

IDEAS CAPSTONE PROJECT FOR DATA ANALYTICS AND BUSSINESS INTELLIGENCE EXPERTS

SUBMISSION GUIDELINE

- **As a data analyst and business intelligence expert, you are expected to use the Sales dataset to provide solutions to challenges in Sections 1-12.**
- **Afterwards,**
 - (a) Use any preferred tool to create two dashboards from the charts created in sections 1 to 12.
 - (b) Create a linkedin Page
 - (c) Join the Data Analyst and Business Intelligence Experts Group [here](#)
 - (d) Upload your dashboards on the linkedin group as a post (Remember to provide a brief discussion of what you have done)
 - (e) Upload the link of your post and a document containing your Tables in Sections 1-12 on this google form
 BID: <https://forms.gle/oiDrJaWN7aNfKNA49>
 DTA: <https://forms.gle/dRdyb3mcEoy6Me477>

**Submission Deadline: MONDAY, 7TH
OCTOBER, 2024**

DATA ANALYSIS PLAN (DAP) FOR SALES ANALYSIS

SECTION 1: ANALYSIS OF FEEDBACK THEMES

TASK: In this section, you are required to examine and categorize the themes extracted from customer feedback provided in the dataset.

REQUIRED:

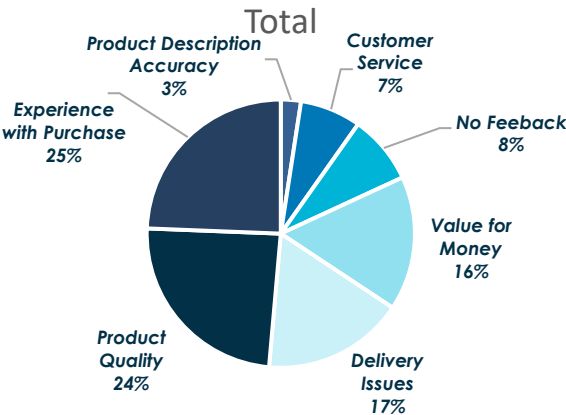
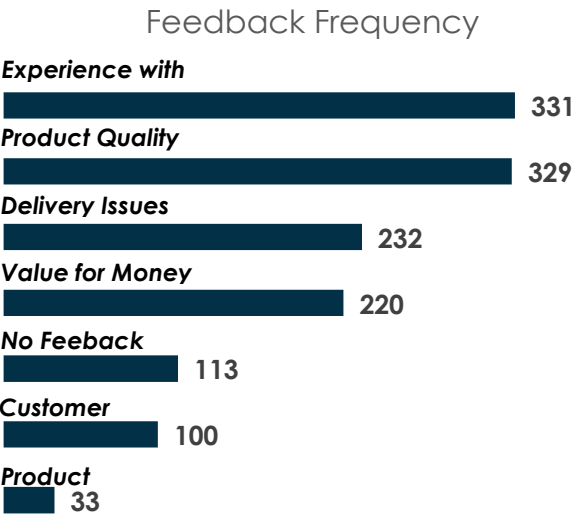
- a) Compute the frequencies and percentages of the feedback themes as provided in Table 1

Table 1: Analysis of Feedback Themes

Suggested Feedback Themes	Frequency	Percentage
Product Quality		
Delivery Issues		
Customer Service		
Value for Money		
Experience with Purchase		
Product Description Accuracy		

Feedback theme	Frequency	percentage
Customer Service	100	7.36%
Delivery Issues	232	17.08%
Experience with Purchase	331	24.37%
No Feedback	113	8.32%
Product Description Accuracy	33	2.43%
Product Quality	329	24.23%
Value for Money	220	16.20%
Grand Total	1358	100.00%

- b) Generate Charts to Visualize the feedback themes
- Bar Chart:** Display frequency of each theme to identify the most common issues.
 - Pie Chart:** Show the proportion of each theme relative to the total feedback.
- c) Generate Insights from your analysis
- Pinpoint areas for improvement and deduce what matters most to the customers.
 - Identify the most frequently mentioned themes.
 - Determine which feedback themes require immediate attention or improvement.



SECTION 2. SENTIMENT DISTRIBUTION

TASK: This section focuses on analyzing the overall sentiment expressed in the feedback.

REQUIRED:

- a) Compute the frequency and percentages of the sentiments as provided in Table 2

Table 2: Sentiment Distribution

Sentiment	Frequency	Percentage
Positive		
Neutral		
Negative		

sentiment	Frequency	percentage
Negative	370	27.25%
Neutral	370	27.25%
Positive	618	45.51%
Grand Total	1358	100.00%

- b) Generate a chart to visualize sentiment categories

- **Pie Chart:** Visualize the proportion of positive, neutral, and negative sentiments.
- **Bar Chart:** Compare the count of each sentiment type.

- c) Generate Insights from your analysis by assessing overall customer satisfaction or identifying if there is a prevalent sentiment in feedback.

Positive



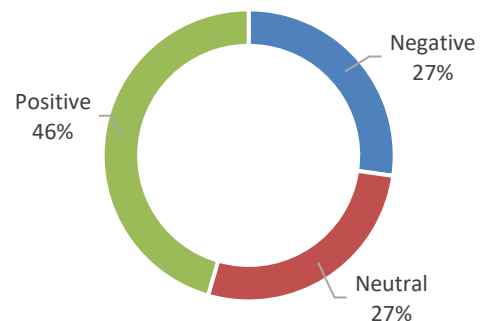
Neutral



Negative



Sentiment Proportion



SECTION 3. SALES ANALYSIS BY REGION

TASK: you are expected to analyze the sales data based on their geographic regions. This is to gain insight into the regional differences in total purchases and amount.

REQUIRED:

a) **Complete Tables 3 and 4**

Table 3: Analysis of No of Purchases by Region

Region	Frequency	Percentage
North America		
Europe		
Asia		
South America		
Africa		
Australia		

Region	Frequency	Percentage
Asia Pacific	212	17.83%
Europe	209	17.58%
Latin America	275	23.13%
Middle East & Africa	259	21.78%
North America	234	19.68%
Grand Total	1189	100.00%

Table 4: Analysis of Sales Amount by Region

Region	Total Amount	Average Amount	Percentage of Total Sales Amount
North America			
Europe			
Asia			
South America			
Africa			
Australia			

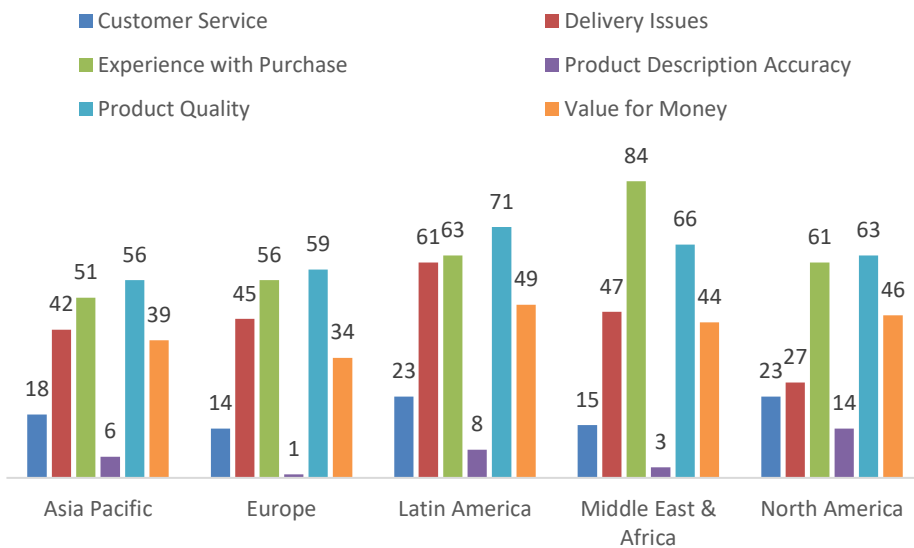
b) **Generate a chart to visualize your recommendations:**

- **Map Visualization:** Show feedback distribution across different regions.
- **Bar Chart:** Compare the number of feedback entries from each region.

c) Discuss insights generated from your analysis:

- Identify regions with the highest and lowest purchases.
- Identify regions with the highest and lowest total amount.
- Analyze regional trends and specific regional concerns.
- Give recommendations based on insight

Region	Total Amount	Average Amount	Percentage of Total Sales Amount
Asia Pacific	\$48,113.83	\$226.95	13.77%
Europe	\$64,107.14	\$306.73	18.34%
Latin America	\$80,352.95	\$292.19	22.99%
Middle East & Africa	\$63,404.91	\$244.81	18.14%
North America	\$59,353.44	\$253.65	16.98%
(blank)	\$34,199.00	\$202.36	9.78%
Grand Total	\$349,531.26	\$257.39	100.00%



SECTION 4. ANALYSIS OF CUSTOMER SEGMENTS

TASK: This section examines feedback based on different customer segments with a view to understand how different customers purchased their goods

REQUIRED:

a) Complete Table 4

Table 4: Analysis of by Customer Segment

Customer Segment	Frequency	Percentage
Online Direct		
Wholesale		
Retail		
Corporate		
Government		

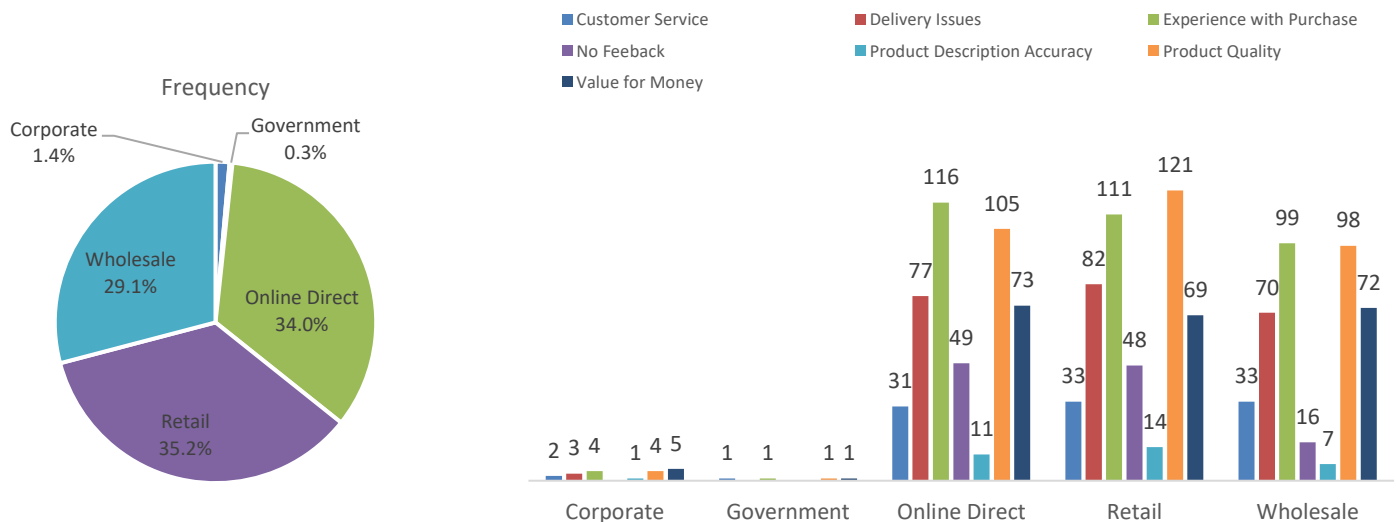
Customer Segment	Frequency	Percentage
Corporate	19	1.40%
Government	4	0.29%
Online Direct	462	34.02%
Retail	478	35.20%
Wholesale	395	29.09%
Grand Total	1358	100.00%

b) Generate a chart to visualize customer segments

- **Bar Chart:** Compare the number of feedback entries by customer segment.
- **Pie Chart:** Display the percentage distribution of feedback across segments.

c) Deduce insights to:

- Determine which customer segments are most vocal.
- Identify segment-specific feedback trends or issues.



SECTION 5. DATA ANALYSIS BY SALES REPRESENTATIVE

TASK: You are expected to analyze different sales representatives to determine if certain reps are associated with higher volumes purchases.

Required:

- a) Provide a tabular analysis of the sales representatives by completing Tables 5a and b

Table 5a: Analysis of by Sales Representative

Sales Rep ID	Frequency	Percentage
Rep_01		
Rep_02		
Rep_03		
Rep_04		
Rep_05		
Rep_06		
Rep_07		
Rep_08		
Rep_09		
Rep_10		
Rep_11		
Rep_12		
Rep_13		
Rep_14		
Rep_15		
Rep_16		
Rep_17		
Rep_18		

SalesRep ID	Frequency	Percentage
REP001	106	7.81%
REP002	93	6.85%
REP003	105	7.73%
REP004	115	8.47%
REP005	99	7.29%
REP006	142	10.46%
REP007	104	7.66%
REP008	111	8.17%
REP009	135	9.94%
REP010	131	9.65%
REP011	33	2.43%
REP012	33	2.43%
REP013	2	0.15%
REP014	2	0.15%
REP015	2	0.15%
REP016	2	0.15%
REP017	44	3.24%
REP018	33	2.43%
REP019	33	2.43%
REP020	33	2.43%
Grand Total	1358	100.00%

Sales Rep ID	Frequency	Percentage
Rep_19		
Rep_20		

Table 5b: Analysis of by Sales Representative and Sales Channel

Sales Rep ID	Sales Channel	Frequency	Percentage
Rep_01	Online		
Rep_02	Offline		
Rep_03	Wholesale		
...	...		
Rep_20	Direct		

- b) Illustrate Tables 5a and 5b with any preferred chart.
- Deduce insights to Identify which sales representatives are associated with higher purchases.
Any strange occurrence?
-

SalesRep ID	Sales Channel Seg	Frequency	Percentage
REP001	Direct	17	1.37%
REP001	Offline	33	2.65%
REP001	Online	30	2.41%
REP001	Wholesale	14	1.12%
REP002	Direct	19	1.53%
REP002	Offline	27	2.17%
REP002	Online	18	1.45%
REP002	Wholesale	20	1.61%
REP003	Direct	30	2.41%
REP003	Offline	24	1.93%
REP003	Online	24	1.93%
REP003	Wholesale	19	1.53%
REP004	Direct	19	1.53%
REP004	Offline	31	2.49%
REP004	Online	26	2.09%
REP004	Wholesale	27	2.17%
REP005	Direct	19	1.53%
REP005	Offline	21	1.69%
REP005	Online	20	1.61%
REP005	Wholesale	29	2.33%
REP006	Direct	33	2.65%
REP006	Offline	32	2.57%
REP006	Online	34	2.73%
REP006	Wholesale	30	2.41%
REP007	Direct	28	2.25%
REP007	Offline	26	2.09%
REP007	Online	25	2.01%
REP007	Wholesale	19	1.53%
REP008	Direct	26	2.09%
REP008	Offline	24	1.93%
REP008	Online	28	2.25%
REP008	Wholesale	21	1.69%
REP009	Direct	31	2.49%
REP009	Offline	25	2.01%
REP009	Online	35	2.81%
REP009	Wholesale	28	2.25%
REP010	Direct	31	2.49%
REP010	Offline	39	3.13%
REP010	Online	21	1.69%
REP010	Wholesale	25	2.01%
REP011	Direct	12	0.96%
REP011	Offline	7	0.56%
REP011	Online	8	0.64%
REP011	Wholesale	6	0.48%
REP012	Direct	9	0.72%
REP012	Offline	7	0.56%
REP012	Online	7	0.56%
REP012	Wholesale	10	0.80%
REP013	Direct	1	0.08%
REP013	Online	1	0.08%
REP014	Direct	1	0.08%
REP014	Offline	1	0.08%
REP015	Offline	1	0.08%
REP015	Online	1	0.08%
REP016	Direct	1	0.08%
REP016	Offline	1	0.08%
REP017	Direct	13	1.04%
REP017	Offline	9	0.72%
REP017	Online	7	0.56%
REP017	Wholesale	15	1.20%
REP018	Direct	9	0.72%
REP018	Offline	9	0.72%
REP018	Online	12	0.96%
REP018	Wholesale	3	0.24%
REP019	Direct	5	0.40%
REP019	Offline	13	1.04%
REP019	Online	10	0.80%
REP019	Wholesale	5	0.40%
REP020	Direct	6	0.48%
REP020	Offline	12	0.96%
REP020	Online	6	0.48%
REP020	Wholesale	9	0.72%
Grand Total		1245	100.00%

SECTION 6. ANALYSIS OF BY PRODUCT CATEGORY

TASK: You are expected to analyze the data based on product categories. This should help you to determine which types of products are receiving the most attention and identify any category-specific issues.

REQUIRED:

a) Complete Table 6

Table 6: Analysis of purchases by Product Category

Product Category	Frequency	Percentage
Electronics		
Clothing		
Home Goods		
Beauty		
Sports		
Automotive		
Toys		
Food & Beverages		

Product Category	Frequency	Percentage
Automotive	15	1.10%
Beauty	208	15.32%
Clothing	253	18.63%
Electronics	275	20.25%
Food & Beverages	10	0.74%
Home Goods	384	28.28%
Sports	213	15.68%
Grand Total	1358	100.00%

b) Use bar or pie charts to visualize the product categories

- **Bar Chart:** Show the number of entries per product category.
- **Pie Chart:** Illustrate the percentage distribution across categories.

c) Provide insights to:

- Identify product categories satisfaction ratings.
 - Give recommendations on which products should be marketed more, or discontinued...
-

SECTION 7. SALES ANALYSIS BY PRODUCT NAME

TASK: You are expected to analyze purchases related to specific product names. This will help you understand how individual products are performing.

REQUIRED:

a) Complete Tables 7a and 7b

Table 7a: Sales Analysis by Product Name

Product Name	Frequency	Percentage
Widget A		
Widget B		
Widget C		
Widget D		
Widget E		
Widget F		
Widget G		
Widget H		
Widget I		
Widget J		

Table 7b: Analysis by Sales Channel and Product Name

Sales Channel	Product Name	Frequency	Percentage
Online	Widget A		
Offline	Widget B		
Wholesale	Widget C		
Direct	Widget D		
...	...		

Product Name	Frequency	Percentage
Widget A	275	20.25%
Widget B	256	18.85%
Widget C	210	15.46%
Widget D	205	15.10%
Widget E	202	14.87%
Widget F	153	11.27%
Widget G	15	1.10%
Widget H	22	1.62%
Widget I	10	0.74%
Widget J	10	0.74%
Grand Total	1358	100.00%

Sales Channel	Product Name	Frequency	Percentage
Marketplace	Widget A	69	5.54%
	Widget B	75	6.02%
	Widget C	53	4.26%
	Widget D	50	4.02%
	Widget E	40	3.21%
	Widget F	49	3.94%
	Widget I	2	0.16%
	Widget J	4	0.32%
Online Direct	Widget A	73	5.86%
	Widget B	62	4.98%
	Widget C	57	4.58%
	Widget D	57	4.58%
	Widget E	30	2.41%
	Widget F	30	2.41%
	Widget I	2	0.16%
	Widget J	2	0.16%
Retail	Widget A	70	5.62%
	Widget B	62	4.98%
	Widget C	52	4.18%
	Widget D	49	3.94%
	Widget E	31	2.49%
	Widget F	38	3.05%
	Widget I	6	0.48%
	Widget J	2	0.16%
Wholesale	Widget A	63	5.06%
	Widget B	57	4.58%
	Widget C	48	3.86%
	Widget D	49	3.94%
	Widget E	25	2.01%
	Widget F	36	2.89%
	Widget J	2	0.16%
Grand Total		1245	100.00%

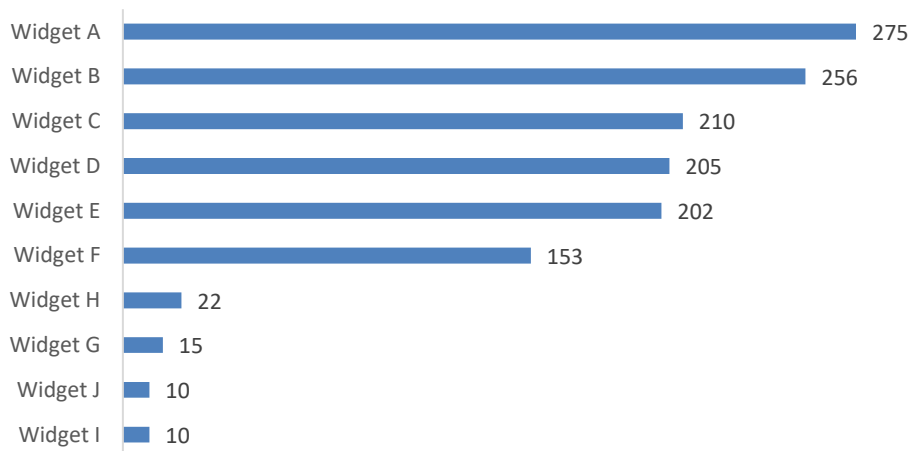
b) Use any chart to visualize the Tables. This could be:

- **Bar Chart:** Compare no of purchases for each product.
- **Word Cloud:** Display frequently mentioned products in analysis.

c) Provide insights to:

- Identify products with the most and least purchases.
- Make recommendations on which products should be pushed to the front shelves

No. of Purchase by Product



SECTION 8. ANALYSIS OF BY SALES CHANNEL

TASK: This section looks at sales channel to identify how most customers purchase the products available.

REQUIRED:

a) Complete Tables 8a and 8b

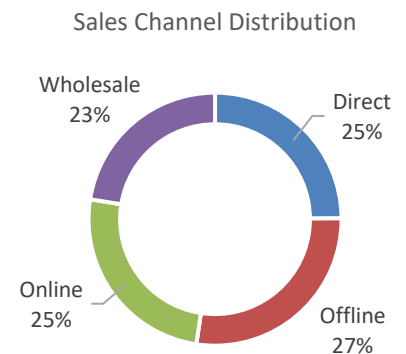
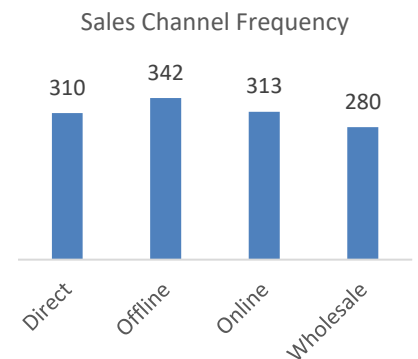
Table 8a: Analysis of by Sales Channel

Sales Channel	Frequency	Percentage
Online		
Offline		
Wholesale		
Direct		

Sales Channel Seg	Frequency	percentage
Direct	310	24.90%
Offline	342	27.47%
Online	313	25.14%
Wholesale	280	22.49%
Grand Total	1245	100.00%

Table 8b: Analysis of customer general feedback across the different channels, identify if the most common feedbacks for sales reps are negative, positive or neutral

Sales Channel	Feedback	Frequency of Feedbacks	Percentage of Feedbacks
Online			
Offline			
Wholesale			
Direct			



b) Create a bar and Pie charts to visualize your tables.

- **Bar Chart:** Show the frequency of analysis entries by sales channel.
- **Pie Chart:** Display the distribution of analysis across sales channels.

c) Deduce insights to:

- Determine which sales channels are associated with higher or lower levels of analysis.
- Identify trends or possible issues with specific to different sales channels.
- Carry out recommendations on ways to improve certain channels

Sales Channel	Frequency			Percentage		
	Negative	Neutral	Positive	Negative	Neutral	Positive
Direct	85	96	129	7%	8%	10%
Offline	88	93	161	7%	7%	13%
Online	89	88	136	7%	7%	11%
Wholesale	75	78	127	6%	6%	10%

SECTION 9. ANALYSIS OF RETURN STATUS

TASK: This section will help you to assess the impact of returns on overall customer satisfaction and identify any trends.

REQUIRED:

a) Complete Table 9

Return Status	Frequency			Percentage			Total Frequency	Total Percentage
	Negative	Neutral	Positive	Negative	Neutral	Positive		
Not Returned	221	234	354	17.75%	18.80%	28.43%	809	64.98%
Returned	116	121	199	9.32%	9.72%	15.98%	436	35.02%
Grand Total	337	355	553	27.07%	28.51%	44.42%	1245	100.00%

Table 9: Analysis of Return Status

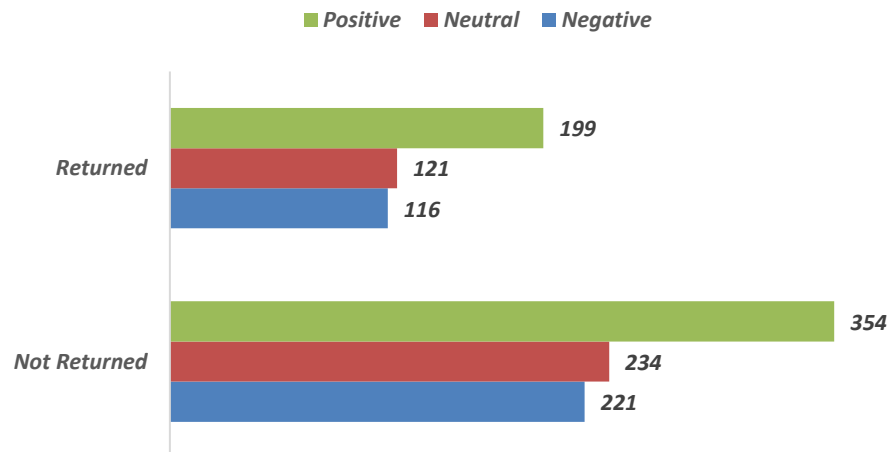
Return Status	Frequency	Percentage	Highest Sales Rep Feedback	Percentage out of all feedbacks
Returned				
Not Returned				

b) Create a chart to visualize your table

c) Generate insights to:

- Determine the impact of return status on customer analysis.
- Analyze if return status is linked with sales rep feedback.

Returned Status and Customer Feedback



SECTION 10. PRICE ANALYSIS

TASK: In this section, you are to analyze product prices to understand their impact on customer feedback. This is to evaluate how pricing affects the frequency and nature of feedback.

REQUIRED:

a) Complete Table 10

Table 10: Price Analysis

Product Name	Average Price	Highest Price	Lowest Price
Widget A			
Widget B			
Widget C			
Widget D			
Widget E			

Product Name	Average Price	Highest Price	Lowest Price
Widget A	\$403.42	\$4,500	\$0
Widget B	\$223.47	\$2,000	\$0
Widget C	\$320.79	\$2,600	\$0
Widget D	\$98.82	\$2,000	\$0
Widget E	\$83.73	\$780	\$0
Widget F	\$375.81	\$3,120	\$0
Widget G	\$414.60	\$1,040	\$52
Widget H	\$383.27	\$1,625	\$26
Widget I	\$407.50	\$780	\$100
Widget J	\$62.00	\$128	\$26

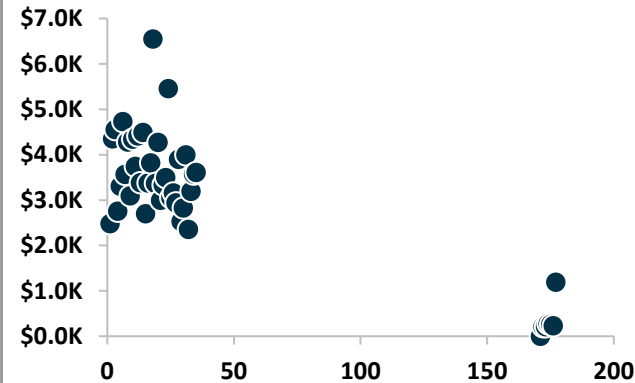
b) Use a bar chart and scatter plot to visualize your Table

- **Bar Chart:** Compare the average price of products.
- **Scatter Plot:** Show the relationship between price and feedback frequency.

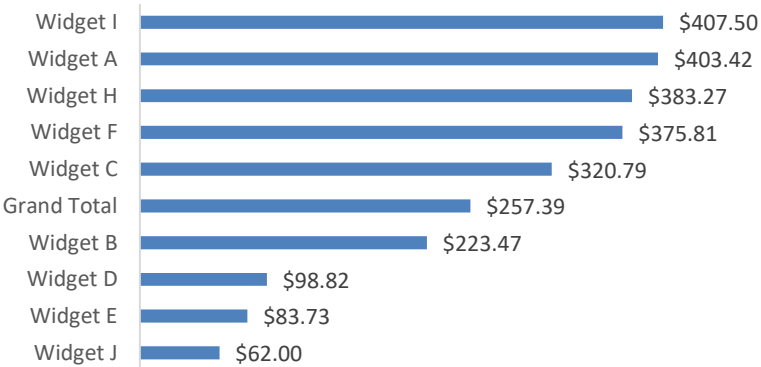
c) Deduce insights to:

- Analyze the impact of product price on customer feedback.
- Determine if higher or lower-priced products receive more or less positive feedback.

Price vs Feedback



Average Price of Product



SECTION 11. DISCOUNT ANALYSIS

TASK: This section focuses on analyzing discount rates and identify trends related to discount rates.

REQUIRED:

a) Complete Table 11

Table 11: Discount Analysis

Product Name	Discount Rate
Widget A	
Widget B	
Widget C	
Widget D	
Widget E	
Product Name	Discount Rate
Widget A	8.15
Widget B	8.83
Widget C	3.94
Widget D	5.28
Widget E	6.895
Widget F	4.61
Widget G	0.78
Widget H	0.62
Widget I	0.36
Widget J	0.57
Grand Total	40.035

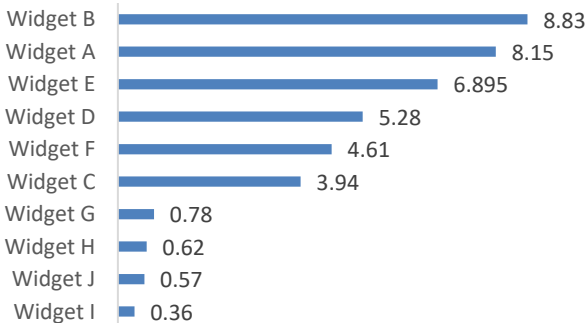
b) Create bar chart and line graph to visualize your table

- **Bar Chart:** Show average discount rates for different products.
- **Line Chart:** Track changes in discount rates over time and their effect on feedback.

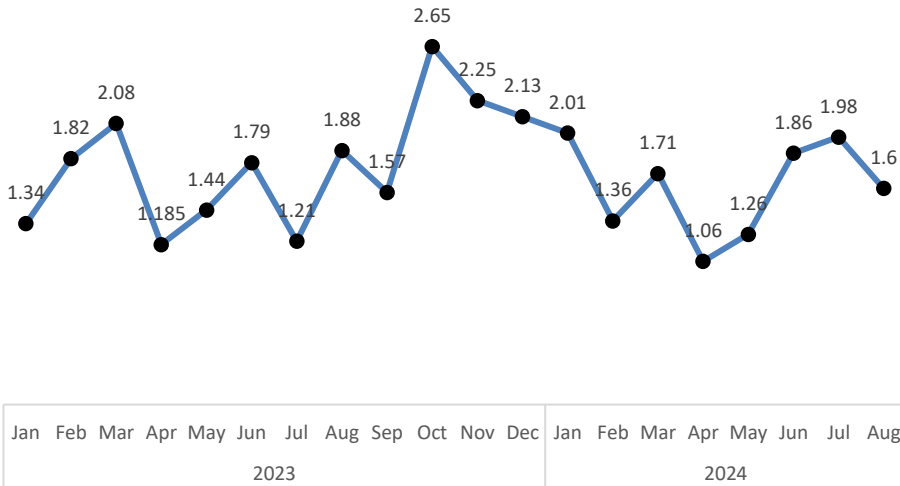
c) Deduce insights to:

- Determine the effect of discount rates on sales.
- Analyze if discounts lead to increased Sales rep positive or negative feedback.

Product Discount Rate



Discount rate over time



SECTION 12. PROFIT MARGIN ANALYSIS

TASK: This section will help us determine if there is a correlation between profit margins and feedback sentiment or frequency.

REQUIRED:

- a) Complete Table 12

Table 12: Profit Margin Analysis

Product Name	Cost Price	Selling Price	Profit Margin
Widget A			
Widget B			
Widget C			
Widget D			
Widget E			

Product Name	Cost Price	Selling Price	Profit Margin
Widget A	\$80,983.00	\$110,940.18	64%
Widget B	\$38,820.00	\$57,208.51	69%
Widget C	\$44,005.00	\$67,366.79	57%
Widget D	\$11,750.00	\$20,257.65	49%
Widget E	\$10,927.00	\$16,913.17	50%
Widget F	\$42,260.00	\$57,498.95	38%
Widget G	\$4,770.00	\$6,219.00	3%
Widget H	\$6,460.00	\$8,432.00	5%
Widget I	\$3,110.00	\$4,075.00	2%
Widget J	\$485.00	\$620.00	2%

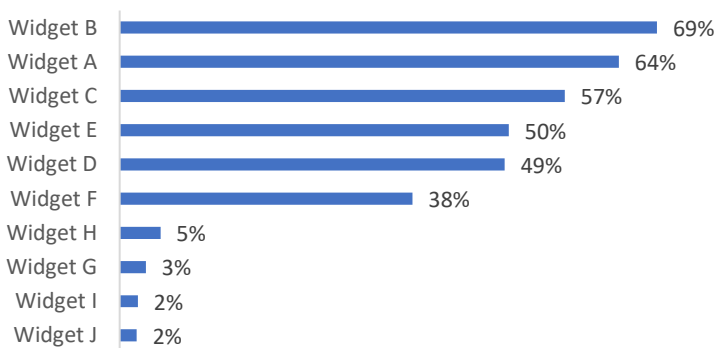
- b) Use a bar chart and scatter plot to visualize your table

- **Bar Chart:** Compare profit margins across products.
- **Scatter Plot:** Show the relationship between profit margins and feedback.

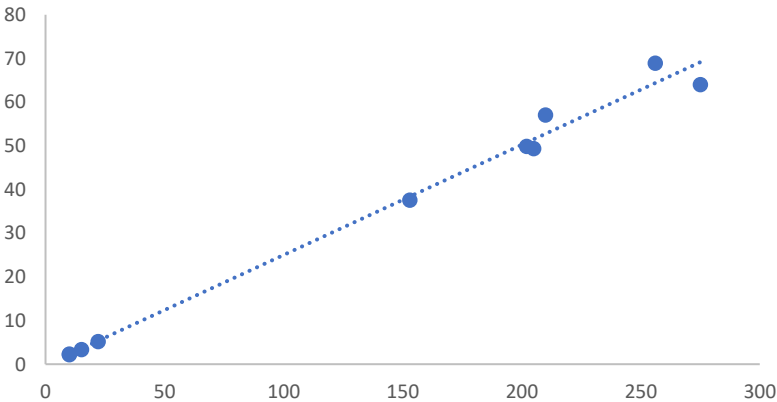
- c) Deduce insights to:

- Analyze how profit margins impact customer feedback.
- Determine if higher or lower profit margin products are associated with different types of feedback.

Profit Margin Across Product



Correlation between Profit Margin & Feedback



SUBMISSION GUIDELINE

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 DTA: <https://forms.gle/dRdyb3mcEoy6Me477>

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