

Business Report

Funnel Analysis Case Study – E-commerce User Journey

Executive Summary

This report analyzes user behavior across the e-commerce purchase funnel to identify conversion bottlenecks, quantify revenue loss, and recommend data-driven actions. Using a dataset of **286,8631 events across 10 columns**, the analysis reveals substantial user drop-off between key funnel stages, uneven product performance, low user retention, and strong seasonality effects. The findings highlight clear opportunities to improve product persuasion, checkout efficiency, and overall revenue performance.

1. Business Context

The platform records high levels of product views but a significantly lower rate of completed purchases. Understanding where users disengage and which products underperform is critical to improving funnel efficiency and revenue outcomes.

Objective:

Evaluate conversion behavior across the user funnel (**View → Add to Cart → Purchase**) to detect drop-offs, quantify revenue loss, and inform optimization strategies.

2. Dataset Overview

- **Total records:** 286,8631
- **Total columns:** 10
- **Time period analyzed:** December 1, 2019 – January 1, 2020
- **Data type:** Event-level e-commerce interaction data

Key Fields Used

- Event timestamp (event_time)
- Event type (view, cart, purchase)
- User identifier
- Product identifier
- Product price

3. Funnel Performance Analysis

Funnel Metrics

- **Product Views:** 358,212 users
- **Add to Cart:** 83,458 users
- **Purchases:** 25,613 users

Conversion Drop-Off Rates

- **View → Cart:** 76.70% drop-off
- **Cart → Purchase:** 69.31% drop-off

Interpretation

The funnel shows a sharp and progressive decline in user counts at each stage. The largest loss occurs when users move from viewing products to adding them to the cart, suggesting insufficient product persuasion. A second major drop occurs during checkout, indicating friction related to pricing, trust, or checkout complexity.

4. Product-Level Conversion Performance

Analysis of top-viewed products reveals significant variation in conversion efficiency:

- Product **5809910** recorded the highest visibility (24,000+ views) but a moderate conversion rate of **6.8%**
- Products **5809912** and **5809911** achieved higher conversion rates (**10.4% and 9%**) despite lower traffic
- Several products recorded conversion rates below **2%**

Interpretation

High visibility does not necessarily translate into sales. Some products attract attention but fail to convince users to purchase, leading to inefficient use of traffic and lost revenue opportunities.

5. User Engagement & Retention Analysis

- **Repeat users:** 74,120
- **Single-event users:** 295,332

Interpretation

The majority of users interact with the platform only once. This indicates weak retention and limited long-term customer value, increasing dependency on continuous acquisition rather than repeat engagement.

6. Time-Based Funnel Trends

Daily Trends

- Views range between **12,500–19,500 users per day**
- Cart and purchase volumes remain below **2,000 users per day**
- A sharp drop across all events occurs on **December 30–31**, likely due to holiday effects, campaign ending, or tracking issues
- Recurring peaks every **5–7 days** suggest day-of-week traffic patterns
- Conversion ratios remain relatively stable throughout the period

Weekly Trends

- **Weeks 1–48:** Low and flat baseline activity with minimal purchases
- **Weeks 49–52:** Dramatic spike in activity, with weekly views exceeding **100,000 users**
- Conversion efficiency remains stable even during peak demand

Interpretation

The business exhibits strong seasonality, with most engagement and sales concentrated in year-end promotional periods. Outside these periods, baseline activity and revenue remain low.

7. Revenue Impact Assessment

- **Average purchase price:** \$5.06
- **Actual revenue generated:** \$129,476.14

Estimated Revenue Opportunities

- **Potential revenue if cart users converted:** \$421,888.09
- **Revenue lost after cart stage:** \$292,411.95
- **Revenue lost after view stage:** \$1,681,319.41

Interpretation

Significant revenue is lost before checkout completion. Improving even a small portion of funnel conversion rates could result in substantial financial gains.

8. Key Business Insights

- The most critical drop-off occurs between product view and cart
- Checkout friction remains a major barrier to purchase
- Several high-traffic products underperform in conversion
- User retention is low, with most users engaging only once

- Revenue is highly dependent on seasonal demand peaks
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9. Strategic Recommendations

- Optimize product pages for high-view, low-conversion products
 - Introduce trust signals such as reviews, ratings, and guarantees
 - Simplify the checkout flow to reduce abandonment
 - Conduct A/B testing on CTAs, pricing displays, and promotions
 - Enhance product recommendation relevance
 - Retarget cart abandoners through email and digital advertising
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10. Assumptions & Limitations

- Funnel analysis is conducted at the user level, not strict session order
 - Revenue estimates assume a constant average purchase price
 - External factors such as marketing spend and competitor activity were not included
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Dashboard:

