

Tools Used:



Visualizing the Pulse of E-Commerce Sales

--End to End Analysis



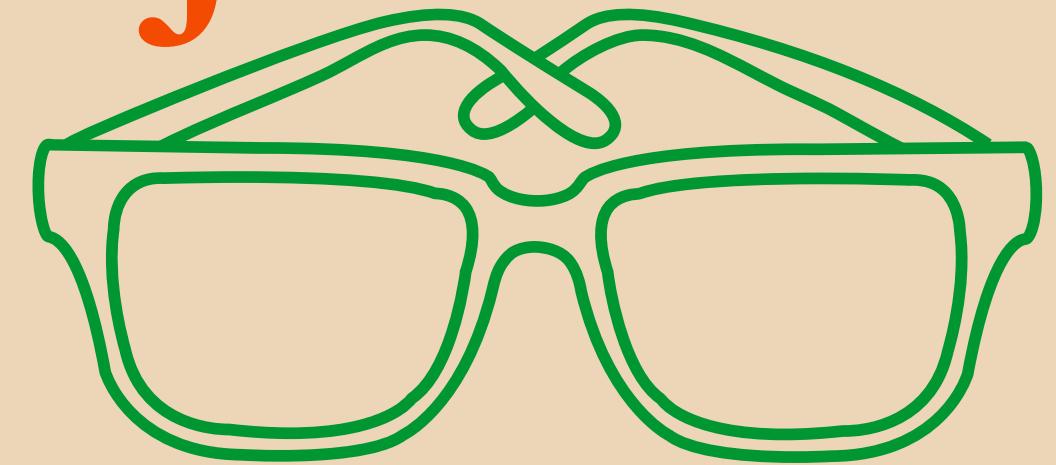
Who's Behind?

Hi, I'm Aritra Biswas

- Aspiring Data Analyst with 11 project experience
- Skilled in SQL, Python, Power BI, and Excel
- Passionate about transforming data into business value



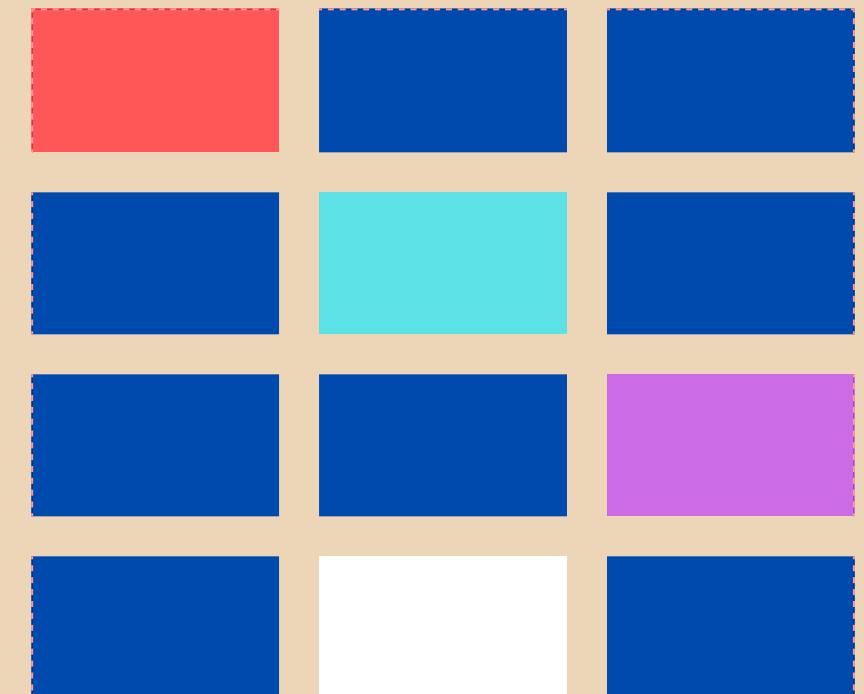
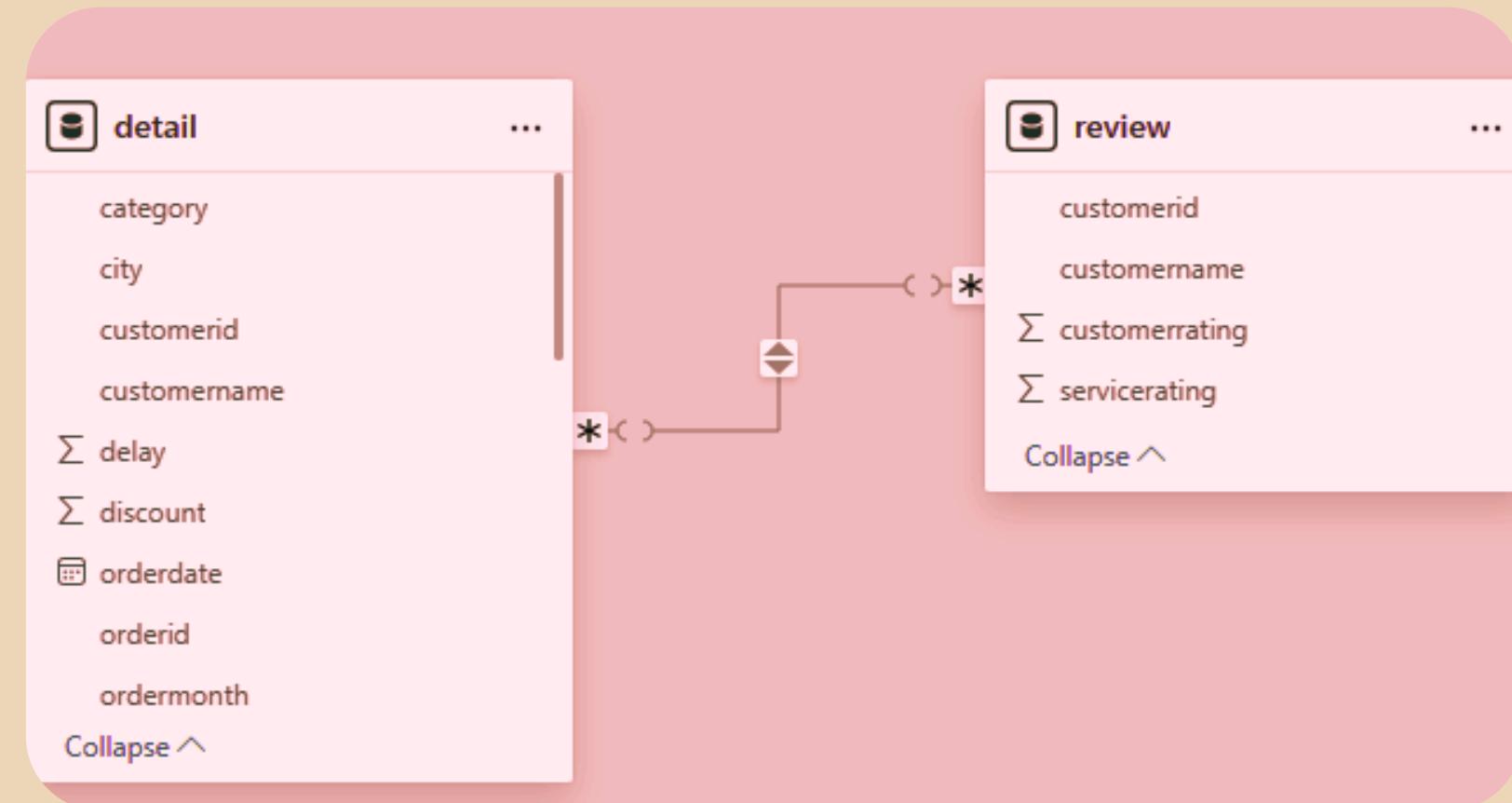
Project Overview



Dataset: 10,000+ transactions + 793 reviews

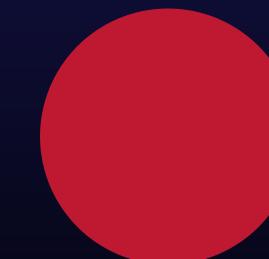
Objectives:

- To improve profitability
- To reduce delivery delays
- To enhance customer experience

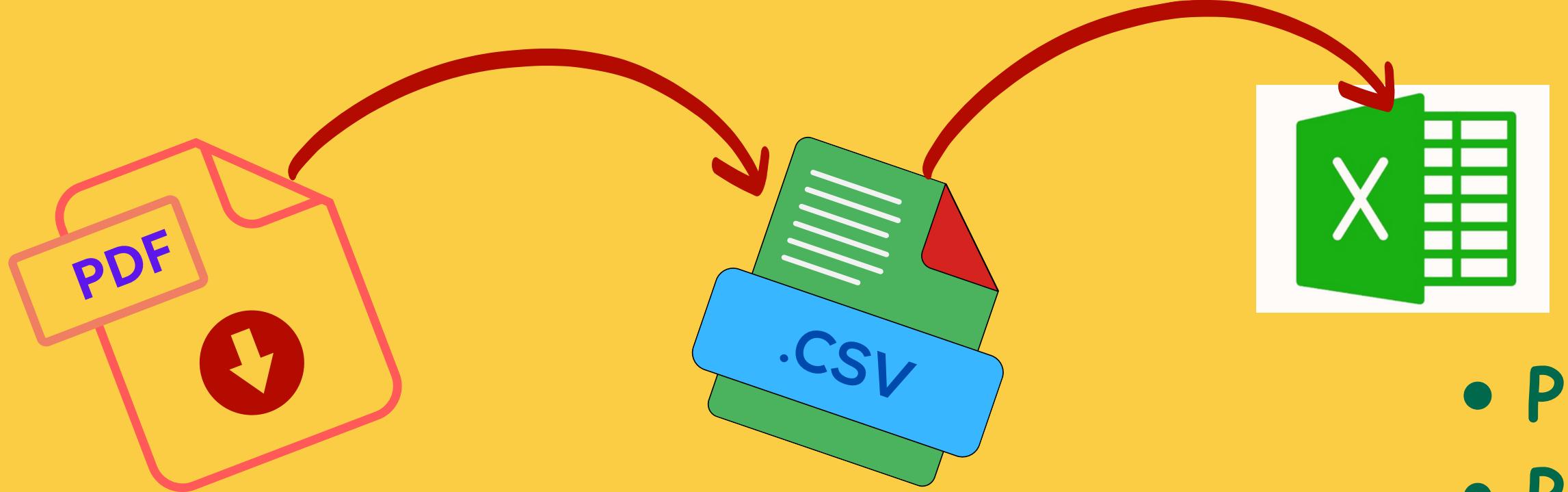


Business Challenges

1.  Low profitability in Office Supplies
2. Shipping delays in key states 
3.  Poor customer service ratings



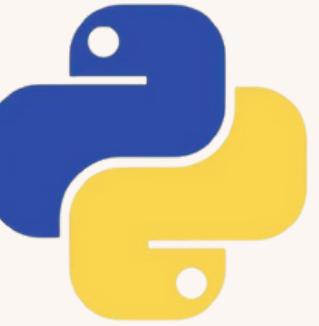
Understanding the Data



- PDF to CSV Conversion
- Pivot Table Summarization
- Preliminary Data Checks

row	orderid	orderdate	ordermonth	ship_date	delay	ship_mode	cust_id	cust_name	segment	country	city	state	postal_code	region	product_id	category	sub_category	product_name
1	CA-2016-15256	06-11-2016	Nov	11-11-2016	3	Second Class	CG-I2520	Claire Gute	Consumer	United States	Henderson	Kentucky	42420	South	FUR-BD-1000798	Furniture	Bookcases	Bush Somers Collection Bookcase
2	CA-2016-15257	06-11-2016	Nov	11-11-2016	4	Second Class	CG-I2520	Claire Gute	Consumer	United States	Henderson	Kentucky	42420	South	FUR-BD-1000745	Furniture	Chairs	Global Chair
3	US-2015-10269	12-06-2015	Dec	16-06-2015	2	Second Class	GD-10269	Christopher Huff	Consumer	United States	Fort Lauderdale	Florida	33311	South	OFF-LA-1000034	Office Supplies	Labels	Self-Adhesive Address Labels, TypeWriter
4	US-2015-10268	11-10-2015	Oct	16-10-2015	4	Standard Class	SD-10235	Sean O'Donnell	Consumer	United States	Fort Lauderdale	Florida	33311	South	OFF-ST-1000760	Office Supplies	Storage	Eldon Fold N Roll Cart System
5	US-2015-10265	11-10-2015	Oct	16-10-2015	7	Standard Class	SD-10235	Sean O'Donnell	Consumer	United States	Fort Lauderdale	Florida	33311	South	OFF-ST-1000760	Office Supplies	Storage	Eldon Fold N Roll Cart System
6	CA-2014-15583	09-06-2014	Jun	14-06-2014	3	Standard Class	EH-I1770	Brosina Hoffman	Consumer	United States	Los Angeles	California	90002	Vest	FUR-FU-1000487	Furniture	Furnishings	Eldon Expressions Wood and Plastic Desk /
7	CA-2014-15581	09-06-2014	Jun	14-06-2014	3	Standard Class	EH-I1770	Brosina Hoffman	Consumer	United States	Los Angeles	California	90002	Vest	OFF-AP-1000233	Office Supplies	Art	Newell 322
8	CA-2014-15582	09-06-2014	Jun	14-06-2014	3	Standard Class	EH-I1770	Brosina Hoffman	Consumer	United States	Los Angeles	California	90002	Vest	OFF-AP-1000237	Office Supplies	Planners	Mobile 3.5" P Phone VoIP phone
9	CA-2014-15582	09-06-2014	Jun	14-06-2014	5	Standard Class	EH-I1770	Brosina Hoffman	Consumer	United States	Los Angeles	California	90002	Vest	OFF-BI-1000298	Office Supplies	Binders	DAX Angle View Binders with Locking Rings
10	CA-2014-15582	09-06-2014	Jun	14-06-2014	5	Standard Class	EH-I1770	Brosina Hoffman	Consumer	United States	Los Angeles	California	90002	Vest	OFF-BI-1000298	Office Supplies	Appliances	Ebelsk FSC26VTEL 6 Outlet Surge
11	CA-2014-15583	09-06-2014	Jun	14-06-2014	5	Standard Class	EH-I1770	Brosina Hoffman	Consumer	United States	Los Angeles	California	90002	Vest	FUR-TA-10001539	Furniture	Tables	Chromcraft Rectangular Conference Tables
12	CA-2014-15583	09-06-2014	Jun	14-06-2014	5	Standard Class	EH-I1770	Brosina Hoffman	Consumer	United States	Los Angeles	California	90002	Vest	TEC-PH-10002033	Technology	Phones	Kontrol 250 Conference phone - Charcoal bl.
13	CA-2017-10441	15-02-2017	Apr	20-04-2017	5	Standard Class	AG-10260	Anderson Madsen	Consumer	United States	Concord	North Carolina	28001	South	OFF-BI-1000235	Office Supplies	Binders	Xerox 180
14	CA-2017-10441	15-02-2017	Apr	20-04-2017	5	Standard Class	AG-10260	Anderson Madsen	Consumer	United States	Washington	Washington	98001	West	OFF-BI-1000231	Office Supplies	Binders	Pelikan PB200 Plastic Comb Binding Mac
15	CA-2015-10262	22-11-2015	Nov	26-11-2015	4	Standard Class	HP-14019	Harold Pavlau	Home Office	United States	Fort Worth	Texas	76106	Central	OFF-BI-1000075	Office Supplies	Binders	Holmes Replacement Filter for HEPA Air Cl
16	CA-2015-10262	22-11-2015	Nov	26-11-2015	4	Standard Class	HP-14019	Harold Pavlau	Home Office	United States	Fort Worth	Texas	76106	Central	OFF-BI-1000075	Office Supplies	Binders	Stores DuraTech Recycled Plastic Frosted E
17	CA-2015-10262	22-11-2015	Nov	26-11-2015	7	Standard Class	HP-14019	Harold Pavlau	Home Office	United States	Madison	Wisconsin	53711	Central	OFF-ST-1000417	Office Supplies	Storage	Stur-D-Stor Shelving, Vertical 5-Shelf, 72" H x
18	CA-2014-15583	11-11-2014	Nov	16-06-2014	5	Standard Class	PK-19075	Pete Kot	Consumer	United States	Jordan	Utah	84084	Vest	OFF-ST-1000087	Office Supplies	Storage	Fellowes Super Stor Drive
19	CA-2014-15583	11-11-2014	Nov	16-06-2014	5	Second Class	AG-10270	Alejandro Grove	Consumer	United States	Portland	Oregon	97202	West	TEC-PH-10001666	Technology	Phones	Motorola MC2500
20	CA-2014-15583	11-11-2014	Nov	16-06-2014	5	Second Class	AG-10270	Alejandro Grove	Consumer	United States	Portland	Oregon	97202	West	TEC-PH-10001666	Technology	Phones	Cisco SPA501G IP Phone
21	CA-2014-15583	11-11-2014	Nov	16-06-2014	5	Second Class	AG-10270	Alejandro Grove	Consumer	United States	San Francisco	California	94109	Vest	TEC-PH-10001666	Technology	Phones	Cisco SPA501G IP Phone
22	CA-2014-15583	11-11-2014	Nov	16-06-2014	5	Second Class	AG-10270	Alejandro Grove	Consumer	United States	San Francisco	California	94109	Vest	OFF-BI-1000225	Office Supplies	Binders	Wilson Jones Hanging View Binder, White, 1"
23	CA-2014-15583	11-11-2014	Nov	16-06-2014	5	Second Class	AG-10270	Alejandro Grove	Consumer	United States	Fremont	Nebraska	68025	Central	OFF-AP-1000246	Office Supplies	Art	Newell 318
24	CA-2016-15730	09-12-2016	Dec	10-12-2016	3	Standard Class	KB-15585	Ken Black	Corporate	United States	Fremont	Nebraska	68025	Central	OFF-AP-1000192	Office Supplies	Binders	Acco Six-Outlet Power Strip, 4' Cord Length
25	CA-2016-15730	09-12-2016	Dec	10-12-2016	3	Standard Class	KB-15585	Ken Black	Corporate	United States	Philadelphia	Pennsylvania	19107	East	OFF-BI-1000274	Furniture	Chairs	Global Office Rolling Chair, Gray
26	CA-2016-15730	09-12-2016	Dec	10-12-2016	3	Second Class	KB-15585	Ken Black	Corporate	United States	Philadelphia	Pennsylvania	19107	East	OFF-BI-1000274	Furniture	Chairs	Global Office Rolling Chair, Gray
27	CA-2016-15735	06-04-2016	Jan	20-01-2016	4	Second Class	EH-15445	Eric Hollmann	Consumer	United States	Los Angeles	California	90049	Vest	OFF-BI-1000234	Office Supplies	Binders	Vision-Jones Active Use Binders
28	CA-2016-15735	06-04-2016	Jan	20-01-2016	4	Second Class	EH-15445	Eric Hollmann	Consumer	United States	Los Angeles	California	90049	Vest	TEC-AC-1000027	Technology	Accessories	Imation 8GB Mini TravelDrive USB 2.0 Flash
29	US-2015-100630	17-09-2015	Sep	25-09-2015	2	Standard Class	TB-21520	Tracy Blumstein	Consumer	United States	Philadelphia	Pennsylvania	19140	East	OFF-BI-1000434	Furniture	Bookcases	Riverside Palais Royal Traveler Bookcase, F
30	US-2015-100630	17-09-2015	Sep	25-09-2015	4	Standard Class	TB-21520	Tracy Blumstein	Consumer	United States	Philadelphia	Pennsylvania	19140	East	OFF-BI-1000434	Furniture	Furniture	Avery Recycled Flexi-View Covers for Bindin
31	US-2015-100630	17-09-2015	Sep	25-09-2015	4	Standard Class	TB-21520	Tracy Blumstein	Consumer	United States	Philadelphia	Pennsylvania	19140	East	OFF-BI-1000434	Furniture	Furniture	Honey Mill 12-3H" Diameter Brushed Ch
32	US-2015-100630	17-09-2015	Sep	25-09-2015	4	Standard Class	TB-21520	Tracy Blumstein	Consumer	United States	Philadelphia	Pennsylvania	19140	East	OFF-AP-1000402	Office Supplies	Art	BOSTON Model 800 Electric Pencil Sharpener
33	US-2015-100630	17-09-2015	Sep	25-09-2015	4	Standard Class	TB-21520	Tracy Blumstein	Consumer	United States	Philadelphia	Pennsylvania	19140	East	OFF-BI-1000250	Furniture	Binders	Acco Six-Outlet Power Strip, 4' Cord Length
34	US-2015-100630	17-09-2015	Sep	25-09-2015	4	Standard Class	TB-21520	Tracy Blumstein	Consumer	United States	Philadelphia	Pennsylvania	19140	East	OFF-AP-1000083	Office Supplies	Art	Lumber Crayons
35	CA-2017-10441	18-03-2017	Q1	23-10-2017	4	Second Class	MA-17526	Matt Abelman	Home Office	United States	Houston	Texas	77055	Central	OFF-BI-1000249	Furniture	Tables	Elbow Chair
36	CA-2017-10441	18-03-2017	Q1	23-10-2017	4	Second Class	MA-17526	Matt Abelman	Home Office	United States	Houston	Texas	77055	Central	TEC-PH-1000144	Technology	Accessories	Easy-Style paper
37	CA-2016-11750	08-12-2016	Dec	10-12-2016	2	First Class	GH-14495	Gene Hale	Corporate	United States	Richmond	Virginia	23290	Central	TEC-PH-1000364	Furniture	Furnishings	Electric Architect's Clamp-On Swing Arm Lat
38	CA-2015-17474	27-12-2015	Sep	31-12-2015	4	Standard Class	SN-20719	Steve Nyugen	Home Office	United States	Houston	Texas	77041	Central	OFF-EN-1000238	Office Supplies	Envelopes	#10 4 9/16" x 9 1/2" Premium Diagonal Seal En
39	CA-2015-17474	27-12-2015	Sep	31-12-2015	4	Standard Class	SN-20719</td											

Data Preprocessing with

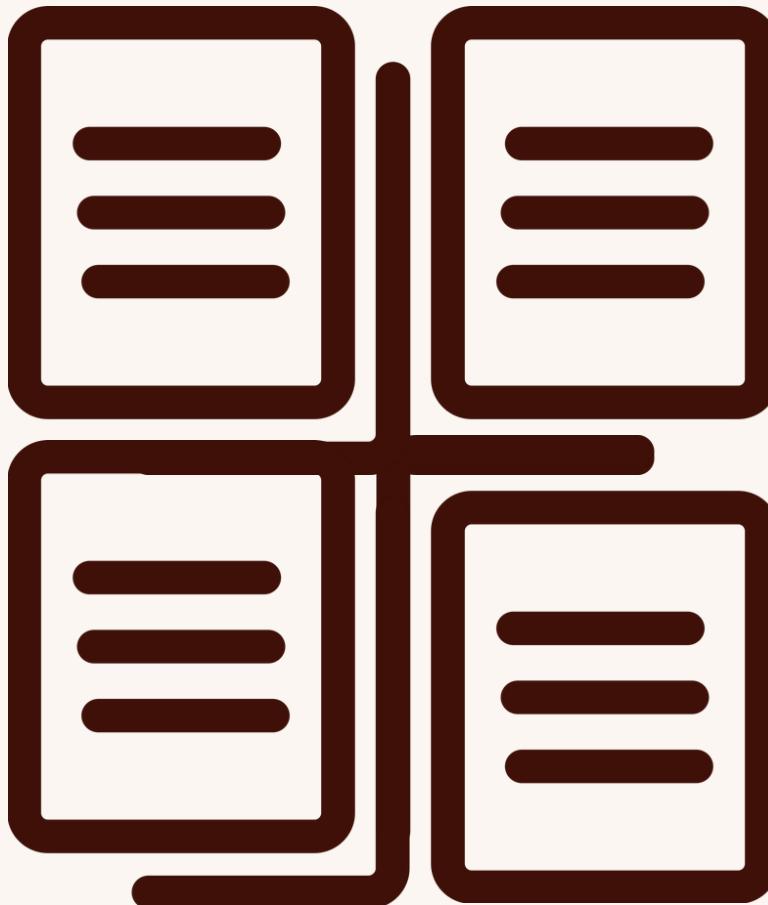


```
df.drop_duplicated().sum()
```

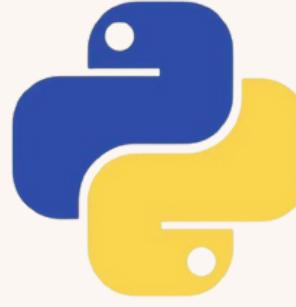
```
df.drop_duplicates(inplace=True)
```

```
df.shape
```

```
[9]: df.duplicated().sum()
[9]: 216
[10]: df.drop_duplicates(inplace=True)
[11]: df.shape
[11]: (9994, 26)
```



Data Preprocessing with



```
[42]: df.isnull().sum()
[42]:
row          0
orderid      0
orderdate    0
ordernmonth   0
ship_date    0
delay         0
ship_mode    0
cust_id      0
cust_name    0
segment       0
country       0
city          0
state          0
postal_code   0
region        0
product_id    0
category      0
sub_category  0
product_name  0
sales          0
quantity      0
discount      0
profit         0
Unnamed: 23  9994
Unnamed: 24  9994
Unnamed: 25  9993
dtype: int64

[43]: df.drop(['Unnamed: 23', 'Unnamed: 24', 'Unnamed: 25'], axis=1, inplace=True)
[44]: df.columns
[44]:
Index(['row', 'orderid', 'orderdate', 'ordernmonth', 'ship_date', 'delay',
       'ship_mode', 'cust_id', 'cust_name', 'segment', 'country', 'city',
       'state', 'postal_code', 'region', 'product_id', 'category',
       'sub_category', 'product_name', 'sales', 'quantity', 'discount',
       'profit'],
      dtype='object')

[45]: df.fillna({
    'sales': df['sales'].mean(),
    'quantity': df['quantity'].median(),
    'discount': df['discount'].mean(),
    'profit': df['profit'].median() }, inplace=True)
```

`df.fillna({
 'sales': df['sales'].mean(),
 'quantity': df['quantity'].median(),
 'discount': df['discount'].mean(),
 'profit': df['profit'].median() }, inplace=True)

df.isnull().sum()`



EDA with

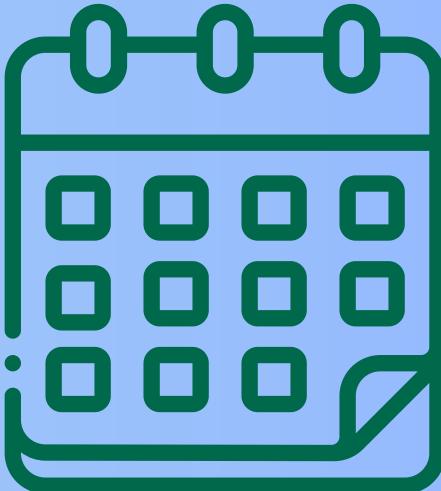


< >Monthly Sales Trend < >

```
SELECT ordermonth, COUNT(ordermonth)  
FROM detail  
GROUP BY ordermonth;
```

Insights:

- Highest order months: September, November, December
- Strategic months for campaigns



EDA with SQL

< >Profitability Analysis< >

```
SELECT category, COUNT(*)
```

```
FROM detail
```

```
WHERE profit = 0.00
```

```
GROUP BY category;
```

Insights:

- Office Supplies → Most zero-profit orders
- Deep discounting caused margin erosion



EDA with



<>Revenue Leakage<>

```
SELECT discount, COUNT(*)  
FROM detail
```

```
WHERE profit = 0.00
```

```
AND discount >= 0.5
```

```
GROUP BY discount;
```

Findings:

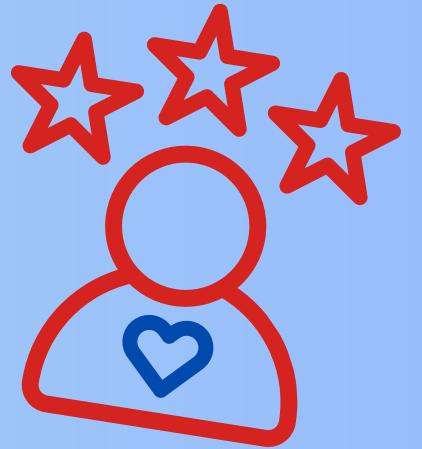
- Discounts over 50% heavily linked to profit loss
- Reevaluate discount policies



EDA with

<>Customer Satisfaction<>

```
SELECT customerid, customerrating  
FROM review  
WHERE customerrating < 5;
```

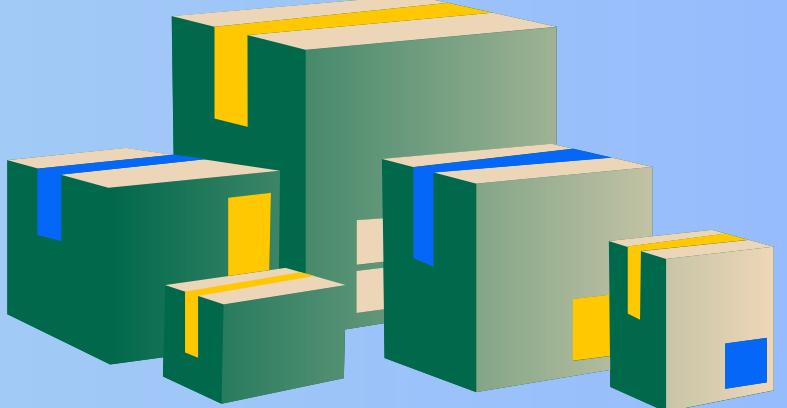


Insight:

- Customers rated < 5 = high risk for cancellation

Recommendation:

- Double-confirm orders for these customers



EDA with

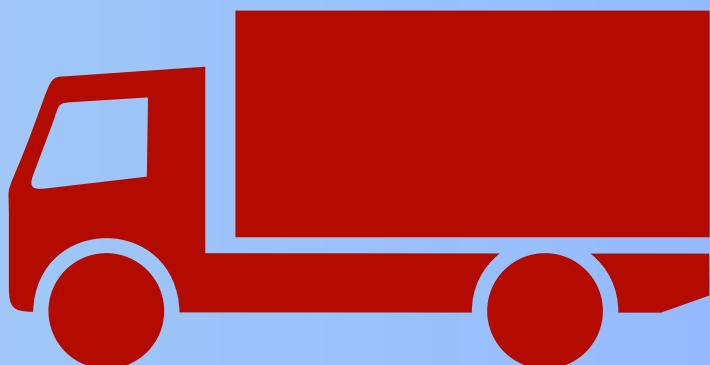
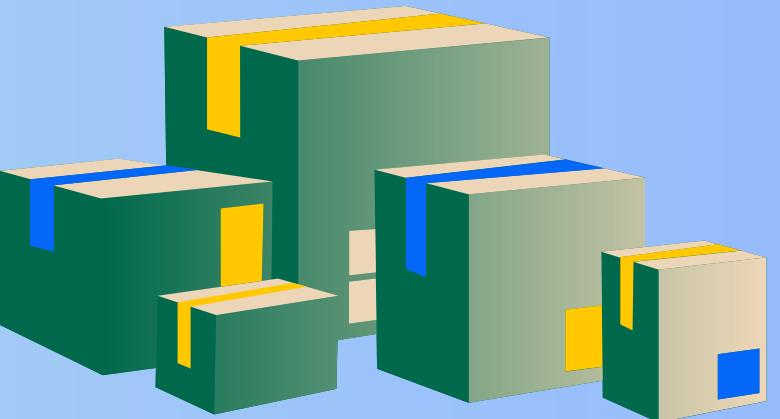


<>Shipping Delay Analysis<>

```
SELECT state, delay, COUNT(*) AS delay_count  
FROM detail  
WHERE delay > 5  
GROUP BY state, delay;
```

Insights:

- Most delayed shipments in: California, New York, Texas
- Logistics improvement needed in these regions

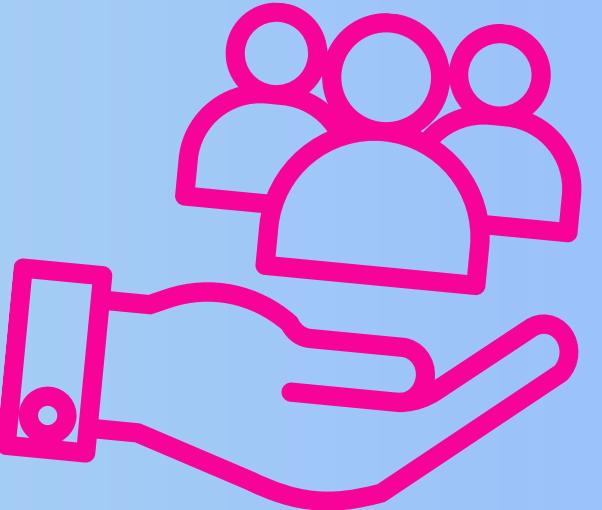


EDA with Used Case



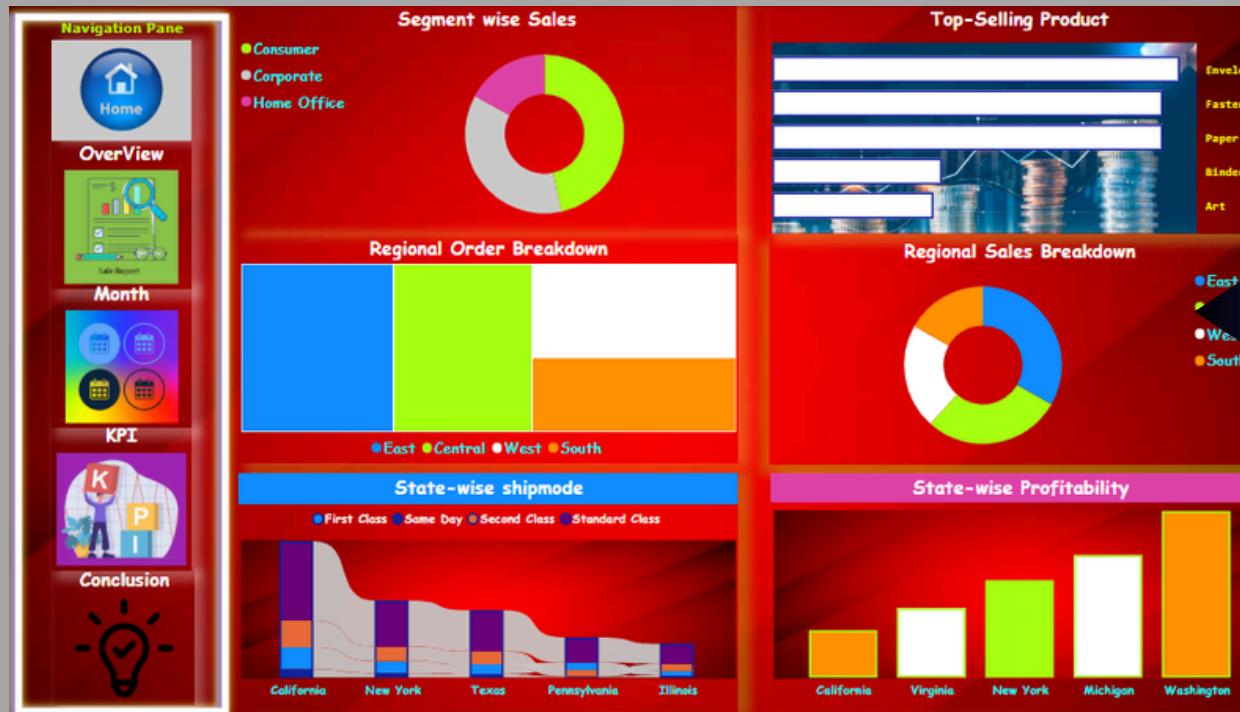
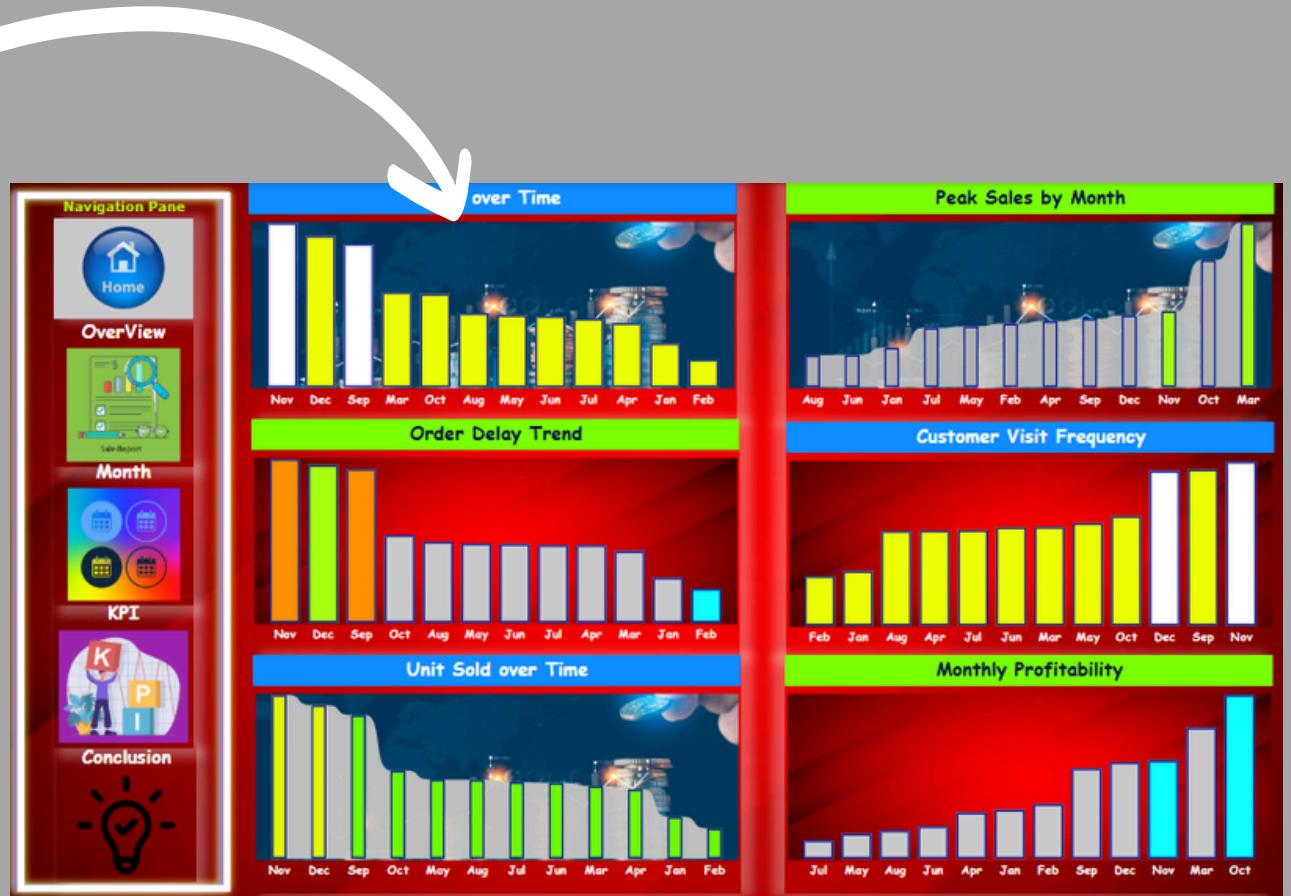
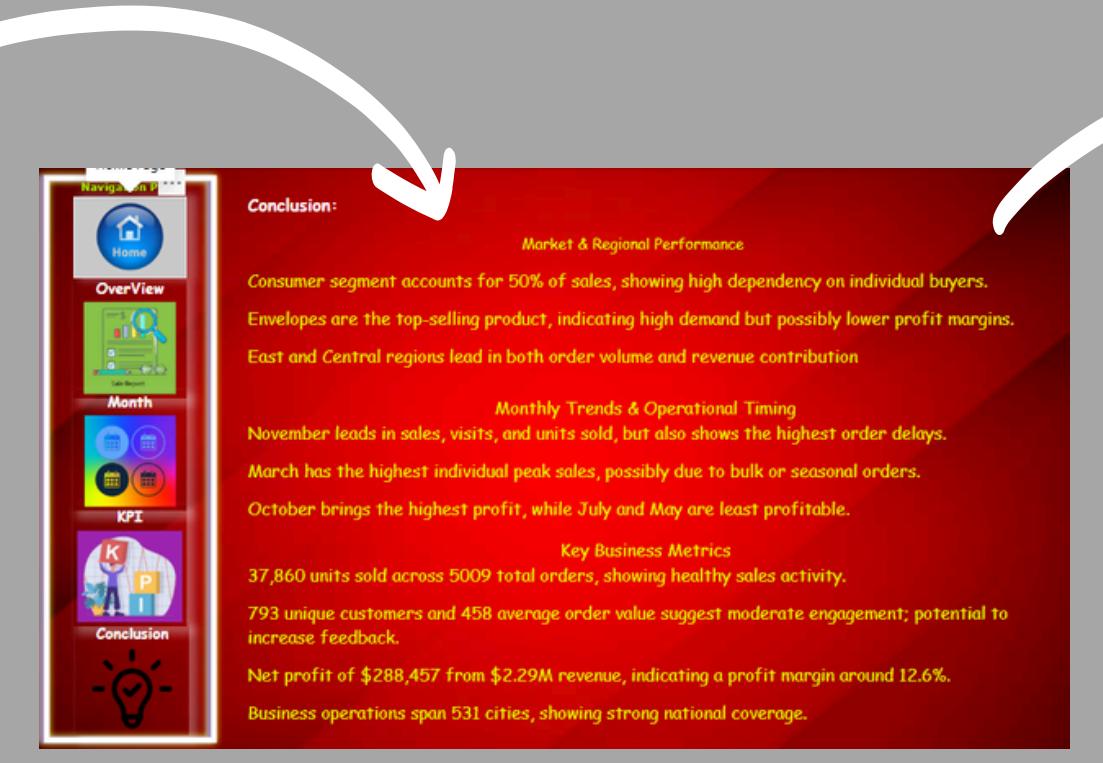
< >Customer Segmentation < >

```
WITH ranked_subcategories AS (
    SELECT segment, subcategory, COUNT(*) AS purchases,
        RANK() OVER (PARTITION BY segment
        ORDER BY COUNT(*) DESC) AS rnk
    FROM detail
    GROUP BY segment, subcategory
)
SELECT * FROM ranked_subcategories WHERE
rnk <= 3;
```



- Enables targeted marketing by segment
- Improves upsell and cross-sell success

Power BI Dashboard



Power BI Dashboard

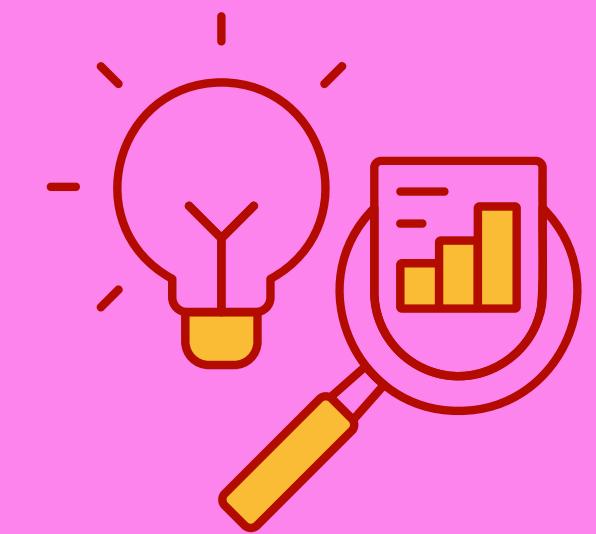


To bring analytical insights, I developed an interactive Power BI dashboard designed for clarity, navigation, and stakeholder actionability. The report features a 5-page layout, accessible through a streamlined navigation pane, each focused on distinct layers of business insights.

Insights:

- ₹22 Lakh Total Revenue
- ₹458 Avg. Order Value
- Sales from 531 cities

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Recommendations:

- Review pricing & discount policies
- Improve logistics in top delay states
- Launch loyalty programs for high-value customers
- Use segment-based promotions for upselling

Forecasted Impact:

- +11% Profit Margin
- +7–9% Revenue Growth
- +22% Better Delivery Experience

11%



Thank you very much!

FOLLOW

for more projects and insights!



Keep analyzing. Stay curious.

