E-Commerce Events History Analysis Report

Problem Statement:

As a business owner we would like to see the following information:

1. Sales funnel (Visits to purchase)
2. Track daily conversion rate (Purchase / Visits)
3. Understand products/brands which are driving the sales

Introduction:

Welcome to the e-commerce analysis report for the Cosmetic Shop's events history dataset. In this report, we delve into the world of cosmetics retail, leveraging data-driven insights to gain a deeper understanding of customer behavior, product performance, and sales trends. By analyzing this rich dataset, we aim to unearth valuable insights that can guide strategic decisions, optimize marketing efforts, and enhance the overall shopping experience.

About Data:

Dataset: **https://www.kaggle.com/datasets/mkechinov/ecommerce-events-history-in-cosmetics-shop**

There are different types of events. See below.

File structure

Property	Description
event_time	Time when event happened at (in UTC).
event_type	Only one kind of event: purchase.

| Property	Description
product_id	ID of a product
category_id	Product's category ID
category_code	Product's category taxonomy (code name) if it was possible to make it. Usually present for meaningful categories and skipped for different kinds of accessories.
brand	Downcased string of brand name. Can be missed.
price	Float price of a product. Present.
user_id	Permanent user ID.
** user_session**	Temporary user's session ID. Same for each user's session. Is changed every time user come back to online store from a long pause.

Events can be:

- view - a user viewed a product
- cart - a user added a product to shopping cart
- remove_from_cart - a user removed a product from shopping cart
- purchase - a user purchased a product

Analysis and Visualizations:

Sales Funnel Analysis:

We start by examining the sales funnel to gain insights into the customer journey from initial visits to purchases. The analysis includes a breakdown of event types and their respective counts.
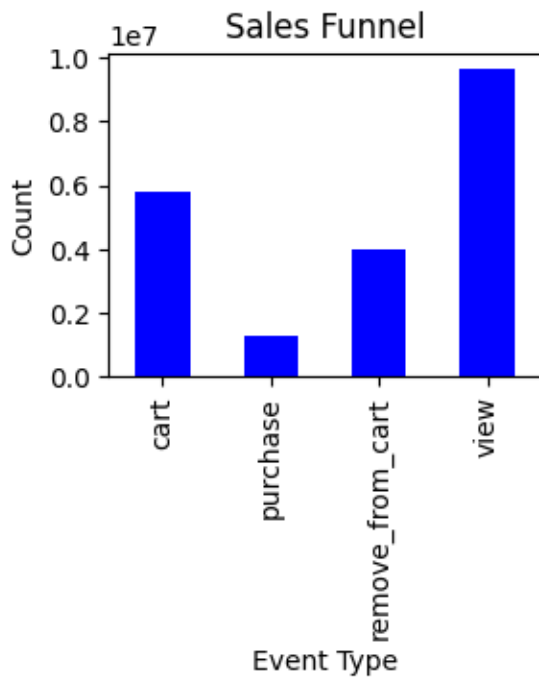

Daily Conversion Rate Tracking:

Tracking the daily conversion rate is crucial for understanding the effectiveness of the sales process. The graph below visualizes the daily conversion rate by calculating the ratio of purchase events to view events.
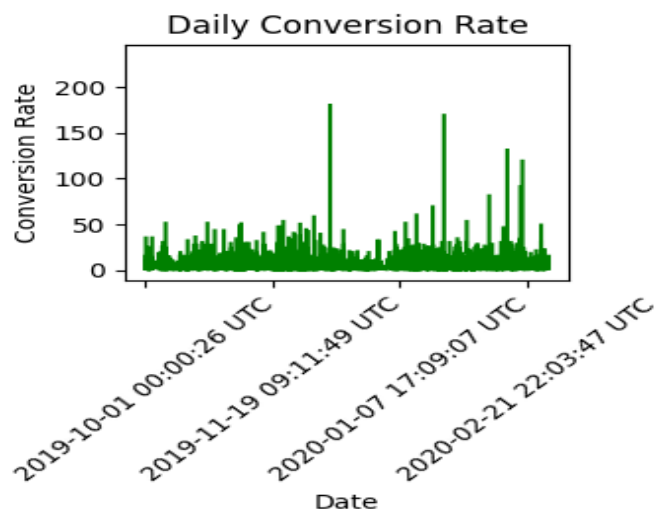
Product Performance Analysis:

Understanding the performance of different products and brands is essential for optimizing inventory and marketing strategies. We identify the top-selling products and brands based on purchase events.


Sales by Product

Sales by Brand
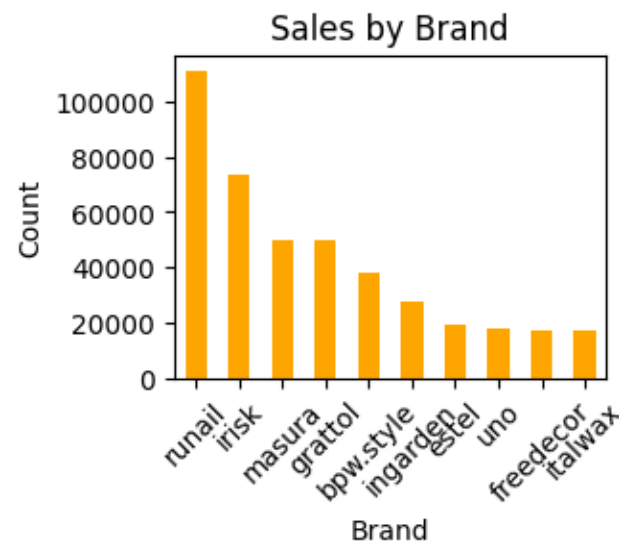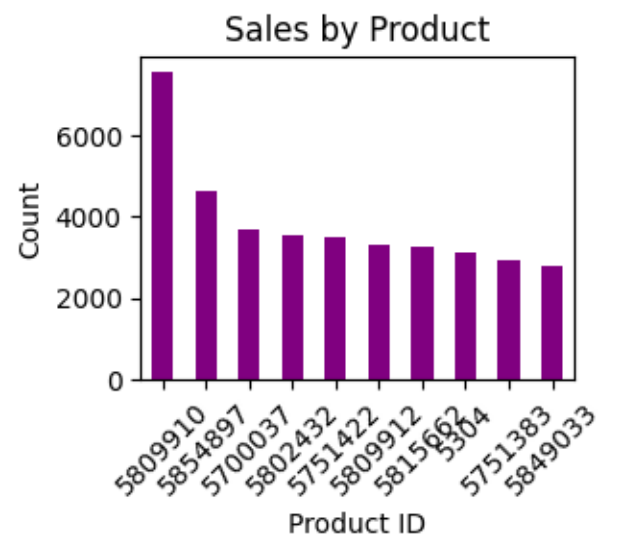
Monthly Sales Trend:

Aggregating and visualizing monthly sales provides a high-level view of revenue trends over time. The combined monthly sales trend highlights any notable patterns or seasonality.
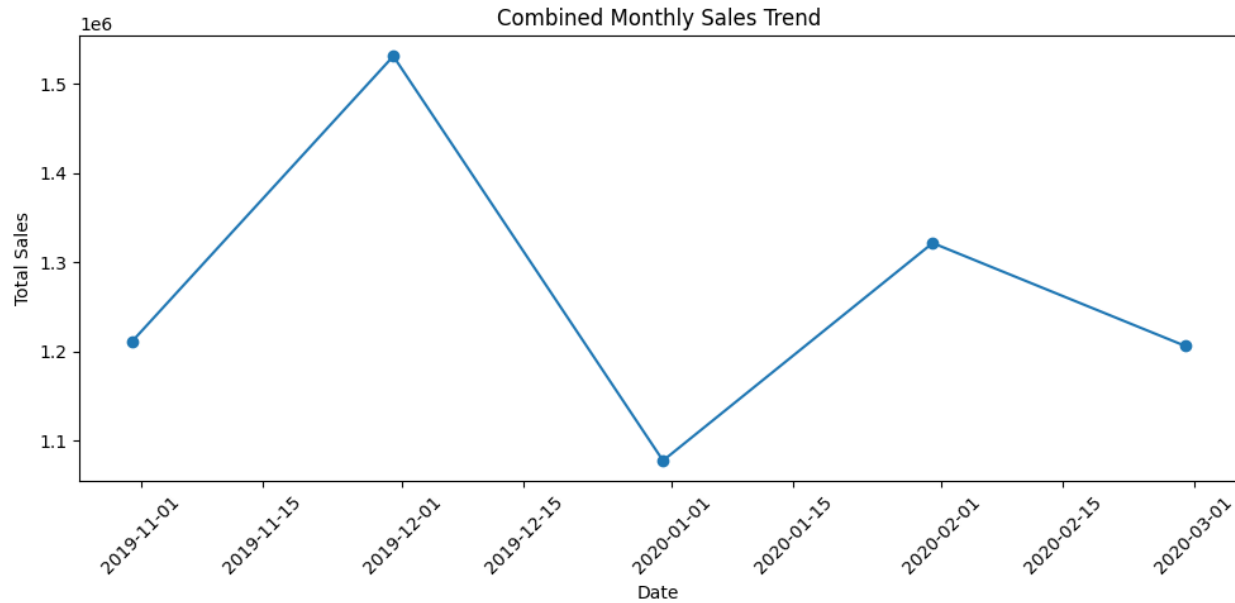

Conversion Funnel Analysis:

Understanding the conversion funnel helps identify potential areas for improvement in the sales process. The pie chart visualizes the distribution of event types in the conversion funnel.
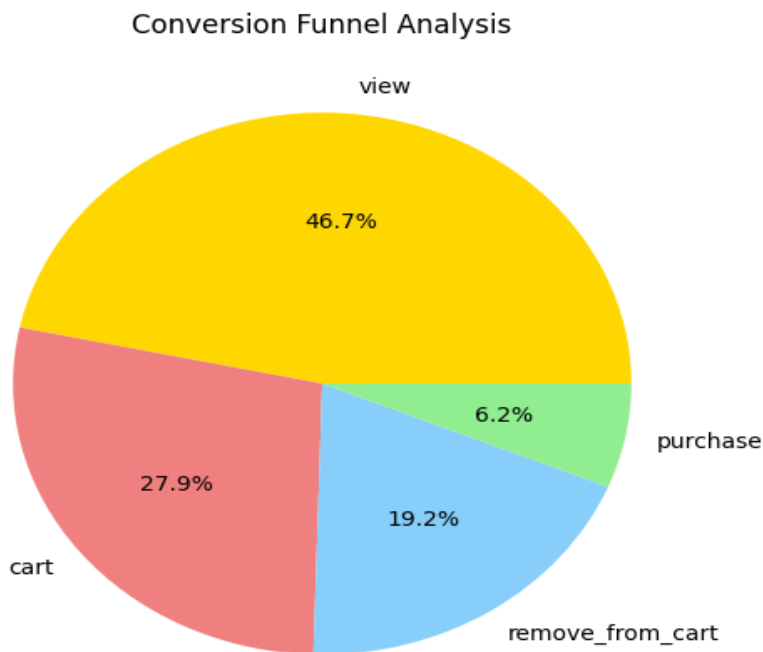
Top Selling Product:

Highlighting the top-selling products based on purchase events offers valuable insights into customer preferences and market demand.
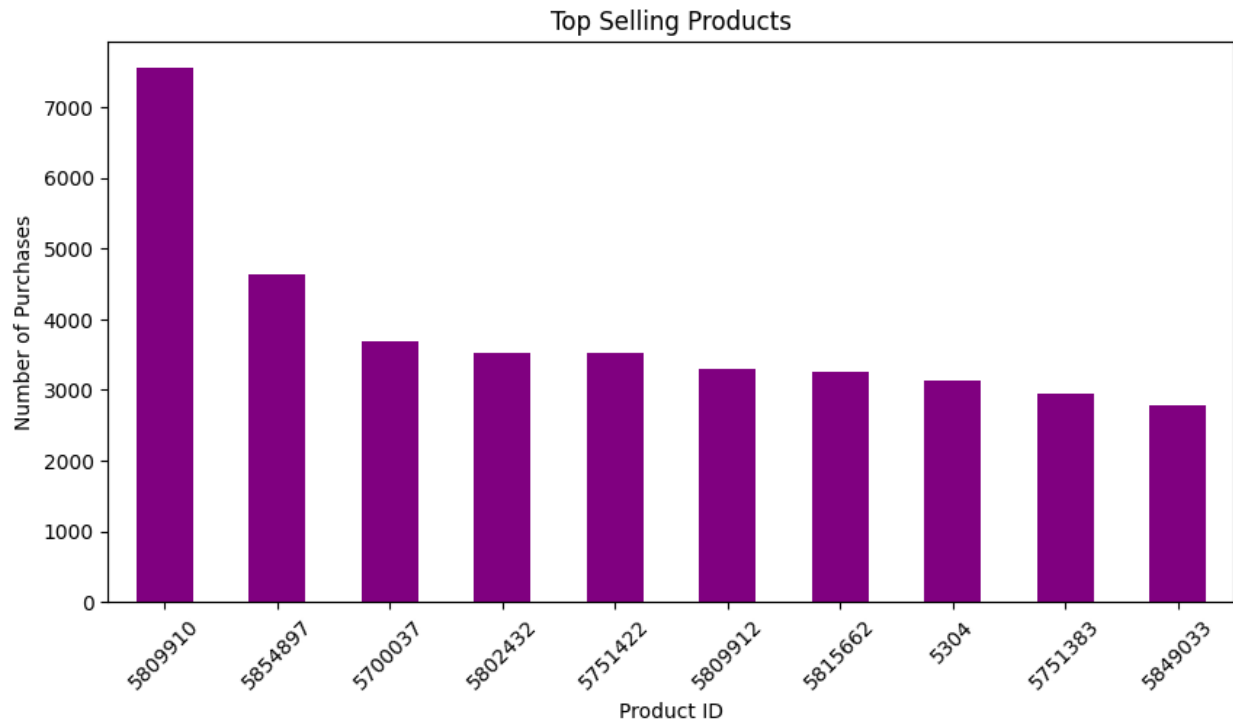
Conclusion:

The E-Commerce Events History Analysis sheds light on key aspects of customer behavior, product performance, and sales trends within the Cosmetic Shop. Through data-driven insights and visualizations, we've uncovered patterns that can inform strategic decisions, enhance marketing efforts, and optimize the overall shopping experience. This analysis provides a solid foundation for future optimizations and growth opportunities within the cosmetic retail industry.

For detailed code and additional visualizations, please refer to the accompanying code and notebook.