

# Reports On Mini Project

**Name** : Nithya S  
**Batch code** : TN\_DA\_FNB10  
**Mail id** : nithyasubburaj2@gmail.com  
**Contact no** : +91 9384760769  
**Project Title** : Digital Marketing Campaign Performance Analysis  
**Project Domain** : Social media & sales-E commerce  
**Tools Used** : Excel, Power BI  
**Submission Date** : 21/02/2026  
**Mentor Name** : Kumaran M

**Raw Dataset Link** : <https://www.kaggle.com/datasets/nayakganesh007/google-ads-sales-dataset>

**Cleaned Dataset Link:**

[https://drive.google.com/drive/folders/1R8K\\_6ummghz\\_KqOE5WlDiXhgS47jFGY1?ths=true](https://drive.google.com/drive/folders/1R8K_6ummghz_KqOE5WlDiXhgS47jFGY1?ths=true)

**Report Link :**

[https://drive.google.com/drive/folders/1R8K\\_6ummghz\\_KqOE5WlDiXhgS47jFGY1?ths=true](https://drive.google.com/drive/folders/1R8K_6ummghz_KqOE5WlDiXhgS47jFGY1?ths=true)

# Digital Marketing Campaign Performance Analysis

## Abstract:

This project analyses the performance of a digital marketing campaign using data analytics techniques. The main objective is to evaluate advertising efficiency, revenue generation, profitability, and customer conversion behaviour. By analysing key metrics such as Sales, Cost, Profit, Conversions, ROAS, ROI, and CTR, the project provides actionable insights to improve campaign effectiveness and optimize marketing spend. The final interactive dashboard enables data-driven decision-making through visual storytelling and performance tracking.

## Overview:

In today's digital business environment, marketing performance measurement is essential for maximizing return on investment. This project focuses on analyzing campaign data across multiple dimensions such as:

- Ad Spend
- Sales Revenue
- Profitability
- Device Performance
- Keyword Performance
- Conversion Trends

The dataset includes campaign details like Cost, Sale Amount, Profit, Conversions, Device Type, Keywords, Click-Through Rate (CTR), Return on Ad Spend (ROAS), and Return on Investment (ROI). An interactive Power BI dashboard was developed to visualize trends, identify high-performing segments, and support strategic business decisions.

## **Purpose Of the Project:**

The actual purpose of this project is:

- Analyze campaign performance using key marketing metrics.
- Evaluate profitability and marketing efficiency.
- Identify top-performing devices and keywords.
- Understand conversion trends over time.
- Demonstrate practical skills in data cleaning, transformation, and visualization.

This project also serves as a real-world application of data analytics concepts learned during the course.

## **Tools Used:**

### **Microsoft Excel**

Microsoft Excel used for:

- Data cleaning and preprocessing
- Handling missing values
- Removing duplicates
- Formatting columns (Currency, Percentage, Date)
- Basic data validation

Excel helped in preparing structured and clean data before importing into Power BI.

### **Power BI**

Power BI user for:

- Creating calculated columns and measures using DAX
- Developing KPIs (Revenue, Cost, Profit, ROAS, ROI, CTR)
- Creating interactive dashboards
- Visualizing trends using charts (Line, Bar, Column, Donut, Scatter)
- Implementing slicers for interactivity

Power BI transformed raw data into meaningful visual insights for business analysis.

## Dataset Selection:

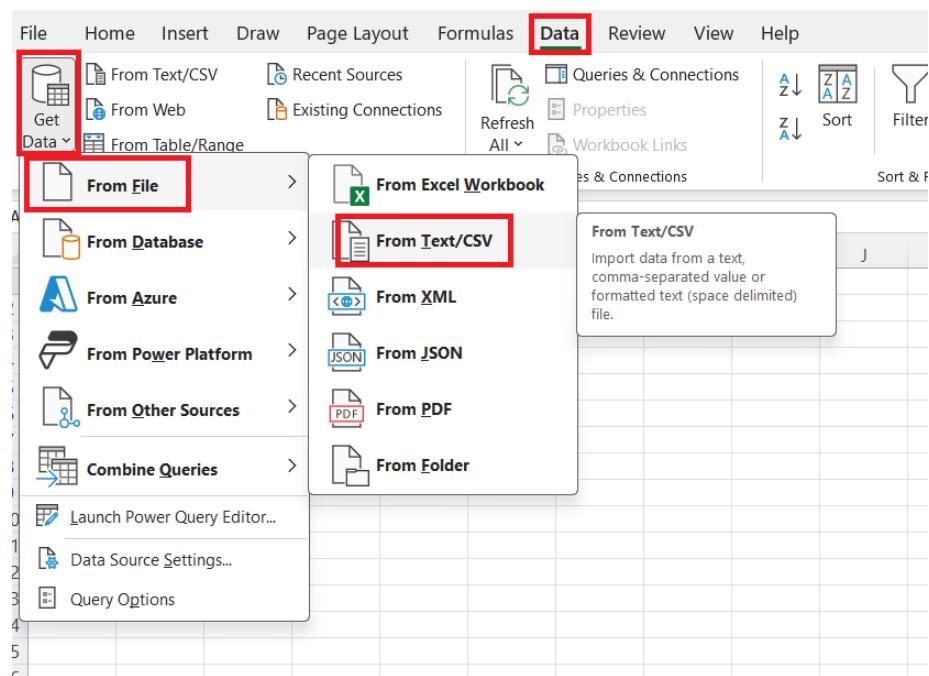
The dataset has 2600 records and 13 features/columns and sourced from Kaggle.com

The screenshot shows the Kaggle dataset page for 'Google Ads sales dataset'. At the top, there's a search bar and navigation links for Data Card, Code (7), Discussion (0), and Suggestions (0). Below this, the dataset name 'GoogleAds\_DataAnalytics\_Sales\_Uncleaned.csv' is listed with a size of 300.37 kB. A 'Download' button is available. To the right, a summary section shows 'Version 1 (300.37 kB)' and 'GoogleAds\_DataAnalytics\_Sales\_Uncleaned.csv'. The 'Summary' section indicates 1 file and 13 columns. The main content area displays a preview of the CSV file, showing columns like Ad\_ID, Campaign\_Name, Clicks, Impressions, Cost, and Lead, with a total of 2600 rows. A note says it's ideal for practicing data cleaning, EDA, marketing analytics, and campaign performance insights.

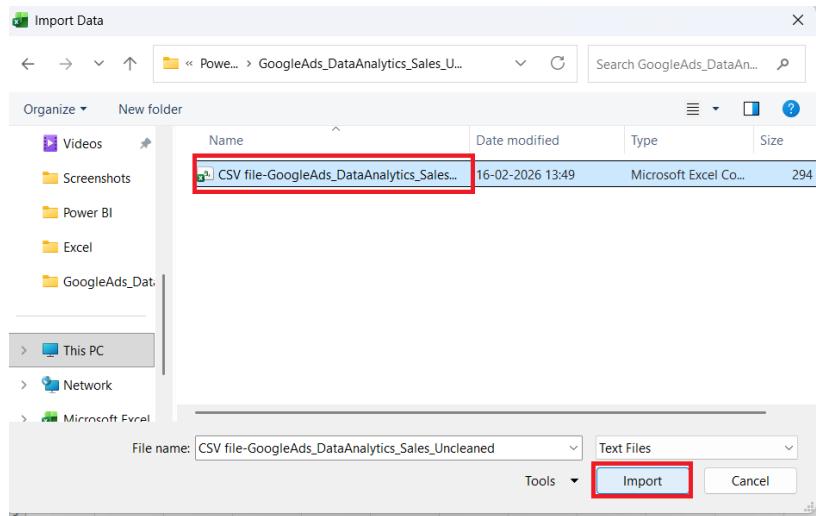
## Data Pre-processing Using Excel:

### 1. Load Data into Excel:

A raw CSV file Loaded into Excel by clicking Data → Get Data → From File → click “From Text/CSV”.



Then Choose file to Load into Excel by clicking “Import”



Click “Load” to Finish the Import Process.

Ad_ID	Campaign_Name	Clicks	Impressions	Cost	Leads	Conversions	Conversion Rate	Sale_Amount	Ad_Date	Loca
A1000	DataAnalyticsCourse	104	4498	\$231.88	14	7	0.058	\$1892	16-11-2024	hyde
A1001	DataAnalyticsCourse	173	5107	\$216.84	10	8	0.046	\$1679	20-11-2024	hyde
A1002	Data Analytics Corse	90	4544	\$203.66	26	9	null	\$1624	16-11-2024	hyde
A1003	Data Analytics Course	142	3185	\$237.66	17	6	null	\$1225	26-11-2024	HYD
A1004	Data Analytics Corse	156	3361	\$195.9	30	8	null	\$1091	22-11-2024	hyde
A1005	DataAnalyticsCourse	195	3776	\$243.57	10	8	null	\$1315	16-11-2024	hyde
A1006	Data Analytics Corse	116	4480	\$237.79	17	5	0.043	\$1640	06-11-2024	hyde
A1007	Data Analytics Corse	184	5060	\$229.61	23	3	0.016	\$1509	24-11-2024	Hyde
A1008	Data Analytics Corse	113	5434		27	4	0.058	\$1362	24-11-2024	Hyde
A1009	Data Analytics Course	166	3355	\$186.78	24	9	0.054	\$1029	12-11-2024	Hyde
A1010	DataAnalyticsCourse	101	5399	\$236.79	20	6	0.059	\$1900	14-11-2024	HYD
A1011	Data Analytics Corse	101	3613	\$208.12	24	5	0.05	\$1130	22-11-2024	hyde
A1012	Data Analytics Course	125	3259	\$191.3	18	3	0.024	\$1959	27-11-2024	hydr
A1013	Data Analytics Corse	196	3742	\$207.46	10	7	0.038	\$1623	12-11-2024	hyde
A1014	Data Analytics Course	181	4311	\$185.09	11	9	0.05	\$1538	04-11-2024	Hyde
A1015	Data Analytics Course	102	5461	\$201.69	22	8	0.078	\$1755	29-11-2024	hyde
A1016	Data Analytics Course	193	5159		15	9	0.047	\$1614	10-11-2024	hydr
A1017	Data Analytics Corse	149	4431	\$207.4	19	9	0.06	\$1693	12-11-2024	HYD
A1018	Data Analytics Corse	150	3113	\$217.41	20	5	null	\$1785	07-11-2024	hyde
A1019	Data Analytics Course	145	5278		25	6	0.041	\$1516	05-11-2024	hyde

Now the Dataset was Loaded into Excel and ready for cleaning process.

Ad_ID	Campaign_Name	Clicks	Impressions	Cost	Leads	Conversions	Conversion Rate	Sale_Amount	Ad_Date	Loca
A1000	DataAnalyticsCourse	104	4498	\$231.88	14	7	0.058	\$1892	16-11-2024	h
A1001	DataAnalyticsCourse	173	5107	\$216.84	10	8	0.046	\$1679	20-11-2024	h
A1002	Data Analytics Corse	90	4544	\$203.66	26	9		\$1624	16-11-2024	h
A1003	Data Analytics Course	142	3185	\$237.66	17	6		\$1225	26-11-2024	h
A1004	Data Analytics Corse	156	3361	\$195.9	30	8		\$1091	22-11-2024	h
A1005	DataAnalyticsCourse	195	3776	\$243.57	10	8		\$1315	16-11-2024	h
A1006	Data Analytics Corse	116	4480	\$237.79	17	5	0.043	\$1640	06-11-2024	h
A1007	Data Analytics Corse	184	5060	\$229.61	23	3	0.016	\$1509	24-11-2024	h
A1008	Data Analytics Corse	113	5434		27	4	0.058	\$1362	24-11-2024	h
A1009	Data Analytics Course	166	3355	\$186.78	24	9	0.054	\$1029	12-11-2024	h
A1010	DataAnalyticsCourse	101	5399	\$236.79	20	6	0.059	\$1900	14-11-2024	h
A1011	Data Analytics Corse	101	3613	\$208.12	24	5	0.05	\$1130	22-11-2024	h
A1012	Data Analytics Course	125	3259	\$191.3	18	3	0.024	\$1959	27-11-2024	h
A1013	Data Analytics Corse	196	3742	\$207.46	10	7	0.038	\$1623	12-11-2024	h
A1014	Data Analytics Course	181	4311	\$185.09	11	9	0.05	\$1538	04-11-2024	h

## 2.Data Cleaning:

### Correct Inconsistencies:

For cleaning purpose, Data loaded into Power Query Editor by Clicking Data → Get data → From Table/Range

The screenshot shows the Microsoft Excel ribbon with the 'Data' tab selected. The 'Get Data' dropdown is open, and 'From Table/Range' is highlighted with a red box. A tooltip for 'From Table/Range' appears, stating: 'Create a new query linked to the selected Excel table or named range. If the selected data isn't part of a table or named range, it will be converted into a table.' Below the ribbon, a table of data is displayed with columns labeled C through G: Clicks, Impressions, Cost, Leads, and Conversions. The data rows show various values for each column.

	C	D	E	F	G
	Clicks	Impressions	Cost	Leads	Conversions
A1000	104	4498	\$231.88	14	7
A1001	173	5107	\$216.84	10	8
A1002	90	4544	\$203.66	26	9
A1003	Data Analytics Course	142	3185	\$237.66	17
A1004	Data Analytics Corse	156	3361	\$195.9	30
A1005	DataAnalyticsCourse	195	3776	\$243.57	10
A1006	Data Analytics Corse	116	4480	\$237.79	17
A1007	Data Analytics Corse	184	5060	\$229.61	23
A1008	Data Analytics Corse	113	5434		27
A1009	Data Analytcis Course	166	3355	\$186.78	24
A1010	DataAnalyticsCourse	101	5399	\$236.79	20
A1011	Data Analytics Corse	101	3613	\$208.12	5

Power Query Editor opened for cleaning, where need to select the file to start process.

The screenshot shows the Power Query Editor interface. The ribbon has the 'File' tab selected. The main area displays a table with columns: Ad\_ID, Campaign\_Name, Clicks, Impressions, and Cost. The 'Transform' tab is active, showing various data transformation tools like Sort, Replace Values, and Split Column. The table data is identical to the one shown in the Excel screenshot above.

Ad_ID	Campaign_Name	Clicks	Impressions	Cost
A1000	DataAnalyticsCourse	104	4498	\$231.88
A1001	DataAnalyticsCourse	173	5107	\$216.84
A1002	Data Analytics Corse	90	4544	\$203.66
A1003	Data Analytics Corse	142	3185	\$237.66
A1004	Data Analytics Corse	156	3361	\$195.9
A1005	DataAnalyticsCourse	195	3776	\$243.57
A1006	Data Analytics Corse	116	4480	\$237.79
A1007	Data Analytics Corse	184	5060	\$229.61
A1008	Data Analytics Corse	113	5434	
A1009	Data Analytcis Course	166	3355	\$186.78
A1010	DataAnalyticsCourse	101	5399	\$236.79

There is some Inconsistency found in “Cost” column, a symbol “\$” considered as s text and replaced with “empty” by Replace Values.

The screenshot shows the Power BI Data Editor interface. A context menu is open over the 'Cost' column, with the 'Replace Values' option highlighted by a red box. A 'Replace Values' dialog box is displayed in the foreground. The 'Value To Find' input field contains a dollar sign (\$) and is also highlighted with a red box. The 'OK' button at the bottom right of the dialog box is also highlighted with a red box.

“Data Type” format of Cost column Changed from Text to “Currency”.

The screenshot shows the Power BI Data Editor interface. A context menu is open over the 'Cost' column, with the 'Transform Column Types' option highlighted by a red box. A 'Transform Column Types' dialog box is displayed in the foreground. The 'Type' dropdown for the 'Cost' column is set to 'Currency' and is highlighted with a red box. The 'OK' button at the bottom right of the dialog box is also highlighted with a red box.

There is some Typos found in Campaign Name Column.

The screenshot shows the Power BI Data Editor interface. A context menu is open over the 'Campaign\_Name' column, with the 'Text Filters' option highlighted by a red box. A 'Text Filters' dialog box is displayed in the foreground. A list of typos is shown in the 'Selected' section of the filter list, all of which are checked (indicated by a checked checkbox icon). These typos include 'Data AnalyticsCourse', 'Data Analytics Corse', 'Data Analytics Corse', and 'DataAnalyticsCourse'. The 'OK' button at the bottom right of the dialog box is highlighted with a red box.

Misspelling Cleared by using “Replace values” option.

The screenshot shows the 'Replace Values' dialog box from Power BI. It has fields for 'Value To Find' (containing 'Data Anlytics Corse') and 'Replace With' (containing 'Data Analytics Course'). The 'OK' button is highlighted with a red box. To the right, the 'PROPERTIES' and 'APPLIED STEPS' panes are visible, with 'Replaced Value1' highlighted in the steps list.

Now errors in Campaign Name column cleared.

The screenshot shows the filter dialog for the 'Campaign\_Name' column. It displays a list of values with two filters selected: '(Select All)' and 'Data Analytics Course'. The 'OK' button is highlighted with a red box. To the right, the 'Query Settings' pane and the 'APPLIED STEPS' pane are shown, listing the four replaced values.

There is a Spelling Errors and case variations found in “Location” column

The screenshot shows the filter dialog for the 'Location' column. It displays a list of values with five filters selected: '(Select All)', 'Hyderabad', 'HYDERABAD', 'hyderabad', and 'hydrebad'. The 'OK' button is highlighted with a red box. To the right, the 'APPLIED STEPS' pane is shown, listing the five replaced values.

Misspelling Cleared by using “Replace values” option and case variations are corrected by “Capitalize each word” now errors in Location column Cleaned.

The screenshot shows the Power BI Data Editor interface. On the left, there's a context menu for the Location column. In the center, a table is displayed with columns Ad\_Date, Location, and Device. The Device column has entries like 'desktop', 'mobile', 'Desktop', 'tablet', etc. A filter is applied to the Location column, showing 'Hyderabad' selected. On the right, the Properties pane is open, showing an Applied Step named 'Capitalized Each Word'.

In “Device” column data is in Mixed case format.

The screenshot shows the Power BI Data Editor interface. On the left, there's a context menu for the Device column. In the center, a table is displayed with columns Ad\_Date, Location, and Device. The Device column has entries like 'desktop', 'mobile', 'Desktop', 'tablet', etc. A filter is applied to the Location column, showing 'Hyderabad' selected. On the right, the Properties pane is open, showing an Applied Step named 'Capitalized Each Word'.

Case variations are aligned by “Capitalize each word” and data looks cleaned.

The screenshot shows the Power BI Data Editor interface. On the left, there's a context menu for the Device column. In the center, a table is displayed with columns Ad\_Date, Location, and Device. The Device column now has entries like 'Desktop', 'Mobile', 'Desktop', 'Tablet', etc. A filter is applied to the Location column, showing 'Hyderabad' selected. On the right, the Properties pane is open, showing an Applied Step named 'Capitalized Each Word'.

In “Keyword” column data is in Mixed case format and typos also found.

The screenshot shows a data cleaning interface with a 'Keyword' column containing various entries like 'learn data analytics', 'data analytics course', etc. On the left, there's a context menu for the 'Keyword' column. A red box highlights the 'Text Filters' option, which is expanded to show a list of words with checkboxes. Several checkboxes are selected, including 'analytics for data', 'data analitics online', 'data analytics course', 'data anaytics training', 'learn data analytics', and 'online data analytic'. The 'APPLIED STEPS' panel on the right shows a history of steps taken, including 'Capitalize...' and 'Replace...' operations.

Case variations are aligned by “Capitalize each word” and Misspelling Cleared by using “Replace values” option data looks cleaned.

This screenshot shows the same data cleaning interface after the cleaning process. The 'Keyword' column now displays entries like 'Learn Data Analytics', 'Data Analytics Course', etc., all in a consistent capitalization style. The 'Text Filters' dropdown on the left and the 'APPLIED STEPS' panel on the right both show the completed cleaning steps, indicating that the data has been successfully cleaned.

## Remove Duplicates:

There is no duplicate found in the Dataset.

## Handling Missing Values:

Column Clicks, Impressions, Cost, Lead, Conversions, Conversion Rate, Sales Amount are having missing values/blanks. To handle the missing values are some methods named mean, median, mode available. For quick analysis, Descriptive Statistics calculated using Analysis → Data analysis Toolpak → Descriptive Statistics.

From that mean value is identified and “Clicks” column’s missing values are filled by “Mean” by Using the following Formula

=IF(C2="","",AVERAGE(\$C\$2:\$C\$2601),C2)

And result matches the descriptive statistical values.

Descriptive Statistics for Clicks													
=IF(C29="",AVERAGE(\$C\$2:\$C\$2601),C29)													
G	H	I	J	K	L	M	N	O	P	Q			
Conversions	Conversion Rate	Sale_Amount	Ad_Date	Location	Device	Keyword	Clicks1						
7	0.058	\$1,892.00	16-11-2024	Hyderabad	Desktop	Learn Data Analytics	104						
8	0.046	\$1,679.00	20-11-2024	Hyderabad	Mobile	Data Analytics Course	173						
9		\$1,624.00	16-11-2024	Hyderabad	Desktop	Data Analytics Online	90						
6		\$1,225.00	26-11-2024	Hyderabad	Tablet	Data Analytics Training	142						
8		\$1,091.00	22-11-2024	Hyderabad	Desktop	Online Data Analytic	156						
8		\$1,315.00	16-11-2024	Hyderabad	Mobile	Data Analytics Training	195						
5	0.043	\$1,640.00	06-11-2024	Hyderabad	Tablet	Data Analytics Course	116						
3	0.016	\$1,509.00	24-11-2024	Hyderabad	Tablet	Analytics For Data	184						
4	0.058	\$1,362.00	24-11-2024	Hyderabad	Tablet	Data Analytics Training	113						
9	0.054	\$1,029.00	12-11-2024	Hyderabad	Mobile	Online Data Analytic	166						
6	0.059	\$1,900.00	14-11-2024	Hyderabad	Desktop	Learn Data Analytics	101						
5	0.05	\$1,130.00	22-11-2024	Hyderabad	Desktop	Online Data Analytic	101						
3	0.024	\$1,959.00	27-11-2024	Hyderabad	Desktop	Data Analytics Online	125						
7	0.038	\$1,623.00	12-11-2024	Hyderabad	Mobile	Data Analytics Training	196						
9	0.05	\$1,538.00	04-11-2024	Hyderabad	Desktop	Data Analytics Training	181						
8	0.078	\$1,755.00	29-11-2024	Hyderabad	Desktop	Data Analytics Course	102						
9	0.047	\$1,614.00	10-11-2024	Hyderabad	Mobile	Learn Data Analytics	193						
10		\$1,688.00	21-11-2024	Hyderabad	Desktop	Data Analytics Training	138.957						
3		\$1,783.00	23-11-2024	Hyderabad	Mobile	Learn Data Analytics	128						
9	0.105	\$1,975.00	13-11-2024	Hyderabad	Mobile	Analytics For Data	86						
4	0.021	\$1,590.00	08-11-2024	Hyderabad	Tablet	Online Data Analytic	188						
5		\$1,111.00	22-11-2024	Hyderabad	Desktop	Online Data Analytic	113						
4		\$1,041.00	12-11-2024	Hyderabad	Tablet	Data Analytics Online	138.957						

“Impressions” column filled by Median by using “Find & Replace” method to avoid extra column storage.

Name	Clicks	Impressions	Cost	Leads	Conversions	Conversion Rate	Sale_Am
tics Course	91	4523	\$203.52		9	0.099	\$1
tics Course	117	4523	\$214.18	29	4	0.034	\$1
tics Course	160	4523	\$245.87	11	6	0.037	
tics Course	199	4523	\$199.98	15	8	0.04	\$1
tics Course	101	4523	\$234.17	29	5	0.05	\$1
tics Course	90	4523	\$249.00	21	10		\$1
tics Course	163	4523	\$206.46	14	3		\$1
tics Course	145	4523	\$236.03	24	8		\$1
tics Course	181	4523	\$208.33	22	8	0.044	\$1
tics Course	83	4523	\$229.97	12	8	0.096	\$2
tics Course	196	4523	\$206.31	24	8	0.051	\$1
tics Course	147	4523	\$205.83	25	8		\$1
tics Course	173	4523	\$241.61	28	3	0.017	\$1
tics Course	192	4523	\$180.82	27	4	0.021	\$1
tics Course	174	4523	\$227.96	25	5	0.029	\$1
tics Course	163	4523		11	3	0.018	\$1
tics Course	144	4523	\$186.47	29	8	0.056	\$1
tics Course		4523	\$234.85	11	8		\$1
tics Course	132	4523	\$219.44	17	3	0.055	\$1
tics Course	120	4523	\$217.66	25	10	0.053	\$1

Missing Values in “Cost” column are handled by “Mean” with grouped by “Device” by taking “AverageIF” as shown below;

=IF(E2="",AVERAGEIF(\$L\$2:\$L\$2601,L2,\$E\$2:\$E\$2601),E2)

=IF(E2="",AVERAGEIF(\$L\$2:\$L\$2601,L2,\$E\$2:\$E\$2601),E2)									
J	K	L	M	N	O	P	U	V	
Date	Location	Device	Keyword	Clicks1	Cost1		Cost		
-11-2024	Hyderabad	Desktop	Learn Data Analytics	104	231.88		Cost		
-11-2024	Hyderabad	Mobile	Data Analytics Course	173	216.84		Mean	215.0906233	
-11-2024	Hyderabad	Desktop	Data Analytics Online	90	203.66		Standard Error	0.405548703	
-11-2024	Hyderabad	Tablet	Data Analytics Training	142	237.66		Median	215.57	
-11-2024	Hyderabad	Desktop	Online Data Analytic	156	195.9		Mode	246.3	
-11-2024	Hyderabad	Mobile	Data Analytics Training	195	243.57		Standard Deviation	20.28959797	
-11-2024	Hyderabad	Tablet	Data Analytics Course	116	237.79		Sample Variance	411.6677856	
-11-2024	Hyderabad	Tablet	Analytics For Data	184	229.61		Kurtosis	-1.216948633	
-11-2024	Hyderabad	Tablet	Data Analytics Training	113	214.5891		Skewness	-0.038232892	
-11-2024	Hyderabad	Mobile	Online Data Analytic	166	186.78		Range	69.88	
-11-2024	Hyderabad	Desktop	Learn Data Analytics	101	236.79		Minimum	180.01	
-11-2024	Hyderabad	Desktop	Online Data Analytic	101	208.12		Maximum	249.89	
-11-2024	Hyderabad	Desktop	Data Analytics Online	125	191.3		Sum	538371.83	
-11-2024	Hyderabad	Mobile	Data Analytics Training	196	207.46		Count	2503	
-11-2024	Hyderabad	Desktop	Data Analytics Training	181	185.09				
-11-2024	Hyderabad	Desktop	Data Analytics Course	102	201.69				
-11-2024	Hyderabad	Mobile	Learn Data Analytics	193	216.2053				
-11-2024	Hyderabad	Mobile	Learn Data Analytics	149	207.4				
-11-2024	Hyderabad	Mobile	Analytics For Data	150	217.41				
-11-2024	Hyderabad	Desktop	Data Analytics Course	145	214.4528				

“Leads” column filled by Median by using below formula, compared the values with Descriptive Statistics results.

=IF(F2="",MEDIAN(\$F\$2:\$F\$2601),F2)

=IF(F2="",MEDIAN(\$F\$2:\$F\$2601),F2)									
F	G	H	I	N	O	P	Q	X	Y
Leads	Conversions	Conversion Rate	Sale_Amount	Clicks1	Cost1	Leads1		Leads	
14	7	0.058	\$1,892.00	104	231.88	14		Leads	
10	8	0.046	\$1,679.00	173	216.84	10		Mean	20.0039185
26	9		\$1,624.00	90	203.66	26		Standard Error	0.119410864
17	6		\$1,225.00	142	237.66	17		Median	20
30	8		\$1,091.00	156	195.9	30		Mode	24
10	8		\$1,315.00	195	243.57	10		Standard Deviation	6.032317279
17	5	0.043	\$1,640.00	116	237.79	17		Sample Variance	36.38885175
23	3	0.016	\$1,509.00	184	229.61	23		Kurtosis	-1.206693906
27	4	0.058	\$1,362.00	113	214.5891	27		Skewness	-0.02460148
24	9	0.054	\$1,029.00	166	186.78	24		Range	20
20	6	0.059	\$1,900.00	101	236.79	20		Minimum	10
24	5	0.05	\$1,130.00	101	208.12	24		Maximum	30
18	3	0.024	\$1,959.00	125	191.3	18		Sum	51050
10	7	0.038	\$1,623.00	196	207.46	10		Count	2552
11	9	0.05	\$1,538.00	181	185.09	11			
22	8	0.078	\$1,755.00	102	201.69	22			
15	9	0.047	\$1,614.00	193	216.2053	15			
19	9	0.06	\$1,693.00	149	207.4	19			
20	5		\$1,785.00	150	217.41	20			
25	6	0.041	\$1,516.00	145	214.4528	25			
10	10	0.044	\$1,735.00	184	223.3	10			

“Conversions” column filled by Median by using below formula, compared the values with Descriptive Statistics results.

=IF(G2="",MEDIAN(\$G\$2:\$G\$2601),G2)

	I	N	O	P	Q	R	S	T	AC	AD
	Rate	Sale_Amount	Clicks1	Cost1	Leads1	Conversion1				
0.058	\$1,892.00	104	231.88	14	7					
0.046	\$1,679.00	173	216.84	10	8					
	\$1,624.00	90	203.66	26	9					
	\$1,225.00	142	237.66	17	6					
	\$1,091.00	156	195.9	30	8					
	\$1,315.00	195	243.57	10	8					
0.043	\$1,640.00	116	237.79	17	5					
0.016	\$1,509.00	184	229.61	23	3					
0.058	\$1,362.00	113	214.5891	27	4					
0.054	\$1,029.00	166	186.78	24	9					
0.059	\$1,900.00	101	236.79	20	6					
0.05	\$1,130.00	101	208.12	24	5					
0.024	\$1,959.00	125	191.3	18	3					
0.038	\$1,623.00	196	207.46	10	7					
0.05	\$1,538.00	181	185.09	11	9					
0.078	\$1,755.00	102	201.69	22	8					
0.047	\$1,614.00	193	216.2053	15	9					

Conversions

Mean 6.519002375  
Standard Error 0.045216945  
Median 7  
Mode 7  
Standard Deviation 2.272573269  
Sample Variance 5.164589262  
Kurtosis -1.223903479  
Skewness -0.01244161  
Range 7  
Minimum 3  
Maximum 10  
Sum 16467  
Count 2526

“Conversion Rate” column filled by below formula,

=[@Conversion1]/[@Clicks1]

	I	N	O	P	Q	R	S	T	AC	AD
	le_Amount	Clicks1	Cost1	Leads1	Conversion1	Conversion Rate1				
	\$1,892.00	104.0	231.88	14	7	0.067				
	\$1,679.00	173.0	216.84	10	8	0.046				
	\$1,624.00	90.0	203.66	26	9	0.100				
	\$1,225.00	142.0	237.66	17	6	0.042				
	\$1,091.00	156.0	195.9	30	8	0.051				
	\$1,315.00	195.0	243.57	10	8	0.041				
	\$1,640.00	116.0	237.79	17	5	0.043				
	\$1,509.00	184.0	229.61	23	3	0.016				
	\$1,362.00	113.0	214.5891	27	4	0.035				
	\$1,029.00	166.0	186.78	24	9	0.054				
	\$1,900.00	101.0	236.79	20	6	0.059				
	\$1,130.00	101.0	208.12	24	5	0.050				
	\$1,959.00	125.0	191.3	18	3	0.024				
	\$1,623.00	196.0	207.46	10	7	0.036				
	\$1,538.00	181.0	185.09	11	9	0.050				
	\$1,755.00	102.0	201.69	22	8	0.078				

Conversions

Mean 6.519002375  
Standard Error 0.045216945  
Median 7  
Mode 7  
Standard Deviation 2.272573269  
Sample Variance 5.164589262  
Kurtosis -1.223903479  
Skewness -0.01244161  
Range 7  
Minimum 3  
Maximum 10  
Sum 16467  
Count 2526

Missing Values in “Sales Amount” column are handled by “Mean” with grouped by “Device” by taking “AverageIF” as shown below and results matches with Descriptive Statistics values.

=IF(I2="","",AVERAGEIF(\$L\$2:\$L\$2601,L2,\$I\$2:\$I\$2601),I2)

	J	K	L	M	S	T	AF	AG	AH
mount	Ad_Date	Location	Device	Keyword	Sales_Amount1				
\$1,892.00	16-11-2024	Hyderabad	Desktop	Learn Data Analytics	1892				
\$1,679.00	20-11-2024	Hyderabad	Mobile	Data Analytics Course	1679				
\$1,624.00	16-11-2024	Hyderabad	Desktop	Data Analytics Online	1624	0.04897923	Mean	1498.648111	
\$1,225.00	26-11-2024	Hyderabad	Tablet	Data Analytics Training	1225	0.000449862	Standard Error	5.787451133	
\$1,091.00	02-11-2024	Hyderabad	Desktop	Online Data Analytic	1091	0.046	Median	1505	
\$1,315.00	16-11-2024	Hyderabad	Mobile	Data Analytics Training	1315	0.05	Mode	1719	
\$1,640.00	06-11-2024	Hyderabad	Tablet	Data Analytics Course	1640	0.019987225	Standard Deviation	287.1065787	
\$1,509.00	24-11-2024	Hyderabad	Tablet	Analytics For Data	1509	0.000399489	Sample Variance	82430.18751	
\$1,041.00	12-11-2024	Hyderabad	Tablet	Data Analytics Online	1041				
\$1,710.00	03-11-2024	Hyderabad	Tablet	Data Analytics Course	1710				
25-11-2024	Hyderabad	Mobile		Data Analytics Course	1496.136804				
\$1,564.00	26-11-2024	Hyderabad	Tablet	Learn Data Analytics	1564				
\$1,902.00	26-11-2024	Hyderabad	Desktop	Learn Data Analytics	1902				
\$1,267.00	05-11-2024	Hyderabad	Desktop	Data Analytics Online	1267				
\$1,340.00	21-11-2024	Hyderabad	Desktop	Analytics For Data	1340				
\$1,692.00	16-11-2024	Hyderabad	Mobile	Data Analytics Training	1692				
\$1,054.00	18-11-2024	Hyderabad	Desktop	Data Analytics Online	1054				
	11-11-2024	Hyderabad	Mobile	Data Analytics Online	1496.136804				
\$1,219.00	16-11-2024	Hyderabad	Tablet	Data Analytics Course	1219				
\$1,946.00	11-11-2024	Hyderabad	Tablet	Analytics For Data	1946				
\$1,833.00	08-11-2024	Hyderabad	Desktop	Analytics For Data	1833				
\$1,975.00	06-11-2024	Hyderabad	Mobile	Data Analytics Online	1975				
\$1,556.00	04-11-2024	Hyderabad	Tablet	Learn Data Analytics	1556				
	09-11-2024	Hyderabad	Desktop	Data Analytics Online	1499.683274				
\$1,728.00	12-11-2024	Hvderabad	Tablet	Learn Data Analytics	1728				

Here is the Cleaned Dataset,

Ad_ID	Campaign_Name	Clicks	Impressions	Cost	Leads	Conversions	Conversion_Rate	Sale_Amount	Ad_Date	Location	Device	Keyword
A1000	Data Analytics Course	104	4498	\$231.88	14	7	0.067	\$1,892.00	16-11-2024	Hyderabad	Desktop	Learn Data Analytics
A1001	Data Analytics Course	173	5107	\$216.84	10	8	0.046	\$1,679.00	20-11-2024	Hyderabad	Mobile	Data Analytics Course
A1002	Data Analytics Course	90	4544	\$203.66	26	9	0.100	\$1,624.00	16-11-2024	Hyderabad	Desktop	Data Analytics Online
A1003	Data Analytics Course	142	3185	\$237.66	17	6	0.042	\$1,225.00	26-11-2024	Hyderabad	Tablet	Data Analytics Training
A1004	Data Analytics Course	156	3361	\$195.90	30	8	0.051	\$1,091.00	22-11-2024	Hyderabad	Desktop	Online Data Analytic
A1005	Data Analytics Course	195	3776	\$243.57	10	8	0.041	\$1,315.00	16-11-2024	Hyderabad	Mobile	Data Analytics Training
A1006	Data Analytics Course	116	4480	\$237.79	17	5	0.043	\$1,640.00	06-11-2024	Hyderabad	Tablet	Data Analytics Course
A1007	Data Analytics Course	184	5060	\$229.61	23	3	0.016	\$1,509.00	24-11-2024	Hyderabad	Tablet	Analytics For Data
A1008	Data Analytics Course	113	5434	\$214.59	27	4	0.035	\$1,362.00	24-11-2024	Hyderabad	Tablet	Data Analytics Training
A1009	Data Analytics Course	166	3355	\$186.78	24	9	0.054	\$1,029.00	12-11-2024	Hyderabad	Mobile	Online Data Analytic
A1010	Data Analytics Course	101	5399	\$236.79	20	6	0.059	\$1,900.00	14-11-2024	Hyderabad	Desktop	Learn Data Analytics
A1011	Data Analytics Course	101	3613	\$208.12	24	5	0.050	\$1,130.00	22-11-2024	Hyderabad	Desktop	Online Data Analytic
A1012	Data Analytics Course	125	3259	\$191.30	18	3	0.024	\$1,959.00	27-11-2024	Hyderabad	Desktop	Data Analytics Online
A1013	Data Analytics Course	196	3742	\$207.46	10	7	0.036	\$1,623.00	12-11-2024	Hyderabad	Mobile	Data Analytics Training
A1014	Data Analytics Course	181	4311	\$185.09	11	9	0.050	\$1,538.00	04-11-2024	Hyderabad	Desktop	Data Analytics Training
A1015	Data Analytics Course	102	5461	\$201.69	22	8	0.078	\$1,755.00	29-11-2024	Hyderabad	Desktop	Data Analytics Course
A1016	Data Analytics Course	193	5159	\$216.21	15	9	0.047	\$1,614.00	10-11-2024	Hyderabad	Mobile	Learn Data Analytics
A1017	Data Analytics Course	149	4431	\$207.40	19	9	0.060	\$1,693.00	12-11-2024	Hyderabad	Mobile	Learn Data Analytics
A1018	Data Analytics Course	150	3113	\$217.41	20	5	0.033	\$1,785.00	07-11-2024	Hyderabad	Mobile	Analytics For Data
A1019	Data Analytics Course	145	5278	\$214.45	25	6	0.041	\$1,516.00	05-11-2024	Hyderabad	Desktop	Data Analytics Course
A1020	Data Analytics Course	184	4143	\$223.30	10	10	0.054	\$1,735.00	21-11-2024	Hyderabad	Tablet	Learn Data Analytics
A1021	Data Analytics Course	171	4154	\$184.23	30	7	0.041	\$1,803.00	08-11-2024	Hyderabad	Tablet	Data Analytics Online
A1022	Data Analytics Course	122	5187	\$211.24	27	6	0.049	\$1,322.00	20-11-2024	Hvderabad	Desktop	Online Data Analytic

### **3.Data Transformation and Metrics Calculations:**

In this project, raw campaign data was transformed into meaningful performance metrics using a formula. The following key marketing metrics were derived during the data transformation process.

#### **Click-Through Rate (CTR)**

Click-Through Rate (CTR) measures the percentage of users who clicked the ad after seeing it. CTR indicates ad effectiveness and audience engagement. A higher CTR suggests strong ad relevance and performance

$$=[@Clicks]/[@Impressions]$$

#### **Cost Per Click (CPC)**

Cost Per Click (CPC) measures how much money is spent for each click received on the advertisement. CPC helps evaluate advertising cost efficiency. A lower CPC indicates better cost management in generating user engagement.

$$=[@Cost]/[@Clicks]$$

#### **Return on Ad Spend (ROAS)**

ROAS measures how much revenue is generated for every ₹1 spent on advertising. ROAS evaluates revenue efficiency.

$$=[@Sale_Amount]/[@Cost]$$

#### **Return on Investment (ROI)**

ROI measures the profitability of the campaign relative to its cost. ROI measures profit efficiency.

$$=[@Profit]/[@Cost]$$

#### **Profit**

Profit represents the net earnings generated after deducting the total advertising cost from the total sales revenue.

It indicates the actual financial gain from the marketing campaign.

$$=[@[\text{Sale\_Amount}]]-[@\text{Cost}]$$

Here is screenshot of Calculating metrics, as shown below;

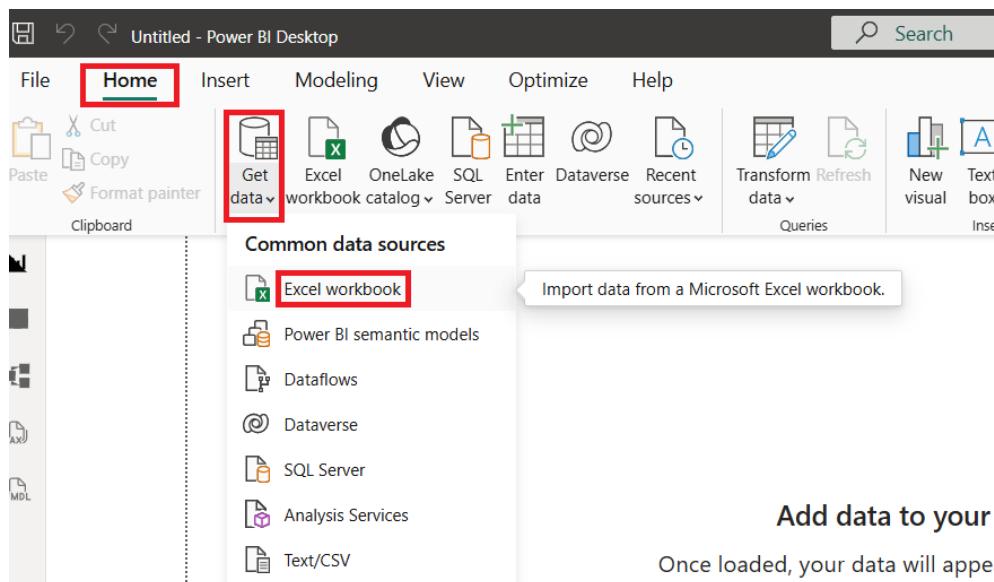
M	N	O	P	Q	R
Keyword	Click Through Rate	Cost Per Click	Profit	Return on Ad Spent	Return on Investment
Learn Data Analytics	0.023	\$2.23	\$1,660.12	8.16	7.16
Data Analytics Course	0.034	\$1.25	\$1,462.16	7.74	6.74
Data Analytics Online	0.020	\$2.26	\$1,420.34	7.97	6.97
Data Analytics Training	0.045	\$1.67	\$987.34	5.15	4.15
Online Data Analytic	0.046	\$1.26	\$895.10	5.57	4.57
Data Analytics Training	0.052	\$1.25	\$1,071.43	5.40	4.40
Data Analytics Course	0.026	\$2.05	\$1,402.21	6.90	5.90
Analytics For Data	0.036	\$1.25	\$1,279.39	6.57	5.57
Data Analytics Training	0.021	\$1.90	\$1,147.41	6.35	5.35
Online Data Analytic	0.049	\$1.13	\$842.22	5.51	4.51
Learn Data Analytics	0.019	\$2.34	\$1,663.21	8.02	7.02
Online Data Analytic	0.028	\$2.06	\$921.88	5.43	4.43
Data Analytics Online	0.038	\$1.53	\$1,767.70	10.24	9.24
Data Analytics Training	0.052	\$1.06	\$1,415.54	7.82	6.82
Data Analytics Training	0.042	\$1.02	\$1,352.91	8.31	7.31
Data Analytics Course	0.019	\$1.98	\$1,553.31	8.70	7.70
Learn Data Analytics	0.037	\$1.12	\$1,397.79	7.47	6.47
Learn Data Analytics	0.034	\$1.39	\$1,485.60	8.16	7.16
Analytics For Data	0.048	\$1.45	\$1,567.59	8.21	7.21
Data Analytics Course	0.027	\$1.48	\$1,301.55	7.07	6.07

After Transformation, Conditional formatting applied for better visual understanding,

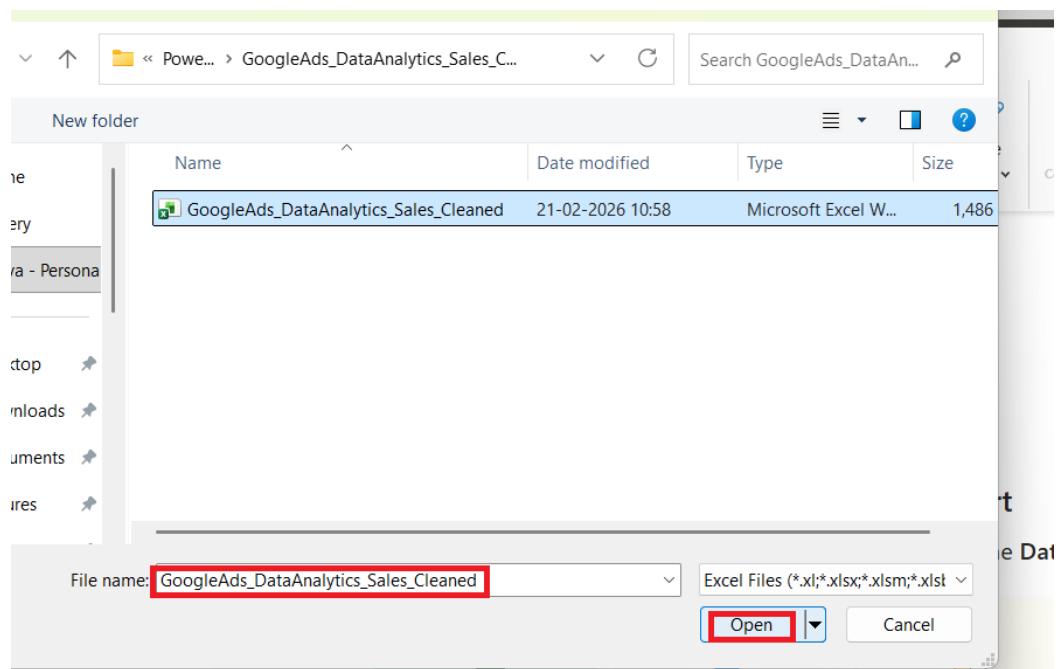
I	J	K	L	M	N	O	P	Q	R	
te	Sale_Amount	Ad_Date	Location	Device	Keyword	Click Through Rate	Cost Per Click	Profit	Return on Ad Spent	Return on Investment
0.067	\$1,892.00	16-11-2024	Hyderabad	Desktop	Learn Data Analytics	0.023	\$2.23	\$1,660.12	8.16	715.94%
0.046	\$1,679.00	20-11-2024	Hyderabad	Mobile	Data Analytics Course	0.034	\$1.25	\$1,462.16	7.74	674.30%
0.100	\$1,624.00	16-11-2024	Hyderabad	Desktop	Data Analytics Online	0.020	\$2.26	\$1,420.34	7.97	697.41%
0.042	\$1,225.00	26-11-2024	Hyderabad	Tablet	Data Analytics Training	0.045	\$1.67	\$987.34	5.15	415.44%
0.051	\$1,091.00	22-11-2024	Hyderabad	Desktop	Online Data Analytic	0.046	\$1.26	\$895.10	5.57	456.92%
0.041	\$1,315.00	16-11-2024	Hyderabad	Mobile	Data Analytics Training	0.052	\$1.25	\$1,071.43	5.40	439.89%
0.043	\$1,640.00	06-11-2024	Hyderabad	Tablet	Data Analytics Course	0.026	\$2.05	\$1,402.21	6.90	589.68%
0.016	\$1,509.00	24-11-2024	Hyderabad	Tablet	Analytics For Data	0.036	\$1.25	\$1,279.39	6.57	557.20%
0.035	\$1,362.00	24-11-2024	Hyderabad	Tablet	Data Analytics Training	0.021	\$1.90	\$1,147.41	6.35	534.70%
0.054	\$1,029.00	12-11-2024	Hyderabad	Mobile	Online Data Analytic	0.049	\$1.13	\$842.22	5.51	450.92%
0.059	\$1,900.00	14-11-2024	Hyderabad	Desktop	Learn Data Analytics	0.019	\$2.34	\$1,663.21	8.02	702.40%
0.050	\$1,130.00	22-11-2024	Hyderabad	Desktop	Online Data Analytic	0.028	\$2.06	\$921.88	5.43	442.96%
0.024	\$1,959.00	27-11-2024	Hyderabad	Desktop	Data Analytics Online	0.038	\$1.53	\$1,767.70	10.24	924.05%
0.036	\$1,623.00	12-11-2024	Hyderabad	Mobile	Data Analytics Training	0.052	\$1.06	\$1,415.54	7.82	682.32%
0.050	\$1,538.00	04-11-2024	Hyderabad	Desktop	Data Analytics Training	0.042	\$1.02	\$1,352.91	8.31	730.95%
0.078	\$1,755.00	29-11-2024	Hyderabad	Desktop	Data Analytics Course	0.019	\$1.98	\$1,553.31	8.70	770.15%
0.047	\$1,614.00	10-11-2024	Hyderabad	Mobile	Learn Data Analytics	0.037	\$1.12	\$1,397.79	7.47	646.51%
0.060	\$1,693.00	12-11-2024	Hyderabad	Mobile	Learn Data Analytics	0.034	\$1.39	\$1,485.60	8.16	716.30%
0.033	\$1,785.00	07-11-2024	Hyderabad	Mobile	Analytics For Data	0.048	\$1.45	\$1,567.59	8.21	721.03%
0.041	\$1,516.00	05-11-2024	Hyderabad	Desktop	Data Analytics Course	0.027	\$1.48	\$1,301.55	7.07	606.92%
0.054	\$1,735.00	21-11-2024	Hyderabad	Tablet	Learn Data Analytics	0.044	\$1.21	\$1,511.70	7.77	676.98%

## Data Visualization using Power BI:

After the transformation process, Data was loaded into Power BI for Visualisation and Dashboards Creation. Data was Loaded into Power BI by Clicking Home → Get data → Excel work books.



Select the file and click open to load data,



In Navigator window select the file and click Load for Further analysis.

The screenshot shows the Power BI Navigator window. On the left, there's a tree view of datasets: 'GoogleAds\_DataAnalytics...' (expanded) with 'Dataset Cleaned', 'Dataset Cleaning', and 'Raw Dataset'; and 'Campaign\_Performance\_Details' (selected, indicated by a red box). On the right, a preview of the 'Campaign\_Performance\_Details' table is shown with columns: Ad\_ID, Campaign\_Name, Clicks, Impressions, Cost, Leads, Conversions, Overall\_CTR, Overall\_ROAS, Overall\_ROI, Total\_Ad\_Spent\_Cost, Total\_Conversion, Total\_Sales\_Amount, and Total\_Profit. The 'Load' button at the bottom is also highlighted with a red box.

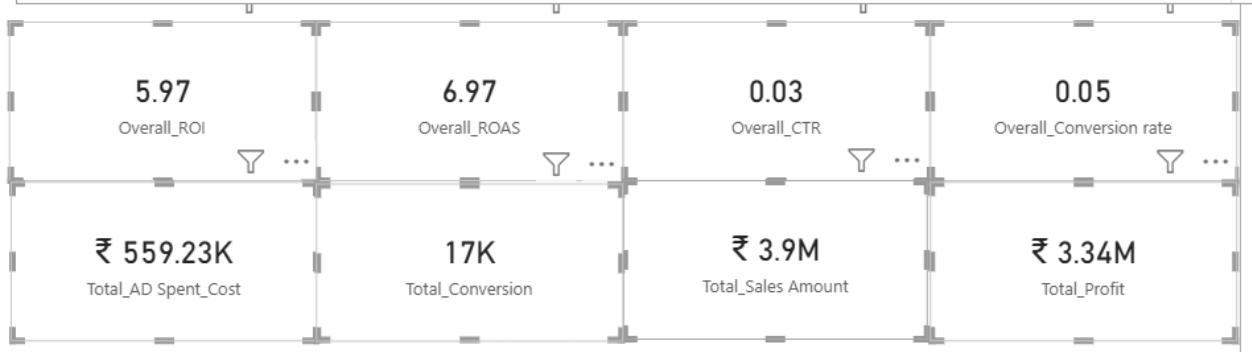
## Visualization

To consolidate campaign performance metrics into a single structured format, a summary table was created using the SUMMARIZE function in Power BI.

This table aggregates key performance indicators from the `Campaign_Performance_Details` dataset.

Also, Measures was created to visualize the metrics values by Cards as shown below,

```
1 Summary_Table = SUMMARIZE('Campaign_Performance_Details',"Total_Ad_Spent_Cost",Sum
(Campaign_Performance_Details[Cost]),"Total_Conversion",Sum(Campaign_Performance_Details[Conversions]),
"Total_Sales_Amount",Sum(Campaign_Performance_Details[Sale_Amount]),"Total_Profit",Sum
(Campaign_Performance_Details[Profit]),"Total_Clicks", Sum(Campaign_Performance_Details[Clicks]),
"Total_Impressions", Sum(Campaign_Performance_Details[Impressions]),"Overall_Conversion_rate", Divide
([Total_Conversion],[Total_Clicks]), "Overall_CTR",Divide([Total_Clicks],[Total_Impressions]),
"Overall_ROAS", DIVIDE([Total_Sales_Amount],[Total_Ad_Spent_Cost]),"Overall_ROI", Divide([Total_Profit],
[Total_Ad_Spent_Cost]))
```



Created the Measures Table separately for better understanding,

The screenshot shows a list of measures in a data visualization tool. The measures listed are:

- Maximum conversion
- Minimum Conversion
- Overall\_Conversion rate
- Overall\_CTR
- Overall\_ROAS
- Overall\_ROI
- Target
- Total\_AD\_Spent\_Cost
- Total\_Clicks
- Total\_Conversion
- Total\_Impressions
- Total\_Leads
- Total\_Profit
- Total\_Sales\_Amount

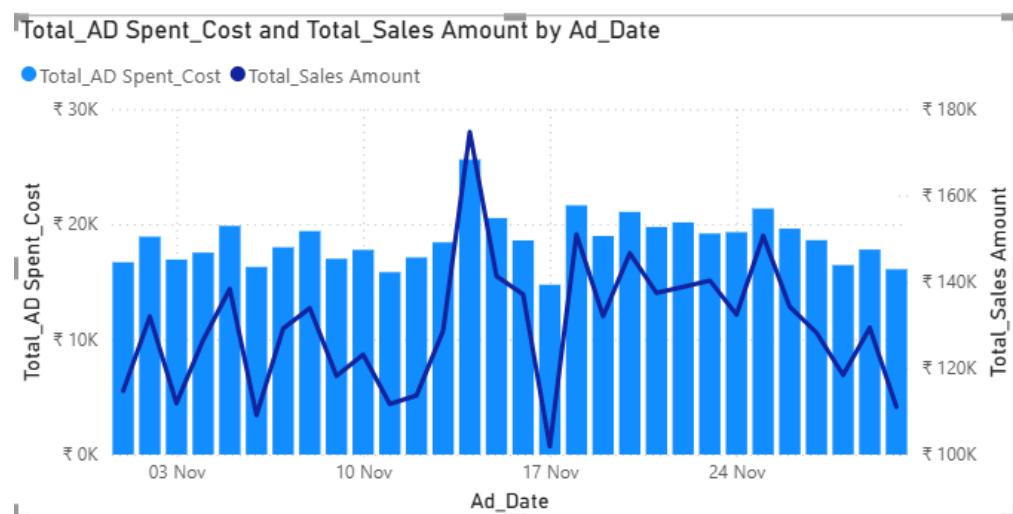
## Charts:

### 1. Revenue vs Cost Trend by Date:

- Sales consistently remain much higher than cost.
- Major performance spike around middle of November.
- No days where cost exceeds revenue.

#### Insight:

Campaign performance is stable with occasional high-performing days.

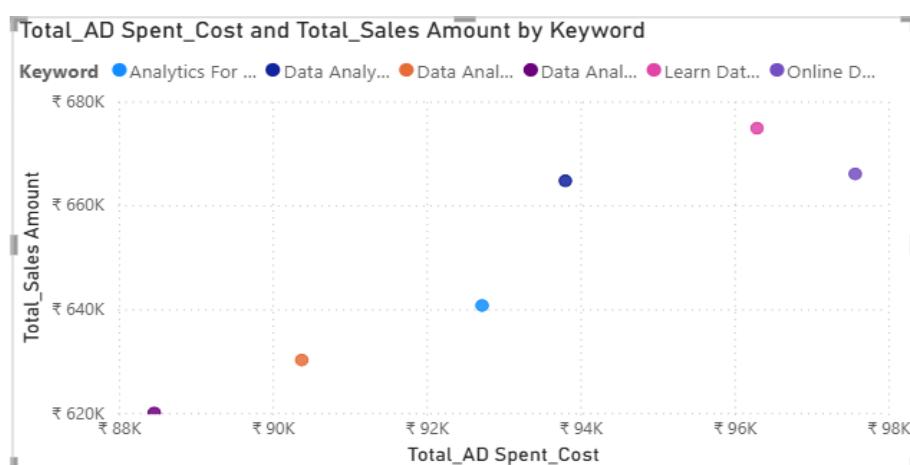


## 2.Cost vs Sales by Keyword:

- There is a positive relationship between ad Cost and Sales. Ad spend increases, sales also increase. This shows campaign spending is generating returns.
- Keyword “Learn Data Analytics” Ad spending around ₹96K generate the highest sales (₹674K).
- Ad spending around ₹88K generates only ₹620K.

### Insight:

Budget allocation is effective overall, but optimizing low-performing keyword Ad can improve profitability.

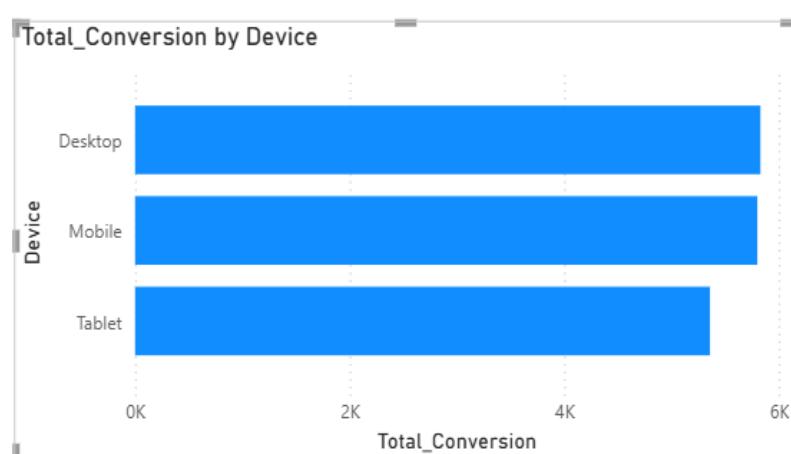


## 3.Total Conversion by Device

- Desktop (5828) and Mobile (5799) generate highest conversions.
- Tablet shows slightly lower performance.

### Insight:

Conversions are evenly distributed across devices, indicating a well-optimized multi-device strategy.

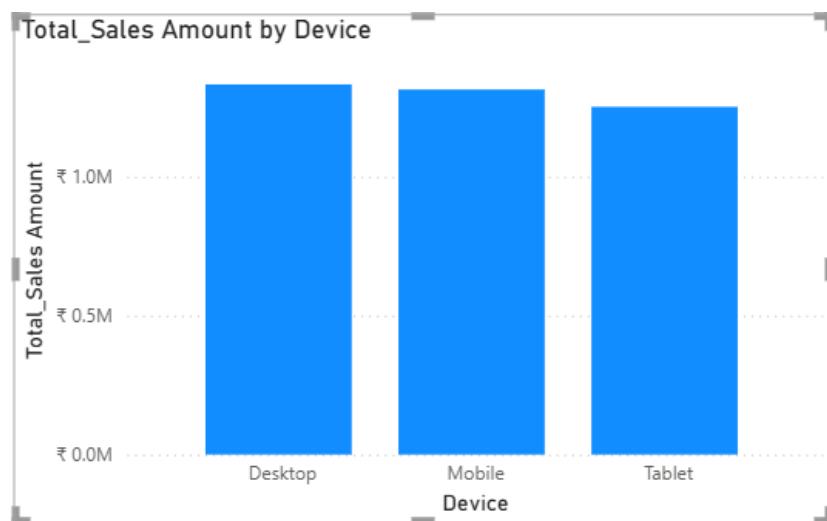


#### 4. Total Sales Amount by Device

- Sales Amount is nearly equal across all devices.
- No single device dominates revenue generation.

##### Insight:

Campaign performance is balanced, reducing dependency on one device platform.

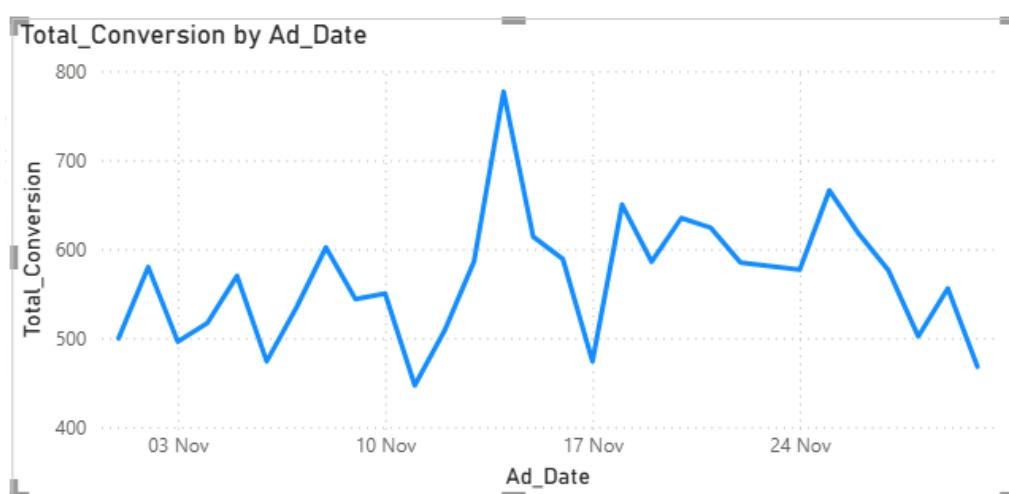


#### 5. Total Conversion by Date

- Peak conversions observed on 14 November 2024, 777 Conversions.
- Minor fluctuations throughout the period.
- End-of-month shows slight Lower conversions.

##### Insight:

Campaign performance is stable with a strong mid-month spike, need to concentrate on end of the month.

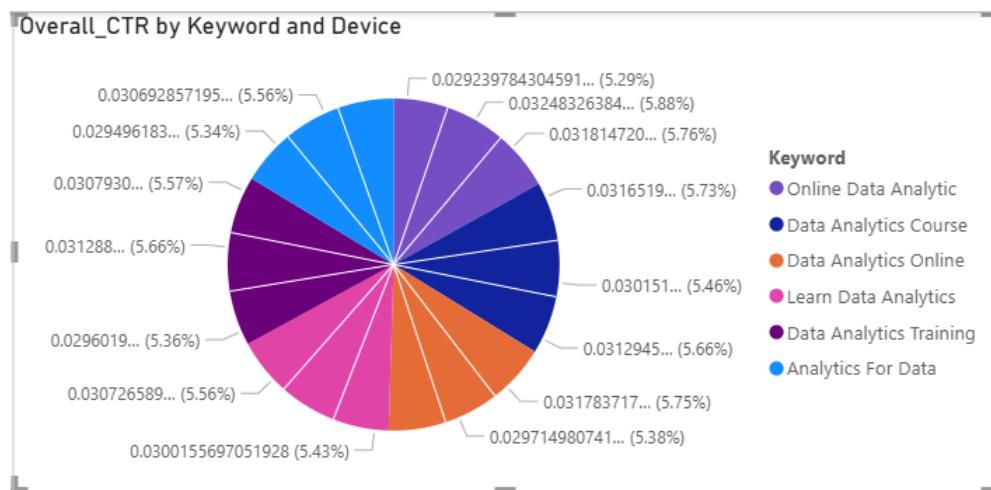


## 6. Overall CTR by Keyword and Device

- CTR values are closely distributed across keywords.
- No extreme variation.

### Insight:

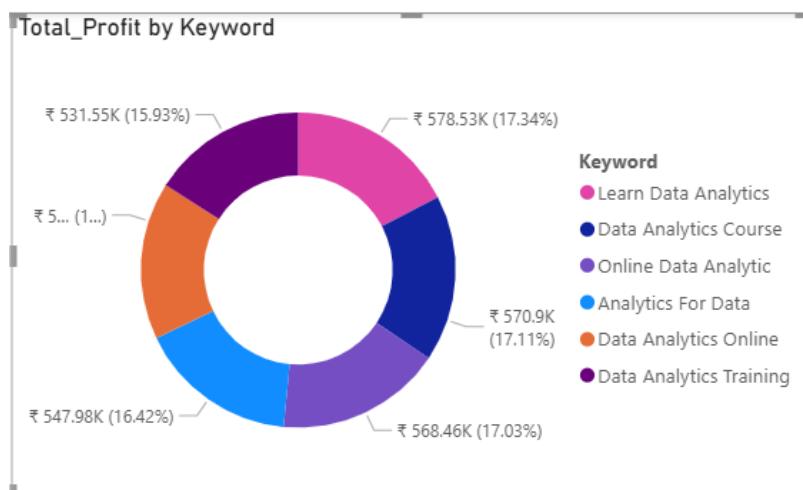
Ad creatives and keyword targeting are consistently effective across devices.



## 7. Total Profit by Keyword

- Profit is remarkably balanced across all keywords, with each contributing between 15.9% and 17.34% of the total.
- Minimal variance: There is only a 0.23% difference between the top performer ("Learn Data Analytics") and the lowest ("Data Analytics Course").

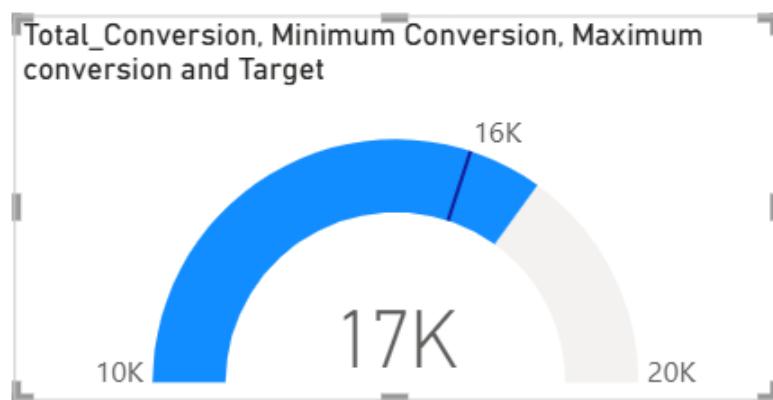
**Insight:** The marketing strategy is highly stable; consistent returns across all keywords indicate a diversified and low-risk.



## 8.Total Conversion vs Target

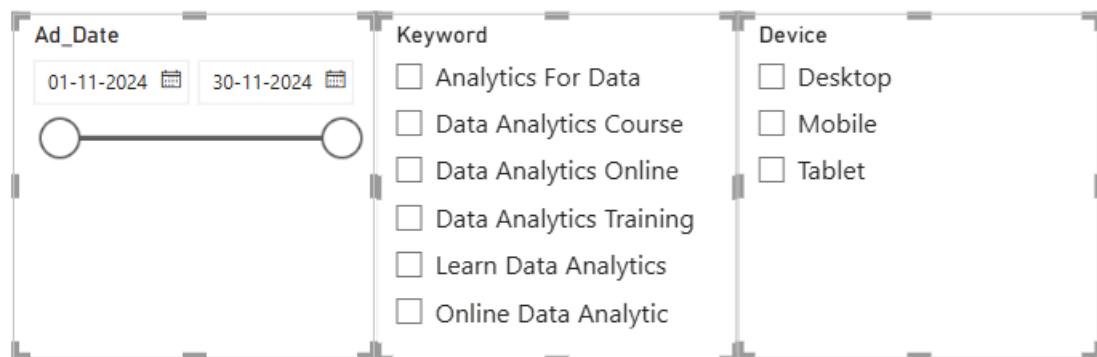
- Total conversions reached 17K, successfully surpassing the 16K target.
- Performance is currently trending toward the maximum goal of 20K.

**Insight:** The campaign is over-performing against its primary KPIs, indicating that the current budget and targeting strategy are highly effective for driving volume.

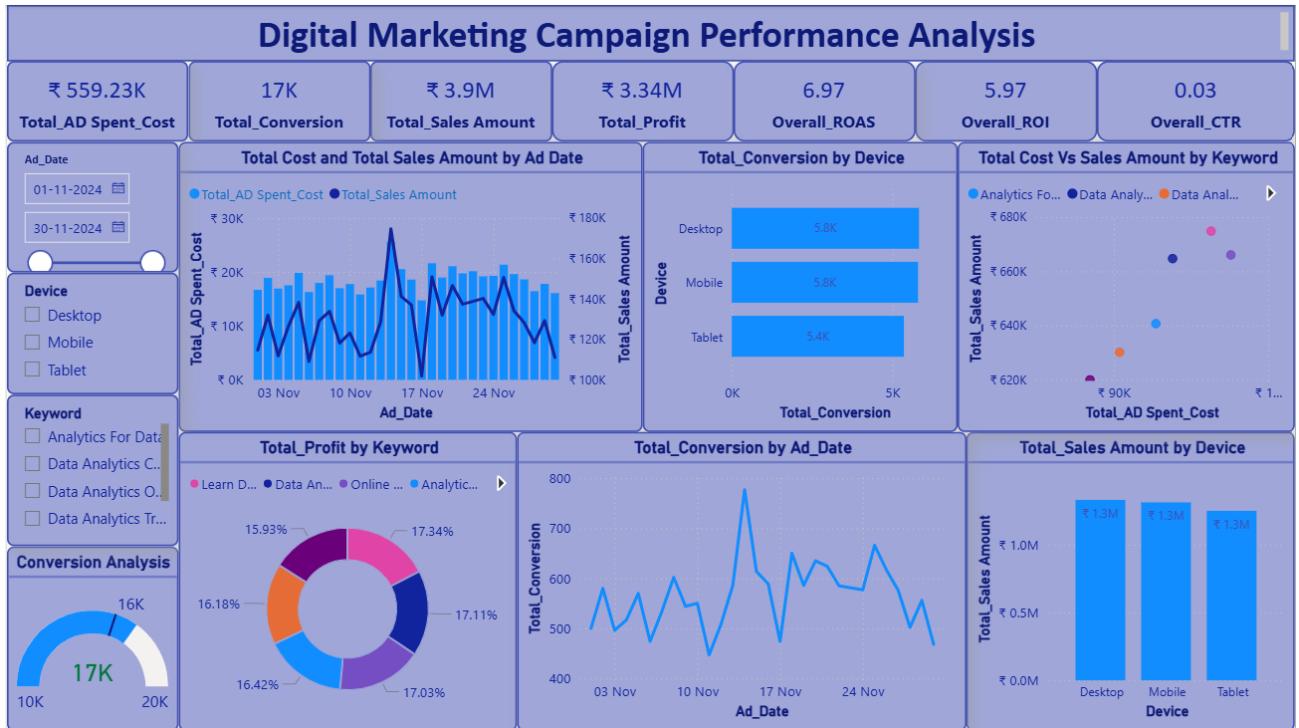


### Slicers:

3 Slicers added for Ad date, Keyword, Device for making Dashboard More interactive.



## Dashboard:



## Insights & Summary (Top KPIs):

Below find the Summary details of the Dashboards;

- Total Ad Spend: ₹559K
- Total Sales Amount: ₹3.9M
- Total Profit: ₹3.34M
- Total Conversions: 17K
- ROAS: 6.97
- ROI: 5.97
- CTR: 3%

For every ₹1 spent, the campaign generated:

- ₹6.97 in revenue
- ₹5.97 in profit

So, Campaign is highly profitable and efficient.

## **Conclusion:**

From Raw data into Meaningful Insights, we knew that, Data Analytics Course Campaign is highly profitable and its Marketing efficiency (ROAS & ROI) is strong. Also, device & keyword analysis are in Balanced performance. Mid of the month campaign performed best and achieve more Revenue. Comparing Total Ad spent Cost, Total Sales Amount is higher that denotes Campaign Performance was Good.

Overall, this project showcases how data analytics can transform raw campaign data into meaningful insights that drive business growth and marketing optimization.