

Boston University

Questrom School of Business

BA890: Analytics Practicum Research Paper

The Look E-Commerce Dashboard Analysis

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Research Problem & Significance

The Look e-commerce platform faces several critical challenges in customer acquisition, retention, and revenue generation. Despite a robust product portfolio and efficient inventory management, the company struggles with low average order value (AOV), high customer acquisition costs, and declining year-over-year revenue growth. Understanding the root causes behind these issues is crucial for developing effective strategies to enhance overall business performance.

Addressing these challenges is essential for The Look's long-term success and competitiveness in the e-commerce market. By identifying the factors contributing to low customer lifetime value, inefficient customer acquisition, and declining revenue, The Look can implement targeted interventions to improve profitability and customer satisfaction. Additionally, understanding product performance and customer behavior drivers will inform future product development, marketing, and sales strategies.

Data Description

The Look e-commerce dataset is a synthetic dataset hosted on Google BigQuery, designed to simulate real-world e-commerce operations. It offers a comprehensive source of data to analyze and gain insights into e-commerce trends and customer behavior. The dataset is composed of several tables, including:

Fact Tables: distribution_centers, orders, and events

Dimension Tables: inventory_items, order_items, products, and users

This structure allows for in-depth analysis of various aspects of an e-commerce business, from customer interactions and order details to product inventory and distribution logistics.

Methodology

The analysis was conducted using Power BI to explore and visualize the Look ecommerce dataset hosted on Google BigQuery. Data cleaning and transformation were performed using Power Query to ensure data accuracy and consistency. This included handling missing values, creating new columns, and establishing relationships between tables. To derive actionable insights, relevant metrics and calculations were created using DAX functions within Power BI.

The dashboard is structured into three primary sections: *Sales Overview*, *Customer Demographics*, and *Financial Metrics*. Each section contains a series of visualizations designed to uncover trends, patterns, and key performance indicators.

Sales Overview: The dashboard presents various visualizations that can be filtered by Gender or Year. A key observation is that the Return Rate consistently hovers around 10% across all years, which is impressive considering the industry average is approximately 15.2% (Cegielski 2024). The dashboard also compares the performance of the top 10 brands by cost and retail price. Notably, Ray-Ban, which ranks fourth in terms of average retail price, does not appear in the top 10 for average cost, indicating a significant profit margin on

Ray-Ban products—around \$68 compared to the website average of \$30. When filtered for women, Canada Goose emerges as the top brand by average retail price, yet it doesn't make the top 10 for average cost, revealing a substantial profit margin of \$328 per product. Conversely, Volcom, which ranks near the bottom on both charts, has a modest profit margin of \$27, \$3 less than the site average, making it a value-for-money option for customers. Additionally, a pie chart displays the top product categories, with intimates leading sales, closely followed by jeans. When filtered by women, intimates dominate with 39%, followed by dresses. A bar chart highlighting event types reveals a concerning gap between the number of items added to carts and actual purchases, with a disparity of 0.4 million unique events.

Customer Demographics: The average age of a customer at The Look is 41 years, significantly older than the industry average of 18-24 years for e-commerce sites (U.S. e-commerce shopper mobile audience by age 2023). This demographic skew presents an opportunity to target a younger market segment. While gender distribution is relatively balanced, geographic data reveals a strong customer base in China, followed by the United States. However, the notably high average time between orders (382 days) indicates a significant challenge in customer retention or acquisition. Customer acquisition efforts predominantly rely on email marketing and AdWords, with organic channels underperforming. This reliance on paid advertising could contribute to the elevated customer acquisition costs implied by the lengthy order cycle. The dominance of Chrome as the preferred browser aligns with industry trends, but the low repeat purchase rate, with most customers making only 1 or 2 purchases, suggests opportunities to enhance customer loyalty and engagement.

Financial Metrics: The Look's revenue is primarily driven by higher-priced product categories such as outerwear, coats, and jeans. While the website exhibited strong revenue growth through 2023, a significant decline is observed in 2024, although the year is incomplete. Key financial metrics reveal areas for improvement. Average Revenue Per User (ARPU) stands at \$9.15, significantly below the industry benchmark of \$1,180 (U.S.: e-commerce revenue per user 2020-2029), indicating opportunities to increase customer spending. Average Order Value (AOV) is also low at \$5.85 compared to the industry standard of \$120. Conversely, inventory turnover is an area of strength, with a 7-day cycle time compared to the industry average of 30 days. This suggests efficient inventory management but may not directly correlate to increased revenue.

Conclusion & Recommendations

After analyzing the dataset, it is clear that while The Look has notable strengths, there are also significant areas requiring improvement. One of the key strengths is the company's return rate, which is below industry standards, indicating high customer satisfaction and effective quality control.

However, several opportunities for improvement have emerged. The Look could better leverage its high-margin brands by increasing their visibility through featured listings, special deals, or bundling with other products to drive sales. Conversely, the pricing of low-margin brands should be evaluated to see if adjustments can be made without negatively impacting sales, potentially improving overall profitability.

A significant gap between items added to carts and actual purchases suggests issues in the checkout process. Simplifying this process, offering guest checkout, and providing multiple payment options could help reduce cart abandonment. Additionally, ensuring that all costs, including taxes and shipping, are transparent early in the shopping process can prevent customers from abandoning their carts at checkout.

Targeting a younger demographic is also crucial, given that the current average customer age is higher than the industry norm. The Look could achieve this by expanding product offerings to appeal to younger consumers, possibly through collaborations with trendy brands or launching a sub-brand aimed at this demographic.

Customer retention is another area of concern. Enhancing loyalty programs to reward repeat purchases, offering exclusive discounts, and providing early access to new products could help reduce the time between orders and increase customer lifetime value.

Furthermore, The Look's organic traffic is underperforming, making it essential to improve the website's SEO and invest in content marketing such as blogs, videos, and social media to attract new customers without relying heavily on paid advertising.

Given that a significant portion of The Look's customers are based in China, opening distribution centers closer to this market could reduce shipping times and costs, improving customer satisfaction.

Finally, The Look's revenue is heavily reliant on higher-priced product categories like outerwear, coats, and jeans, which could limit growth if these categories face market saturation. To mitigate this risk, The Look should consider diversifying its product range to include more mid-priced and lower-priced items that appeal to a broader audience. Additionally, implementing strategies to upsell and cross-sell products, such as recommending complementary items during checkout or offering bundle deals, could help increase the average order value. Highlighting fast-moving items through special promotions or featured product sections on the website could also help maintain momentum and capitalize on strong inventory turnover.

Future Work

Future analysis could benefit from applying advanced machine learning techniques to the dataset. This could include customer segmentation to tailor marketing efforts more precisely, inventory management optimization through predictive modeling, and sales forecasting to better anticipate market demand. Additionally, analyzing customer sentiment and behavior using natural language processing (NLP) on customer reviews and feedback could provide deeper insights into customer preferences and areas for improvement. By integrating these advanced analytical techniques, The Look could further enhance its decision-making processes and maintain a competitive edge in the e-commerce market.

References

Cegielski, Stephanie. 2024. "Brick-and-Mortar Shopping Drives Lower Return Rate Than Online Shopping."

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<https://www.icsc.com/news-and-views/icsc-exchange/brick-and-mortar-shopping-drives-lower-return-rate-than-online-shopping>.

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<https://www.statista.com/forecasts/280703/e-commerce-arpu-in-the-united-states>.

"U.S. e-commerce shopper mobile audience by age 2023." n.d. Statista. Accessed August 10, 2024.

<https://www.statista.com/statistics/1343467/ecommerce-shoppers-mobile-audience-united-states-age/>.

Appendix

Home

Sales Overview

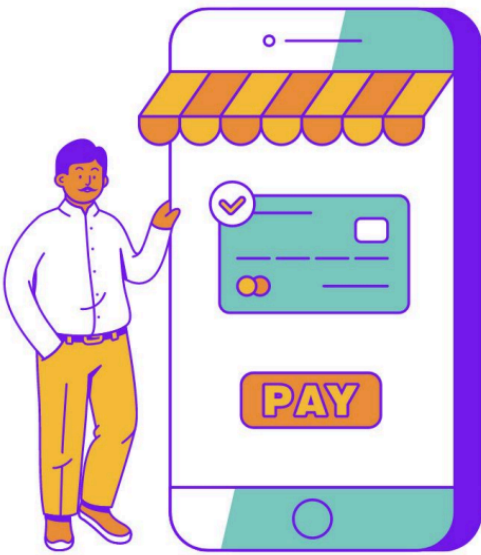
Customer Profile Insights

Financial Metrics



The Look E-Commerce Dashboard

Made By: Dhruv Shah



Sales Overview

Home

Sales Overview

Customer Profile Insights

Financial Metrics

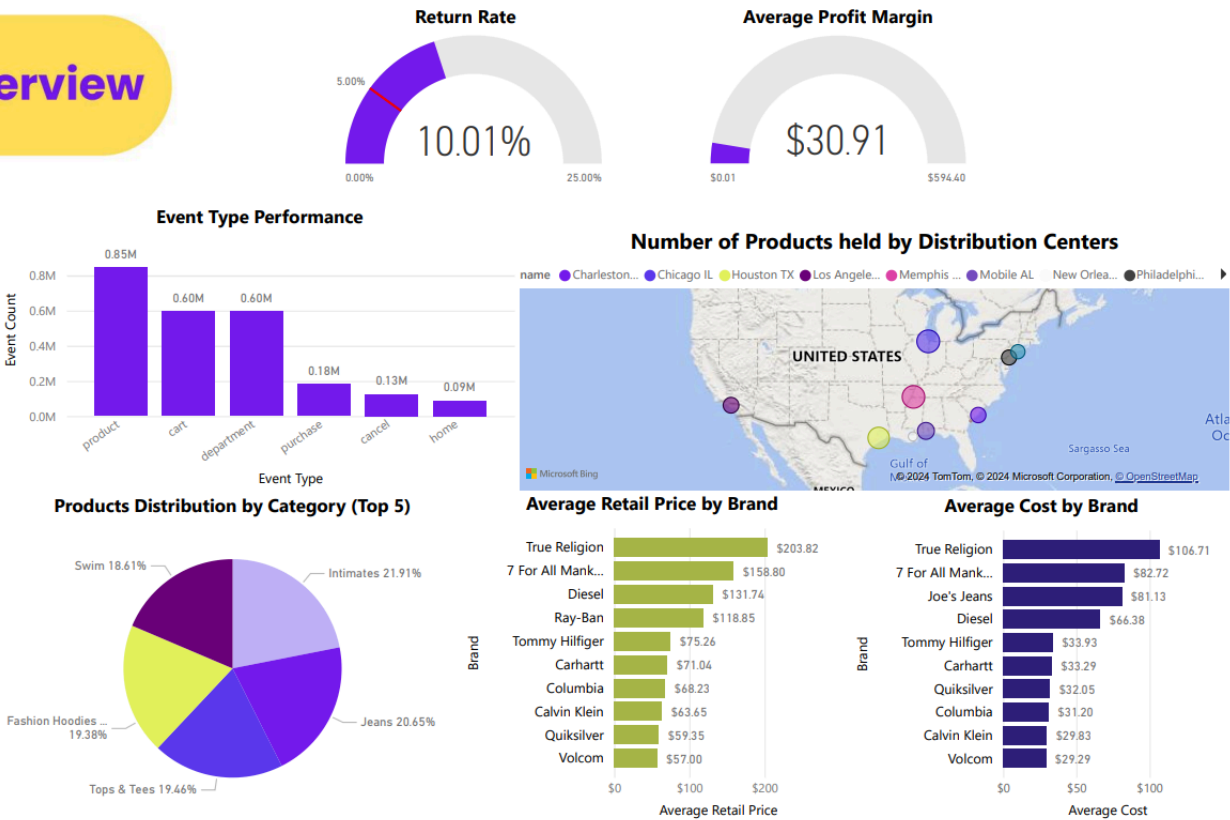
Gender

Men

Women

Year

All



Customer Profile Insights

Home

Sales Overview

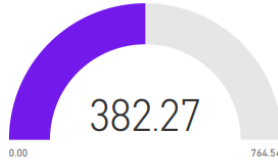
Customer Profile Insights

Financial Metrics

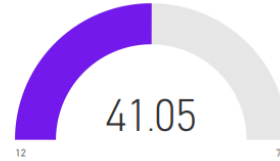
Year

All

Average Days Taken to Place an Order



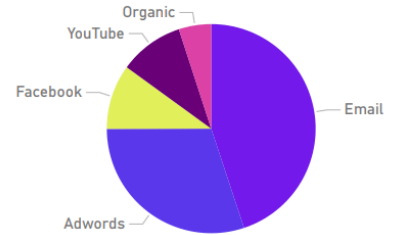
Average Age (In Years)



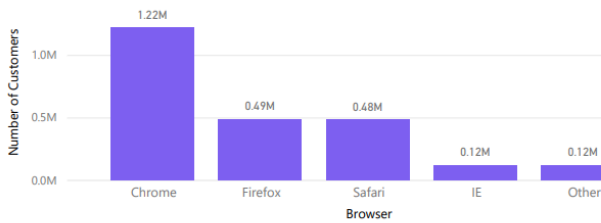
Customer Geographic Distribution



Customer Acquisition Channels



Customer Browser Preferences



Repeat Customer Analysis



Financial Metrics

Home

Sales Overview

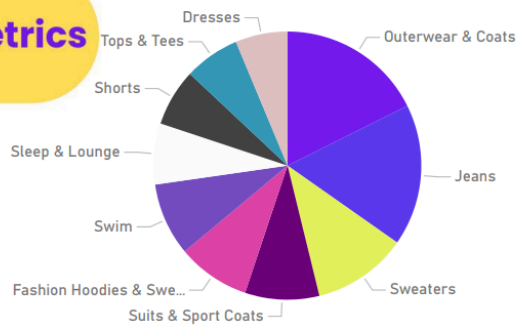
Customer Profile Insights

Financial Metrics

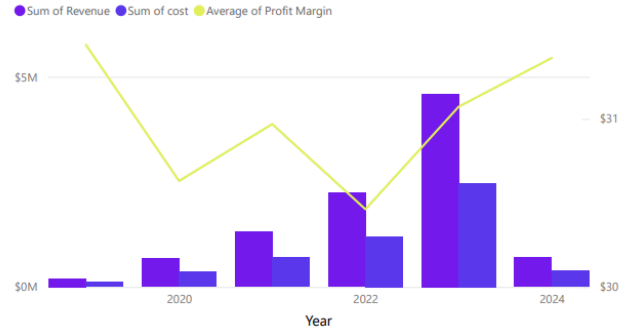
Year

All

Revenue Distribution Across Product Categories



Year-Over-Year Revenue, Cost, and Profit Margin



Average Revenue Per User

\$9.15

Industry Average: \$1.18K (-99.23%)
2024

Average Turnover (In Days)

6.61

Industry Average: 30 (+77.97%)
2024

Average Order Value

\$5.85

Industry Average: \$120 (-95.12%)
2024