UDACITY

Marketing Data and Technology

Draw Insights from Marketing Data

Part One: Setting Goals

Identify Key Business Objectives

Key Business Objective: A defined goal or outcome used to plan the desired direction of your company.
Write at least 3 but no more than 5 business objectives that support your business model. Each objective should be SMART.

1	Increase the online store's overall conversion rate from 1.5% to 2% within the next 6 months by optimizing product pages and checkout flow.
2	Grow average order value (AOV) from $45 to $55 within the next 12 months by introducing product bundles and upsell offers.
3	Improve customer retention rate by 10% over the next 9 months by launching an email loyalty campaign with personalized promotions.
4	Increase revenue from mobile users by 15% in the next 12 months by improving mobile site speed and checkout experience.
5	Achieve a 20% increase in paid search ROAS within 6 months by reallocating budget from low-performing display ads.

Identify Key Performance Indicators

Key Performance Indicator (KPI): A quantifiable metric used to determine how effectively your key business objectives are being met. Ensure that the specific metric is clearly identified.	
1	Conversion rate (%)
2	Average order value ($)
3	Customer retention rate (%)
4	Mobile revenue ($)
5	Return on ad spend (ROAS) from paid search

Part Two:
A/B Testing Proposal

A/B Testing Proposal: KPI, Variable, and Hypothesis

KPI used as basis for the A/B test
Conversion rate (%)
Variable that will have an impact on the KPI
The placement of the “Add to Cart” button on product pages.
Hypothesis for your A/B Test
Moving the “Add to Cart” button higher on the product page will increase conversions because customers will not need to scroll to find it, reducing friction in the purchase journey.

A/B Testing Proposal: Details and results

Details of the A/B test	
Variations being tested:	Baseline: Current layout where the “Add to Cart” button appears below the fold after product details.
	Variation: “Add to Cart” button placed above the fold directly under the product title and price.
User groups:	Website visitors will be randomly split 50/50 into two groups. One group sees the baseline, the other sees the variation.
Data collection tool:	Google Optimize (or GA4 integrated with Google Optimize).
Length of the test:	Run for 4 weeks or until at least 50,000 users per variation have interacted with the product pages to ensure statistical significance.

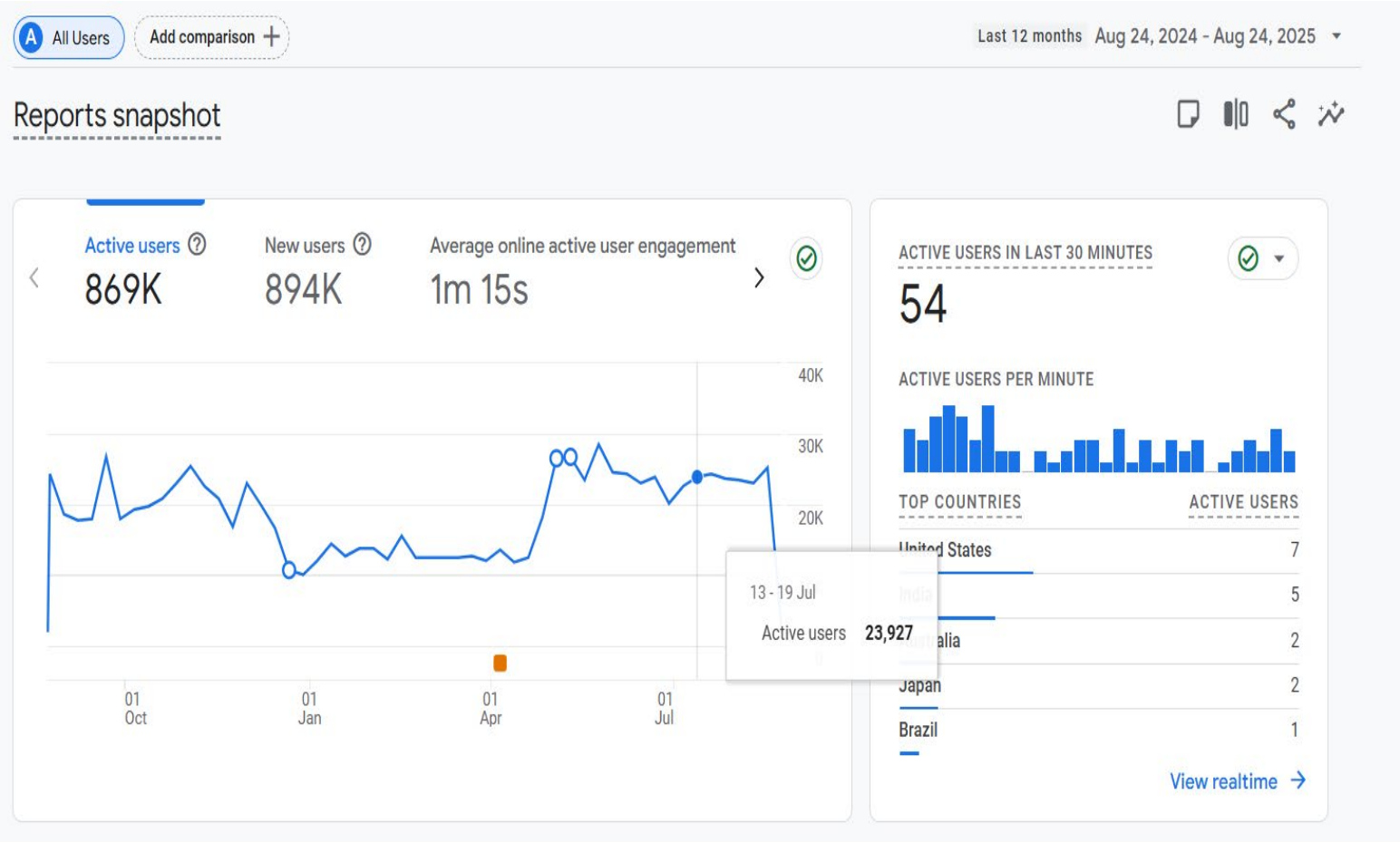
A/B Testing Proposal: Details and results

Describe how you would determine the results of the A/B test

To evaluate the A/B test, examine the conversion rate (%) for each variation. The higher conversion rate is better since it indicates more users completed purchases after visiting the product pages.

Part Three: Data Exploration

Reports Snapshot



Reports Snapshot

Which month had the most new users?

May

Which month had the fewest new users?

August

Write some ideas why certain trends are associated with these specific months?

Increase in new users in May is because:

- Google often runs product launches, conferences (like Google I/O in May), and marketing campaigns that increase awareness of the Merchandise Store.
- Seasonal interest in new branded products and promotions tied to these events drive more traffic.
- Academic calendars also play a role, with many students finishing the semester in May, leading to more online activity.

Reports Snapshot

Write some ideas why certain trends are associated with these specific months?

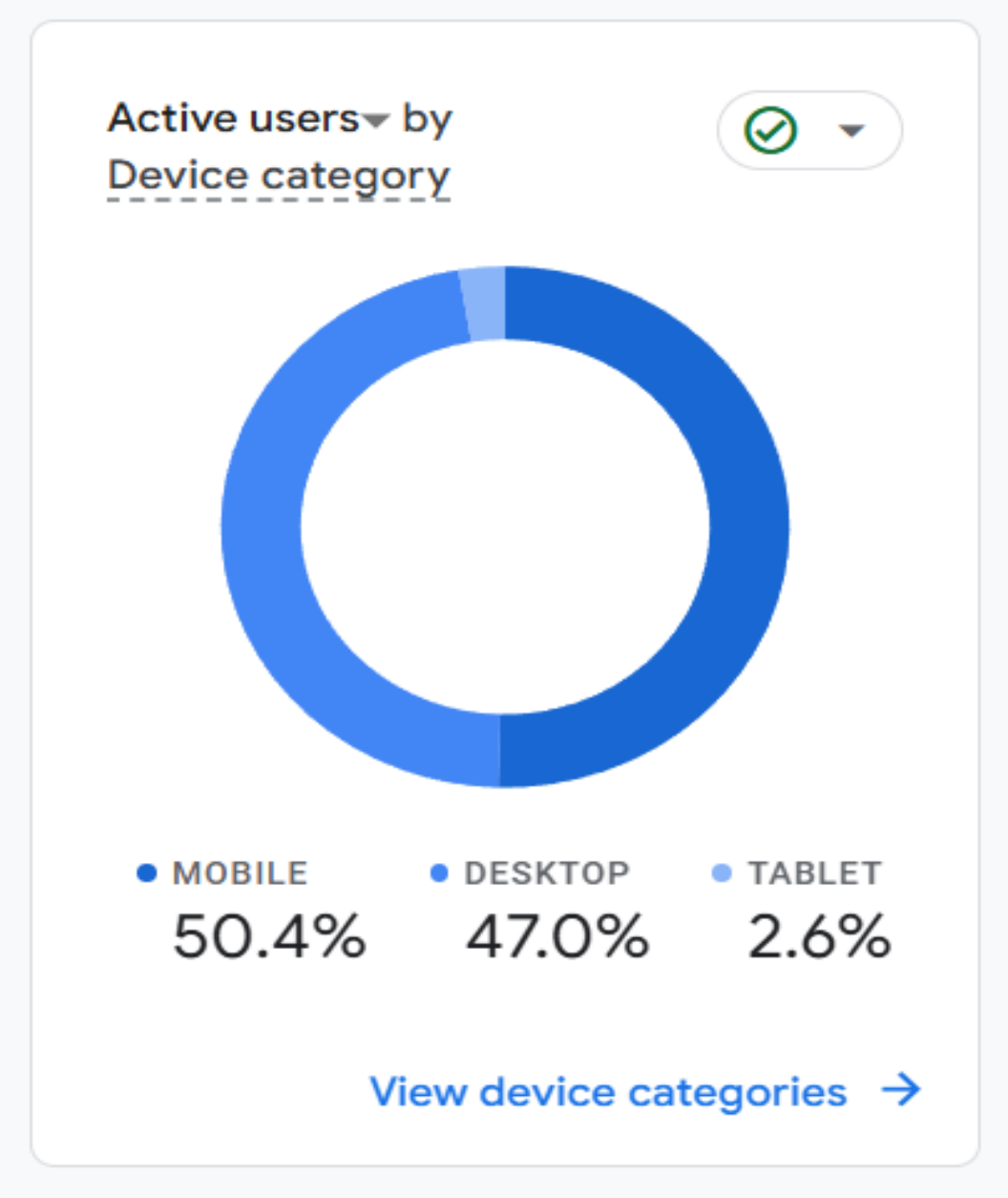
Fewest new users are in August is beacuse

- August is a slower retail month with no major shopping events.
- Many users are on vacation or focused on back-to-school shopping from other retailers, so attention shifts away from branded merchandise.
- Lower marketing push compared to November (holiday) or May (Google events) contributes to reduced traffic.

User Tech

Please go into the User → Tech → Tech overview report for the following:

For the twelve month period you've chosen, provide a screenshot showing percentage chart (donut charts) of All Users that came from mobile, desktop, and tablet devices.



User Acquisition

For this section, if you are using your own business's Google Analytics data but do not have eCommerce capabilities established, please use the Google Analytics demo data provided from the Google Merchandise store.

Take a screenshot that shows the Engagement rate of the different acquisition channels over a 12 month period.

Plot rows | Search... | Rows per page: 10 | Go to: 1 | 1-10 of 13

		First user defa... channel group	Total users	New users	Returning users	Average online active user engagement time	Engaged online sessions per active user	
☑		Total	**872,477** 100% of total	**893,794** 100% of total	**136,167** 100% of total	**1m 15s** Avg 0%	**0.72** Avg 0%	
☑	1	**Direct**	618,871 (70.93%)	630,369 (70.53%)	89,215 (65.52%)	1m 05s	0.62	11
☑	2	**Organic Search**	170,431 (19.53%)	177,429 (19.85%)	27,355 (20.09%)	1m 18s	0.93	3
☑	3	**Paid Search**	26,662 (3.06%)	26,554 (2.97%)	4,810 (3.53%)	1m 40s	0.86	
☑	4	**Referral**	23,562 (2.7%)	22,742 (2.54%)	5,969 (4.38%)	2m 28s	1.22	
☑	5	**Cross-network**	19,059 (2.18%)	19,023 (2.13%)	4,362 (3.2%)	2m 22s	1.13	
☐	6	**Email**	6,278 (0.72%)	5,889 (0.66%)	2,899 (2.13%)	4m 10s	1.88	
☐	7	**Unassigned**	5,820 (0.67%)	5,120 (0.57%)	776 (0.57%)	52s	0.62	
☐	8	**Organic Social**	3,459 (0.4%)	3,396 (0.38%)	789 (0.58%)	2m 17s	1.12	
☐	9	**Organic Shopping**	2,676 (0.31%)	2,648 (0.3%)	578 (0.42%)	2m 04s	1.16	
☐	10	**Paid Other**	435 (0.05%)	432 (0.05%)	45 (0.03%)	37s	0.53	

User Acquisition

For this section, if you are using your own business's Google Analytics data but do not have eCommerce capabilities established, please use the Google Analytics demo data provided from the Google Merchandise store.

Take a screenshot that shows the Engagement rate of the different acquisition channels over a 12 month period.

Traffic acquisition: Session primary channel group (Default Channel Group) — Last 12 months Aug 24, 202

	Session primary...Channel Group)	Sessions	Engaged sessions	Engagement rate	Average online session engagement	Online session events	
	Total	1,287,652 100% of total	628,595 100% of total	48.82% Avg 0%	50s Avg 0%	13.24 Avg 0%	
1	Direct	801,461 (62.24%)	325,133 (51.72%)	40.57%	40s	10.83	8,6
2	Organic Search	280,443 (21.78%)	183,390 (29.17%)	65.39%	56s	13.49	3,7
3	Referral	52,039 (4.04%)	36,461 (5.8%)	70.06%	1m 25s	19.04	
4	Paid Search	45,873 (3.56%)	29,063 (4.62%)	63.36%	1m 17s	17.74	
5	Unassigned	44,610 (3.46%)	4,330 (0.69%)	9.71%	51s	30.13	1,
6	Email	27,138 (2.11%)	20,921 (3.33%)	77.09%	1m 45s	21.80	
7	Cross-network	26,726 (2.08%)	20,796 (3.31%)	77.81%	1m 40s	22.11	
8	Organic Social	8,466 (0.66%)	6,014 (0.96%)	71.04%	1m 35s	20.48	
9	Organic Shopping	4,063 (0.32%)	3,183 (0.51%)	78.34%	1m 19s	16.43	
10	Paid Other	561 (0.04%)	247 (0.04%)	44.03%	33s	9.32	
11	Display	183 (0.01%)	23 (<0.01%)	12.57%	0s	4.86	
12	Organic Video	122 (<0.01%)	77 (0.01%)	63.11%	23s	8.53	
13	Affiliates	1 (<0.01%)	1 (<0.01%)	100%	14s	6.00	

User Acquisition

For this section, if you are using your own business's Google Analytics data but do not have eCommerce capabilities established, please use the Google Analytics demo data provided from the Google Merchandise store.

Take a screenshot that shows the Engagement rate of the different acquisition channels over a 12 month period.

Traffic acquisition: Session primary channel group (Default Channel Group)

Last 12 months Aug 24, 2024 - Aug 24, 2025

	Session primary...Channel Group)	Engaged sessions	Engagement rate	Average online session engagement	Online session events	Event count All events	Key events All events	Session key event rate All events	Total revenue
	Total	628,595 % of total	48.82% Avg 0%	50s Avg 0%	13.24 Avg 0%	17,044,386 100% of total	1,099,753.00 100% of total	20.45% Avg 0%	$2,640,987.51 100% of total
1	Direct	(51.72%)	40.57%	40s	10.83	8,683,659 (50.95%)	526,966.00 (47.92%)	14.69%	$1,317,189.64 (49.87%)
2	Organic Search	(29.17%)	65.39%	56s	13.49	3,782,432 (22.19%)	263,613.00 (23.97%)	28.57%	$666,682.86 (25.24%)
3	Referral	1 (5.8%)	70.06%	1m 25s	19.04	990,644 (5.81%)	88,938.00 (8.09%)	36.72%	$206,630.39 (7.82%)
4	Paid Search	(4.62%)	63.36%	1m 17s	17.74	813,952 (4.78%)	58,294.00 (5.3%)	29.15%	$161,677.68 (6.12%)
5	Unassigned	(0.69%)	9.71%	51s	30.13	1,343,880 (7.88%)	29,413.00 (2.67%)	20.61%	$43,420.99 (1.64%)
6	Email	(3.33%)	77.09%	1m 45s	21.80	591,476 (3.47%)	65,541.00 (5.96%)	45.52%	$138,233.35 (5.23%)
7	Cross-network	(3.31%)	77.81%	1m 40s	22.11	590,988 (3.47%)	43,323.00 (3.94%)	40.89%	$59,786.10 (2.26%)
8	Organic Social	(0.96%)	71.04%	1m 35s	20.48	173,415 (1.02%)	16,779.00 (1.53%)	40.48%	$38,289.04 (1.45%)
9	Organic Shopping	(0.51%)	78.34%	1m 19s	16.43	66,775 (0.39%)	6,560.00 (0.6%)	56.34%	$8,858.14 (0.34%)
10	Paid Other	(0.04%)	44.03%	33s	9.32	5,228 (0.03%)	231.00 (0.02%)	13.37%	$0.00 (0%)
11	Display	(<0.01%)	12.57%	0s	4.86	890 (<0.01%)	0.00 (0%)	0%	$0.00 (0%)
12	Organic Video	(0.01%)	63.11%	23s	8.53	1,041 (<0.01%)	95.00 (<0.01%)	48.36%	$219.32 (<0.01%)
13	Affiliates	(<0.01%)	100%	14s	6.00	6 (<0.01%)	0.00 (0%)	0%	$0.00 (0%)

User Acquisition

Which channel groups had the highest and lowest engagement rates?

The channel group with the highest engagement rate is Email, with an engaged online sessions per active user of 1.88. The channel group with the lowest engagement rate is Paid Other, with an engaged online sessions per active user of 0.53

Which channel groups had the highest and lowest total revenue?

The channel group with the highest total revenue is Organic Search, with a total revenue of $66,662.86. The channel group with the lowest total revenue is Display, with a total revenue of $0.00.

What do these metrics mean, based on your experience?

The Engaged online sessions per active user metric indicates the average number of engaged sessions each active user contributes to a channel group, reflecting the level of user interaction and interest. A higher value suggests greater user engagement, while a lower value may indicate less interaction, though this should be analyzed in the context of user acquisition strategies and content relevance. he "Total revenue" metric represents the overall financial return generated from transactions associated with each channel, providing insight into the economic effectiveness of marketing efforts.

Monetization

For this section, if you are using your own business's Google Analytics data but do not have eCommerce capabilities established, please use the Google Analytics demo data provided from the Google Merchandise store.

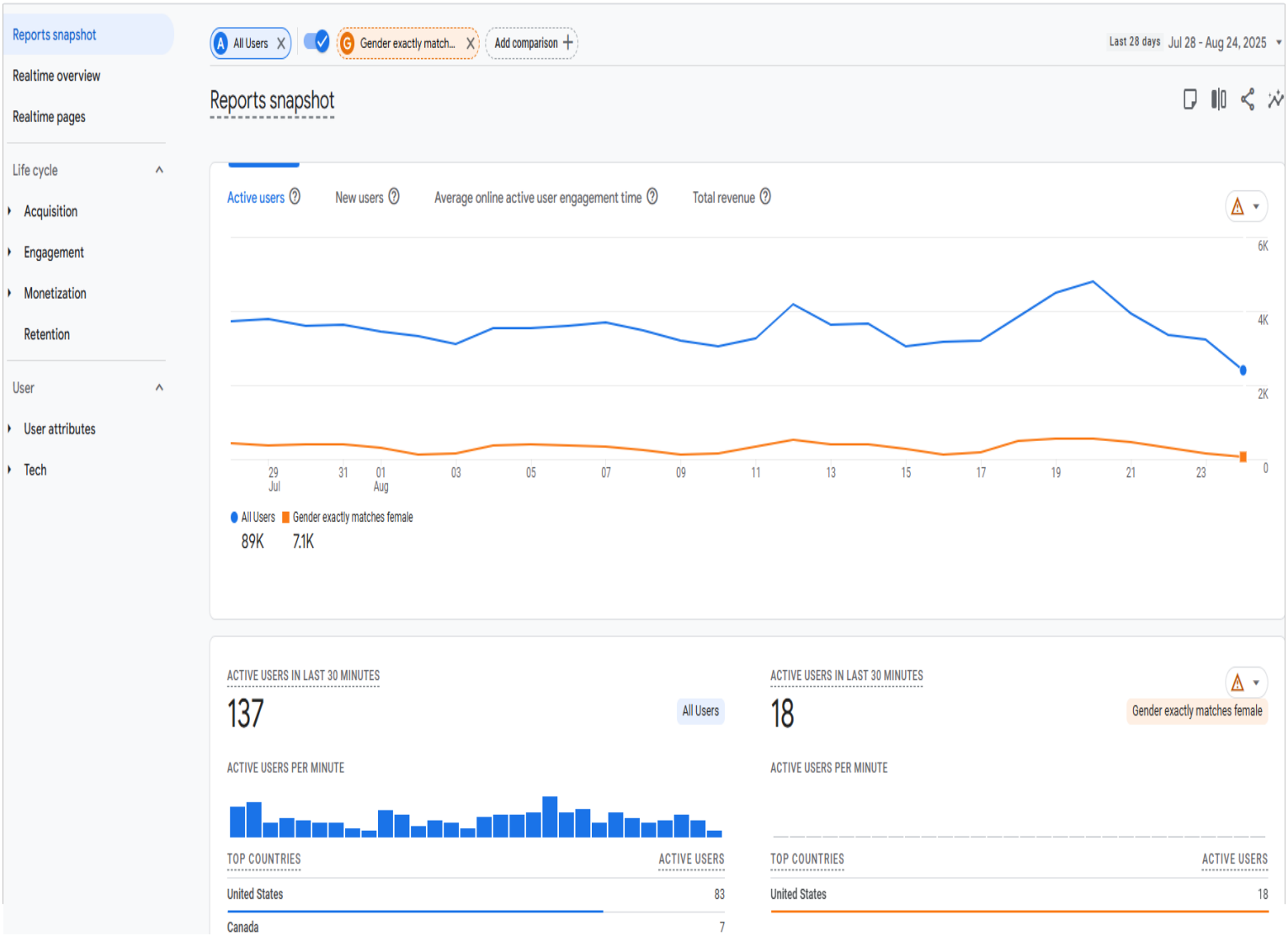
During the twelve month period you've selected, provide a screenshot that shows the Item name that contributed the highest number of unique purchases and the item name that was responsible for the largest percentage of revenue? (Screenshot(s) only; no annotation required.)

Plot rows | Search... | Rows per page: 10 | Go to: 1 | 1-10 of 722

	Item name	Items viewed	Items added to cart	Items purchased	Item revenue
	Total	795,144 100% of total	625,437 100% of total	216,347 100% of total	$2,892,279.61 100% of total
1	Android Café Mug	1,126 (0.14%)	920 (0.15%)	0 (0%)	$0.00 (0%)
2	Android Iconic 4" Decal	70 (<0.01%)	142 (0.02%)	0 (0%)	$0.00 (0%)
3	Bouteille à bouchon Google Loop	0 (0%)	1 (<0.01%)	0 (0%)	$0.00 (0%)
4	Chaussettes YouTube Expressive	0 (0%)	4 (<0.01%)	0 (0%)	$0.00 (0%)
5	Chaussettes YouTube vieille école	0 (0%)	3 (<0.01%)	0 (0%)	$0.00 (0%)
6	Chrome Chaussettes Dinosaures	0 (0%)	6 (<0.01%)	0 (0%)	$0.00 (0%)
7	Chrome Dino Hit the Slopes Sweater	1 (<0.01%)	4 (<0.01%)	0 (0%)	$0.00 (0%)
8	Emoji Kitchen Fox Loaf Cap	2,222 (0.28%)	418 (0.07%)	0 (0%)	$0.00 (0%)
9	Emoji Kitchen Headphones Skull Cap	735 (0.09%)	146 (0.02%)	0 (0%)	$0.00 (0%)
10	Emoji Kitchen Smiling Pizza Cap	926 (0.12%)	194 (0.03%)	0 (0%)	$0.00 (0%)

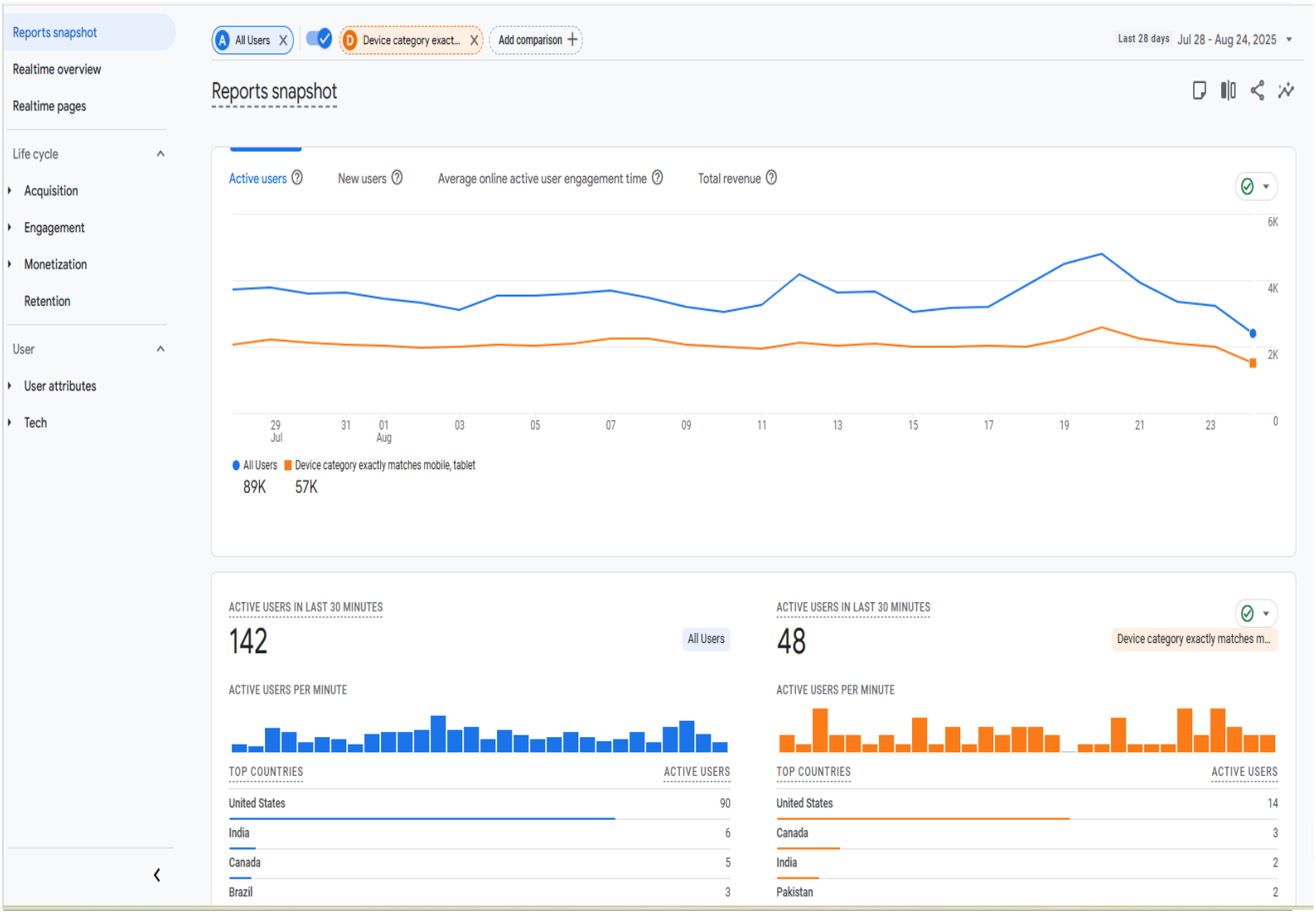
Part Four: Segmentation

Audience Segment: Demographics



Values used:	Segment 1: All Users Segment 2: Gender exactly matches female

Audience Segment: Technology



Values used:	Segment 1: All Users Segment 2: Device category exactly matches mobile, tablet

Part Five:
Analysis and Suggestions

Google Merchandise Store data

You can find the results of the Google Merchandise Store campaigns below.

Campaign Name	Cost	Revenue	ROAS
Tech Trends: Discover the Latest Google Gear	$5,000	$3,000	0.6
Shop with Google: Unleash Your Digital Lifestyle	$5,000	$8,000	1.6
Google Gadgets Galore: Elevate Your Tech Game	$5,000	$8,000	1.6
Gear Up with Google: Your One-Stop Tech Shop	$8,000	$13,000	1.625
Google Merch Madness: Score Big on Tech Essentials	$5,000	$2,000	0.4
Unlock the Power of Google: Shop the Best in Tech	$2,000	$3,500	1.75
Totals	$30,000	$37,500	

Business Sales Growth

Based on the data provided, how might the campaigns be realigned and improved to potentially achieve a 20% YOY sales growth **without additional cost**? You can assume that the data will remain consistent over the projected time frame. Please reference specific data to support your answer, such as metrics and campaigns.

You could get the answer by asking yourself: Which campaign would I spend less, and which would I spend more?

The provided data indicates a total advertising cost of $30,000 across six campaigns, generating $37,500 in revenue and yielding an overall return on ad spend (ROAS) of 1.25. To achieve a 20% year-over-year sales growth, the target revenue would increase to $45,000 while maintaining the same $30,000 cost, necessitating an improved overall ROAS of 1.5. Assuming consistent performance metrics over the projected timeframe, this can be accomplished by reallocating budget from underperforming campaigns to higher-ROAS ones, thereby optimizing resource distribution without incurring additional expenses.
To determine reallocations, campaigns should be evaluated based on their ROAS, as this metric directly reflects efficiency in revenue generation per dollar spent. Campaigns with ROAS below 1.0 are net losses and should receive reduced or zero spending, while those above 1.5 warrant increased investment due to their superior returns.

Business Sales Growth

Campaigns to spend less on (pause or eliminate):

Google Merch Madness: Score Big on Tech Essentials – Cost: $5,000; Revenue: $2,000; ROAS: 0.4. This campaign underperforms significantly, contributing only 5.3% of total revenue despite accounting for 16.7% of costs. Tech Trends: Discover the Latest Google Gear – Cost: $5,000; Revenue: $3,000; ROAS: 0.6. Similarly inefficient, it generates 8% of revenue while consuming 16.7% of the budget. Pausing these two campaigns would free up $10,000 in budget, with a minimal revenue loss of $5,000, preserving 86.7% of the original revenue ($32,500) from the remaining campaigns.

Campaigns to spend more on (scale up):

Unlock the Power of Google: Shop the Best in Tech – Cost: $2,000; Revenue: $3,500; ROAS: 1.75. This is the top performer, demonstrating high efficiency.

Gear Up with Google: Your One-Stop Tech Shop – Cost: $8,000; Revenue: $13,000; ROAS: 1.625. It contributes the highest absolute revenue (34.7% of total) and offers strong returns.

Shop with Google: Unleash Your Digital Lifestyle – Cost: $5,000; Revenue: $8,000; ROAS: 1.6.

Google Gadgets Galore: Elevate Your Tech Game – Cost: $5,000; Revenue: $8,000; ROAS: 1.6.

These four campaigns collectively account for $20,000 in cost and $32,500 in revenue, with an average ROAS of approximately 1.625.

Business Sales Growth

Proposed Budget Reallocation and Projected Outcomes

Reallocate the $10,000 from the paused campaigns proportionally to the high-ROAS performers, weighted by their current ROAS to maximize returns. For instance:

- Increase "Unlock the Power of Google" by $3,000 (new cost: $5,000; projected additional revenue: $3,000 × 1.75 = $5,250).
- Increase "Gear Up with Google" by $3,000 (new cost: $11,000; projected additional revenue: $3,000 × 1.625 = $4,875).
- Increase "Shop with Google" by $2,000 (new cost: $7,000; projected additional revenue: $2,000 × 1.6 = $3,200).
- Increase "Google Gadgets Galore" by $2,000 (new cost: $7,000; projected additional revenue: $2,000 × 1.6 = $3,200).
- This reallocation maintains the total cost at $30,000. The projected total revenue would be the retained $32,500 plus the additional $16,525, resulting in approximately $49,025—a 30.7% increase over the original $37,500, exceeding the 20% target.

Improvements to Enhance Campaign Effectiveness

Beyond budget realignment, campaigns can be improved through data-informed optimizations to sustain or enhance ROAS:

Targeted Segmentation: Leverage user attributes from the analytics data, such as focusing on female users (71,000 active users, or 80% of total) and mobile/tablet devices (57,000 active users, or 64% of total), by refining ad creatives and bidding strategies for these segments. For example, adapt high-ROAS campaigns like "Unlock the Power of Google" to prioritize mobile-friendly formats, potentially increasing engagement time and conversions.

Geographic Focus: Concentrate efforts on top countries, particularly the United States (29,000 active users, or 33% of total), by localizing content in scaled campaigns to capitalize on higher engagement rates.

Performance Monitoring and Testing: Implement A/B testing on ad variations within high-ROAS campaigns to refine messaging and use Google Analytics for ongoing tracking of metrics like average online active user engagement time to identify further efficiencies.

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eCommerce improvements

Looking at your website pages or the Google Merchandise Store website and current eCommerce experience, identify one change to the eCommerce UX and one additional eCommerce option you would recommend implementing.

UX change:

One recommended improvement to the eCommerce user experience is the implementation of a progressive checkout process with a progress bar and guest checkout option. Currently, the checkout process may involve multiple steps that could deter users, particularly on mobile devices, which constitute 64% of active users (57,000 out of 89,000). A progressive checkout with a visible progress bar would provide users with clear guidance on their position within the process (e.g., "Step 1 of 3: Shipping Details"), reducing cart abandonment rates. Additionally, offering a guest checkout option would eliminate the need for immediate account creation, catering to the 143 active users per minute observed, many of whom may prefer a quick purchase without registration, thereby enhancing convenience and potentially increasing conversion rates.

eCommerce improvements

Looking at your website pages or the Google Merchandise Store website and current eCommerce experience, identify one change to the eCommerce UX and one additional eCommerce option you would recommend implementing.

Other eCommerce change or addition:

One additional eCommerce option to implement is the integration of a subscription model for exclusive merchandise. The current data indicates a significant user base, with 89,000 active users and a total revenue of $37,500 from campaigns, suggesting potential for recurring revenue streams. A subscription service could offer monthly deliveries of limited-edition Google gear (e.g., branded apparel or tech accessories) at a fixed rate, appealing to the 29,000 users from the United States and other top countries like Canada and India. This model would leverage customer loyalty, provide predictable revenue, and differentiate the store from competitors, potentially increasing average order value and retention as observed in the lifecycle metrics.

Technology

It is time for some exploration! You need to find 2 emerging marketing technologies that you could use in a technology stack. For each one, you need to describe why you would use that tool.	
1	Customer Data Platforms (CDPs) with AI integration
	A CDP unifies customer data across channels (web, mobile, email, ads). AI layers on top to predict purchase intent, churn risk, or product affinity. This enables precise segmentation and real-time personalization, which increases conversion without raising acquisition cost.
2	Conversational AI (Chatbots with Natural Language Processing)
	AI chatbots can handle product questions, recommend items, and assist with checkout 24/7. They reduce cart abandonment, capture leads, and improve customer experience. They also integrate with analytics to provide insight into customer intent and barriers to purchase.