

E-Commerce Conversion Funnel Analysis – Project Report

Our team for the E-Commerce Conversion Funnel Analysis project includes:

- **Raunit Kumar**
- **Khushi Verma**
- **Srimathi**
- **Arthikha**

Together, we are committed to delivering a comprehensive and insightful analysis to enhance the efficiency of the conversion funnel.

I. Executive Summary

The analysis of the e-commerce conversion funnel reveals that while overall traffic and product engagement are healthy, profitability is constrained by a significant 32% drop-off at the checkout stage and a high 22% return rate in the fashion category. Electronics drive approximately 40% of total revenue and show strong customer loyalty, whereas weekend browsing surges by about 30% without a proportional increase in purchases. Addressing checkout friction, optimizing fashion sizing and expectations, and converting high-intent weekend traffic into purchases can materially improve conversion rates, revenue realization, and profit margins.

II. Objective / Business Question

The objective of this project is to analyze customer behavior across the e-commerce funnel—from browsing to purchase and post-purchase outcomes—to identify:

- Where major drop-offs occur in the funnel
- How conversion, returns, and pending orders affect total sales and profit
- Which product categories (notably electronics and fashion) drive revenue and risk
- How daily and weekly patterns, especially weekends, influence conversions
- What targeted actions can improve conversion, reduce returns, and stabilize profit

III. Key Metrics / KPIs

The following KPIs were used to measure funnel performance, profitability, and behavioral patterns.

Metric / KPI	Description	Indicative Value / Insight
Total Sales	Gross revenue generated from all completed orders	Driven heavily by electronics (~40% share)
Total Profit	Revenue minus costs and impact of returns/refunds	Constrained by 22% fashion returns and 18% pending/returned orders
Conversion Rate %	Sessions that end in a completed purchase	Negatively impacted by 32% checkout drop-off
Cart-to-Checkout Conversion	Users moving from cart to checkout	Relatively strong; main fall occurs at checkout completion
Checkout-to-Purchase Rate	Users who complete payment after initiating checkout	Key bottleneck, reduced by extra fees and long forms
Average Revenue Per User (ARPU)	Average revenue per unique user in the analysis period	Higher for electronics buyers than fashion-only buyers
Return & Refund Rate	Proportion of orders returned or refunded	Fashion return rate at 22%, above platform average
Category Profitability	Profit contribution by product category	Electronics lead; fashion's profit diluted by returns
Daily & Weekly Trends	Patterns in traffic, conversion, and revenue over time	30% higher weekend browsing but weaker conversions

IV. Insights & Findings

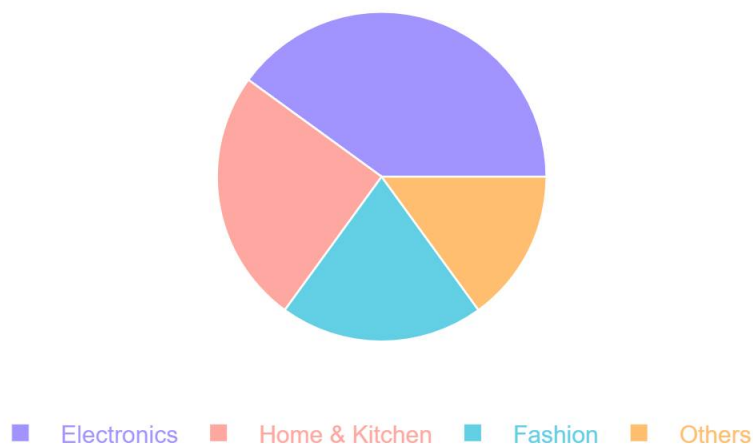
IV.1 Funnel Conversion & Checkout Drop-off

- Fact: Approximately 32% of users drop off at the checkout stage, primarily when additional fees (shipping, handling, or taxes) appear late in the journey or when faced with lengthy, complex forms.

- **Why it matters:** This stage is closest to revenue realization; even small improvements in checkout completion can significantly increase total sales and profit without needing more traffic.
- **Recommendation:** Simplify checkout by reducing form fields, offering guest checkout, making all fees transparent earlier in the funnel, and enabling fast payment options (UPI, wallets, one-click pay).

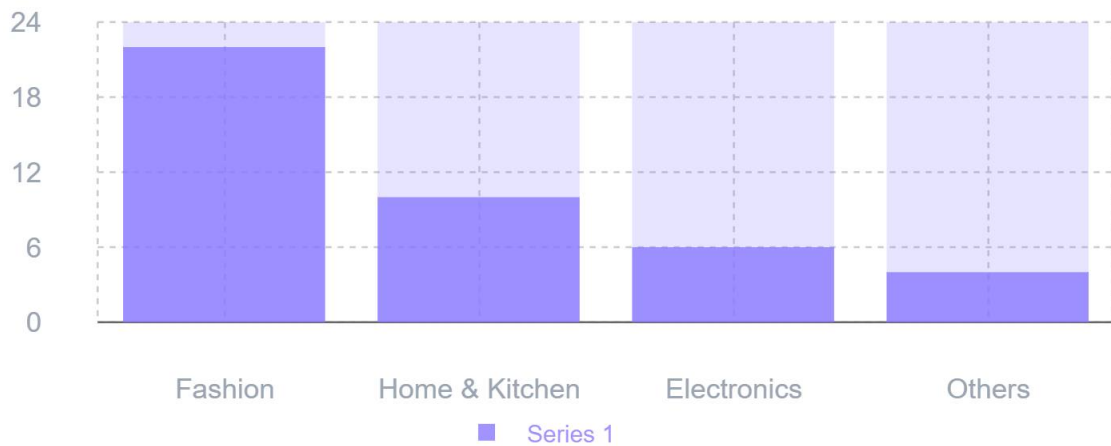
IV.2 Electronics as Core Revenue Driver

- **Fact:** Electronics contribute roughly 40% of total revenue, indicating strong demand and higher average order values. Customers in this category show repeat purchase behavior and higher ARPU.
- **Why it matters:** Electronics are the primary revenue anchor; protecting and nurturing this segment is essential for stable growth and profitability.
- **Recommendation:** Enhance cross-sell and upsell within electronics (accessories, warranties), introduce loyalty benefits for high-value electronics customers, and prioritize stock availability and delivery SLAs for this category.



IV.3 Fashion Returns and Profit Erosion

- **Fact:** Fashion products show a 22% return rate, mainly driven by size mismatch and expectation gaps between product display and actual delivered product.
- **Why it matters:** High return volume increases operational costs (reverse logistics, repackaging) and directly reduces realized profit, offsetting the value of initial sales growth in this category.
- **Recommendation:** Introduce detailed sizing guides and size comparison tools, standardize size charts across brands, improve product images and descriptions, and use fit/quality reviews to surface realistic expectations to buyers.



V. Data Preparation & Cleaning (Summary)

Data used in this analysis was processed and cleaned in Python (Jupyter Notebook) to ensure accuracy and consistency before building dashboards and visuals.

V.1 Data Cleaning Steps

We cleaned our dataset using Jupyter Notebook because it allows us to run code step-by-step and quickly check the results.

What we did:

Loaded the dataset into Jupyter using Python.

Removed missing values or filled them with correct values.

Deleted duplicate rows so the same order is not counted twice.

Corrected data types (example: dates converted to date format, price changed to numbers).

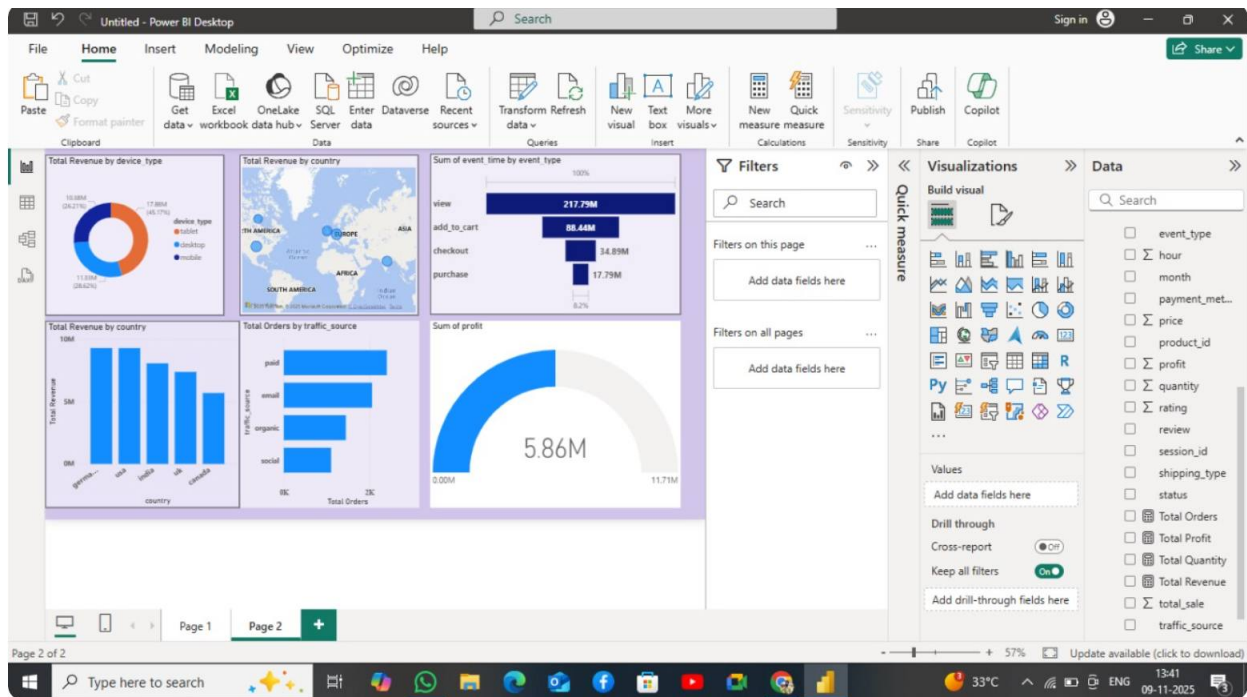
Fixed errors like wrong price, spelling mistakes, or empty categories.

Removed outliers (very high or very low values that are not realistic).

Saved the cleaned dataset for analysis.

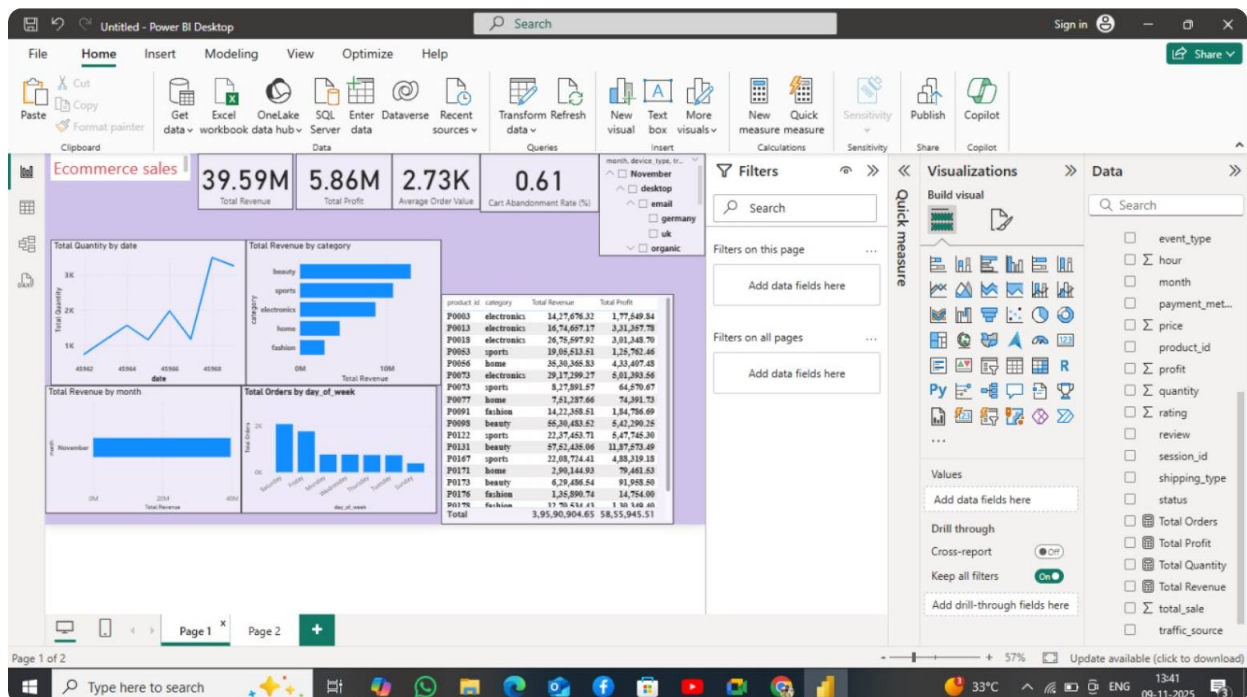
VI.1 Funnel Performance Overview

Power BI funnel charts track user progression from product views to cart additions, checkout initiation, and completed purchases, highlighting the 32% drop-off at checkout.



VI.2 Category Profitability & Returns

Bar and pie charts illustrate category-wise revenue and profit contributions, overlaying return rates to show where profitability is being eroded (notably fashion vs electronics).



VI.3 Time Trends and Weekend Behavior

Line charts present daily and weekly trends in sessions, conversion, and revenue, emphasizing the weekend traffic spike and comparatively weaker conversion rate.

VIII. Limitations

- Data is simulated, so real-world behavior, seasonality, and market shocks may not be fully captured.
- No geographic or demographic segmentation is available, limiting the ability to tailor insights to specific customer segments or regions.
- Behavioral factors such as marketing campaign exposure, coupon usage, and competitor activity are not explicitly modeled.

IX. Next Steps / Recommendations

IX.1 Product & UX Actions

- Redesign checkout flows to minimize steps, reduce friction, and surface all costs early in the journey.
- Introduce guest checkout and auto-fill options using saved profiles to speed up completion.
- Deploy contextual nudges during checkout (trust badges, delivery estimates, "only X left in stock").

IX.2 Category & Returns Management

- Enhance fashion sizing guides with body measurements, fit predictions, and brand-specific notes.
- Improve product detail pages with richer visuals, close-up views, and customer photos and reviews.
- Monitor high-return SKUs and brands and refine assortment or quality checks accordingly.

IX.3 Weekend Conversion Strategy

- Run time-bound weekend flash sales, bundles, and cart-based offers to convert browsing into purchases.
- Use personalized recommendations based on recent views and wishlists, especially on Fridays and weekends.
- Schedule targeted push/email campaigns aligned with peak weekend browsing hours.

IX.4 Operational Optimization

- Set up automated reminders and alerts to reduce pending orders and incomplete payments.
- Streamline return processing and update stock positions quickly to minimize inventory lock-ups.
- Regularly monitor funnel KPIs, return rates, and category-level profitability via the Power BI dashboard.