

Final Report

Analyzing customer trends in an online retail setting to identify factors influencing purchase behavior and recommend strategies for improved sales performance

Introduction:

This analysis aims to explore customer behavior in an online retail setting to identify factors influencing purchase behavior and recommend actionable strategies for improved sales performance. The analysis includes customer demographics, order status, and product category trends. Based on these findings, recommendations for increasing sales are provided. Additionally, potential future analysis using Python for predictive modeling is discussed.

Data Analysis Findings:

Sales Trends Over Time:

Analyzing sales trends by year, quarter, and month.

1. **Annual Sales:**
 - 2003: \$3,516,979.54
 - 2004: \$4,724,162.60
 - 2005: \$1,791,486.71 (data may be incomplete for this year)
2. **Quarterly Sales:**
 - Highest sales generally occur in Q4 of each year.
3. **Monthly Sales:**
 - November shows significantly higher sales, especially in 2003 and 2004

Sales by Country:

The analysis of sales by country reveals the top markets for the retailer. Countries with the highest sales indicate strong customer bases and potential areas for targeted marketing campaigns.

Top 10 Customers based on total spending and Purchase Frequency:

CUSTOMER NAME	Purchase Frequency	Total Spending
1. AV Stores, Co.	51	1778
2. Alpha Cognac	20	687
3. Amica Models & Co.	26	843

4.	Anna's Decorations, Ltd	46	1469
5.	Atelier graphique	7	270
6.	Australian Collectables, Ltd	23	705
7.	Australian Collectors, Co.	55	1926
8.	Australian Gift Network, Co	15	545
9.	Auto Assoc. & Cie.	18	637
10.	Auto Canal Petit	27	1001

Top Countries by Sales:

COUNTRY	SALES
USA	\$ 3627982.83
SPAIN	\$1215686.92
FRANCE	\$1110916.52
AUSTRALIA	\$630623.10
UK	\$478880.46
ITALY	\$374674.31
FINLAND	\$329581.91
NORWAY	\$307463.70
SINGAPORE	\$288488.41
DENMARK	\$245637.15
CANADA	\$224078.56
GERMANY	\$220472.09
SWEDEN	\$ 210014.21
AUSTRIA	\$202062.53
JAPAN	\$188167.81
SWITZERLAND	\$117713.56
BELGIUM	\$108412.62
PHILIPPINES	\$ 94015.73
IRELAND	\$57756.43

Top-Selling Products Lines:

Understanding which product lines generate the most revenue can help in inventory management and marketing efforts. Categories with declining sales might require promotional strategies or product reviews.

1. **Classic Cars:** \$3919615.66
2. **Vintage Cars:** \$1903150.84
3. **Motorcycles:** \$1166388.34
4. **Trucks and Buses:** \$1127789.84
5. **Planes:** \$ 975003.57
6. **Ships:** \$714437.13
7. **Trains:** \$226243.4

Here are the top 10 products (Product Models within Product Lines) by sales:

1. **S18_3232:** \$288,245.42
2. **S10_1949:** \$191,073.03
3. **S10_4698:** \$170,401.07
4. **S12_1108:** \$168,585.32
5. **S18_2238:** \$154,623.95
6. **S12_3891:** \$145,332.04
7. **S24_3856:** \$140,626.90
8. **S12_2823:** \$140,006.16
9. **S18_1662:** \$139,421.97
10. **S12_1099:** \$137,177.01

Repeat Purchase Patterns:

- 91 customers have made repeat purchases.
- On average, these repeat customers have placed approximately 3.36 orders.
- The maximum number of orders placed by a single customer is 26.

Order Quantity and Sales Correlation

- The correlation between “Quantity Ordered” and “Sales” is approximately 0.55, indicating a moderate positive relationship.

Order status on sales performance:

Analyzing sales by order status helps identify the proportion of completed, pending, and canceled orders. This information can guide operational improvements to reduce pending and canceled orders.

STATUS SALES

1. Shipped: \$9291501.08
2. Cancelled: \$194487.48
3. On Hold: \$178979.19
4. Resolved: \$150718.28
5. In Process: \$144729.96
6. Disputed: \$72212.86

Customer Lifetime Value (CLV)

Using historical purchase data to predict the future value of customers. This can help in identifying high-value customers and tailoring marketing efforts accordingly.

- **Total Revenue:** \$10,032,628.85
- **Number of Customers:** 92
- **Customer Lifetime Value (CLTV):** \$109,050.31

Recommendations Based on Analysis:

Based on the analysis, the following strategies are recommended to improve sales performance:

1. **Promote Top-Selling Products:** Focus marketing efforts on the top-selling products to boost sales further.
2. **Targeted Marketing Campaigns:** Focus on top-performing countries with tailored marketing campaigns to further increase sales in these regions.
3. **Personalized Marketing:** Use insights from customer purchase patterns to create personalized marketing campaigns
4. **Product Promotion:** Boost marketing efforts for top-selling product categories and introduce promotions for categories with declining sales to stimulate demand.
5. **Customer Loyalty Programs:** Implement loyalty programs and personalized offers to retain customers and encourage repeat purchases.
6. **Enhance Customer Retention:** Implement strategies to maintain and boost customer satisfaction, leveraging the high CLTV.
7. **Operational Improvements:** Address the reasons behind pending and canceled orders. Streamlining the checkout process and improving customer service can reduce order cancellations.

Recommendations for Further Analysis:

To enhance the insights from this analysis, future work can include predictive modeling using Python. Potential analysis includes:

1. **Product Preferences:** Identify the top-selling products and assess how pricing strategies affect sales.
2. **Repeat Purchases:** Examine the frequency of repeat purchases to identify customer loyalty patterns.
3. **Order Status Analysis:** Investigate how different order statuses impact sales and delivery times.
4. **Churn Analysis:** Develop models to predict which customers are likely to churn. Understanding the factors leading to churn can help in creating targeted retention strategies.
5. **Sales Forecasting:** Implement time series analysis to forecast future sales trends. This can aid in inventory management and sales planning.
6. **Market Basket Analysis:** Use association rule learning to identify products frequently bought together. This can help in designing effective cross-selling and upselling strategies.

5. Conclusion:

This analysis provided valuable insights into customer purchasing behavior, order status, and product category trends in the online retail setting. By implementing the recommended strategies, the retailer can improve sales performance and customer satisfaction. Future predictive modeling using Python will further enhance decision-making and strategic planning.