

CUSTOMER PURCHASE BEHAVIOR ANALYSIS

Based on Dynamic Daily Duration Insights

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GOALS

To understand customer behavior by examining daily purchase session duration dynamic.

To analyze how this behavior varies across different device categories (desktop, mobile).

Parameters

Source: Google Merchandise Store Raw Events

Dates: Nov 1, 2020 to Jan 31, 2021

Metrics :

Purchase Session Duration - duration from the time users first arrive on the website until their first purchase on any given day.

Number of Purchases- daily count of purchases

Category :

Desktop

Mobile

Orders
4633

Purchase Frequency

Num. orders / Num. unique customers

1

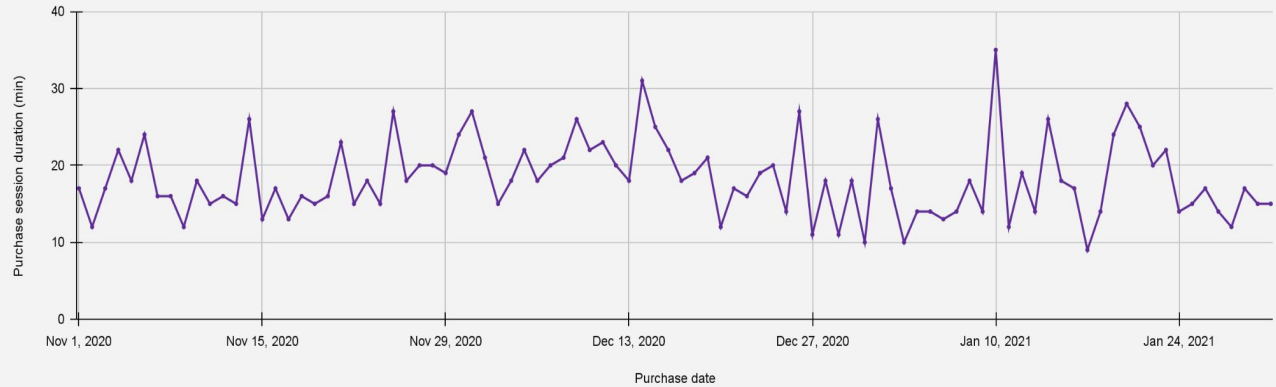
Average Purchases per Day

50

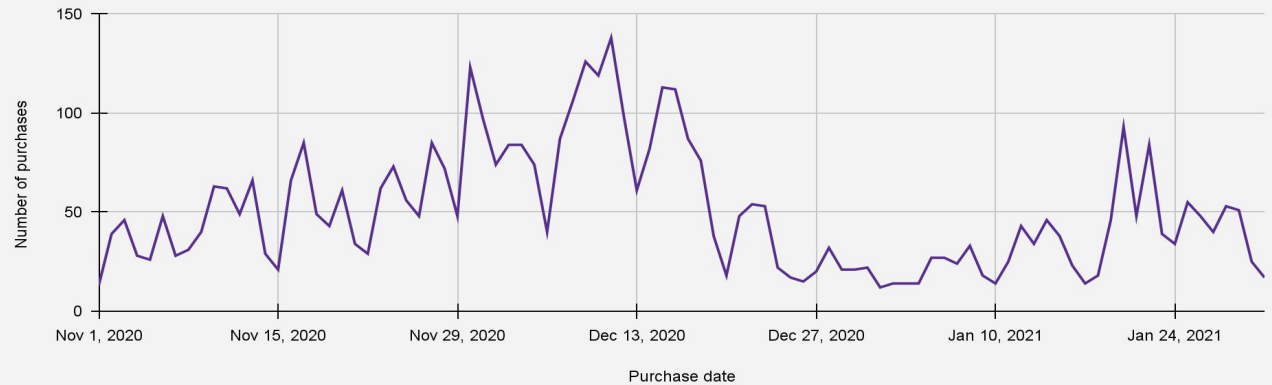
Median Time to Purchase (min)

19

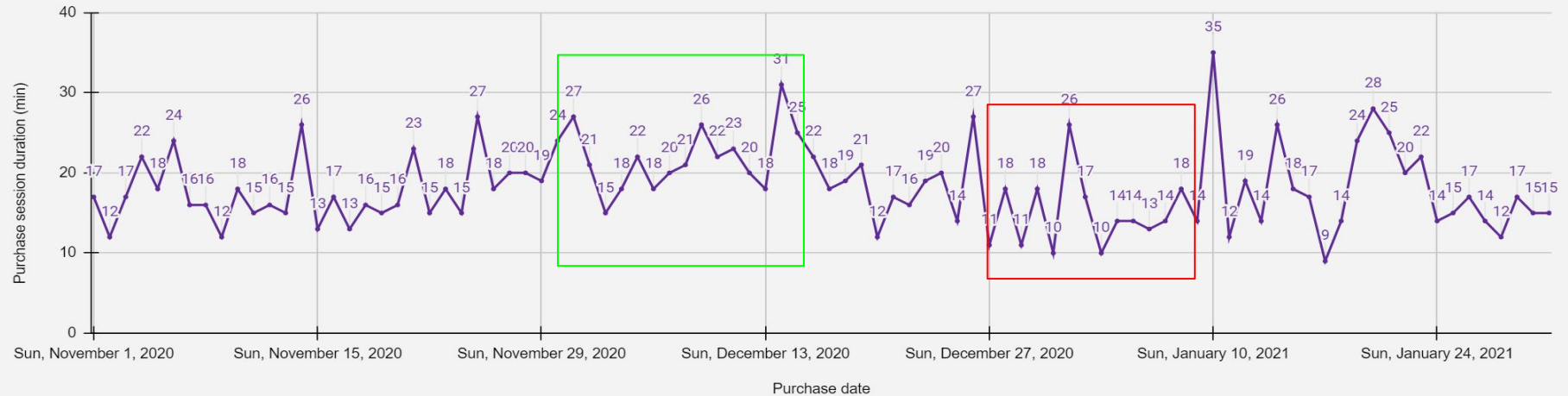
Daily median purchase session duration over time



Daily purchase volume

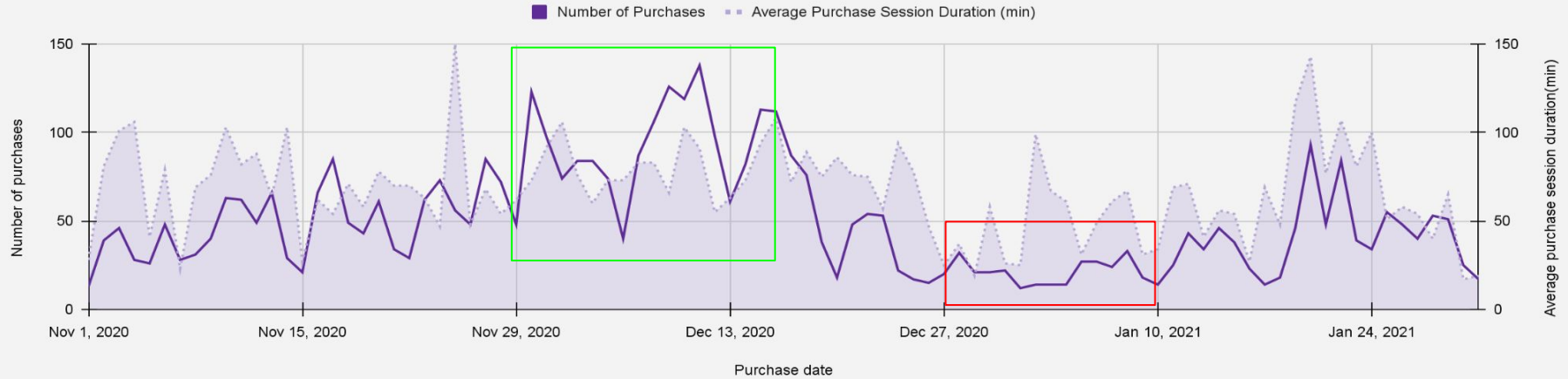


Daily median purchase session duration over time



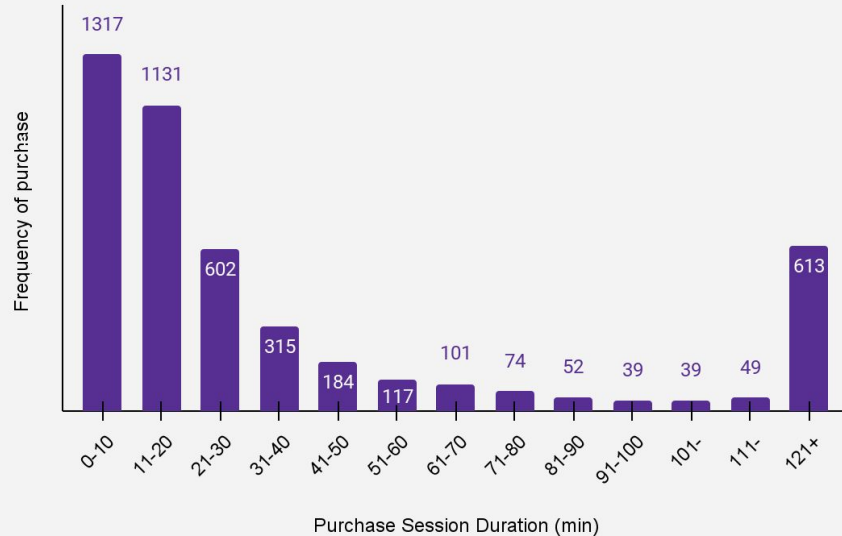
- Significant fluctuation in the daily median purchase session duration over time.
- Highest peak in purchase session duration occurs on January 10, 2021 (35 minutes)
- Periodic spikes and drops which may correspond to weekly patterns or events such as weekends, promotions, or holidays.
- During the week, on Wednesdays user engagement seems to be high. While on Sundays, engagement seems to be low.
- Spikes around late November associated with Black Friday and Cyber Monday sales events.
- A noticeable decline in session duration immediately after the holidays in early January.

Daily Purchase Volume



- Correlation between the number of purchases and the average purchase session duration.
- Higher the engagement time => Higher number of purchase activity
- Peaks in purchase volume observed around late November, which likely corresponds to Black Friday and Cyber Monday sales and mid-Dec, for holiday shopping.
- Consistent pattern of higher activity at the beginning of the week and towards weekends.
- Post-holiday drop in purchase volume in early Jan.

Distribution of Purchase Session Durations



- 65.83% of the purchases were made within session durations of 0-30min
- Duration ranges (41-50 minutes and beyond) have much lower frequencies.
- Notable outlier in the 121+ minutes range, with 613 sessions → can be eliminated by changing the definition of session duration.

01

Daily Median Purchase Session Duration Over Time

- Significant fluctuations in daily median purchase session durations.
- Peaks around key shopping events (Black Friday, Christmas, New Year).
- Post-holiday decline in session durations, with occasional spikes.

02

Daily Purchase Volume and Average Session Duration

- Correlation between higher purchase volumes and longer average session durations.
- Peaks in purchase volumes coincide with promotional periods.
- Weekly patterns suggest higher activity during weekends and beginning of the week.

03

Distribution of Purchase Session Durations

- Majority of sessions are completed within 30 minutes.
- Outliers exist with sessions exceeding 121 minutes.
- Significant number of short sessions (0-10 minutes), indicating quick purchases or “postponed purchase”

ACTIONS

Improve Purchase Process

- **Session Duration:** Redefine purchase session duration.
- **Enhance Support:** Provide quick access to customer support and product info.
- **Analyze Long Sessions:** Identify and resolve issues in sessions over 121 minutes.
- **Analyze Short Sessions:** Identify features that are widely used during short sessions.

Timing Marketing Campaigns

- **Leverage Peak Periods:** Focus promotions around late November and mid-December.
- **Utilize Weekly Patterns:** Target campaigns for weekends and early week.
- **Engage Post-Holiday:** Use loyalty programs and new year promotions to sustain engagement.
- **Align with Events:** Time campaigns to match user behavior peaks.

Desktop
2627

Mobile
1908

Tablet
100

Median Time to Purchase (min)

19

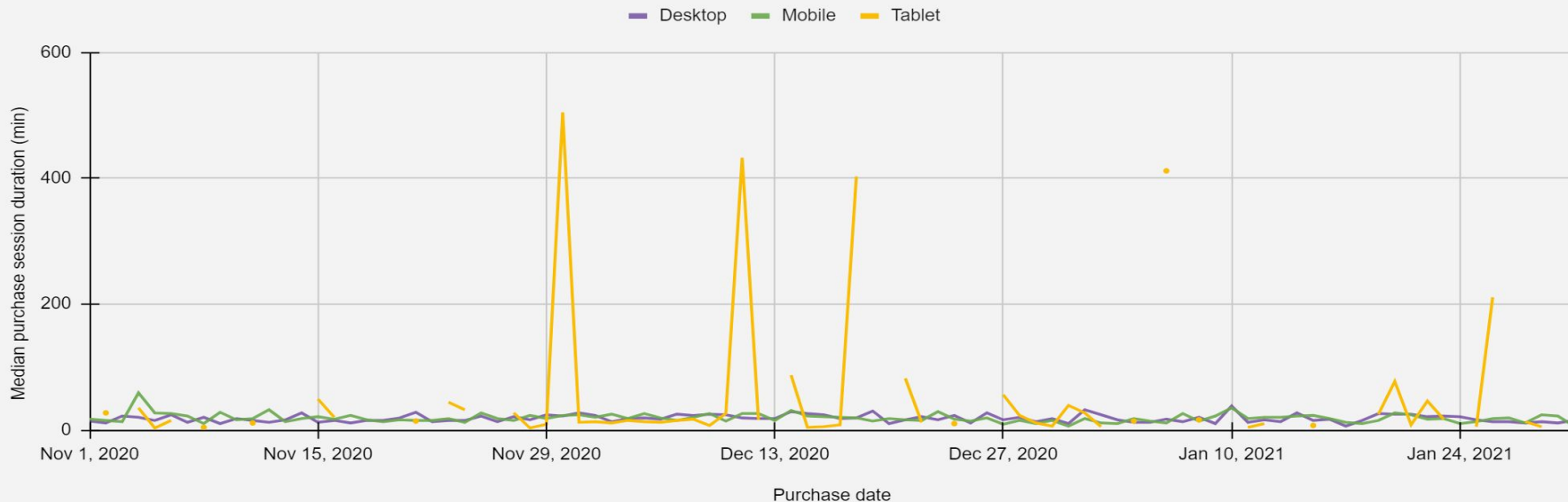
Median Time to Purchase (min)

19

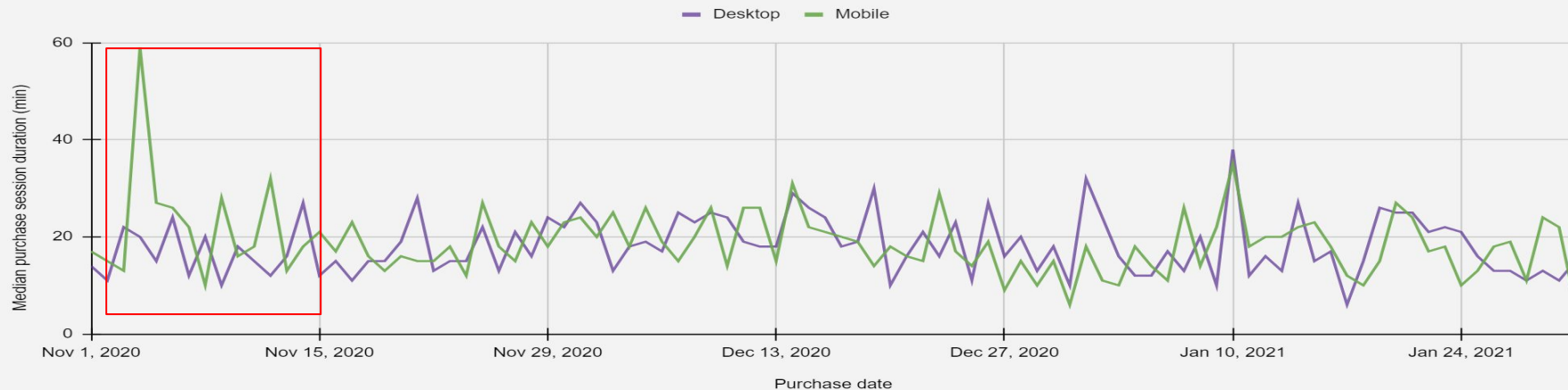
Median Time to Purchase (min)

17

Daily purchase session duration dynamic by device category

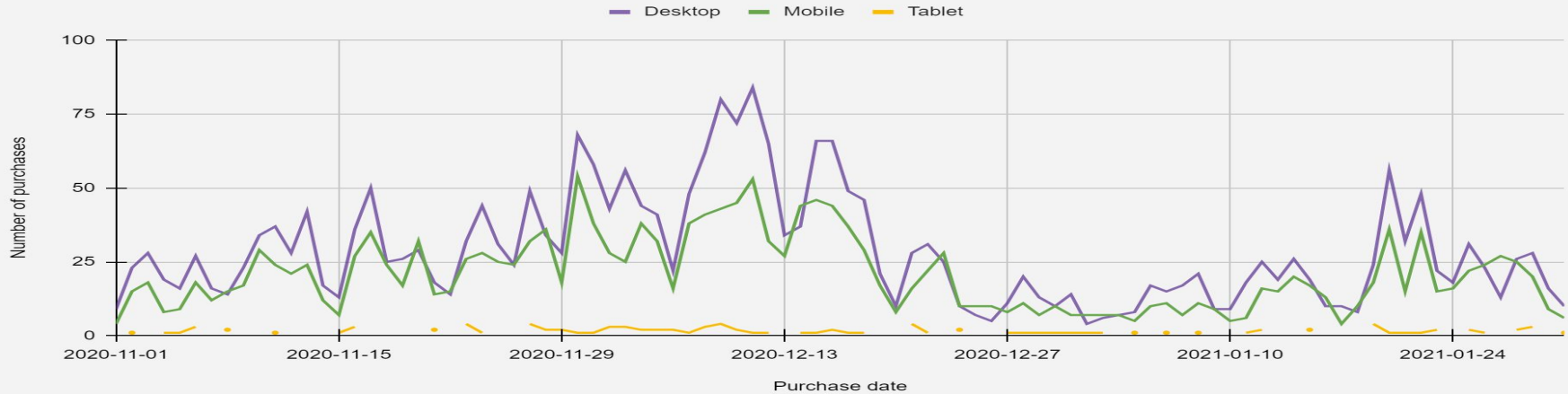


Daily purchase session duration dynamic by device category



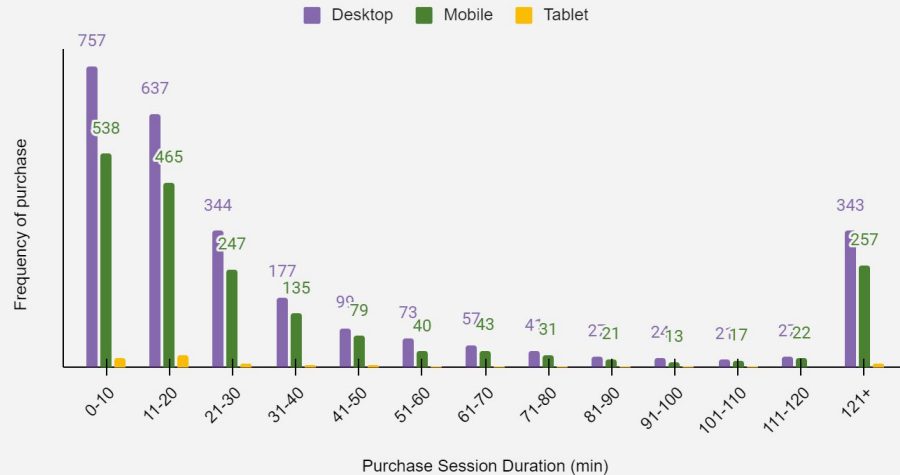
- Mobile session durations show more fluctuation compared to desktop sessions.
- Desktop session durations remain relatively stable, mostly around 20 minutes.
- Significant peaks in mobile sessions, particularly early November, indicating high engagement or issues on mobile.
- Both desktop and mobile session durations align closely around major shopping events (late November, late December).
- Similar post holiday decline and weekly patterns for both categories

Daily purchase volume by device category



- Desktop purchases consistently dominate during peak shopping periods.
- High purchase volumes on desktop around late November and mid-December, due to Black Friday, Cyber Monday, and holiday shopping.
- Mobile purchase volumes are relatively stable but lower than desktop. While Tablet purchases have negligible impact on overall volume.
- Pronounced drops in purchase volumes after the holiday season.

Distribution of Purchase Session Duration by Category



- Majority of purchase sessions across all devices fall within the 0-10 minute range, with desktop leading.
- Both desktop and mobile show a decline in frequency for durations between 31-60 minutes, with desktop consistently higher.
- Very long sessions (121+ minutes) are notable outliers, especially on desktop and mobile.
- Tablet usage is minimal across all session durations, indicating low preference for purchases.

01

Device-Specific Purchase Session Durations

- Majority of sessions are 0-10 minutes, led by desktop (757), followed by mobile (538), and tablet (12).
- Frequency of sessions over 121 minutes are notable in desktop (343) and mobile (257) categories.

02

Device Usage Patterns

- Desktop consistently shows higher session frequencies across all durations.
- Mobile follows a similar pattern but with lower frequencies.
- Tablet usage is minimal, indicating low preference for purchases.

03

Weekly and Event Trends

- Higher activity during weekends and major shopping events (late November, mid-December).
- Post-holiday decline in session durations, with occasional spikes in both desktop and mobile.

ACTIONS

Desktop

- **Enhance User Support:** Provide easy access to support for long sessions (121+ minutes).
- **Streamline Checkout:** Simplify steps to reduce session duration and boost conversions.
- **Prepare for Peaks:** Ensure smooth navigation and server capacity during high activity periods.

Mobile

- **Simplify Navigation:** Improve navigation to reduce session variability.
- **Speed Optimization:** Reduce load times for a better user experience.
- **Personalized Recommendations:** Implement to help users find products faster.

Tablet

- **Optimize UI:** Improve tablet interface to increase appeal for purchases.
- **Ensure Continuity:** Provide seamless transition between devices.

DRAWBACK

- Purchase session duration alone doesn't indicate whether the length of time is positive or negative for the business. A longer duration could mean users are engaged and browsing more products, or it could mean they're having difficulty completing their purchase.
- Exclusion of events where sessions started before midnight (UTC) and purchases that occurred early in the day (after 00:00 UTC)

Thank You!