

INTERNSHIP PROJECT

PROJECT TEAM ID: PTID-CDA-MAR-23-138

PROJECT ID: PRDA-01

PROJECT NAME: PROFIT ANALYSIS

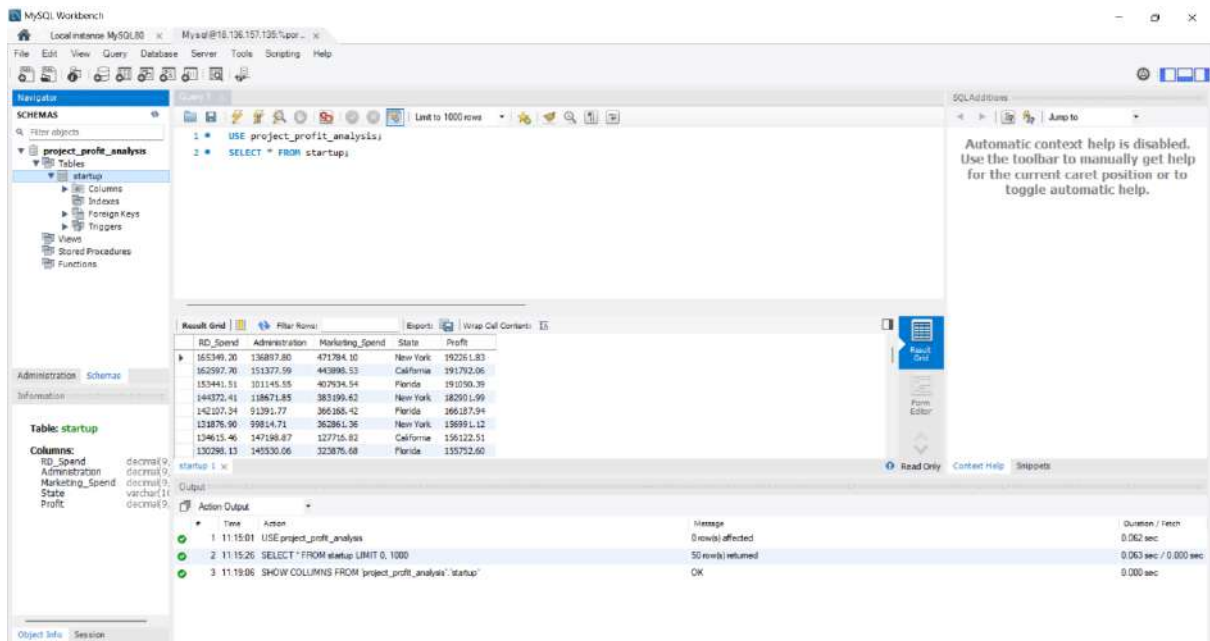
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TOOLS USED: SQL, EXCEL, POWERBI

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DATA CONNECTION



- Connected to SQL server -18.136.157.135, with the given username and password,
- Query ran to see the table data
USE project_profit_analysis; (To select the database)
SELECT * FROM startup; (To select all columns and data in startup table)
- By left clicking on the table 'startup' -selected option Table export wizard, selecting all columns and selected a local directory to export the csv data.

REGRESSION ANALYSIS

Startup ID	R&D Spend	Administration	Marketing Spend	Predicted Profit
1	165349.2	138897.8	671784.1	192261.8
2	162597.7	151377.59	443898.5	191792.1
3	153441.51	101345.55	407934.5	191050.4
4	144372.41	118671.85	383199.6	182907
5	142187.34	91981.77	360108.4	166187.8
6	131876.9	98814.71	362801.4	150981.1
7	134615.46	147988.87	127776.8	156123.5
8	130098.13	145530.06	323876.7	155752.6
9	120542.52	148718.95	311613.3	152211.8
10	123334.88	108679.17	304981.6	149760
11	101913.08	110594.11	229161	146122
12	100671.96	91290.61	245744.6	144259.4
13	93861.75	127320.38	249839.4	141585.5
14	91992.39	135495.07	25664.9	134307.4
15	119943.24	156547.42	256512.9	132602.7
16	114523.61	122616.84	261776.2	129917
17	78013.11	121597.55	264346.1	126992.9
18	94657.16	145077.58	282574.3	125370.4
19	91749.16	114175.79	294919.6	124266.9
20	86419.7	153514.11	0	122776.9
21	76253.86	113887.3	298664.5	118474
22	78389.47	153773.43	297737.3	111313
23	73094.56	122782.75	303319.3	110352.3

- The exported csv data was not in the right format to form the table in excel.
- Again from SQL server selected Table export wizard for table 'startup', selecting all columns and this time in options field changing field separator to " , " , and removing string enclosed ". Saving the data in local directory.
- In excel workbook changing the format of the data into table.
- Checking data types ---as columns R&D Spend, Administration, Marketing Spend ,profit all are numerical data type and State is categorical data types.
- 0 values present in columns R&D Spend, Marketing Spend are not null values but expenditure spent by start-ups is 0 in that features.
- Selecting Menu Data--data analysis ----Regression.
- Selecting input X-- R&D Spend, Administration, Marketing Spend.
- Output column Y --Profit, selecting output range in the same sheet.
- Checking R2 Score for accuracy of our regression model, and forming equation using intercept and coefficients of each column i.e. $y = m_1x_1 + m_2x_2 + m_3x_3 + c$

Multilinear regression prediction line equation is

$$\text{Profit} = 0.805715 * x_1 + 0.02682 * x_2 + 0.027228 * x_3 + 50122.19$$

R&D Spend	Administration	Marketing Spend	Predicted Profit
21892.92	81910.77	164270.7	70037.90477
23940.93	96489.63	137001.1	70554.5725

BUILDING DASHBOARD ON POWERBI

Creating Framework

On PPT Created slides specifying

- Data information (about 50 startups from 3 regions)
- Data set column information about each column and its data type.
- Data Connection – From SQL Database to PowerBI ,using SQL server -18.136.157.135, with the given username and password

In PowerBI selecting option transform data

Data Transformation

- Created another column specifying startup no. from 1 to 50 (As a primary key for each startup)
- In power query editor selecting Add column----index column ---starting from 1
- Checked for null values
 - Checked for duplicated values

CREATING KPI's



Creating more slides on PPT for framework specifying Slide for KPI's

- Making KPI's on the Dashboard
 - Total startups (Count of startups)
 - In dashboard ---Running Dax query ---New measure

No Of Startups = COUNT('project_profit_analysis startup'[Startup_no])

Drag and drop card ---drag and drop new measure ---No of startups

- Total R&D spending (Sum of R & D by the startup)

Changed format of column to currency

Drag and drop card—drag sum of R&D spending

- Total Administration spending (Sum of Administration spending by the startup)

Changed format of column to currency

Drag and drop card—drag sum of Administration spending

- Total Marketing spending (Sum of marketing spending by the startup)

Changed format of column to currency

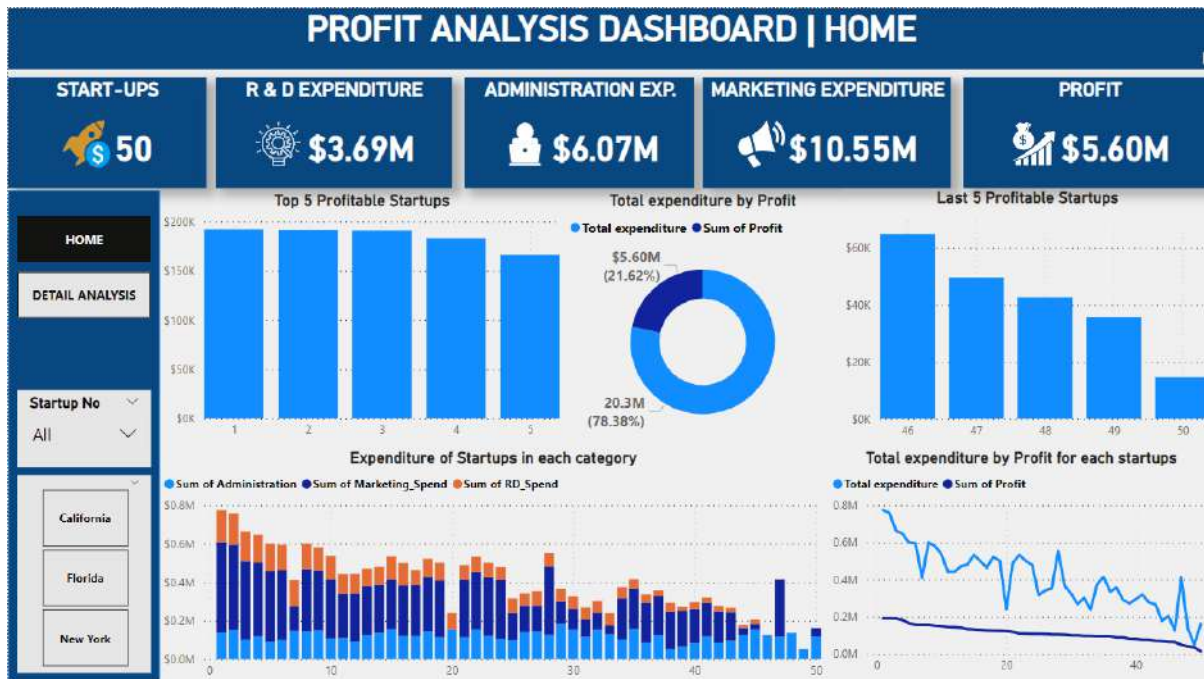
Drag and drop card—drag sum of Marketing spending

- Total Profit (Sum of profit earned by the startup)

Changed format of column to currency

Drag and drop card—drag sum of Profit4) Expected Chart's requirement for the dashboard

MAKING CHARTS



DAX QUERY for creating new measure—

Total expenditure = CALCULATE(SUM('project_profit_analysis startup'[Administration])+SUM('project_profit_analysis startup'[Marketing_Spend])+SUM('project_profit_analysis startup'[RD_Spend]))

1) Top 5 startups with highest profit (BAR CHART)

- Displaying a Bar chart that shows top 5 Startups with highest profit

2) Last 5 startups with least profit (BAR CHART)

- Displaying a Bar chart that shows last 5 Startups with highest profit

3) Total expenditure by total profit generated (DONUT CHART)

- Displaying a donut chart showing profit and total expenditure sharing, based on our selection.

4) Sum of Administration, Marketing, R&D Spent by each startup (STACKED COLUMN CHART)

- Displaying a stacked column chart showing amount spent by each startups in respective categories

5) Total expenditure by total profited generated by each startup (LINE CHART)

- Displaying relationship between total expenditure and profit by each startup through line chart.

6) FILTERS APPLIED : For varied selection through slicers filters applied using State and Startup No.

MAKING PAGES; HOME & DETAIL ANALYSIS

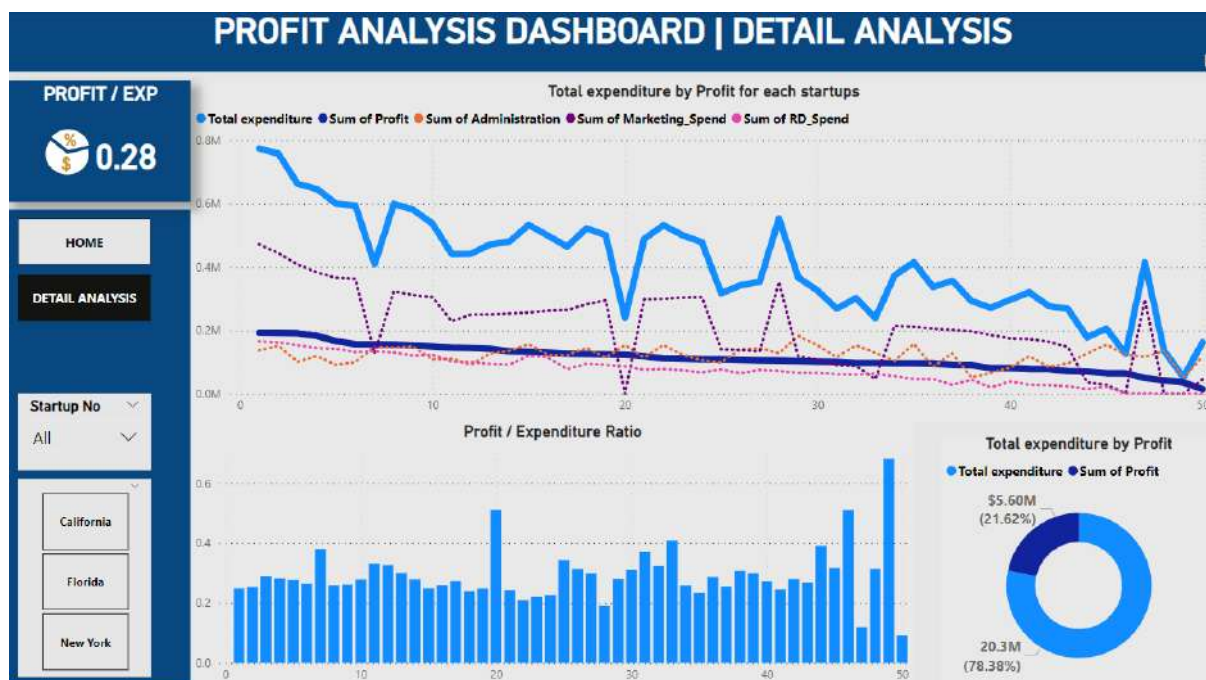
Creating buttons for going from one page to other

- In the detail analysis page, creating line chart between Total expenditure, R&D Expenditure, Administration Expenditure, Marketing expenditure and Profit .To know relationship between each of the categories producing profit.
- Created new measure by running DAX query-

Profit_by_exp =

```
DIVIDE(  
    SUM('project_profit_analysis_startup'[Profit]),  
    [Total expenditure]  
)
```

- Used this as one of the KPI on this page and created a bar chart between startup no's and profit /expenditure ratio . To see which startup is producing max profit compared to its investment.



FORMATTING VISUALS ON CHARTS AND BACKGROUND

- Formatting KPI's, text size, colour, card style.
- Selecting Format Painter and apply to other KPI's
- Formatting one visualization, bar graph, text title, removing x-axis, y-axis label, colour, background
- Selecting Format Painter and apply to other visualizations

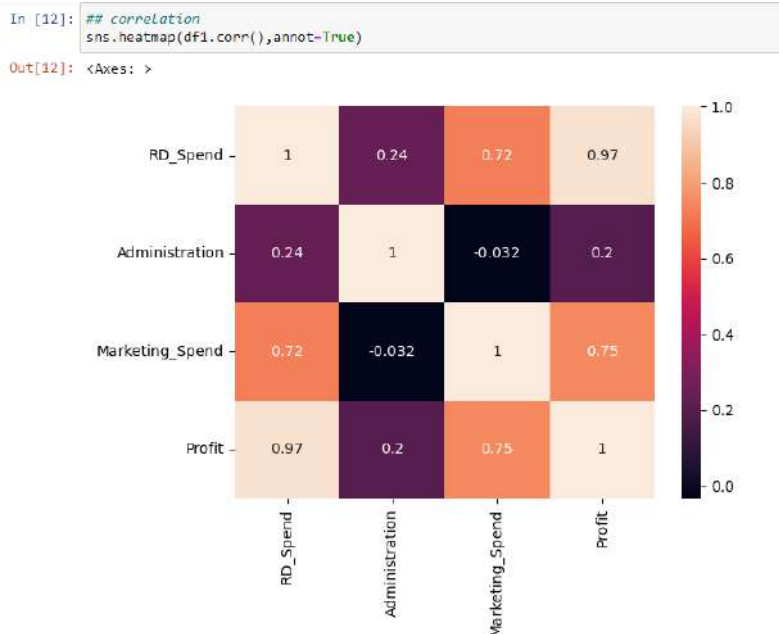
MAKING INSIGHTS FROM THE DASHBOARD

INSIGHTS

The insights generated from the dashboard are-

- The top 6 profitable startups have spent maximum expenditure compared to 50 startups and even in that total expenditure the majority they have spent is on marketing followed by R & D, followed by Administration.
- In general terms the least profitable startups have spent lowest expenditure and with varying distribution in all the three categories, spending almost nil in marketing. These startups expenditure was done majorly in only administration
- Looking at the linear relationship through line charts. Except for few rare cases total expenditure is directly changing to profit generated. As expenditure increase so does profit.
- Overall looking at the line chart it can be concluded that the profit varies linearly either because of R & D spent or because of amount spent on marketing (the graph is varying similar like total expenditure).
- The amount spent on Administration is almost in same range for all 50 startups making it least factor affecting profit generated.

Confirmation through correlation factor



With correlation factor of RD_spend to profit- **0.97**, Marketing to Profit-**0.75** and least Administration to profit **-0.2**.

SUGGESTIONS FROM MY SIDE

The major features out of the three-expenditure affecting Profit are Expenditure on Marketing and R&D Expenditure. So, startups should primarily focus on their Marketing and R&D. And managing their Administration expenditure to their sufficient requirement only, until and unless it's a startup with their primary factor of producing profit from their administration only (services providing company through working staff).