

E-Commerce Funnel Drop-Off & Root Cause Analysis

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Period: April–September 2015
Tools: Python (pandas, matplotlib), Tableau

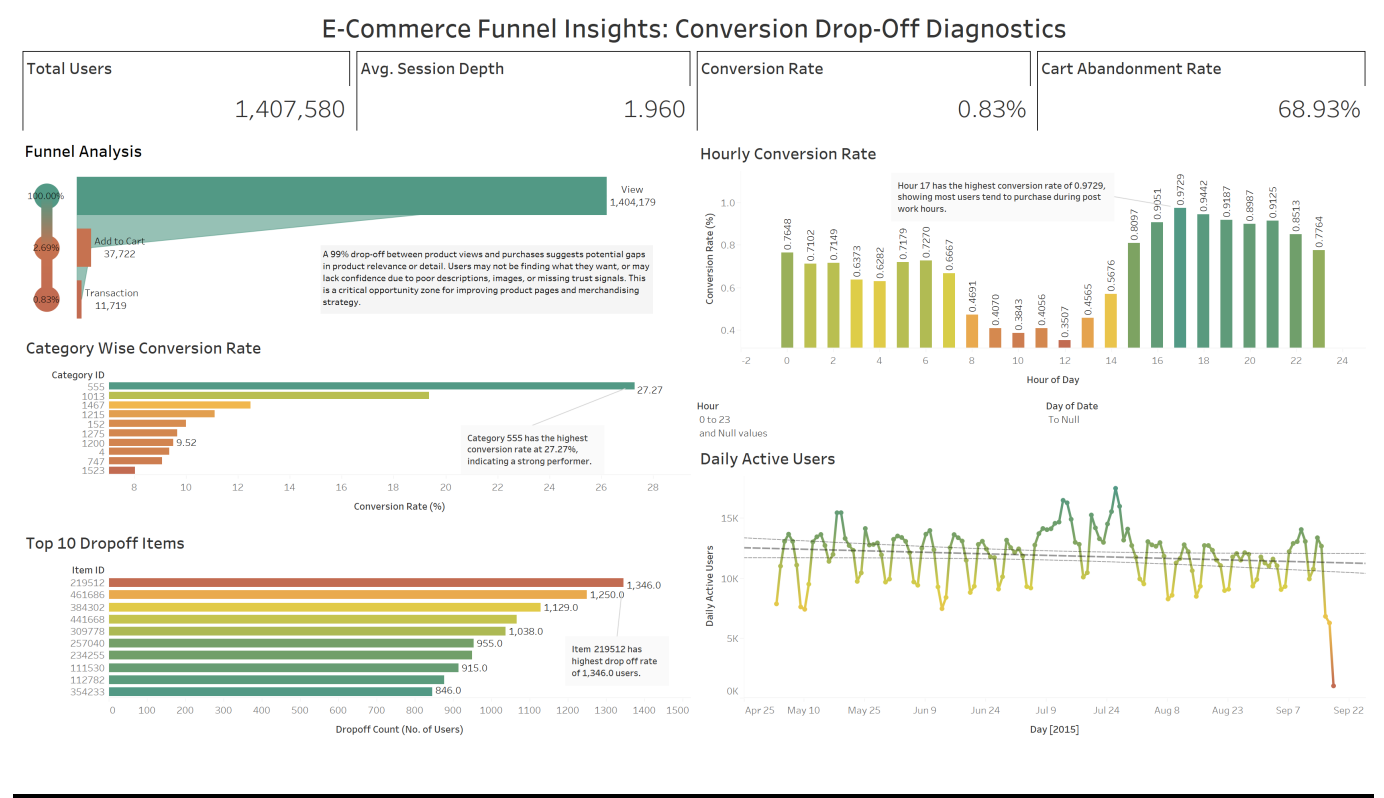
1. Executive Summary

Over the past two quarters, the e-commerce platform sustained strong and consistent traffic volumes, yet revenue growth failed to meet business expectations. To address this performance gap, I conducted a **comprehensive funnel drop-off** and **root cause analysis** to determine precisely **where in the purchase journey users disengage** and why.

Leveraging **event-level clickstream data**, I reconstructed the end-to-end customer journey, from initial product view through to completed transaction, quantifying drop-off rates at each stage. This analysis was enriched with temporal trends, category-level performance metrics, and SKU-specific insights to provide a multidimensional understanding of conversion challenges.

The findings informed a prioritized set of actionable, **data-backed recommendations** designed to mitigate immediate revenue leakage, optimize high-impact touchpoints, and establish a scalable framework for ongoing conversion performance monitoring.

[View Interactive Dashboard](#)



2. Key Metrics Overview

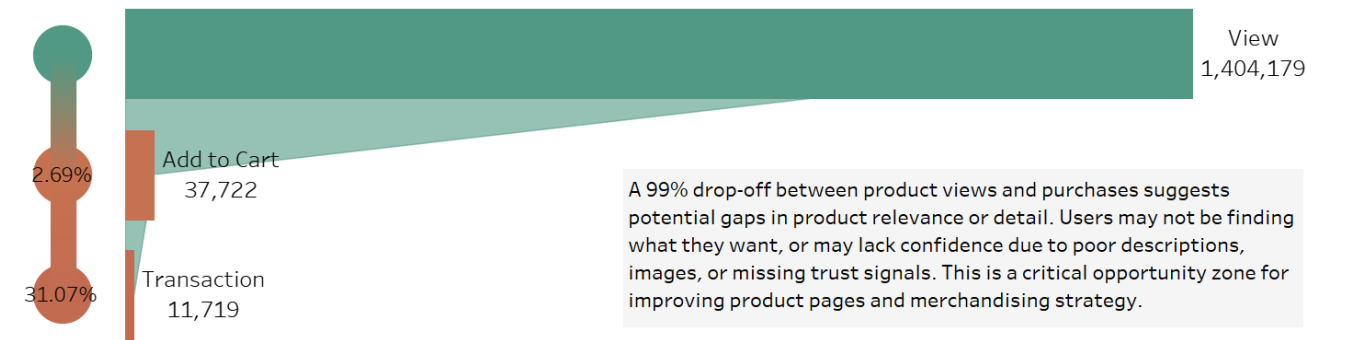
Total Users	Avg. Session Depth	Conversion Rate	Cart Abandonment Rate
1,407,580	1.960	0.83%	68.93%

KPI	Value
Total Users	1,407,580
Average Session Depth	1.96 events
Conversion Rate	0.83%
Cart Abandonment Rate	68.93%
Click-to-Cart Rate	2.69%
Click-to-Purchase Rate	0.83%

Interpretation: While site reach is strong, less than 1% of users who view a product complete a purchase. The combination of low engagement (session depth < 2) and high cart abandonment suggests both **content and process barriers**.

3. Funnel Analysis

Funnel Analysis



Stage	Users	Conversion % from Previous
Product View	1,404,179	—
Add to Cart	37,722	2.69%
Transaction	11,719	31.05% (of cart)

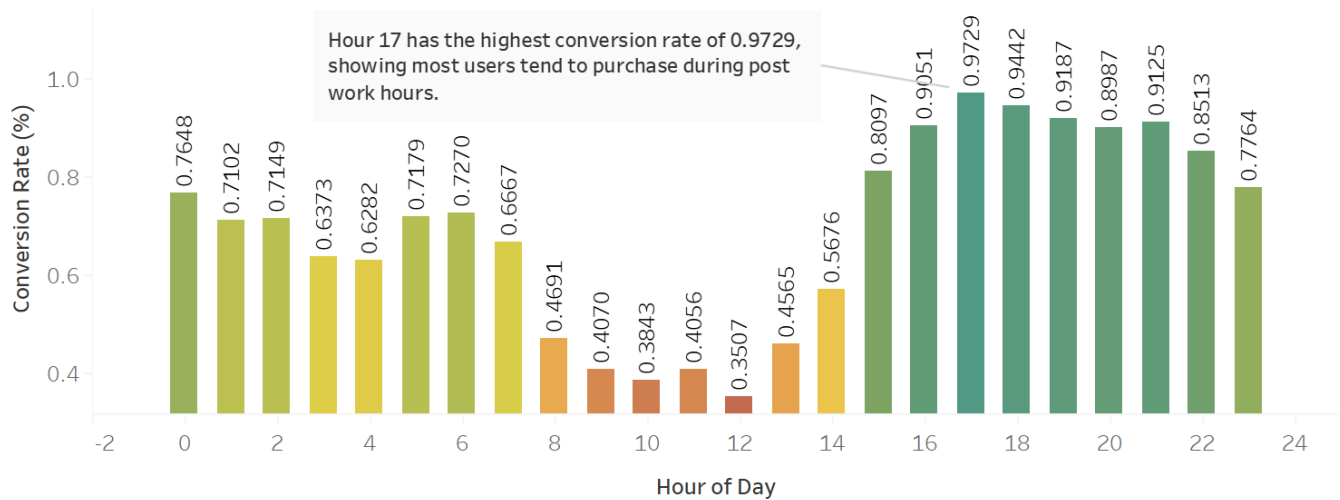
Observation: The **most severe drop-off** occurs between **view and add-to-cart**, indicating that the majority of users are browsing without committing products to their basket.

Possible Causes:

- Product pages fail to inspire confidence or urgency
- Weak merchandising for high-intent visitors
- Price, shipping, or feature details missing at the decision point

4. Hourly Conversion Performance

Hourly Conversion Rate



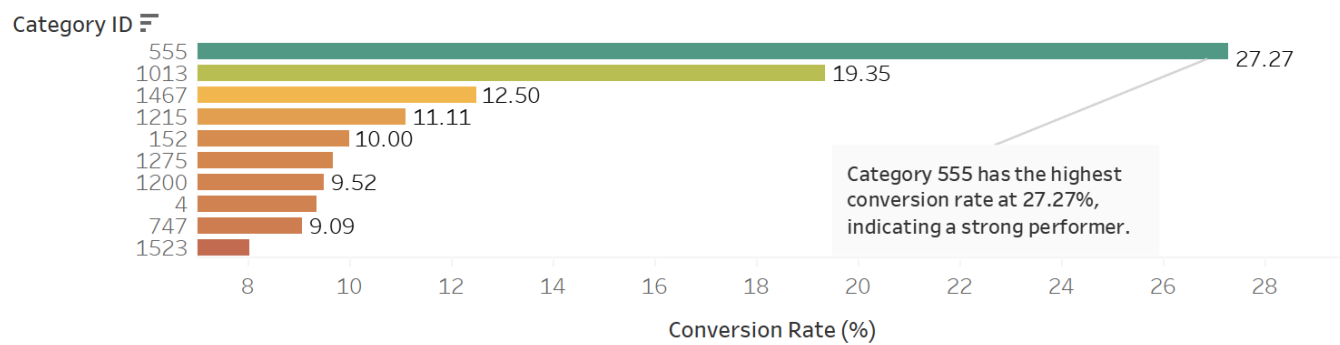
Insight:

- Peak conversion: **5–6 PM** (0.97% CR)
- Weakest window: **12 PM (noon)** (0.38% CR)

Implication: Users are more likely to complete purchases in the **post-work browsing window**. Marketing spend and promotional scheduling should be **aligned to behavioral peaks**.

5. Category Performance

Category Wise Conversion Rate



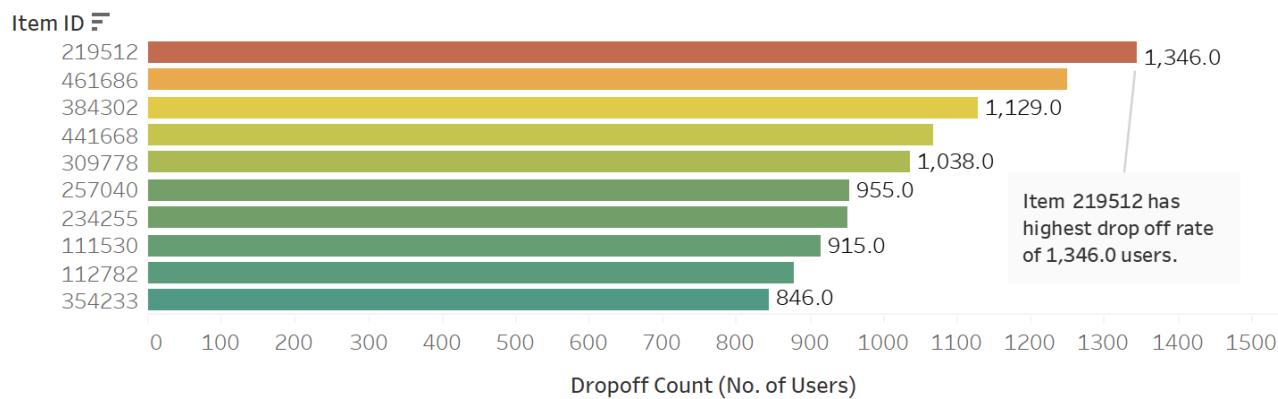
Highlights:

- Category **555** leads with **27.27% conversion**
- Category **1013** follows with 19.35%
- Majority of other categories convert below 10%

Business Risk: Underperforming categories dilute overall conversion and may occupy prime real estate in navigation or campaigns without delivering value.

6. High Drop-Off Products

Top 10 Dropoff Items



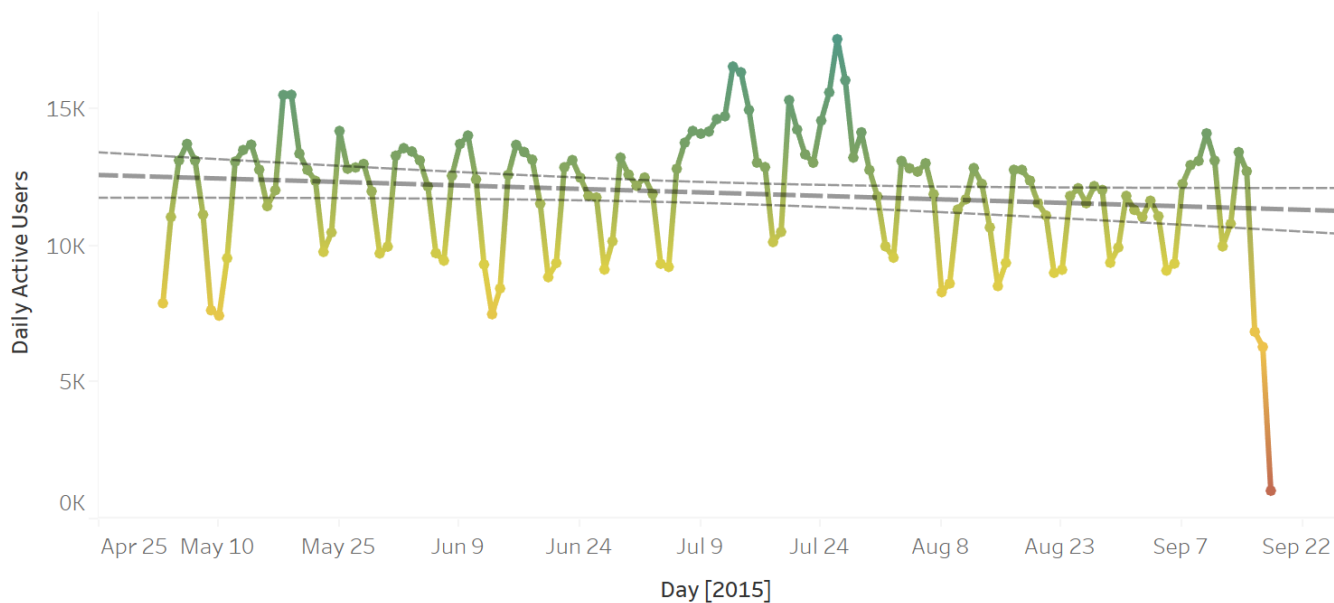
Products with the **highest user drop-off** after view/cart inclusion:

1. Item 219512 – 1,346 users lost
2. Item 461686 – 1,250 users lost
3. Item 384302 – 1,129 users lost

Analysis: These items are attracting attention but failing to close. This is a **prime opportunity for intervention**—reassess pricing strategy, review stock availability, and improve product page content.

7. Engagement Trends

Daily Active Users



- DAU peaks at ~15K in late July
- Gradual decline begins in August, suggesting **seasonality or retention erosion**
- Session depth remains low, limiting upsell and cross-sell potential

8. Root Cause Framework

1. **Content Gaps** – Product information, imagery, and trust signals may not be sufficient for decision-making.
 2. **Value Misalignment** – Price or perceived value mismatches in underperforming categories.
 3. **Timing Inefficiency** – Promotional cadence not matched to peak intent periods.
 4. **Checkout Friction** – Cart abandonment likely linked to unnecessary steps or unclear costs.
 5. **Retention Weakness** – User base engagement declining over time.
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9. Recommendations

1. Targeted Product Page Optimization

- Prioritize high drop-off SKUs for content, imagery, and review enrichment.
- Test urgency elements (low stock indicators, limited-time offers).

2. Cart Recovery Strategy

- Implement email/push retargeting with personalized incentives.
- Introduce abandoned cart reminders within 24 hours.

3. Time-Weighted Marketing

- Shift budget allocation to **4–8 PM** campaigns to exploit peak CR.
- Experiment with lunchtime micro-offers to lift midday engagement.

4. Category-Level Overhaul

- Audit low-converting categories for product-market fit.
- Reposition or replace chronically underperforming lines.

5. Checkout UX Streamlining

- Minimize steps, surface shipping costs early, and reinforce security.
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10. Strategic Next Steps

- Set up **conversion monitoring** segmented by product, category, and hour.
 - Integrate **A/B testing** into both product and checkout flows.
 - Pair quantitative funnel data with **qualitative feedback** from users to validate hypotheses.
 - Track retention metrics in parallel with conversion to ensure sustainable growth.
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