E-COMMERCE SALES INSIGHTS ANALYSIS

Python Scripts and SQL Queries:

Calculate Following KPI's Using Python

1. Calculate the Total Revenue generated from the sales?
2. Find out the Total Number of Orders?
3. Calculate the Total Units Sold across all products?
4. Determine the Average Order Value (AOV) based on Total Sales Revenue and Total Orders?
5. Calculate the Average Quantity Per Order based on Total Units Sold and Total Orders?

Analyze following Sales Questions using SQL Queries

1. Calculate Sales Quantity by Product Category?
2. Analyze Orders and Sales Revenue by Month?
3. Identify Top 5 States by Total Sales Revenue?
4. Identify Bottom 5 States by Total Sales Revenue?
5. Identify Top 5 Cities by Total Sales Revenue?
6. Identify Bottom 5 Cities by Total Sales Revenue
7. Analyze Sales Contribution by Gender (Men vs Women)?
8. Calculate Percentage of Total Orders by Status?
9. Examine Relationship Between Age Group and Gender with Total Orders?
10. Calculate Percentage of Total Orders by Sales Channels?

Python KPI's Requirements Script:

```
# Total Revenue
total_revenue = df['Amount'].sum()

# Total Orders (Distinct Order_ID)
total_orders = df['Order ID'].nunique()

# Total Units Sold
total_units_sold = df['Qty'].sum()

# Average Order Value
avg_order_value = total_revenue / total_orders

# Average Quantity Per Order
avg_qty_per_order = total_units_sold / total_orders

# Display all KPIs
print("===== Ecommerce KPIs =====")
print(f"Total Revenue: ${total_revenue}")
print(f"Total Orders: ${total_orders}")
print(f"Total Units Sold: ${total_units_sold}")
print(f"Average Order Value (AOV): ${avg_order_value:.2f}")
```

```
print(f"Average Quantity Per Order (AQPO): ${avg_qty_per_order:.2f}")
```

```
===== Ecommerce KPIs =====
Total Revenue: $21176377
Total Orders: $28471
Total Units Sold: $31237
Average Order Value (AOV): $743.79
Average Quantity Per Order (AQPO): $1.10
```

1. Calculate Sales Quantity by Product Category?

```
SELECT Category, SUM(Qty) AS Quantity
FROM Ecommerce_Sales
GROUP BY Category
ORDER BY Quantity DESC;
```

	Product_Category	Quantity
1	Set	12446
2	Kurta	10541
3	Western Dress	4084
4	Top	2201
5	Saree	1389
6	Ethnic Dress	264
7	Blouse	234
8	Bottom	78

2. Analyze Orders and Sales Revenue by Month?

```
SELECT Month, COUNT(Order_ID) AS Orders,
CONCAT(CAST(SUM(Sales_Amount)/100000.0 AS DECIMAL(5,2) ),' M') AS
Sales_Amount
FROM Ecommerce_Sales
GROUP BY Month
ORDER BY
  CASE Month
    WHEN 'Jan' THEN 1
    WHEN 'Feb' THEN 2
    WHEN 'Mar' THEN 3
    WHEN 'Apr' THEN 4
    WHEN 'May' THEN 5
    WHEN 'Jun' THEN 6
    WHEN 'Jul' THEN 7
    WHEN 'Aug' THEN 8
    WHEN 'Sep' THEN 9
    WHEN 'Oct' THEN 10
    WHEN 'Nov' THEN 11
    WHEN 'Dec' THEN 12
  END;
```

	Month	Orders	Sales_Amount
1	Jan	2702	18.21 M
2	Feb	2750	18.76 M
3	Mar	2819	19.28 M
4	Apr	2685	18.29 M
5	May	2617	17.98 M
6	Jun	2597	17.51 M
7	Jul	2579	17.72 M
8	Aug	2617	18.09 M
9	Sep	2490	16.89 M
10	Oct	2424	16.67 M
11	Nov	2383	16.15 M
12	Dec	2384	16.22 M

3. Identify Top 5 States by Total Sales Revenue?

```
SELECT TOP 5 Ship_State,
CONCAT('$', CAST(SUM(Sales_Amount)/1000000.0 AS DECIMAL(10,2)), ' M')
AS Total_Sales_Revenue
FROM Ecommerce_Sales
GROUP BY Ship_State
ORDER BY SUM(Sales_Amount) DESC;
```

	Ship_State	Total_Sales_Revenue
1	MAHARASHTRA	$2.99 M
2	KARNATAKA	$2.65 M
3	UTTAR PRADESH	$2.10 M
4	TELANGANA	$1.71 M
5	TAMIL NADU	$1.68 M

4. Identify Bottom 5 States by Total Sales Revenue?

```
SELECT TOP 5 Ship_State,
CONCAT('$',CAST(SUM(Sales_Amount)/1000.0 AS DECIMAL(10,2)),' K') AS
Total_Sales_Revenue
FROM Ecommerce_Sales
GROUP BY Ship_State
ORDER BY SUM(Sales_Amount) ASC;
```

	Ship_State	Total_Sales_Revenue
1	New Delhi	$8.42 K
2	MIZORAM	$12.18 K
3	LADAKH	$14.15 K
4	DADRA AND NAGAR	$14.98 K
5	MEGHALAYA	$25.99 K

5. Identify Top 5 Cities by Total Sales Revenue?

```
SELECT TOP 5 Ship_City AS Top_5_Ship_Cities,
CONCAT('$', CAST(SUM(Sales_Amount) / 1000000.0 AS DECIMAL(5,2)), ' M')
AS Sales_Revenue
```

```
FROM Ecommerce_Sales

GROUP BY Ship_City
ORDER BY Sales_Revenue DESC;
```

	Top_5_Ship_Cities	Sales_Revenue
1	Bengaluru	$1.77 M
2	Hyderabad	$1.37 M
3	New Delhi	$1.16 M
4	Mumbai	$0.92 M
5	Chennai	$0.92 M

6. Identify Bottom 5 Cities by Total Sales Revenue?

```
SELECT TOP 5 Ship_City AS Ship_Cities,
CONCAT('$', SUM(Sales_Amount)) AS Sales_Revenue FROM Ecommerce_Sales
GROUP BY Ship_City
ORDER BY SUM(Sales_Amount) ASC;
```

	Ship_Cities	Sales_Revenue
1	Vrindavan {Mathura}	$301
2	Elgaid	$301
3	Perambra	$307
4	Multai	$319
5	Dharmasthala	$329

7. Analyze Sales Contribution by Gender (Men vs Women)?

```
SELECT Gender,
CONCAT('$',CAST(SUM(Sales_Amount) / 1000000.0 AS DECIMAL(5,2)),' M') AS
Total_Sales_Revenue,
CONCAT(CAST(SUM(Sales_Amount)*100.0 / (SELECT SUM(Sales_Amount) FROM
Ecommerce_Sales)
AS DECIMAL(5,0)), ' %') AS Percentage_Contribution FROM Ecommerce_Sales
GROUP BY Gender;
```

	Gender	Total_Sales_Revenue	Percentage_Contribution
1	Women	$13.56 M	64 %
2	Men	$7.61 M	36 %

8. Calculate Percentage of Total Orders by Status?

```
SELECT Status, COUNT(Order_ID) AS Total_Orders,
CONCAT(CAST(COUNT(Order_ID) * 100.0 / (SELECT COUNT(*) FROM
Ecommerce_Sales)
AS DECIMAL(5,0)), ' %') AS Percentage_Order_Status FROM Ecommerce_Sales
GROUP BY Status
ORDER BY COUNT(Order_ID) * 100.0 / (SELECT COUNT(Order_ID) FROM
Ecommerce_Sales) DESC;
```

	Status	Total_Orders	Percentage_Order_Status
1	Delivered	28641	92 %
2	Returned	1045	3 %
3	Cancelled	844	3 %
4	Refunded	517	2 %

9. Examine Relationship Between Age Group and Gender with Total Orders?

```
SELECT Age_Group, Gender,
CONCAT(CAST(COUNT(Order_ID) * 100.0 / (SELECT COUNT(Order_ID) FROM
Ecommerce_Sales)
AS DECIMAL(5,0)), ' %') AS Percent_of_Orders
FROM Ecommerce_Sales
GROUP BY Age_Group, Gender
ORDER BY Gender DESC;
```

	Age_Group	Gender	Percent_of_Orders
1	Adult	Women	35 %
2	Teenager	Women	21 %
3	Senior	Women	14 %
4	Adult	Men	15 %
5	Teenager	Men	9 %
6	Senior	Men	6 %

10. Calculate Percentage of Total Orders by Sales Channels?

```
SELECT Channel, CONCAT(CAST(COUNT(Order_ID) * 100.0 / (SELECT
COUNT(Order_ID)
FROM Ecommerce_Sales) AS DECIMAL(5,0)), ' %')
AS Total_Orders_Distribution FROM Ecommerce_Sales
GROUP BY Channel
ORDER BY COUNT(Order_ID) * 100.0 / (SELECT COUNT(Order_ID) FROM
Ecommerce_Sales) DESC;
```

	Channel	Total_Orders_Distribution
1	Amazon	35 %
2	Myntra	23 %
3	Flipkart	22 %
4	Ajio	6 %
5	Nalli	5 %
6	Meesho	5 %
7	Others	4 %

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