PROFIT ANALYSIS REPORT

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INTRODUCTION

This Profit Analysis Project leverages advanced data analytics techniques to uncover key insights into business profitability. By analyzing factors such as R&D Spend, Administration, and Marketing Spend, we identify their impact on profit. Using statistical regression models and interactive dashboards, we transform raw data into actionable insights, helping businesses optimize investments for maximum profitability. This presentation highlights key findings, trends, and strategic recommendations based on our analysis.

DATA OVERVIEW

Total Records: 50 observations

- The dataset consists of 50 unique business records, each representing a company's financial data.
- It provides insights into how different levels of investment in these areas contribute to the overall profitability of the business.

Key Variables:

- R&D Spend: Investment in research and development
- Administration: Operational administrative costs
- Marketing Spend: Expenses on marketing and advertising
- State: Business location (California, Florida, New York)
- Profit: Net profit earned

VISION

01 To become a leading force in data-driven business optimization by transforming raw data into actionable insights. Our goal is to enhance profitability and efficiency through innovative analytical approaches, ensuring businesses stay competitive in an evolving market.

02 **Empowering Decision-Makers:** Provide intuitive, data-backed insights that help businesses make informed strategic choices.

Driving Sustainable Growth: Utilize advanced analytics to identify trends and optimize profitability while ensuring long-term business success.

MISSION

01 To utilize Excel regression analysis and Power BI dashboards to extract meaningful patterns, enabling data-driven decision-making. By integrating powerful analytical tools, we aim to improve financial performance and operational efficiency for businesses.

02 **Leveraging Analytical Tools:** Use Excel and Power BI to perform deep financial analysis and uncover key performance indicators.

Enhancing Business Profitability: Identify strategies and opportunities that maximize profit margins and operational effectiveness.

TOOLS USED IN PROJECT

01

SQL

Utilized to efficiently extract, filter, and manipulate data from the team’s database for in-depth analysis. Complex queries were written to retrieve relevant insights, enabling data-driven decision-making.

02

Microsoft Excel

Used for data analysis and regression calculations. Excel's built-in functions, such as the Data Analysis Toolpak, were utilized to perform linear regression, identify correlations, and analyze profit-driving variables.

03

Power BI

Used to create interactive dashboards and visualizations for better insights into profit trends. Power BI helped in visualizing sales performance, expenses, and operational efficiency across various business segments.

ANALYSIS RESULT

- **R&D Spend has the highest impact on profit: The regression coefficient for R&D Spend is 0.8057**, indicating a strong positive correlation with profit. The scatter plot in the dashboard also shows a clear upward trend, confirming the significance of R&D investments.
- **Marketing Spend has a moderate positive effect on profit: The coefficient is 0.0272**, and the scatter plot shows a slightly increasing trend, implying that while marketing helps boost profits, it is not as impactful as R&D investment.
- **Administration Spend does not significantly affect profit: The coefficient is -0.0268**, suggesting that administrative costs do not contribute positively to profit and might even reduce it. The regression output and scatter plot reinforce this finding.

- **Total Sales across all analyzed businesses amount to 20.30M, with a Total Profit of 5.60M, and the Average Profit per business is 112.01K.**
- **State-wise Profit Contribution:**
  - **Florida leads with 35.3% of total profits.**
  - **New York follows with 33.81%.**
  - **California contributes 30.88%.**

REGRESSION ANALYSIS RESULT

In this section, we performed a multiple regression analysis to identify the key factors influencing profits.
The analysis was conducted using Excel, which provided us with the following key outputs:

- Regression Statistics
- ANOVA Result
- Coefficients and P-Values
- Model Equation

R&D_Spend	Administration	Marketing_Spend	State	Profit
165349.2	136897.8	471784.1	New York	192261.83
162597.7	151377.59	443898.53	California	191792.06
153441.51	101145.55	407934.54	Florida	191050.39
144372.41	118671.85	383199.62	New York	182901.99
142107.34	91391.77	366168.42	Florida	166187.94
131876.9	99814.71	362861.36	New York	156991.12
134615.46	147198.87	127716.82	California	156122.51
130298.13	145530.06	323876.68	Florida	155752.6
120542.52	148718.95	311613.29	New York	152211.77
123334.88	108679.17	304981.62	California	149759.96
101913.08	110594.11	229160.95	Florida	146121.95
100671.96	91790.61	249744.55	California	144259.4
93863.75	127320.38	249839.44	Florida	141585.52
91992.39	135495.07	252664.93	California	134307.35
119943.24	156547.42	256512.92	Florida	132602.65
114523.61	122616.84	261776.23	New York	129917.04
78013.11	121597.55	264346.06	California	126992.93
94657.16	145077.58	282574.31	New York	125370.37
91749.16	114175.79	294919.57	Florida	124266.9
86419.7	153514.11	0	New York	122776.86
76253.86	113867.3	298664.47	California	118474.03
78389.47	153773.43	299737.29	New York	111313.02
73994.56	122782.75	303319.26	Florida	110352.25
67532.53	105751.03	304768.73	Florida	108733.99
77044.01	99281.34	140574.81	New York	108552.04
64664.71	139553.16	137962.62	California	107404.34
75328.87	144135.98	134050.07	Florida	105733.54
72107.6	127864.55	353183.81	New York	105008.31
66051.52	182645.56	118148.2	Florida	103282.38
65605.48	153032.06	107138.38	New York	101004.64
61994.48	115641.28	91131.24	Florida	99937.59
61136.38	152701.92	88218.23	New York	97483.56
63408.86	129219.61	46085.25	California	97427.84

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.975062046
R Square	0.950745994
Adjusted R Square	0.947533776
Standard Error	9232.334837
Observations	50

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regression	3	75683964196	25227988065	295.9781	4.53E-30
Residual	46	3920856301	85236006.54		
Total	49	79604820497			

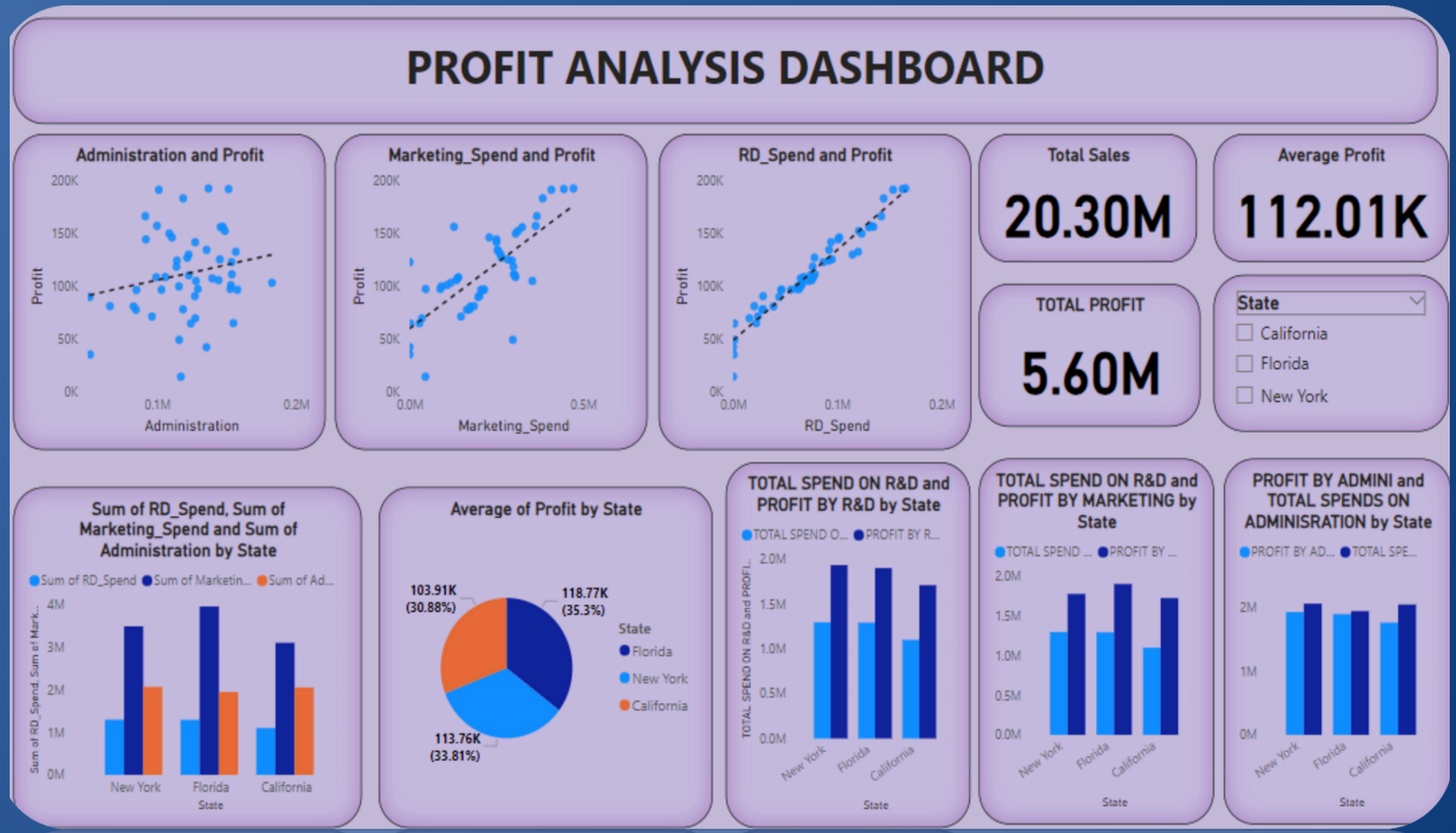
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*Upper 95.0%*
Intercept	50122.19299	6572.352622	7.626217867	1.06E-09	36892.73	63351.65	36892.73	63351.65
R&D_Spend	0.80571505	0.04514727	17.84637376	2.63E-22	0.714838	0.896592	0.714838	0.896592
Administration	-0.026815968	0.05102878	-0.525506752	0.601755	-0.129532	0.0759	-0.129532	0.0759
Marketing_Spend	0.027228065	0.016451235	1.6550773	0.104717	-0.005887	0.060343	-0.005887	0.060343

Formula:

Profit = R&D Coefficient*R&D +Administration Coefficient*Administration + Marketing Coefficient*Marketing + Intercept

R&D Spend	Administration	Marketing Spend	Profit
21892.92	81910.77	164270.7	70037.90
23940.93	96489.63	137001.1	70554.57

DASHBOARD


PROFIT ANALYSIS DASHBOARD
Administration and Profit
Profit
200K
150K
100K
50K
0K
0.1M
0.2M
Administration
Marketing_Spend and Profit
Profit
200K
150K
100K
50K
0K
0.0M
0.5M
Marketing_Spend
RD_Spend and Profit
Profit
200K
150K
100K
50K
0K
0.0M
0.1M
0.2M
RD_Spend
Total Sales
20.30M
Average Profit
112.01K
TOTAL PROFIT
5.60M
State
California
Florida
New York
Sum of RD_Spend, Sum of Marketing_Spend and Sum of Administration by State
Sum of RD_Spend
Sum of Marketin...
Sum of Ad...
4M
3M
2M
1M
0M
New York
Florida
California
State
Average of Profit by State
103.91K
(30.88%)
118.77K
(35.3%)
113.76K
(33.81%)
State
Florida
New York
California
TOTAL SPEND ON R&D and PROFIT BY R&D by State
TOTAL SPEND O...
PROFIT BY R...
2.0M
1.5M
1.0M
0.5M
0.0M
New York
Florida
California
State
TOTAL SPEND ON R&D and PROFIT BY MARKETING by State
TOTAL SPEND ...
PROFIT BY ...
2.0M
1.5M
1.0M
0.5M
0.0M
New York
Florida
California
State
PROFIT BY ADMINI and TOTAL SPENDS ON ADMINISRATION by State
PROFIT BY AD...
TOTAL SPE...
2M
1M
0M
New York
Florida
California
State

ACTIONABLE INSIGHTS

Increase Investment in R&D: Since R&D spending has the highest correlation with profit, the company should prioritize allocating more funds to research and development for better returns.

Optimize Marketing Expenditure: While marketing spend does contribute to profit, its impact is lower than R&D. A better strategy would be to focus on targeted and performance-based marketing to increase ROI.
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Reduce Unnecessary Administrative Costs: Since administration spending has no positive impact on profit, companies should streamline operations and eliminate inefficiencies to improve profitability.

State-wise Strategy: As Florida shows the highest average profit, efforts should be made to analyze what factors contribute to this success and implement similar strategies in other states.

Predictive Profit Model: The regression model can be used to predict future profits based on changes in spending patterns, helping startups make data-driven financial decisions.

SUGGESTION

- Implement data-driven budget allocation to prioritize R&D investment.
- Conduct further analysis on marketing efficiency to identify the best-performing campaigns.
- Consider cost-cutting measures in administrative operations.
- Expand operations in high-performing states and analyze what makes them more profitable.
- Regularly update the regression model to improve prediction accuracy and make better financial decisions.
- Utilize SQL to extract data from the team’s database for deeper analysis and more accurate decision-making.

CONCLUSION

The profit analysis highlights that R&D spending is the most critical factor in increasing profitability, while marketing spend provides some benefit, and administration spend should be optimized. The company should focus on innovation, data-driven marketing, and cost control to maximize profitability. Additionally, leveraging predictive models for financial planning can significantly improve decision-making and business growth.

THANK YOU

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