REFOCUS
GROUP 7

POPCART:
ANALYSIS OF DIGITAL MARKETING
AND SALES DATA

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Problem

PopCart is an ecommerce app with a primary focus on lifestyle and fashion brands from independent stores across the country. PopCart has invested a significant amount of money in digital marketing campaigns to promote their products, but the effectiveness of these campaigns in driving clicks and sales remained unclear.

Our team was tasked to analyze marketing advertisement data to assist the company in understanding which product categories are most popular among different segments, which campaigns are performing best by gender, and which age groups are most likely to engage with marketing content.

Methodology

With the marketing impressions and sales data provided by the company, the dataset was processed using Microsoft Excel and SQL. Data Analysis goals have been set in place to serve as landmarks to help the team in order to analyze the effectiveness and currents efforts of the digital marketing campaigns launched by PopCart.

Data Analysis Goals:

- What is the overall click-through rate (CTR) for the campaigns launched by the company
- What is the CTR for each product category?
- What percentage of the total revenue generated during campaign periods is contributed by female customers?
- Which campaign has generated the most impressions?
- How many unique users per location viewed the campaign with the most impressions?

During the campaign period, PopCart has launched a total of 10 Digital Marketing campaigns (Refer to Table 1). In terms of overall click-through rate (CTR), it is calculated using the following formula:

$$CTR = \left(\frac{Number\ of\ clicks}{Number\ of\ impressions}\right) x100$$

Two methods were used to arrive at the answer. Utilizing the dataset on marketing impressions, through SQL, the query presented in Figure 1 was executed on PgAdmin to arrive at a CTR of 38.71%.

```
/*
----------------------------------------------------------------
GOAL 1: CALCULATING OVERALL CTR
----------------------------------------------------------------
*/


SELECT COUNT(*) AS total_impressions,
COUNT(CASE WHEN is_click IS TRUE THEN 1 END) AS total_clicks,
ROUND((SUM
    (CASE
        WHEN is_click THEN 1
        ELSE 0
    END) / COUNT (campaign_name)::numeric)*100,2) AS overall_ctr
FROM marketing_impressions
```

	total_impressions bigint	total_clicks bigint	overall_ctr numeric
1	128858	49876	38.71

Figure 1. SQL Query to calculate the over-all click-through rate

Through Microsoft Excel, a pivot table on the marketing impressions dataset was created and was ensured that while doing so, the dataset was added to a data model in order to add measures to the field list of the pivot table. Two measures were added to calculate the CTR and also the Difference of the CTR to 100% (this field would later help in data visualization), the measures and formulas are presented in Figure 2.
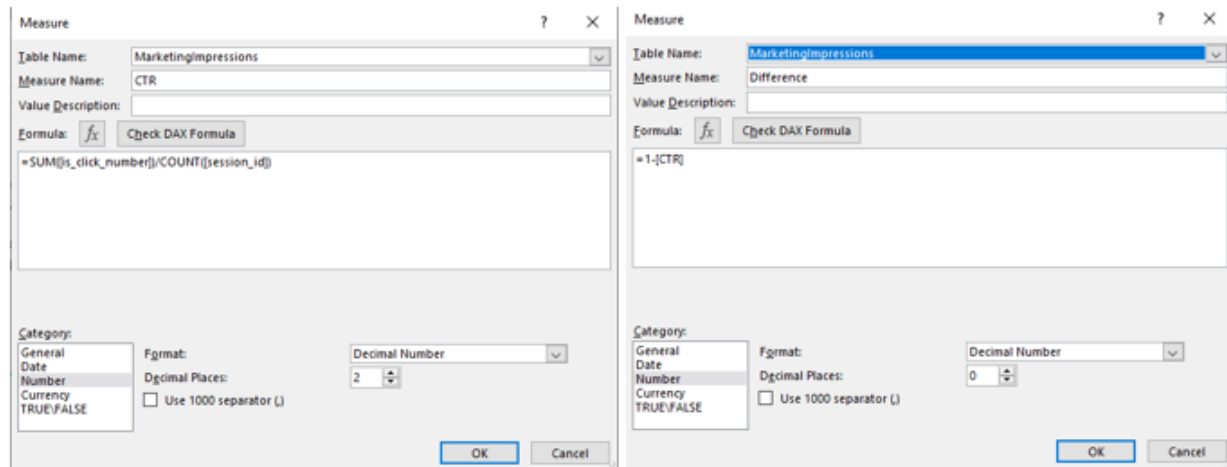
Figure 2. CTR and Difference Measure for pivot field

When using the two measure fields the following pivot table with the calculated overall CTR is presented in Figure 3. The values are formatted as percentages.

Figure 3. Pivot table and contents to calculate overall CTR

PopCart launched digital marketing campaigns for 5 categories of products: Apparel and Accessories, Electronics and Gadgets, Health and Beauty, Home and Garden, and Sports and Outdoors. The CTRs of each category has been calculate from the marketing impressions dataset through SQL queries and Microsoft Excel pivot tables in order to gain insights on the effectiveness and popularity of each product category during the campaign period. The SQL query to calculate this concern is presented on Figure 4.

```
/*
--------------------------------------------------------------------
GOAL 2: CALCULATING CTR FOR EACH PRODUCT CATEGORY
--------------------------------------------------------------------
*/


SELECT product_category,
ROUND((SUM
    (CASE
        WHEN is_click THEN 1
        ELSE 0
    END) / COUNT (campaign_name)::numeric)*100,2) AS ctr
FROM marketing_impressions
GROUP BY product_category
```

	product_category 🔒 text	ctr 🔒 numeric
1	Electronics and gadgets	47.67
2	Health and beauty	43.33
3	Home and garden	40.33
4	Sports and outdoors	35.71
5	Apparel and accessories	30.93

Figure 4. SQL Query to calculate click-through rate per product category

In Microsoft Excel, the same previously added measures on CTR and Difference as shown in Figure 2 were used in this particular data analysis, the difference is that the product category field was placed on the row field list in order to calculate the CTR per

category, the field list and resulting pivot table are presented on Figure 5. The values are formatted as percentages.

Row Labels	CTR	Difference
Apparel and accessories	30.93%	69.07%
Sports and outdoors	35.71%	64.29%
Home and garden	40.33%	59.67%
Health and beauty	43.33%	56.67%
Electronics and gadgets	47.67%	52.33%
Grand Total	**38.71%**	**61.29%**

Filters

Columns
Σ Values

Rows
product_category

Σ Values
CTR
Difference

Figure 5. Pivot table and contents to calculate CTR per product category

Using the SQL query in Figure 6, we learned that almost one out of 4 customers (~25%) who bought an item were products of marketing campaigns.

```
SELECT
    is_campaign,
    SUM(Total_php) AS TotalSales,
    ROUND((SUM(Total_php) / (SELECT SUM(Total_php) FROM Sales)) * 100, 2) AS Percentage
FROM
    Sales
GROUP BY
    is_campaign;
```

Output   Messages   Notifications

is_campaign boolean	totalsales numeric	percentage numeric
false	265645770	75.12
true	87965591	24.88

Figure 6. SQL Query to calculate total percentage of sales from marketing campaign

PopCart is concerned on the specific demographics of the company's customer base in terms of the total revenue generated during the campaign period. PopCart is specifically interested in determining the percentage contribution of female customers to the total revenue during the campaign period. Two datasets on the marketing impressions and sales data was provided by the company. The marketing impressions table contains details on the gender of the user per campaign session, while sales in Php are found on the sales data table. Both tables share a common column on the session id which can be used to join the tables in SQL or perform a VLOOKUP function in Microsoft Excel. In joining the two tables on the session id, the following SQL query and snapshot of the resulting table can be found on Figure 7.

```sql
/*
-------------------------------------------------------------------
JOINING SALES DATA AND MARKETING IMPRESSIONS BY SESSION ID
-------------------------------------------------------------------
*/


SELECT
sales_data.session_id,
sales_data.user_id,
sales_data.is_campaign,
marketing_impressions.is_click,
marketing_impressions.gender,
marketing_impressions.region,
marketing_impressions.campaign_id,
marketing_impressions.campaign_name,
marketing_impressions.product_category,
marketing_impressions.age_level,
marketing_impressions.product_category,
sales_data.total_php

FROM sales_data
INNER JOIN marketing_impressions
ON sales_data.session_id = marketing_impressions.session_id
```

	session_id integer	user_id integer	is_campaign boolean	is_click boolean	gender text	region text	campaign_id integer	campaign_name text	product_category text	age_level text	product_category text	total_php numeric
1	574275	923896	true	true	Female	Metro Manila	118601	12 Days of Christmas Deals	Sports and outdoors	35-44 years	Sports and outdoors	4450
2	562747	1101628	true	true	Male	North Luzon	118601	12 Days of Christmas Deals	Health and beauty	25-34 years	Health and beauty	5879
3	232085	172910	true	true	Female	Mindanao	118601	12 Days of Christmas Deals	Sports and outdoors	25-34 years	Sports and outdoors	1210
4	222325	172910	true	true	Female	Mindanao	118601	12 Days of Christmas Deals	Sports and outdoors	25-34 years	Sports and outdoors	3059
5	399297	254445	true	true	Male	Visayas	118601	12 Days of Christmas Deals	Health and beauty	35-44 years	Health and beauty	1944
6	546723	803761	true	true	Male	South Luzon	118601	12 Days of Christmas Deals	Sports and outdoors	45-54 years	Sports and outdoors	1762
7	207878	1099847	true	true	Male	North Luzon	118601	12 Days of Christmas Deals	Home and garden	25-34 years	Home and garden	2187
8	394014	1099847	true	true	Male	North Luzon	118601	12 Days of Christmas Deals	Health and beauty	25-34 years	Health and beauty	4439
9	223950	128879	true	true	Male	Mindanao	118601	12 Days of Christmas Deals	Sports and outdoors	25-34 years	Sports and outdoors	6365

Figure 7. SQL query on joining sales data and marketing impressions tables by session id

Through this understanding that the two tables can be joined through the session id, we can utilize this to formulate a query to calculate the percentage contribution of female customers to the total revenue during the campaign period. This SQL query is shown on Figure 8.

Figure 8. SQL query on the percentage contribution of female customers to the total revenue during the campaign period

The same results for the percentage contribution can also be achieved through excel. VLOOKUP Function was utilized on the sales data table to determine the gender of a user on a specific marketing session. The VLOOKUP function and resulting column on Microsoft excel is presented on Figure 9.

	A	B	C	D	E	F	G	H	I
1	session_id ▼	user_id ▼	product_category ▼	region ▼	is_campaign ▼	total_php ▼	gender ▼		
2	145	795168	Apparel and accessories	North Luzon	TRUE	4169	Male		
3	153	303072	Apparel and accessories	Mindanao	TRUE	756	Male		
4	159	118751	Apparel and accessories	Mindanao	TRUE	718	Male		
5	173	381951	Apparel and accessories	South Luzon	TRUE	2990	Male		
6	257	1101192	Apparel and accessories	Metro Manila	TRUE	5123	Male		
7	286	80271	Apparel and accessories	Metro Manila	TRUE	1904	Male		

=VLOOKUP([@[session_id]],MarketingImpressions[[#All],[session_id]:[gender]],7,1)

Figure 9. VLOOKUP function for gender on sales data session id

In order to determine the percentage contribution to the total revenue, a pivot table was created from the sales data table with the new column on gender from the VLOOKUP function. The gender field was used in the rows while the total php was used in the column field of the pivot table and in order to determine the contribution during the campaign period the *is_campaign* column was used as a filter in order to filter only the sessions that are TRUE in the *is_campaign* column. The field list and the resulting pivot table are presented on Figure 10. The values are formatted as percentages.

Figure 10. Pivot table and contents to calculate percentage contribution by gender to the total revenue during the campaign period

From the 10 Campaigns Launched by PopCart (Refer to Table 1), the company is interested in determining the top campaign that generated the most impressions/views. In order to determine this, the SQL query in Figure 11 was used.

```
/*
-----------------------------------------------------------------
GOAL 4: CALCULATING THE CAMPAIGN WITH MOST IMPRESSIONS
-----------------------------------------------------------------
*/


SELECT campaign_name,COUNT(campaign_name) AS total_impressions
FROM marketing_impressions
GROUP BY campaign_name
ORDER BY COUNT(campaign_name) DESC
```

	campaign_name text	total_impressions bigint
1	12 Days of Christmas Deals	36191
2	Tech Madness Sale	19717
3	Mid-Year Mega Sale	14568
4	Flash Sale	12276
5	Summer Splash Sale	11946
6	Year-End Clearance Sale	8808
7	1.2.3 Super Shopping Day	7279
8	Cyber Monday Madness	7088
9	Back-to-School Deals	6514
10	Spring Deals	4471

Figure 11. SQL query on campaigns ordered by their total impressions

The same results can be achieved using a pivot table of the marketing impressions table where the campaign name column is used as the row and the count of each campaign name is performed in the value field area. This process is evident on Figure 12.

Row Labels	Total Impressions
Summer Splash Sale	11,946
Flash Sale	12,276
Mid-Year Mega Sale	14,568
Tech Madness Sale	19,717
12 Days of Christmas Deals	36,191
Grand Total	**94,698**

Filters	Columns
Rows	Values
campaign_name	Total Impressions

Figure 12. Pivot table and contents to calculate the total impressions in each campaign

In addition to determining the top campaign with the most impressions, PopCart is also interested in determining the number of unique users in each location in the country that viewed the top campaign. Based on the SQL query and Microsoft Excel functions performed, the team has determined the "12 Days of Christmas Deals" as the top marketing campaign. Based on this answer, a specific query can be executed in order to determine the number of unique users per location. This SQL query is seen in Figure 13.

```
/*
-------------------------------------------------------------------
GOAL 5: UNIQUE USERS PER LOCATION WITH MOST IMPRESSIONS
-------------------------------------------------------------------
*/


SELECT region,
COUNT (DISTINCT
CASE
    WHEN campaign_name = '12 Days of Christmas Deals' THEN user_id
END) AS unique_users
FROM marketing_impressions
GROUP BY region
```

	region text 🔒	unique_users bigint 🔒
1	Metro Manila	6403
2	Mindanao	6397
3	North Luzon	6238
4	South Luzon	6310
5	Visayas	6351

Figure 13. SQL query on the number of unique users per location that viewed the top marketing campaign

In order to generate the same findings on Microsoft Excel, it is important that when creating the pivot table, the marketing impressions table is added to a data model. This is because an extra function in the pivot table can be utilized when this is done, this extra function is the discount function as seen in Figure 14. Using this function, we can create a pivot table on the distinct count on users per location by using the region column on the rows field and the discount of the user id, taking into consideration to use the campaign name column as a filter in order to select users that view the top marketing campaign (12 Days of Christmas Deals), this is shown in Figure 15.
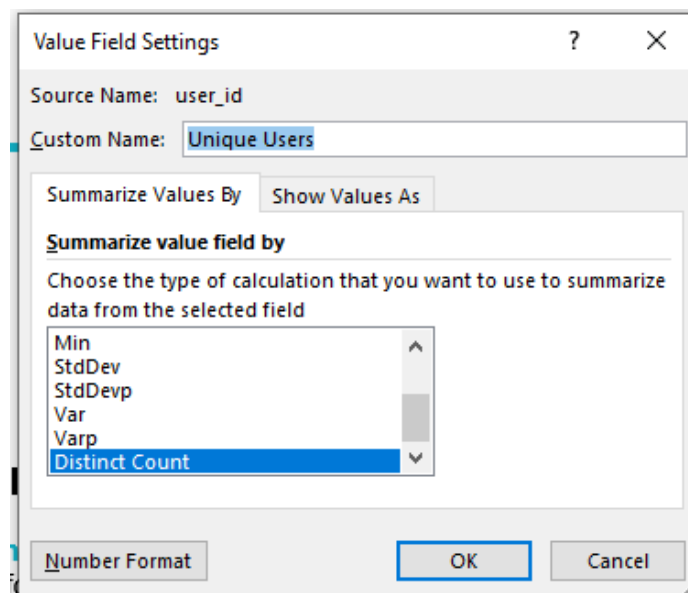

Figure 14. Distinct Count function when adding dataset to data model

Figure 15. Pivot table and contents to calculate the unique users per location that viewed the top marketing campaign

PopCart wants to understand the popularity of the company's digital marketing content across the different user segments, they aim to identify the popularity of product categories based on location, age groups, and gender. In order to determine these and help the company with their issue, the following SQL Query shown on Figure 16 was used. This generate a table that gives us the total impressions, clicks, and click through rate of each product categories across all user segments. The results are in descending order by the total number of clicks because the team see clicks from users as the representation of a campaign product's popularity. It is clicks that ultimately drives sales.

```
/*
----------------------------------------------------------------
BONUS QUESTION
----------------------------------------------------------------
*/


SELECT product_category, gender, age_level, region,
COUNT(*) AS count_of_impressions,
SUM(
CASE
    WHEN is_click is true THEN 1
    ELSE 0
END) AS number_of_clicks,
ROUND((SUM(
CASE
    WHEN is_click is true THEN 1
    ELSE 0
END)/COUNT(*)::numeric)*100,2) AS ctr
FROM marketing_impressions
GROUP BY product_category, age_level, region, gender
ORDER BY  number_of_clicks DESC;
```

	product_category text	gender text	age_level text	region text	count_of_impressions bigint	number_of_clicks bigint	ctr numeric
1	Sports and outdoors	Male	35-44 years	Mindanao	2999	1340	44.68
2	Sports and outdoors	Male	35-44 years	Visayas	2925	1283	43.86
3	Sports and outdoors	Male	35-44 years	North Luzon	2904	1277	43.97
4	Sports and outdoors	Male	35-44 years	Metro Manila	2843	1248	43.90
5	Health and beauty	Male	35-44 years	Metro Manila	2294	1222	53.27
6	Sports and outdoors	Male	35-44 years	South Luzon	2833	1205	42.53
7	Health and beauty	Male	35-44 years	South Luzon	2183	1146	52.50
8	Health and beauty	Male	35-44 years	Visayas	2168	1144	52.77
9	Health and beauty	Male	35-44 years	North Luzon	2136	1110	51.97
10	Health and beauty	Male	35-44 years	Mindanao	2072	1102	53.19

Figure 16. SQL query on the total impressions, total number of clicks and CTR of a campaigns product category across user segments

In order to generate results on this matter on Microsoft Excel, a new column in the marketing impressions dataset was created by concatenating the user demographics of region, gender and age group to come up with a user segment (Figure 17).

=CONCATENATE([@region],", ",[@gender],", ",[@[age_level]])

Figure 17. CONCATENATE function to creating a column on user segment

With the new column on user segment created, generating a pivot table to understand the popularity of product categories across user segments can be done. The user segment column is used on the row field, while the count of the user segments, sum of clicks, and the CTR measure described in Figure 2 were used. In order to filter the results by product category, the product category was placed in the filter field list and slicers were created for easy switching of product category calculated data (Figure 18). The resulting pivot table was formatted to only show the top 10 user segments per category to identify popularity as shown in Figure 19-23. To see the full dataset on the popularity of product categories across all user segments, the results can be found in the Tables Section (Refer to tables 2-6).

Figure 18. Pivot table contents on popularity of product category across user segments

product_category	Apparel and accessories ⊤		

Row Labels ⊤	Total Impressions	Total Clicks	CTR
South Luzon, Male, 25-34 years	1,664	581	34.92%
North Luzon, Male, 25-34 years	1,582	557	35.21%
Visayas, Male, 25-34 years	1,515	546	36.04%
Mindanao, Male, 25-34 years	1,593	546	34.27%
Metro Manila, Male, 25-34 years	1,538	537	34.92%
Mindanao, Male, 18-24 years	842	143	16.98%
Metro Manila, Male, 18-24 years	879	142	16.15%
South Luzon, Male, 18-24 years	847	142	16.77%
North Luzon, Male, 18-24 years	913	141	15.44%
Visayas, Male, 18-24 years	845	140	16.57%
Grand Total	**12,218**	**3,475**	**28.44%**

Figure 19. Pivot table on top 10 user segments in the apparel and accessories product category

product_category	Electronics and gadgets ⊤		

Row Labels ⊤	Total Impressions	Total Clicks	CTR
Mindanao, Male, 35-44 years	858	499	58.16%
Visayas, Male, 35-44 years	890	496	55.73%
North Luzon, Male, 35-44 years	852	494	57.98%
South Luzon, Male, 35-44 years	848	483	56.96%
Metro Manila, Male, 35-44 years	849	465	54.77%
North Luzon, Male, 25-34 years	621	257	41.38%
Metro Manila, Male, 25-34 years	645	255	39.53%
South Luzon, Male, 25-34 years	632	248	39.24%
Visayas, Male, 25-34 years	598	246	41.14%
Mindanao, Male, 25-34 years	615	238	38.70%
Grand Total	**7,408**	**3,681**	**49.69%**

Figure 20. Pivot table on top 10 user segments in the electronics and gadgets product category

product_category		Health and beauty ⫪		

Row Labels ⫪	Total Impressions	Total Clicks	CTR
Metro Manila, Male, 35-44 years	2,294	1,222	53.27%
South Luzon, Male, 35-44 years	2,183	1,146	52.50%
Visayas, Male, 35-44 years	2,168	1,144	52.77%
North Luzon, Male, 35-44 years	2,136	1,110	51.97%
Mindanao, Male, 35-44 years	2,072	1,102	53.19%
South Luzon, Male, 25-34 years	1,770	683	38.59%
Metro Manila, Male, 25-34 years	1,746	632	36.20%
Visayas, Male, 25-34 years	1,744	621	35.61%
Mindanao, Male, 25-34 years	1,724	617	35.79%
North Luzon, Male, 25-34 years	1,695	575	33.92%
Grand Total	**19,532**	**8,852**	**45.32%**

Figure 21. Pivot table on top 10 user segments in the health and beauty product category

product_category		Home and garden ⫪		

Row Labels ⫪	Total Impressions	Total Clicks	CTR
Metro Manila, Male, 35-44 years	1,071	638	59.57%
South Luzon, Male, 35-44 years	1,086	627	57.73%
Visayas, Male, 35-44 years	1,084	609	56.18%
North Luzon, Male, 35-44 years	1,043	588	56.38%
Mindanao, Male, 35-44 years	1,002	553	55.19%
Visayas, Male, 25-34 years	1,407	514	36.53%
Mindanao, Male, 25-34 years	1,408	490	34.80%
North Luzon, Male, 25-34 years	1,354	490	36.19%
Metro Manila, Male, 25-34 years	1,358	476	35.05%
South Luzon, Male, 25-34 years	1,278	470	36.78%
Grand Total	**12,091**	**5,455**	**45.12%**

Figure 22. Pivot table on top 10 user segments in the home and garden product category

product_category	Sports and outdoors

Row Labels	Total Impressions	Total Clicks	CTR
Mindanao, Male, 35-44 years	2,999	1,340	44.68%
Visayas, Male, 35-44 years	2,925	1,283	43.86%
North Luzon, Male, 35-44 years	2,904	1,277	43.97%
Metro Manila, Male, 35-44 years	2,843	1,248	43.90%
South Luzon, Male, 35-44 years	2,833	1,205	42.53%
Visayas, Male, 25-34 years	2,153	592	27.50%
Metro Manila, Male, 25-34 years	2,132	590	27.67%
Mindanao, Male, 25-34 years	2,102	570	27.12%
South Luzon, Male, 25-34 years	2,111	562	26.62%
North Luzon, Male, 25-34 years	2,112	546	25.85%
Grand Total	25,114	9,213	36.68%

Figure 23. Pivot table on top 10 user segments in the sports and outdoors product category

Tables

Table 1. 10 Digital marketing campaigns launched by PopCart

Campaign ID	Campaign Name
118601	12 Days of Christmas Deals
359520	Tech Madness Sale
105960	Mid-Year Mega Sale
98970	Flash Sale
405490	Summer Splash
360936	Year-End Clearance Sale
82320	1,2,3 Super Shopping Day
396664	Cyber Monday Madness
404347	Back-to-School Deals
414149	Spring Deals

Table 2. Popularity of apparel and accessories across user segments (ordered by total clicks)

User Segment	Total Impressions	Total Clicks	CTR
South Luzon, Male, 25-34 years	1,664	581	34.92%
North Luzon, Male, 25-34 years	1,582	557	35.21%
Visayas, Male, 25-34 years	1,515	546	36.04%
Mindanao, Male, 25-34 years	1,593	546	34.27%
Metro Manila, Male, 25-34 years	1,538	537	34.92%
Visayas, Male, 35-44 years	550	310	56.36%
Mindanao, Male, 35-44 years	599	310	51.75%
Metro Manila, Male, 35-44 years	562	306	54.45%
South Luzon, Male, 35-44 years	565	296	52.39%
North Luzon, Male, 35-44 years	569	279	49.03%
Mindanao, Male, 18-24 years	842	143	16.98%
Metro Manila, Male, 18-24 years	879	142	16.15%
South Luzon, Male, 18-24 years	847	142	16.77%
North Luzon, Male, 18-24 years	913	141	15.44%
Visayas, Male, 18-24 years	845	140	16.57%
Metro Manila, Female, 25-34 years	362	83	22.93%
North Luzon, Female, 25-34 years	359	81	22.56%
Visayas, Female, 25-34 years	375	81	21.60%
South Luzon, Female, 25-34 years	335	80	23.88%
Visayas, Male, 55-64 years	328	77	23.48%

Mindanao, Female, 25-34 years	364	72	19.78%
South Luzon, Male, 55-64 years	278	71	25.54%
Mindanao, Male, 55-64 years	305	67	21.97%
North Luzon, Male, 55-64 years	296	67	22.64%
Metro Manila, Male, 55-64 years	326	60	18.40%
South Luzon, Male, 45-54 years	140	54	38.57%
Visayas, Male, 45-54 years	132	50	37.88%
Metro Manila, Male, 45-54 years	119	49	41.18%
North Luzon, Male, 45-54 years	132	49	37.12%
Mindanao, Male, 45-54 years	114	45	39.47%
Mindanao, Female, 35-44 years	114	45	39.47%
Visayas, Female, 55-64 years	139	38	27.34%
Visayas, Female, 35-44 years	101	35	34.65%
Mindanao, Female, 55-64 years	159	34	21.38%
Metro Manila, Female, 35-44 years	89	32	35.96%
North Luzon, Female, 55-64 years	156	31	19.87%
South Luzon, Female, 35-44 years	96	30	31.25%
Metro Manila, Female, 55-64 years	146	30	20.55%
North Luzon, Female, 35-44 years	84	28	33.33%
South Luzon, Female, 55-64 years	160	25	15.63%
Metro Manila, Male, 65 years and older	36	18	50.00%
North Luzon, Male, 65 years and older	39	15	38.46%
Visayas, Male, 65 years and older	41	12	29.27%
Metro Manila, Female, 45-54 years	27	12	44.44%
Visayas, Female, 45-54 years	39	10	25.64%
North Luzon, Female, 45-54 years	32	9	28.13%
Mindanao, Female, 45-54 years	25	9	36.00%
South Luzon, Male, 65 years and older	25	8	32.00%
North Luzon, Female, 65 years and older	23	8	34.78%
South Luzon, Female, 45-54 years	24	7	29.17%
Metro Manila, Female, 18-24 years	37	7	18.92%
Mindanao, Female, 18-24 years	25	6	24.00%
Mindanao, Male, 65 years and older	27	6	22.22%
South Luzon, Female, 18-24 years	27	6	22.22%
South Luzon, Female, 65 years and older	27	5	18.52%
Metro Manila, Female, 65 years and older	20	4	20.00%
North Luzon, Female, 18-24 years	26	4	15.38%
Mindanao, Female, 65 years and older	15	4	26.67%
South Luzon, Male, 0-17 years	6	2	33.33%
Visayas, Female, 18-24 years	29	2	6.90%
North Luzon, Male, 0-17 years	3	2	66.67%
Visayas, Female, 65 years and older	11	2	18.18%
Metro Manila, Male, 0-17 years	1	-	0.00%

User Segment	Total Impressions	Total Clicks	CTR
Mindanao, Male, 0-17 years	3	-	0.00%
Mindanao, Female, 0-17 years	1	-	0.00%
Metro Manila, Female, 0-17 years	3	-	0.00%
Visayas, Male, 0-17 years	2	-	0.00%
Grand Total	**20,846**	**6,448**	**30.93%**

Table 3. Popularity of electronic and gadgets across user segments (ordered by total clicks)

User Segment	Total Impressions	Total Clicks	CTR
Mindanao, Male, 35-44 years	858	499	58.16%
Visayas, Male, 35-44 years	890	496	55.73%
North Luzon, Male, 35-44 years	852	494	57.98%
South Luzon, Male, 35-44 years	848	483	56.96%
Metro Manila, Male, 35-44 years	849	465	54.77%
North Luzon, Male, 25-34 years	621	257	41.38%
Metro Manila, Male, 25-34 years	645	255	39.53%
South Luzon, Male, 25-34 years	632	248	39.24%
Visayas, Male, 25-34 years	598	246	41.14%
Mindanao, Male, 25-34 years	615	238	38.70%
Mindanao, Male, 45-54 years	378	221	58.47%
Visayas, Male, 45-54 years	398	220	55.28%
North Luzon, Male, 45-54 years	363	212	58.40%
South Luzon, Male, 45-54 years	361	207	57.34%
Metro Manila, Male, 45-54 years	341	201	58.94%
Mindanao, Male, 55-64 years	156	78	50.00%
Visayas, Male, 55-64 years	138	66	47.83%
North Luzon, Female, 25-34 years	159	63	39.62%
South Luzon, Female, 35-44 years	134	60	44.78%
North Luzon, Male, 55-64 years	132	58	43.94%
Visayas, Female, 35-44 years	131	57	43.51%
South Luzon, Male, 55-64 years	138	52	37.68%
Mindanao, Female, 35-44 years	127	51	40.16%
North Luzon, Female, 35-44 years	115	49	42.61%
Metro Manila, Male, 55-64 years	124	49	39.52%
Metro Manila, Female, 35-44 years	121	49	40.50%
South Luzon, Female, 25-34 years	156	48	30.77%
South Luzon, Female, 45-54 years	96	48	50.00%
Metro Manila, Female, 25-34 years	138	48	34.78%
Visayas, Female, 25-34 years	132	47	35.61%
Mindanao, Female, 25-34 years	140	46	32.86%

Mindanao, Female, 45-54 years	99	45	45.45%
Visayas, Female, 45-54 years	100	45	45.00%
Metro Manila, Female, 45-54 years	90	41	45.56%
Visayas, Male, 18-24 years	142	40	28.17%
North Luzon, Female, 45-54 years	89	38	42.70%
North Luzon, Male, 18-24 years	150	37	24.67%
Mindanao, Male, 18-24 years	143	35	24.48%
Metro Manila, Male, 18-24 years	135	34	25.19%
South Luzon, Male, 18-24 years	141	34	24.11%
North Luzon, Female, 55-64 years	42	20	47.62%
South Luzon, Female, 55-64 years	49	20	40.82%
Visayas, Female, 55-64 years	39	19	48.72%
Mindanao, Female, 55-64 years	46	19	41.30%
Metro Manila, Female, 55-64 years	46	15	32.61%
Metro Manila, Male, 65 years and older	15	9	60.00%
Mindanao, Female, 65 years and older	9	7	77.78%
South Luzon, Male, 65 years and older	11	7	63.64%
Mindanao, Male, 65 years and older	7	6	85.71%
North Luzon, Female, 65 years and older	8	6	75.00%
North Luzon, Male, 65 years and older	10	4	40.00%
South Luzon, Female, 65 years and older	7	3	42.86%
Visayas, Female, 18-24 years	8	3	37.50%
Visayas, Female, 65 years and older	6	3	50.00%
Metro Manila, Female, 65 years and older	6	2	33.33%
Mindanao, Female, 18-24 years	5	2	40.00%
North Luzon, Female, 18-24 years	8	2	25.00%
Metro Manila, Female, 18-24 years	10	2	20.00%
Mindanao, Male, 0-17 years	2	2	100.00%
South Luzon, Female, 18-24 years	8	1	12.50%
North Luzon, Male, 0-17 years	1	1	100.00%
Visayas, Male, 65 years and older	7	1	14.29%
Visayas, Male, 0-17 years	1	1	100.00%
Metro Manila, Male, 0-17 years	1	-	0.00%
Grand Total	**12,827**	**6,115**	**47.67%**

Table 4. Popularity of health and beauty products across user segments (ordered by total clicks)

User Segment	Total Impressions	Total Clicks	CTR
Metro Manila, Male, 35-44 years	2,294	1,222	53.27%
South Luzon, Male, 35-44 years	2,183	1,146	52.50%
Visayas, Male, 35-44 years	2,168	1,144	52.77%
North Luzon, Male, 35-44 years	2,136	1,110	51.97%
Mindanao, Male, 35-44 years	2,072	1,102	53.19%
South Luzon, Male, 25-34 years	1,770	683	38.59%
Metro Manila, Male, 25-34 years	1,746	632	36.20%
Visayas, Male, 25-34 years	1,744	621	35.61%
Mindanao, Male, 25-34 years	1,724	617	35.79%
North Luzon, Male, 25-34 years	1,695	575	33.92%
Mindanao, Male, 45-54 years	907	496	54.69%
South Luzon, Male, 45-54 years	866	458	52.89%
North Luzon, Male, 45-54 years	880	456	51.82%
Visayas, Male, 45-54 years	850	446	52.47%
Metro Manila, Male, 45-54 years	831	426	51.26%
North Luzon, Female, 35-44 years	297	145	48.82%
Visayas, Female, 35-44 years	304	143	47.04%
Mindanao, Female, 35-44 years	288	118	40.97%
Metro Manila, Male, 55-64 years	287	114	39.72%
Visayas, Male, 55-64 years	295	114	38.64%
Metro Manila, Female, 35-44 years	281	108	38.43%
South Luzon, Female, 35-44 years	268	105	39.18%
Metro Manila, Female, 25-34 years	305	104	34.10%
Mindanao, Male, 55-64 years	267	101	37.83%
North Luzon, Male, 55-64 years	263	100	38.02%
North Luzon, Female, 25-34 years	312	99	31.73%
Visayas, Female, 25-34 years	313	95	30.35%
Metro Manila, Female, 45-54 years	218	91	41.74%
South Luzon, Male, 55-64 years	270	88	32.59%
Visayas, Female, 45-54 years	211	86	40.76%
South Luzon, Female, 45-54 years	193	83	43.01%
Mindanao, Male, 18-24 years	329	82	24.92%
North Luzon, Female, 45-54 years	205	82	40.00%
Mindanao, Female, 45-54 years	204	80	39.22%
Mindanao, Female, 25-34 years	262	76	29.01%
South Luzon, Female, 25-34 years	285	74	25.96%
South Luzon, Male, 18-24 years	391	71	18.16%
North Luzon, Male, 18-24 years	333	70	21.02%

Metro Manila, Male, 18-24 years	368	67	18.21%
Visayas, Male, 18-24 years	384	60	15.63%
North Luzon, Female, 55-64 years	114	43	37.72%
South Luzon, Female, 55-64 years	107	41	38.32%
Mindanao, Female, 55-64 years	111	38	34.23%
Visayas, Female, 55-64 years	113	38	33.63%
Metro Manila, Female, 55-64 years	104	29	27.88%
Visayas, Male, 65 years and older	25	11	44.00%
Mindanao, Male, 65 years and older	15	10	66.67%
Metro Manila, Male, 65 years and older	14	9	64.29%
South Luzon, Male, 65 years and older	17	9	52.94%
North Luzon, Male, 65 years and older	14	6	42.86%
Metro Manila, Female, 65 years and older	15	6	40.00%
Visayas, Female, 65 years and older	12	5	41.67%
South Luzon, Female, 65 years and older	15	5	33.33%
North Luzon, Female, 65 years and older	8	5	62.50%
Metro Manila, Female, 18-24 years	11	4	36.36%
Mindanao, Female, 18-24 years	17	4	23.53%
Mindanao, Female, 65 years and older	11	3	27.27%
South Luzon, Female, 18-24 years	8	2	25.00%
North Luzon, Female, 18-24 years	9	2	22.22%
Visayas, Female, 18-24 years	15	2	13.33%
North Luzon, Female, 0-17 years	1	1	100.00%
South Luzon, Male, 0-17 years	2	1	50.00%
Metro Manila, Male, 0-17 years	2	1	50.00%
Mindanao, Male, 0-17 years	4	-	0.00%
North Luzon, Male, 0-17 years	2	-	0.00%
Grand Total	**31,765**	**13,765**	**43.33%**

Table 5. Popularity of home and garden products across user segments (ordered by total clicks)

User Segment	Total Impressions	Total Clicks	CTR
Metro Manila, Male, 35-44 years	1,071	638	59.57%
South Luzon, Male, 35-44 years	1,086	627	57.73%
Visayas, Male, 35-44 years	1,084	609	56.18%
North Luzon, Male, 35-44 years	1,043	588	56.38%
Mindanao, Male, 35-44 years	1,002	553	55.19%
Visayas, Male, 25-34 years	1,407	514	36.53%
Mindanao, Male, 25-34 years	1,408	490	34.80%
North Luzon, Male, 25-34 years	1,354	490	36.19%

Metro Manila, Male, 25-34 years	1,358	476	35.05%
South Luzon, Male, 25-34 years	1,278	470	36.78%
Visayas, Male, 45-54 years	311	181	58.20%
South Luzon, Male, 45-54 years	310	171	55.16%
Metro Manila, Male, 45-54 years	302	162	53.64%
Mindanao, Male, 45-54 years	295	156	52.88%
North Luzon, Male, 45-54 years	293	149	50.85%
Metro Manila, Male, 18-24 years	450	89	19.78%
North Luzon, Male, 18-24 years	450	79	17.56%
Mindanao, Male, 18-24 years	458	75	16.38%
South Luzon, Male, 18-24 years	405	70	17.28%
Visayas, Male, 55-64 years	222	70	31.53%
Visayas, Male, 18-24 years	449	68	15.14%
North Luzon, Female, 35-44 years	114	65	57.02%
Mindanao, Female, 25-34 years	236	64	27.12%
South Luzon, Male, 55-64 years	226	61	26.99%
North Luzon, Female, 25-34 years	207	61	29.47%
North Luzon, Male, 55-64 years	224	61	27.23%
Metro Manila, Male, 55-64 years	202	60	29.70%
South Luzon, Female, 25-34 years	198	58	29.29%
South Luzon, Female, 35-44 years	116	56	48.28%
Mindanao, Male, 55-64 years	206	56	27.18%
Mindanao, Female, 35-44 years	113	55	48.67%
Visayas, Female, 25-34 years	203	53	26.11%
Metro Manila, Female, 25-34 years	187	53	28.34%
Visayas, Female, 35-44 years	100	46	46.00%
South Luzon, Female, 45-54 years	95	43	45.26%
North Luzon, Female, 45-54 years	78	42	53.85%
Metro Manila, Female, 35-44 years	92	35	38.04%
Mindanao, Female, 45-54 years	75	33	44.00%
Visayas, Female, 45-54 years	68	31	45.59%
Metro Manila, Female, 45-54 years	75	30	40.00%
Visayas, Female, 55-64 years	82	27	32.93%
Mindanao, Female, 55-64 years	94	26	27.66%
Metro Manila, Female, 55-64 years	94	21	22.34%
North Luzon, Female, 55-64 years	87	20	22.99%
South Luzon, Female, 55-64 years	88	18	20.45%
Visayas, Male, 65 years and older	19	10	52.63%
Mindanao, Male, 65 years and older	18	8	44.44%
North Luzon, Male, 65 years and older	17	8	47.06%
Mindanao, Female, 65 years and older	9	6	66.67%
North Luzon, Female, 18-24 years	13	5	38.46%
South Luzon, Male, 65 years and older	16	4	25.00%

North Luzon, Female, 65 years and older	13	4	30.77%
Metro Manila, Male, 65 years and older	9	3	33.33%
Visayas, Female, 18-24 years	12	3	25.00%
Visayas, Female, 65 years and older	15	3	20.00%
Metro Manila, Female, 18-24 years	12	2	16.67%
South Luzon, Female, 18-24 years	12	2	16.67%
South Luzon, Female, 65 years and older	8	2	25.00%
Metro Manila, Female, 65 years and older	14	2	14.29%
Mindanao, Female, 18-24 years	9	1	11.11%
Mindanao, Male, 0-17 years	2	1	50.00%
South Luzon, Male, 0-17 years	1	1	100.00%
North Luzon, Male, 0-17 years	3	1	33.33%
South Luzon, Female, 0-17 years	1	-	0.00%
Visayas, Male, 0-17 years	1	-	0.00%
Metro Manila, Male, 0-17 years	3	-	0.00%
Grand Total	**19,503**	**7,866**	**40.33%**

Table 6. Popularity of sports and outdoors products across user segments (ordered by total clicks)

User Segment	Total Impressions	Total Clicks	CTR
Mindanao, Male, 35-44 years	2,999	1,340	44.68%
Visayas, Male, 35-44 years	2,925	1,283	43.86%
North Luzon, Male, 35-44 years	2,904	1,277	43.97%
Metro Manila, Male, 35-44 years	2,843	1,248	43.90%
South Luzon, Male, 35-44 years	2,833	1,205	42.53%
South Luzon, Male, 45-54 years	1,310	606	46.26%
Visayas, Male, 45-54 years	1,313	604	46.00%
North Luzon, Male, 45-54 years	1,283	600	46.77%
Visayas, Male, 25-34 years	2,153	592	27.50%
Metro Manila, Male, 25-34 years	2,132	590	27.67%
Metro Manila, Male, 45-54 years	1,308	586	44.80%
Mindanao, Male, 45-54 years	1,320	576	43.64%
Mindanao, Male, 25-34 years	2,102	570	27.12%
South Luzon, Male, 25-34 years	2,111	562	26.62%
North Luzon, Male, 25-34 years	2,112	546	25.85%
Visayas, Female, 35-44 years	498	185	37.15%
South Luzon, Female, 35-44 years	487	177	36.34%
Metro Manila, Female, 35-44 years	498	172	34.54%
Mindanao, Female, 35-44 years	437	169	38.67%
South Luzon, Female, 45-54 years	420	166	39.52%

North Luzon, Female, 45-54 years	405	155	38.27%
North Luzon, Female, 35-44 years	444	152	34.23%
Mindanao, Male, 55-64 years	428	144	33.64%
Mindanao, Female, 45-54 years	383	142	37.08%
Visayas, Female, 45-54 years	378	136	35.98%
Metro Manila, Male, 55-64 years	400	135	33.75%
Metro Manila, Female, 45-54 years	398	135	33.92%
Visayas, Male, 55-64 years	403	134	33.25%
North Luzon, Male, 55-64 years	402	133	33.08%
South Luzon, Female, 25-34 years	453	129	28.48%
Visayas, Female, 25-34 years	470	128	27.23%
North Luzon, Female, 25-34 years	429	123	28.67%
Mindanao, Female, 25-34 years	489	122	24.95%
South Luzon, Male, 55-64 years	414	120	28.99%
Metro Manila, Female, 25-34 years	429	112	26.11%
North Luzon, Male, 18-24 years	492	69	14.02%
Visayas, Male, 18-24 years	487	66	13.55%
South Luzon, Male, 18-24 years	499	62	12.42%
Metro Manila, Male, 18-24 years	496	61	12.30%
Visayas, Female, 55-64 years	176	58	32.95%
South Luzon, Female, 55-64 years	184	54	29.35%
Mindanao, Male, 18-24 years	482	54	11.20%
Mindanao, Female, 55-64 years	172	49	28.49%
North Luzon, Female, 55-64 years	154	44	28.57%
Metro Manila, Female, 55-64 years	173	39	22.54%
Mindanao, Male, 65 years and older	22	9	40.91%
North Luzon, Male, 65 years and older	31	8	25.81%
South Luzon, Male, 65 years and older	22	7	31.82%
Visayas, Male, 65 years and older	27	7	25.93%
South Luzon, Female, 18-24 years	24	6	25.00%
Visayas, Female, 65 years and older	17	6	35.29%
Mindanao, Female, 18-24 years	20	5	25.00%
Metro Manila, Male, 65 years and older	22	5	22.73%
Visayas, Female, 18-24 years	15	5	33.33%
Metro Manila, Female, 65 years and older	18	4	22.22%
Mindanao, Female, 65 years and older	19	4	21.05%
North Luzon, Female, 65 years and older	15	3	20.00%
North Luzon, Female, 18-24 years	11	2	18.18%
Mindanao, Male, 0-17 years	1	1	100.00%
Visayas, Male, 0-17 years	2	-	0.00%
South Luzon, Female, 65 years and older	6	-	0.00%
South Luzon, Female, 0-17 years	1	-	0.00%
Metro Manila, Female, 18-24 years	15	-	0.00%

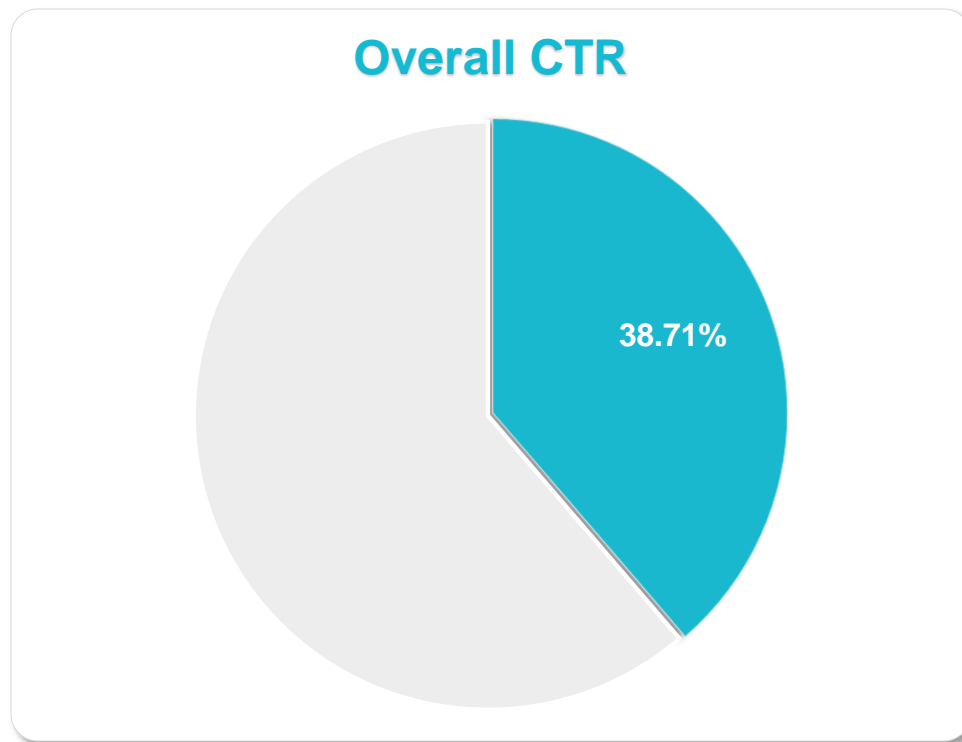|			
North Luzon, Male, 0-17 years	1	-	0.00%
Grand Total	**43,917**	**15,682**	**35.71%**

Findings

Figure 24. Overall click-through rate of campaigns launched by PopCart

During the campaign period, PopCart has launched a total of 10 Digital Marketing campaigns. The total impressions/views of which is 128,858 driving 49,876 clicks. This generates an overall CTR of **38.71%** (Refer to Figure 24). The average CTR for the Ecommerce industry is 2.69% for Search Network CTR and 0.51% for Display Network CTR. With this comparison in mind, the insight we can get from this is that the campaigns launched by PopCart were extremely successful at driving clicks from users.
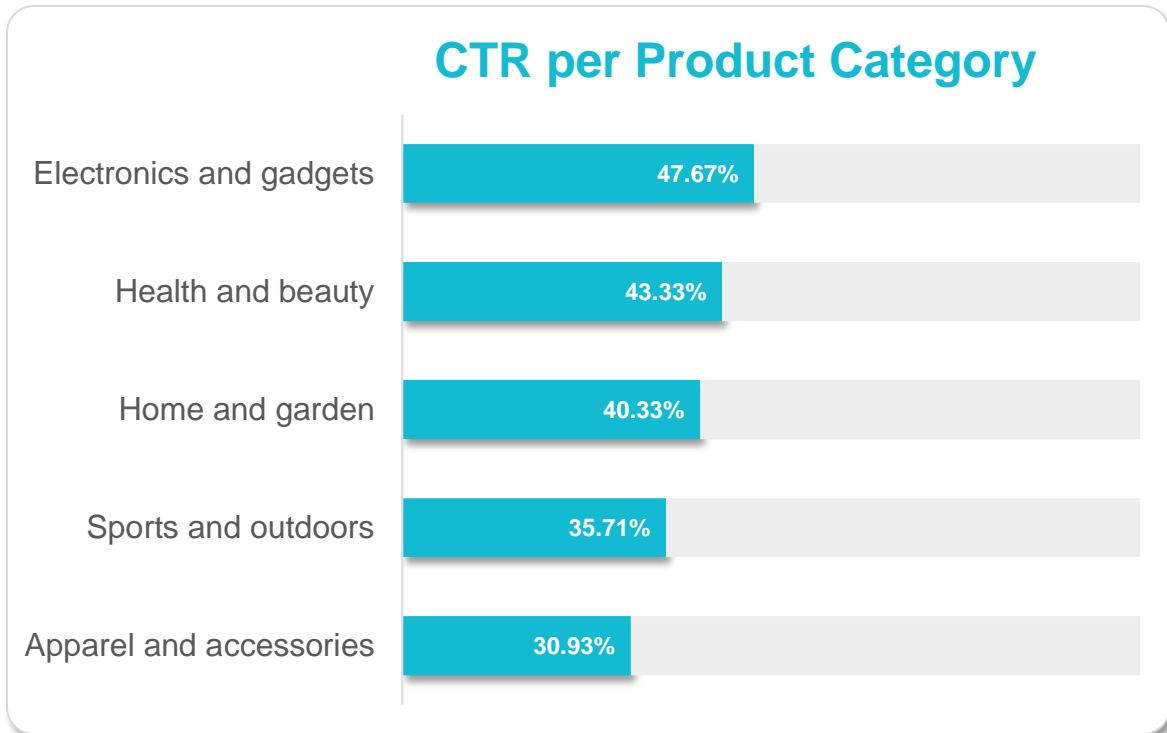
Figure 25. Click-through rate per product category

PopCart has five main product categories as shown in the Figure 25, the click through rates of each has been calculated. As shown, products under the Electronics and Gadgets category have the highest CTR of **47.67%.** This demonstrates that Electronic and gadget products are of high interest/popularity for the users during the campaign period, generating the most clicks from the total impressions. Health and beauty, Home and Garden, Sports and outdoors, and Apparel and accessories follow respectively.
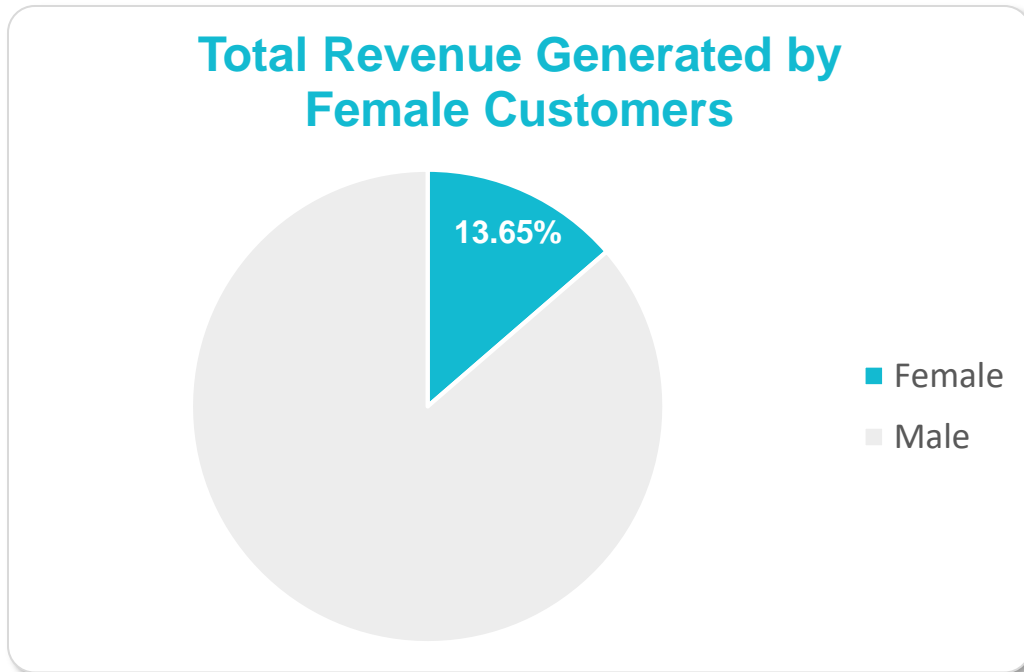
Figure 246Percentage contribution of female customers to the total revenue during campaign period

If we are concerned on the specific demographics of PopCart's customer base, in terms of the total revenue generated during the campaign period. Limited to the dataset provided, female customers only contributed to a small portion **(13.65%)** of the total revenue, the rest are by males (Figure 26). This shows that digital marketing campaigns may have been more appealing for male customers.

Top Campaign with the Most Impressions

Campaign	Impressions
12 Days of Christmas Deals	36,191
Tech Madness Sale	
Mid-Year Mega Sale	
Flash Sale	
Summer Splash Sale	
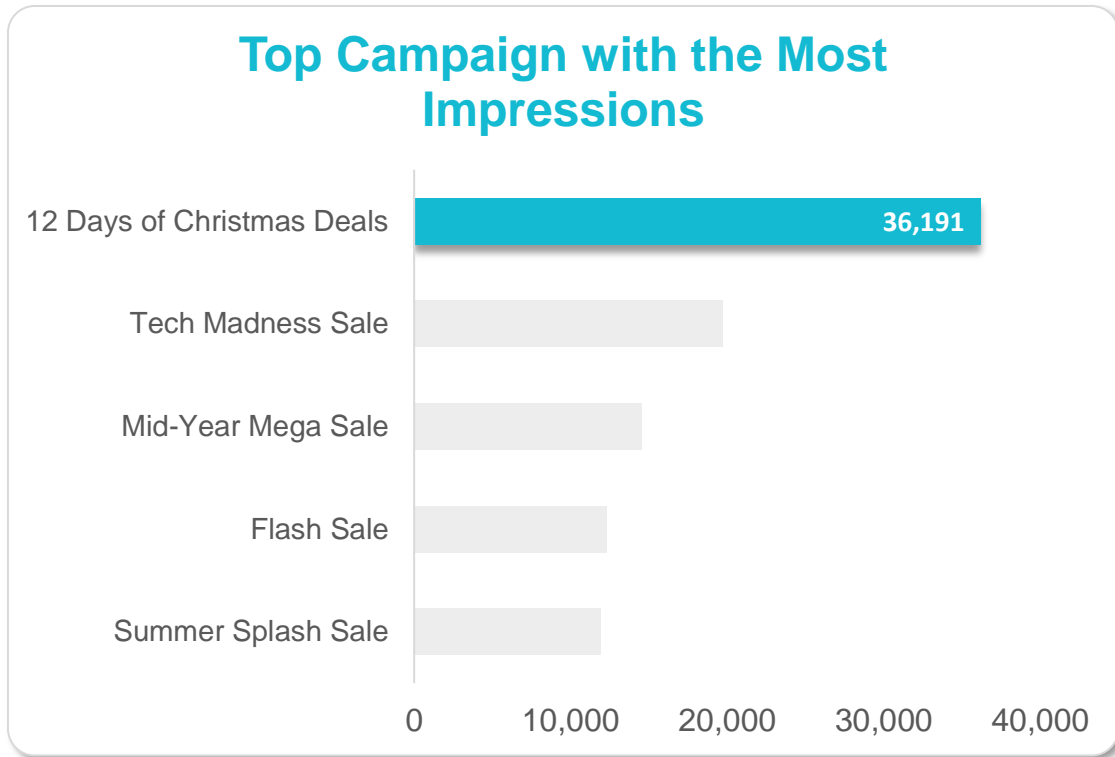
Figure 27. Top campaigns launched by PopCart based on total impressions

Going back to the 10 campaigns launched by PopCart, the marketing campaign that generated the most impressions is the **12 Days of Christmas Deals** with 36,191 total impressions (Figure 27). Christmas season is a time where customers are actively looking for places to purchase gifts. The "12 Days of Christmas Deals" marketing campaign capitalized on this demand from customers. Certain occasions in the year increases demand of customers. This finding can be a reliable opportunity for the company to create more marketing opportunities.
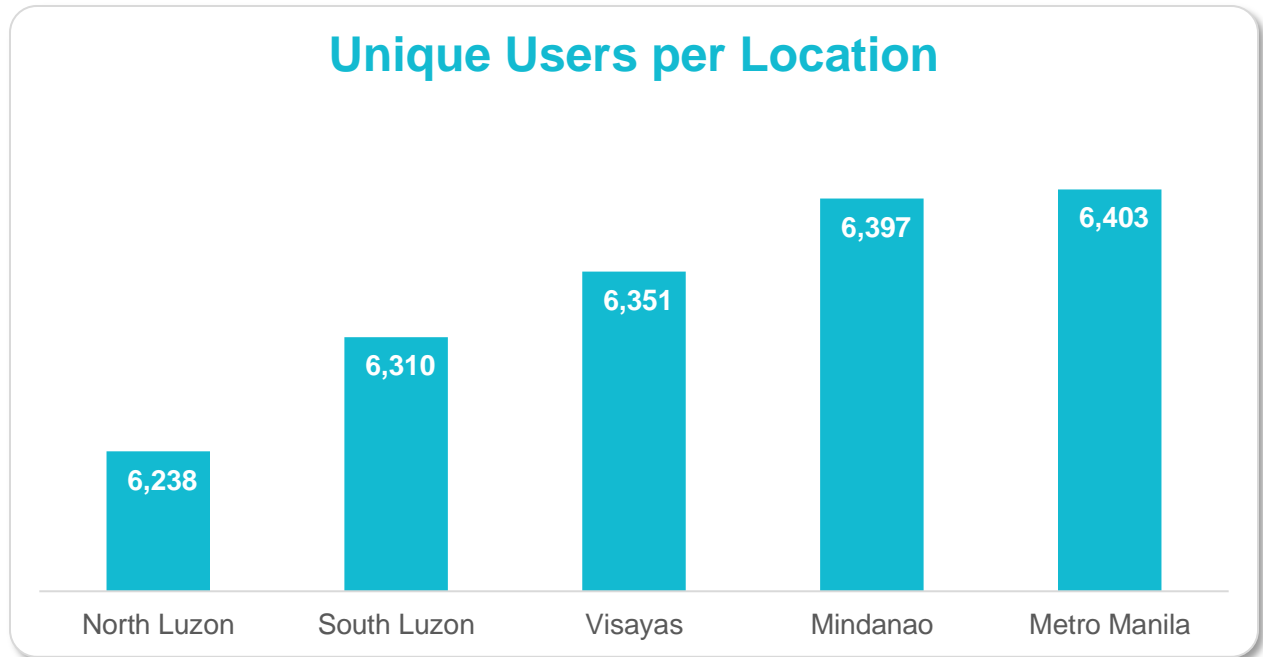
Figure 28. Unique users per location that viewed the 12 Days of Christmas Deals marketing campaign

Diving in deeper, in the **12 Days of Christmas Deals** marketing campaign launched by PopCart, the following chart shows the number of unique users per location that viewed the campaign. **Metro Manila** having the highest number of unique users (Figure 28). The number of unique users in each location are not statistically too different. Areas like Metro Manila, Mindanao, and Visayas contains the greatest number of digitally active users that were able to view the company's campaign which shows that majority of PopCart's customers during the Christmas season are from these areas.

In the succeeding charts we will present the popularity of product categories across the top 10 user segments. Popularity has been determined by the total number of clicks to their impressions and the calculated CTR because ultimately clicks are what drive sales.
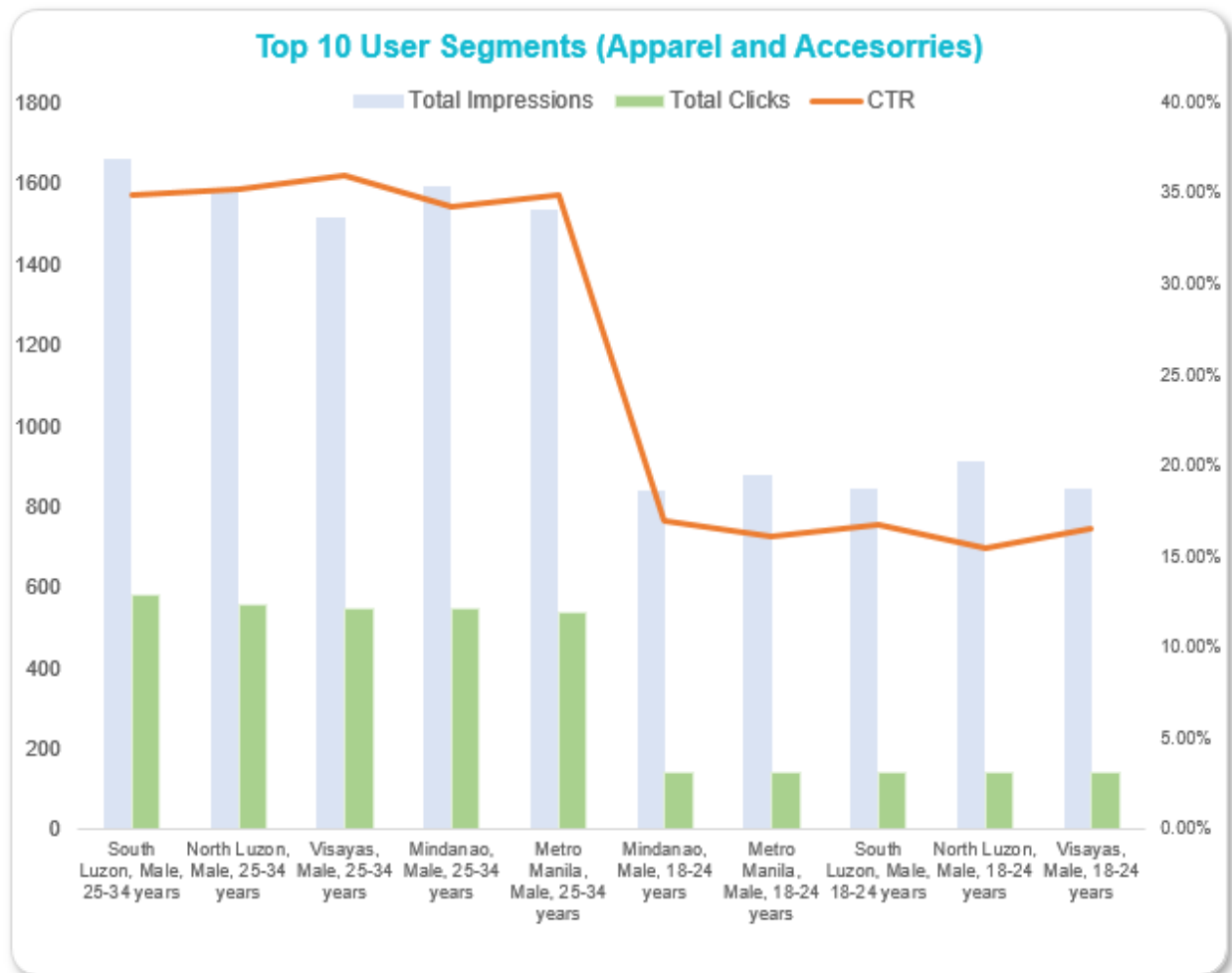
Figure 29. Top 10 user segments in the apparel and accessories product category according to total number of clicks
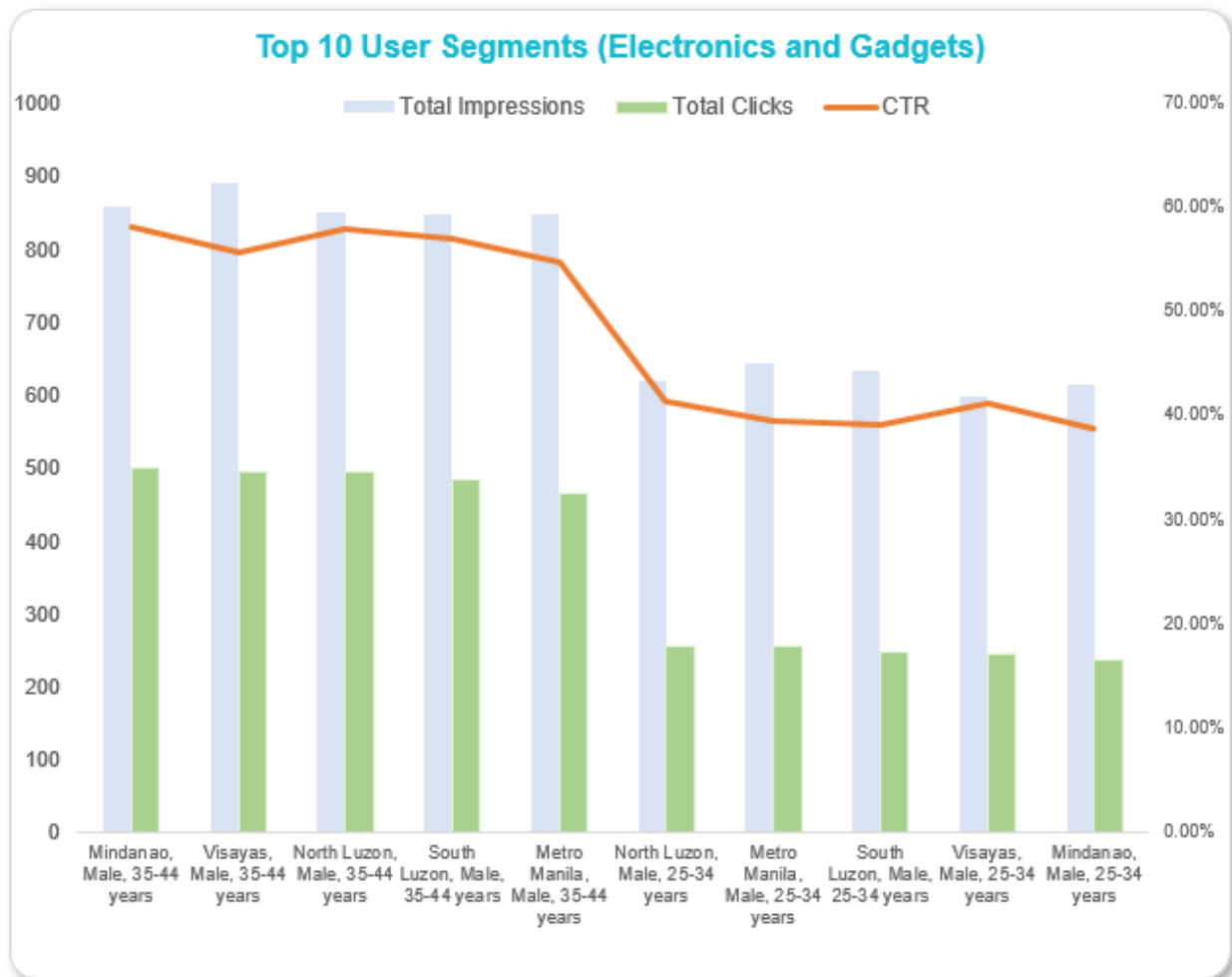
Figure 30. Top 10 user segments in the electronic and gadgets product category according to total number of clicks
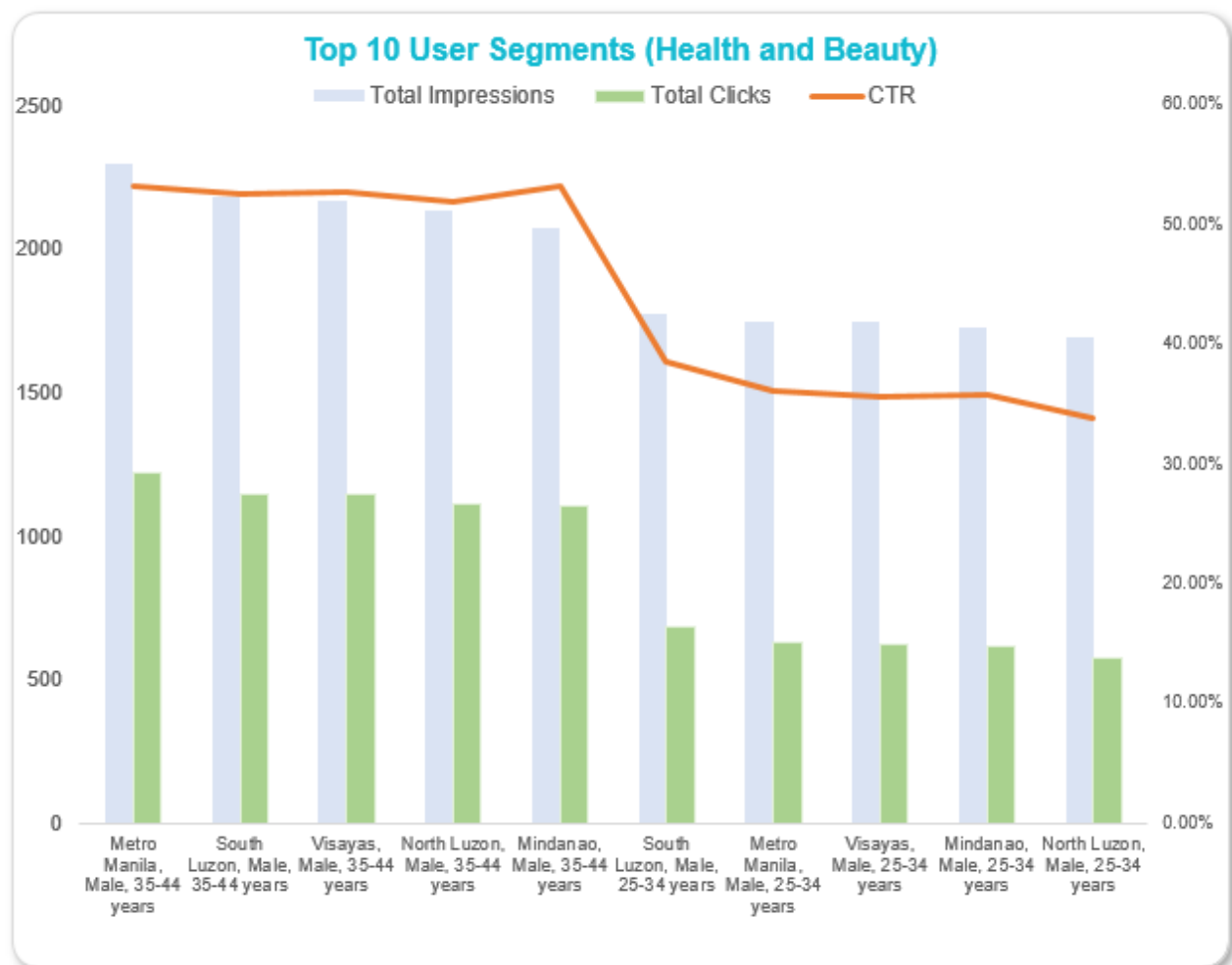
Figure 31. Top 10 user segments in the health and beauty product category according to total number of clicks
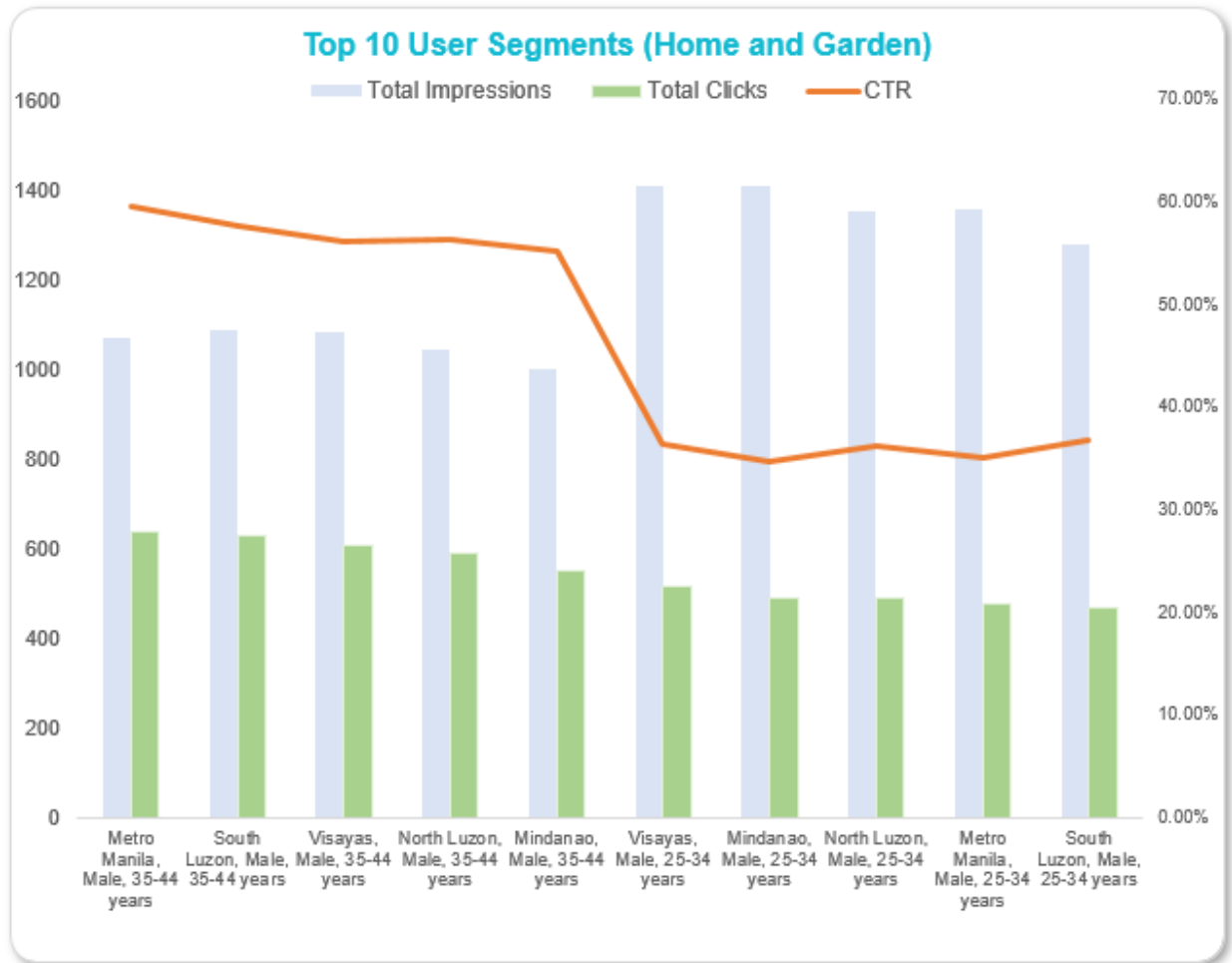
Figure 32. Top 10 user segments in the home and garden product category according to total number of clicks
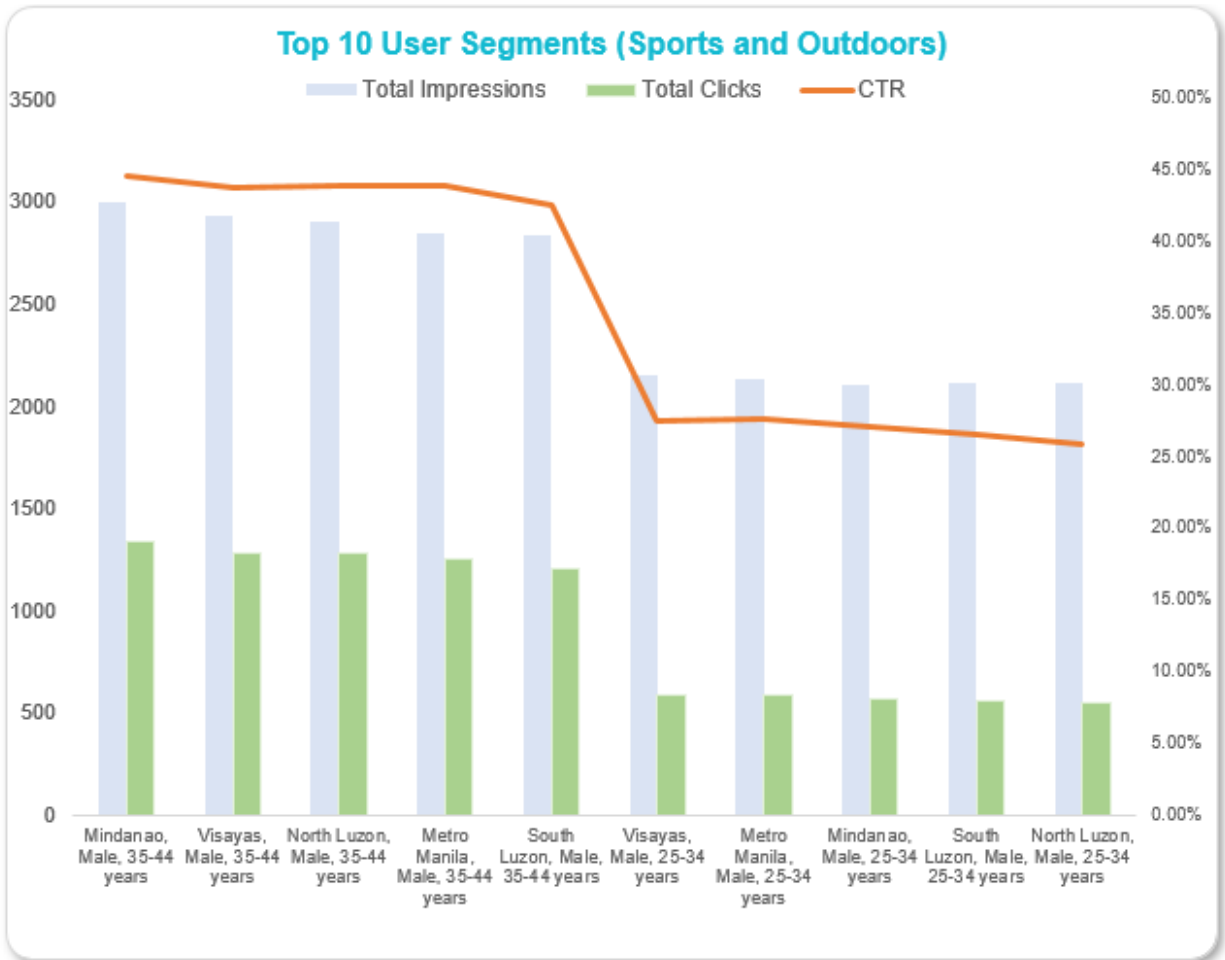
Figure 33. Top 10 user segments in the sports and outdoors product category according to total number of clicks

Insights:

- **Figure 29: The Apparel and Accessories** product category is most popular amongst users who are males in the 25-34-year-old age group from South Luzon, North Luzon, and Visayas.
- **Figure 30: The Electronics and Gadgets** product category is most popular amongst users who are males in the 35-44-year-old age group from Mindanao, Visayas, and North Luzon.
- **Figure 31: The Health and Beauty** product category is most popular amongst users who are males in the 35-44-year-old age group from Metro Manila, South Luzon, and Visayas.
- **Figure 32: The Home and Garden** product category is most popular amongst users who are males in the 35-44-year-old age group from Metro Manila, South Luzon, and Visayas.
- **Figure 33: The Sports and Outdoors** product category is most popular amongst users who are males in the 35-44-year-old age group from Mindanao, Visayas, and North Luzon.

Recommendations

These are the following marketing strategies the team recommends to PopCart based on the data analysis:

1. With the overall click-through rate of the campaigns launched by PopCart being **38.71%** (Figure 22), the campaigns may be maintained for the next period to generate more clicks from users, and new campaigns can be launched, the success of which can be determined through analysis in the next period.
2. Since it was determined that Electronics and Gadgets product category generated the highest click-through rate of **47.67%** (Figure 23), showing that products in this category are of high interest/popularity for the users during the campaign period, a suggested strategy from this is that improved and increased marketing can be established for this category to generate more clicks and possibly more sales in the future.

3. Female customers only contributed to a small portion **(13.65%)** of the total revenue (Figure 24), showing that digital marketing campaigns may have been more appealing for male customers. In order to generate more income from female customers, new marketing campaigns can be launched specifically to cater and attract female users.

4. The top campaign that generated most clicks was the **12 Days of Christmas Deals** (Figure 25), showing that Christmas season is a time where customers are actively looking for places to purchase gifts. The "12 Days of Christmas Deals" marketing campaign capitalized on this demand from customers. Certain occasions in the year increases demand of customers, this is why PopCart can create new campaigns during "gift giving" times of the year, such as but not limited to:

   a. Valentine's Day
   b. Mother's and Father's Day
   c. Graduation season etc.

5. The number of unique users in each location that viewed the 12 Days of Christmas Deals is not statistically too different (Figure 26). Areas like Metro Manila, Mindanao, and Visayas contains the greatest number of digitally active users that were able to view the company's campaign which shows that majority of PopCart's customers during the Christmas season are from these areas. Marketing in these areas must be maintained equally to maintain customers.

6. Most products are popular for **male customers in the 35-44 years old age group**. Popularity of each product category mainly depends on the location of users. The suggested marketing strategy is to generate campaigns that target these user segments where each product category is popular in (Figure 27-31). This will be an effective strategy in driving more clicks to generate more income.