Ecommerce Customer & Vendor Behavior Analysis

Comprehensive analysis of customer churn, vendor performance, and revenue trends to drive strategic business decisions.

Project Objectives

Customer Churn Analysis
Analyze churn rate and regional distribution patterns

Vendor Performance
Evaluate sales metrics and customer ratings

Revenue Tracking
Monitor monthly trends across all regions

Delivery & Retention
Measure success rates and repeat purchases

Technology Stack

Python (Pandas, NumPy)

Data cleaning, transformation, and exploratory analysis

SQL Server

Data modeling, relationships, and analytical queries

Power BI

Dashboard visualization and KPI reporting

Dataset Structure

Table Name	Description	Columns
customers	Customer demographics, region, churn status, and join date	8
orders	Order details including amount, payment method, delivery status	8
vendors	Vendor ratings, total products, and onboarding date	6

Data Preparation Process

Data Cleaning

Removed duplicates and handled missing values

Standardization

Corrected region names and date formats

Feature Creation

Added customer age groups and performance scores

```python
# Clean region names
df_customers['region'] = df_customers['region'].str.strip().str.lower()
 .replace({'south americ':'south america'})

# Convert dates
df_orders['order_date'] = pd.to_datetime(df_orders['order_date'])
```

Key Business Questions
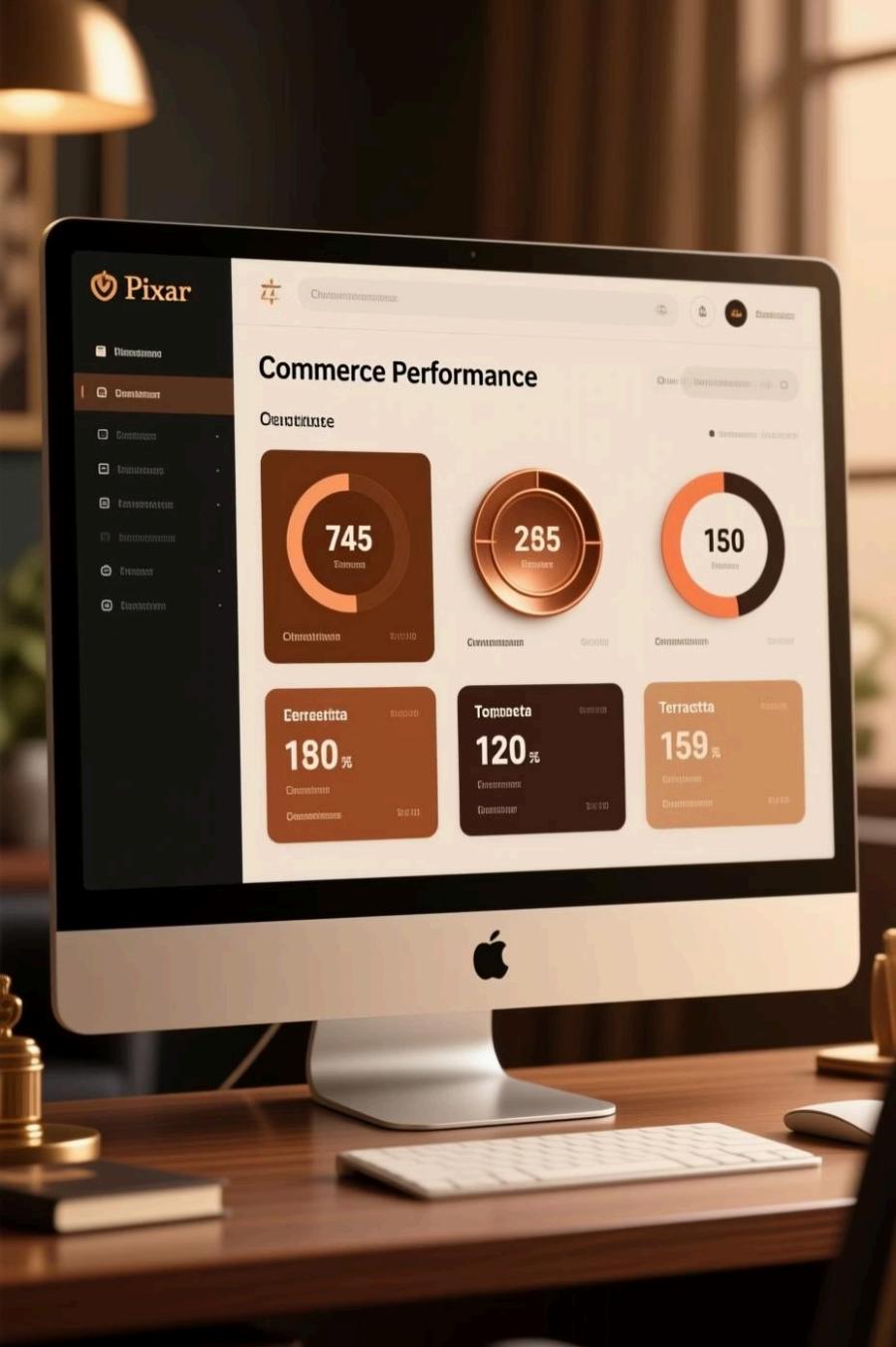
1   Which regions have the highest customer churn rates?

2   Which customers haven't ordered in the past 90 days?

3   What percentage made more than one purchase?

4   Which regions generate highest average order value?

5   Which vendors maintain high revenue and ratings?

Critical Performance Metrics

55%

North America Churn

Highest churn rate indicating dissatisfaction

33.1%

Delivery Success
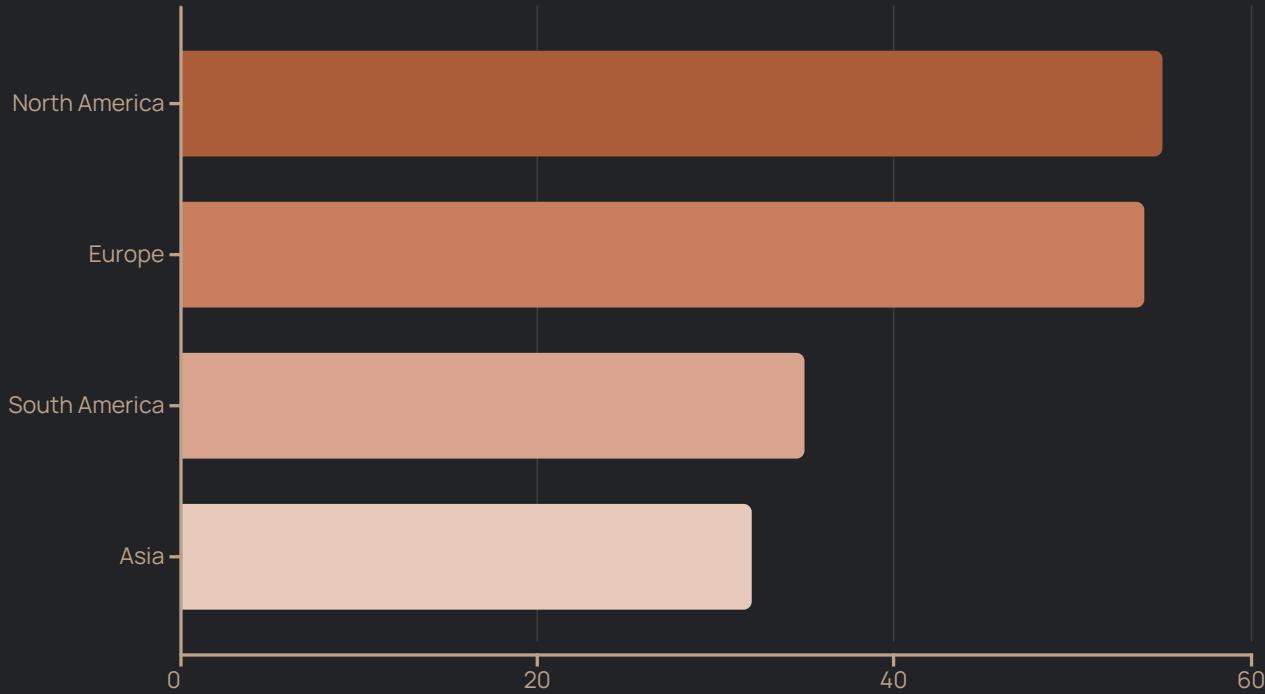
Low rate reveals operational bottleneck

80.7%

Repeat Purchases

Strong loyalty among existing customers

Made with GAMMA

Regional Churn Analysis

Key Insight

North America and Europe show critical churn levels above 50%, while Asia and South America demonstrate stronger customer retention and growth potential.

Revenue Trends & Seasonality

Monthly revenue analysis reveals strong seasonal patterns with peak performance during March–July period, indicating successful promotional campaigns.

Peak Season

March–July shows highest revenue concentration

Regional Growth

Asia and South America show stable upward trends

Vendor Variance

Performance inconsistency impacts brand perception

Strategic Recommendations

Improve Delivery Efficiency

Partner with reliable logistics to boost 33.1% success rate

Launch Retention Campaigns

Target high-churn regions with personalized offers

Vendor Quality Incentives

Implement rating-based rewards to ensure consistency

Deploy Churn Prediction

Use Python models to identify at-risk customers early

Expand in Growth Markets

Focus resources on Asia and South America opportunities