce.order_items` oi ON u.id = oi.user_id
GROUP BY u.id
ORDER BY order_volume ASC;
```

Strategic Conclusion

- The analysis presented in this dashboard provides comprehensive insights into e-commerce performance, highlighting key growth areas and operational optimization opportunities. The data clearly emphasizes the importance of well-managed distribution networks, inventory management for top-selling categories, and data-driven marketing that addresses gender-based preferences. By implementing targeted strategies to enhance customer engagement, optimize supply chains, and drive category-specific growth, the business is well-positioned to sustain its growth trajectory in the competitive e-commerce landscape.