Checkout Funnel Analysis Project using Mysql & tableau

Dataset Source: 365 Data Science
Tools: MySQL, Tableau, Excel

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INTRODUCTION

This project analyzes user behavior in the checkout funnel of an e-commerce platform. Using SQL for data preparation and Tableau for visualization, the study identifies where customers drop off, what errors occur, and how device usage impacts checkout performance. The goal was to uncover reasons behind cart abandonment and provide actionable recommendations to improve successful conversions.

Checkout is the most critical stage in an e-commerce journey. Even minor friction in the process can lead to lost revenue. The dataset (when downloaded) consists of two tables:

- *checkout_actions (12,542 records): all user actions within the checkout process, including success, failure, and error messages.*
- *checkout_carts (5,946 records): carts created by users, with timestamps.*

The analysis covers July 2022–March 2023, with a focus on user engagement, errors, and conversion outcomes.

OBJECTIVE & BUSINESS QUESTIONS

The company faces high cart abandonment rates and wants to identify:

- *When and where in the checkout funnel customers drop off.*
- *Which error messages are most frequent and device-specific.*
- *How cart creation translates (or fails to translate) into successful checkouts.*

The objective is to pinpoint inefficiencies and recommend solutions to improve checkout success rates.

PROCESS

Dataset downloaded *as zip folder 'project-files-checkout-flow-optimization-analysis-with-sql-and-tableau' from 365DataScience*

extracted *the folder*

imported *the .sql file* ***to MySQL Workbench*** *&* ***ran the script***

created a schema: One Database & Two tables

DB: 365_checkout_database

Table 1: ***checkout_actions: Contains all checkout action's details***	***Table 1:*** ***checkout_carts: Detail of when the cart is created***

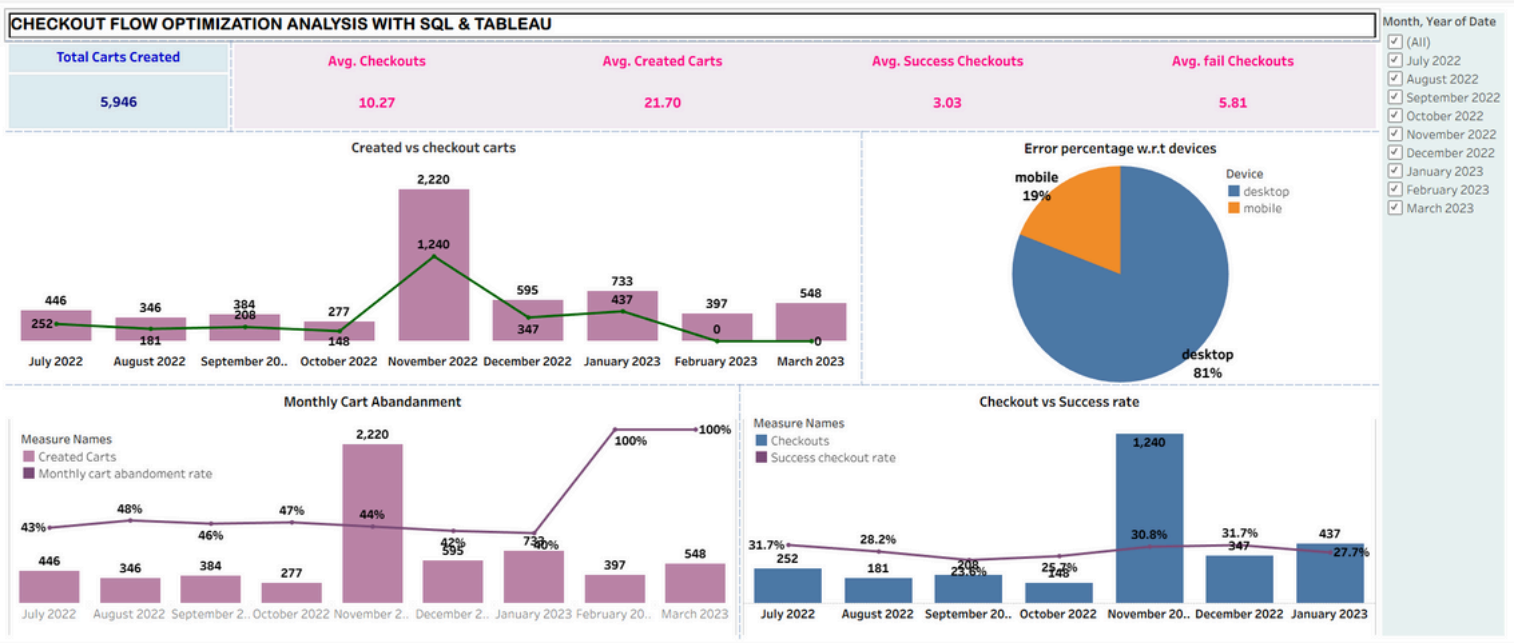
did the ***exploration, transformation & Manipulation*** *using Mysql query &* ***created multiple tables by joining the above tables- `master_cart`, `cart_created`, `checkout_actions`, `cart_complete_details`,`cart_error_details`***

exported *the CSVs of `cart_complete_details` & `cart_error_details`*

Imported to tableau & built required calculated fields: Monthly cart abandoment rate, Success checkout rate,

Built *cross-filtering enabled* ***dashboard*** *with filters*

TABLEAU STORY SNAPS



Error Messages w.r.t Devices

Error Message	Device: desktop	Device: mobile
year field is required	28.94%	22.11%
number field is required	23.02%	40.82%
Your card was declined.	16.55%	13.95%
lastName field is required	7.35%	6.12%
Your card has insufficient funds.	6.55%	3.74%
Your card does not support this type of purchase.	4.72%	3.40%
Your card is not supported.	3.36%	3.74%
month field is required	2.80%	1.70%
Your card's security code is incorrect.	1.76%	0.68%
zip field is required	1.68%	0.68%
State field is required	1.44%	1.02%
firstName field is required	0.96%	1.02%
Your card number is incorrect.	0.88%	1.02%

Tableau story url:

https://public.tableau.com/views/CheckoutFlowOptimizationAnalysiswithSQLandTableauProject_17566395281580/Story1?:language=en-US&publish=yes&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_linktext

INSIGHTS & INTERPRETATION

- *Cart Creation Trends*

Cart creation remained consistent from July 2022 to March 2023, with small fluctuations.
February & March 2023 showed zero successful checkouts in raw data, inflating abandonment rates to 100%.

- *Checkout Success vs. Failures*

Out of 12,542 actions, only 1,372 were successful checkouts (≈11%), while 2,962 failed attempts (≈24%) highlight process inefficiencies.
Mobile users showed slightly higher failure ratios compared to desktop.

- *Error Messages*

A total of 29 distinct error messages were recorded.
Some errors were strongly device-specific (e.g., "Session Expired" on mobile, "Invalid Payment Method" on desktop).
To improve clarity, least frequent 10 error messages (low volume, 100% desktop) were excluded in final charts.

- *Abandonment Rates*

Average abandonment rate across the period: ~78%.
Anomalies (100% abandonment in Feb–Mar 2023) were due to missing successful checkout records in raw data.

RECOMMENDATIONS

- *Error Reduction*

Prioritize fixing top recurring errors like "Year field is required" and "Number field is required."
Standardize device testing to address mobile-specific drop-offs.

- *Checkout Optimization*

Implement auto-save carts and persistent sessions to reduce drop-offs due to timeouts.
Simplify payment workflows and provide multiple options.

- *Monitoring & Reporting*

Build a real-time error dashboard for quick detection of spikes.
Track abandonment separately for each device to identify UI/UX gaps.

- *Data Validation*

Ensure data capture consistency (e.g., avoid missing successful checkouts in Feb–Mar 2023).