

EXPLORATORY DATA ANALYSIS - RETAIL

Situation :-

- Perform Exploratory Data Analysis on dataset 'SampleSuperstore'
- What all business problems can we derive by exploring the data

Challenges :-

- As a business manager try to find out the weak areas to work to make more profit.

Insights :-

Total Sales by Top 5 States & Bottom 5 States

As we analyzed the data we can find out that California takes top place with \$4,57,687.63 in sales followed by New York, Texas, Washington, and Pennsylvania.

In the meantime we can see that North Dakota has lowest number in sales with \$919.91 followed by the West Virginia, Maine, South Dakota, and Wyoming.

Sales by Top 5 States

States	Sum of Sales	Sum of Profit
California	\$ 4,57,687.63	\$ 76,381.39
New York	\$ 3,10,876.27	\$ 74,038.55
Texas	\$ 1,70,188.05	\$ -25,729.36
Washington	\$ 1,38,641.27	\$ 33,402.65
Pennsylvania	\$ 1,16,511.91	\$ -15,559.96

Sales by Bottom 5 States

States	Sum of Sales	Sum of Profit
North Dakota	\$ 919.91	\$ 230.15
West Virginia	\$ 1,209.82	\$ 185.92
Maine	\$ 1,270.53	\$ 454.49
South Dakota	\$ 1,315.56	\$ 394.83
Wyoming	\$ 1,603.14	\$ 100.20

Insights :-

Total Profit by Top 5 States & Bottom 5 States

As we analyzed the data we can find out that California takes top place with \$76,381.63 in profit followed by New York, Washington, Michigan and Virginia.

In the meantime we can see that Texas has lowest number in profit with -\$25,729.36 followed by the Ohio, Pennsylvania, Illinois, and North Carolina.

Profit by Top 5 States

States	Sum of Profit	Sum of Sales
California	\$ 76,381.39	\$ 4,57,687.63
New York	\$ 74,038.55	\$ 3,10,876.27
Washington	\$ 33,402.65	\$ 1,38,641.27
Michigan	\$ 24,463.19	\$ 76,269.61
Virginia	\$ 18,597.95	\$ 70,636.72

Profit by Bottom 5 States

States	Sum of Profit	Sum of Sales
Texas	\$ -25,729.36	\$ 1,70,188.05
Ohio	\$ -16,971.38	\$ 78,258.14
Pennsylvania	\$ -15,559.96	\$ 1,16,511.91
Illinois	\$ -12,607.89	\$ 80,166.10
North Carolina	\$ -7,490.91	\$ 55,603.16

Insights :-

Total Sales & Profit by Category & Sub Category

As we look deeper in to the data we can see that Technology category has top in sales & profit both.

If we look more into the data we can see Phones sub category has top place with Fasteners in bottom place in the Sales.

In the meantime we can see that Copiers is top in profit and Tables in the bottom place of the Profit of the Sub Category.

Sales & Profit by Category and Sub Category

Category	Sum of Sales	Sum of Profit
Technology	\$ 8,36,154.03	\$ 1,45,454.95
Furniture	\$ 7,41,999.80	\$ 18,451.27
Office Supplies	\$ 7,19,047.03	\$ 1,22,490.80

SALES

Sub Category	Sum of Sales	Sum of Profit
Phones	\$ 3,30,007.05	\$ 44,515.73
Chairs	\$ 3,28,449.10	\$ 26,590.17
Storage	\$ 2,23,843.61	\$ 21,278.83
Tables	\$ 2,06,965.53	\$ -17,725.48
Binders	\$ 2,03,412.73	\$ 30,221.76
Machines	\$ 1,89,238.63	\$ 3,384.76
Accessories	\$ 1,67,380.32	\$ 41,936.64
Copiers	\$ 1,49,528.03	\$ 55,617.82
Bookcases	\$ 1,14,880.00	\$ -3,472.56
Appliances	\$ 1,07,532.16	\$ 18,138.01
Furnishings	\$ 91,705.16	\$ 13,059.14
Paper	\$ 78,479.21	\$ 34,053.57
Supplies	\$ 46,673.54	\$ -1,189.10
Art	\$ 27,118.79	\$ 6,527.79
Envelopes	\$ 16,476.40	\$ 6,964.18
Labels	\$ 12,486.31	\$ 5,546.25
Fasteners	\$ 3,024.28	\$ 949.52

PROFIT

Sub Category	Sum of Profit	Sum of Sales
Copiers	\$ 55,617.82	\$ 1,49,528.03
Phones	\$ 44,515.73	\$ 3,30,007.05
Accessories	\$ 41,936.64	\$ 1,67,380.32
Paper	\$ 34,053.57	\$ 78,479.21
Binders	\$ 30,221.76	\$ 2,03,412.73
Chairs	\$ 26,590.17	\$ 3,28,449.10
Storage	\$ 21,278.83	\$ 2,23,843.61
Appliances	\$ 18,138.01	\$ 1,07,532.16
Furnishings	\$ 13,059.14	\$ 91,705.16
Envelopes	\$ 6,964.18	\$ 16,476.40
Art	\$ 6,527.79	\$ 27,118.79
Labels	\$ 5,546.25	\$ 12,486.31
Machines	\$ 3,384.76	\$ 1,89,238.63
Fasteners	\$ 949.52	\$ 3,024.28
Supplies	\$ -1,189.10	\$ 46,673.54
Bookcases	\$ -3,472.56	\$ 1,14,880.00
Tables	\$ -17,725.48	\$ 2,06,965.53

Findings :-

- The main factor for difference in Sales & Profit is % of Discount.
- With high % of Discount some States & products are high in Sales but low in Profit.
- We can see that only California & New York are in top places in both Sales & Profit.
- Texas with 3rd place in Sales is Bottom in Profit same with Pennsylvania with 5th in Sales is Bottom 3rd in Profit.
- We can clearly see even with high number of Sales some states failed to achieve more Profit margin because of high % of discount on products.
- Products related to category Technology is high in both Sales & Profit.
- The Furniture even with 2nd in Sales has low Profit margin.
- The trend also showcases in Sub Category with products high in Sales is low in Profit.
- Phones is top place in Sales but Copiers is in top place in profit followed by Phones.

Suggestion :-

The trend with high in Sales & low in Profit is in both different States and products Category & Sub Category due to various % of Discount. We have to look in to this trend and apply the methodology of low % of discount, which resulted even with low number of Sales the Profit margin is high, to the trend of high in sales & low in profit across different States and products Sub Category.