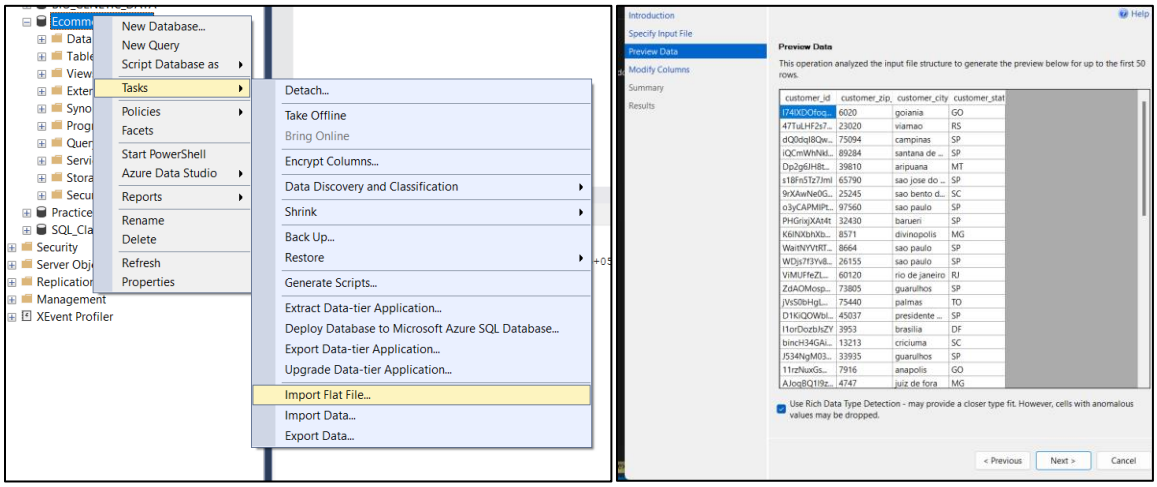
ECOMMERCE ORDERS

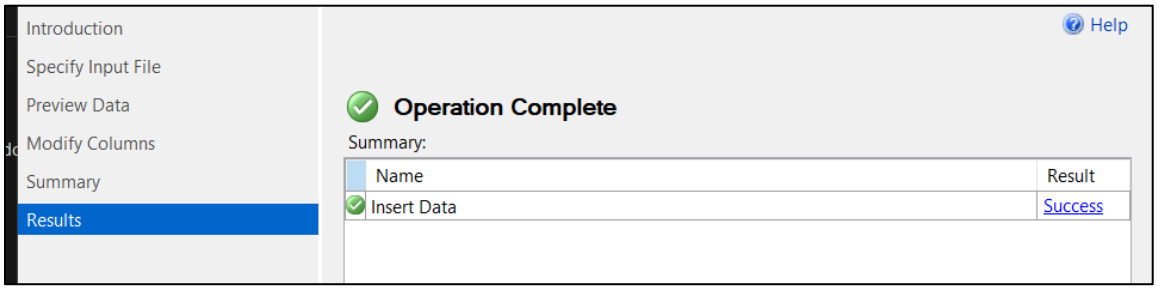
CREATING DATABASE

```
CREATE DATABASE Ecommerce_Orders;
```

IMPORTING CSV FILES INTO DATABASE

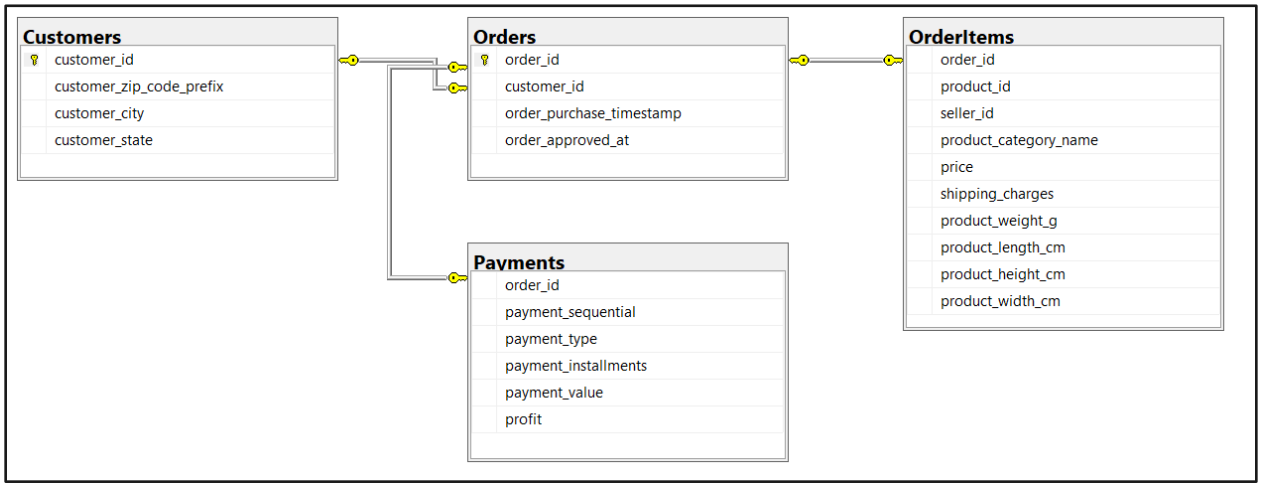
Customers.csv, Orders.csv, OrderItems.csv and Payments.csv





CREATING RELATIONSHIP

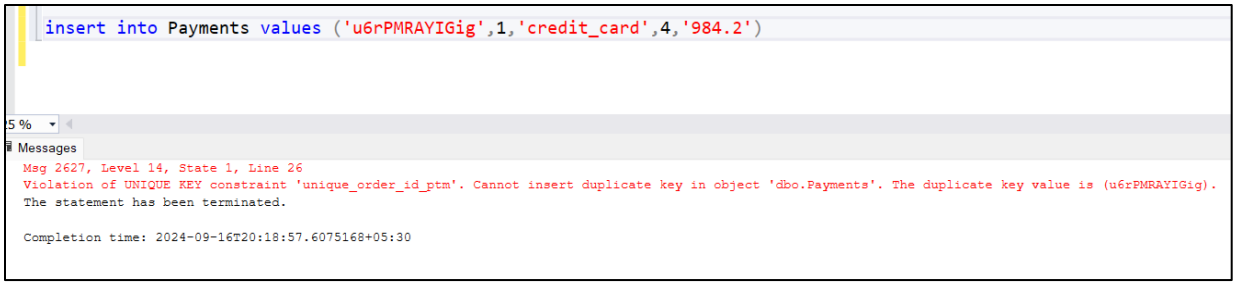
```
ALTER TABLE Customers ADD PRIMARY KEY (customer_id)
ALTER TABLE Orders ADD FOREIGN KEY (customer_id) REFERENCES Customers (customer_id)
ALTER TABLE Orders ADD PRIMARY KEY (order_id)
ALTER TABLE OrderItems ADD FOREIGN KEY (order_id) REFERENCES Orders (order_id)
ALTER TABLE Payments ADD FOREIGN KEY (order_id) REFERENCES Orders (order_id)
```



Customer_id from Customers table and Order_id from Orders table are primary key no duplicate values or null value will be inserted, however customer_id from orders and order_id from Payments and OrderItems table must set unique and not null as they are linked to foreign keys.

```
ALTER TABLE orders ADD CONSTRAINT unique_customerid UNIQUE (customer_id)
ALTER TABLE payments ADD CONSTRAINT unique_order_id_ptm UNIQUE (order_id)
ALTER TABLE OrderItems ADD CONSTRAINT unique_order_id_orderitm UNIQUE (order_id)
```

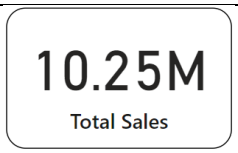
Attempting to insert duplicate order_id in Payments table



OVERVIEW

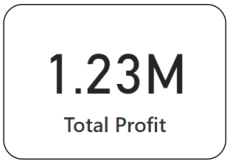
TOTAL SALES

```
SELECT ROUND(SUM(payment_value),0) AS total_sales FROM Payments
```



TOTAL PROFIT

```
SELECT SUM(profit) as total_profit FROM Payments
```



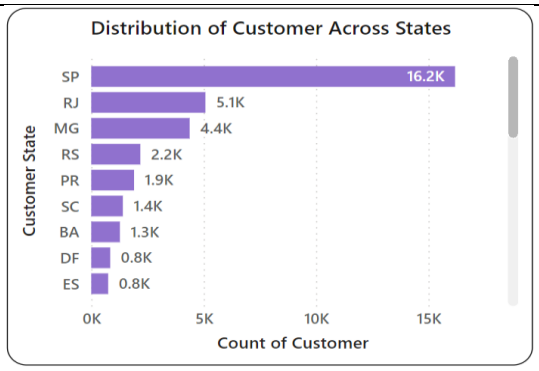
TOTAL PRODUCT COUNT

```
SELECT COUNT(distinct product_category_name) FROM OrderItems
```

CUSTOMER SEGMENTATION and BEHAVIOUR ANALYSIS

Distribution of Customer across state

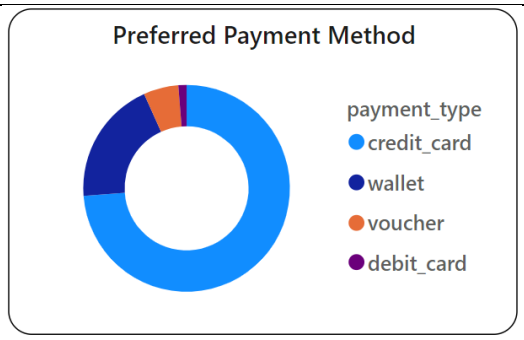
```
SELECT customer_state, COUNT(customer_id)
    total_customer
    FROM Customers
GROUP BY customer_state
ORDER BY total_customer DESC
```



Findings: The majority of customers are from SP, RJ, and MJ, while the number of customers from other regions is significantly lower.

Preferred Payment Method

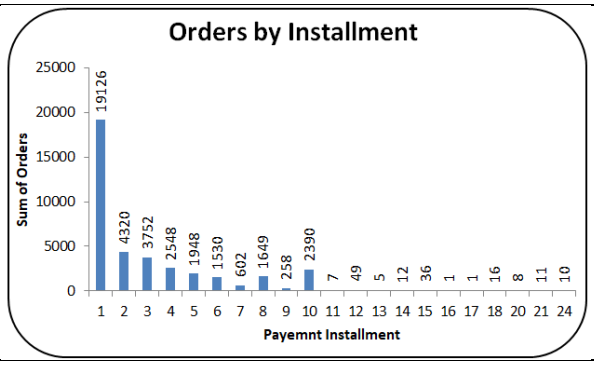
```
SELECT payment_type, COUNT(product_id) AS
Payment_Method
   FROM OrderItems
JOIN Payments
   ON OrderItems.order_id=Payments.order_id
GROUP BY payment_type
ORDER BY Payment_Method DESC
```



Findings: Customers predominantly prefer using credit cards as their primary payment method.

Installment patterns for high-value items

```
SELECT payment_installments,
COUNT(product_id) AS total_orders
   FROM Payments
JOIN OrderItems
   ON Payments.order_id=OrderItems.order_id
WHERE price > 1000
GROUP BY payment_installments
ORDER BY total_orders DESC;
```

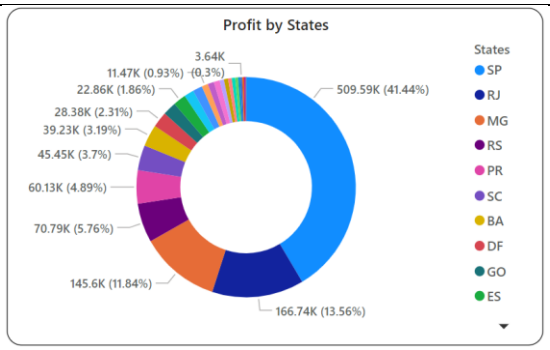


Findings: For high-value items priced above 1000, customer preferences are nearly evenly split between single payments and multi-installment payments.

PROFIT ANALYSIS

States that generates most profit

```
SELECT customer_state, ROUND(SUM(profit),2)
AS total_profit
   FROM Customers
JOIN orders
   ON
Customers.customer_id=Orders.customer_id
JOIN Payments
   ON Orders.order_id=Payments.order_id
GROUP BY customer_state
ORDER BY total_profit DESC;
```



Findings: SP, RJ, and MG are identified as the most profitable states, while other states have made an equal contribution to the overall profit.

Profit by product category

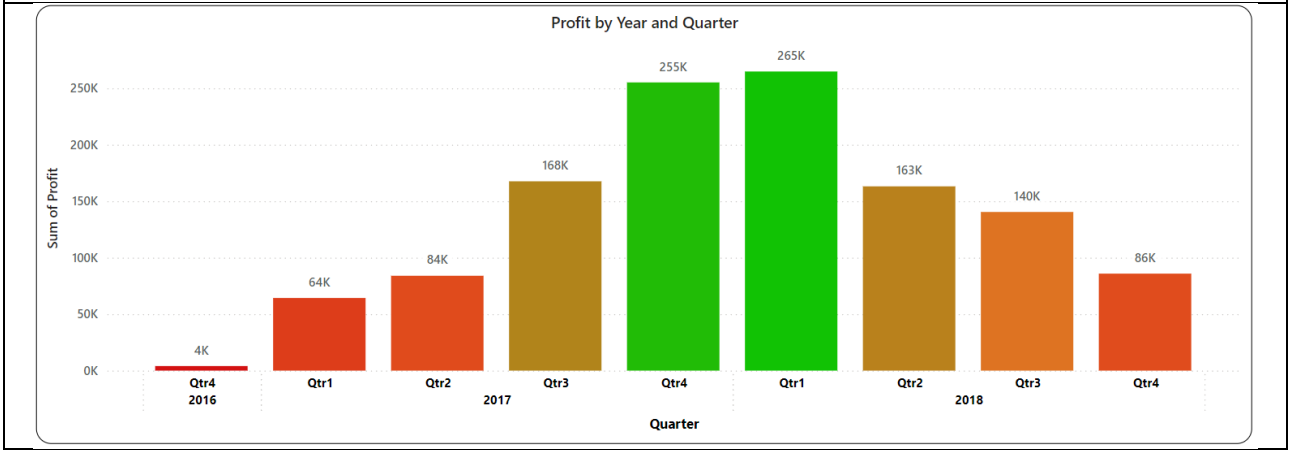
```
SELECT product_category_name,
ROUND(SUM(profit),2) AS total_profit
   FROM OrderItems
JOIN Payments
   ON OrderItems.order_id=Payments.order_id
GROUP BY product_category_name
ORDER BY total_profit DESC;
```

Product category	Sum of Profit
toys	924,571.96
bed_bath_table	31,428.48
health_beauty	28,945.60
sports_leisure	26,027.33
furniture_decor	25,411.82
computers_accessories	23,857.12
housewares	20,415.53
watches_gifts	18,343.41
garden_tools	12,733.38
cool_stuff	12,425.33
telephony	11,664.96
auto	10,527.63
Total	1,229,665.60

Findings: Toys have emerged as the leading product category, contributing the most to overall profits.

Profit by Each Year and Quarter

```sql
SELECT Profit_Year, Quarter, sum(profit) as Total_profit from (
SELECT Year(order_purchase_timestamp) as Profit_Year,
    CASE
        WHEN MONTH(order_purchase_timestamp) IN (1, 2, 3) THEN 'Qtr1'
        WHEN MONTH(order_purchase_timestamp) IN (5, 5, 6) THEN 'Qtr2'
        WHEN MONTH(order_purchase_timestamp) IN (7, 8, 9) THEN 'Qtr3'
        ELSE 'Qtr4'
    END AS Quarter,
    profit
FROM Orders
JOIN Payments
    ON Orders.order_id = Payments.order_id) as year_qtr_wise_profit
GROUP BY Profit_Year, Quarter
ORDER BY Profit_Year, Quarter
```



Findings: The business, which started in 2016, showed improvement through the quarters and peaked in 2017. However, profits have been declining significantly from Qtr 1 to Qtr 4, in the year 2018 which requires immediate attention.

SALES ANALYSIS

Sales by Product Category

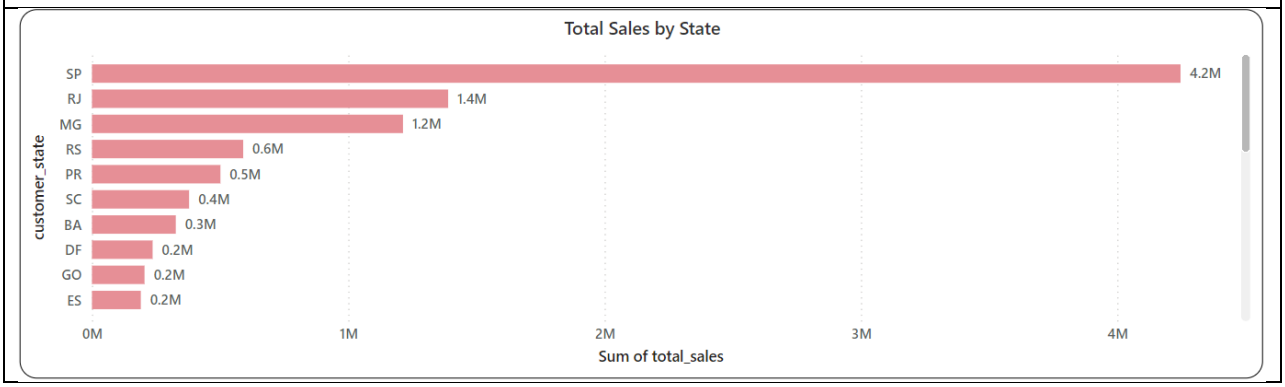
```
SELECT product_category_name,
ROUND(SUM(payment_value),2) AS total_sales
   FROM OrderItems
JOIN Payments
   ON OrderItems.order_id=Payments.order_id
GROUP BY product_category_name
ORDER BY total_sales DESC;
```

product_category_name	Sum of total_sales
toys	7,704,766.31
bed_bath_table	261,903.99
health_beauty	241,213.33
sports_leisure	216,894.42
furniture_decor	211,765.19
computers_accessories	198,809.30
housewares	170,129.43
watches_gifts	152,861.79
garden_tools	106,111.46
cool_stuff	103,544.41
telephony	97,207.99
auto	87,730.27
Total	10,247,213.30

Findings: The Toys category has emerged as the leading product category, with high sales being the primary driver of profit.

States with high sales

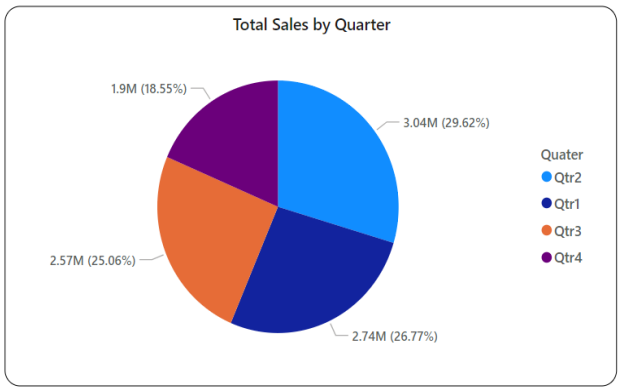
```
SELECT customer_state, ROUND(SUM(payments.payment_value),2) AS total_orders
   FROM Customers
JOIN Orders
   ON Customers.customer_id=Orders.customer_id
JOIN payments
   ON Orders.order_id=payments.order_id
GROUP BY customer_state
ORDER BY total_orders DESC;
```



Findings: As noted, SP, RJ, and MG have emerged as the most profitable states, with high sales in these regions being the key contributing factor.

Sales by each Quarter

```
SELECT Quarter, SUM(payment_value) AS
       Quarter_sale FROM
(
  SELECT CASE
   WHEN MONTH(order_purchase_timestamp)
       IN (1, 2, 3) THEN 'Qtr1'
   WHEN MONTH(order_purchase_timestamp)
       IN (4, 5, 6) THEN 'Qtr2'
   WHEN MONTH(order_purchase_timestamp)
       IN (7, 8, 9) THEN 'Qtr3'
   ELSE 'Qtr4' END AS Quarter,
payment_value
    FROM Orders
    JOIN Payments ON Orders.order_id =
                     Payments.order_id
) AS SubQueryAlias
GROUP BY Quarter ORDER BY Quarter;
```

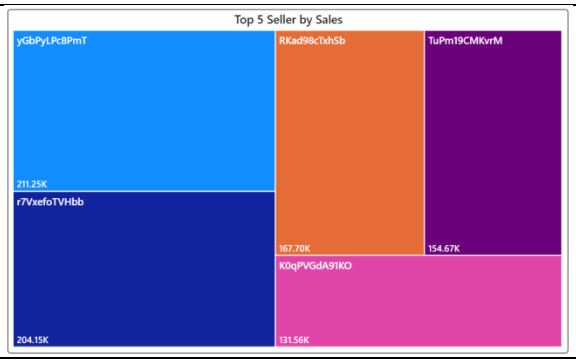


Findings: In terms of sales, Q2 has shown higher sales figures, although Q1 recorded a higher profit.

PERFORMANCE OF PRODUCT SELLER

Top 5 Seller by Sales

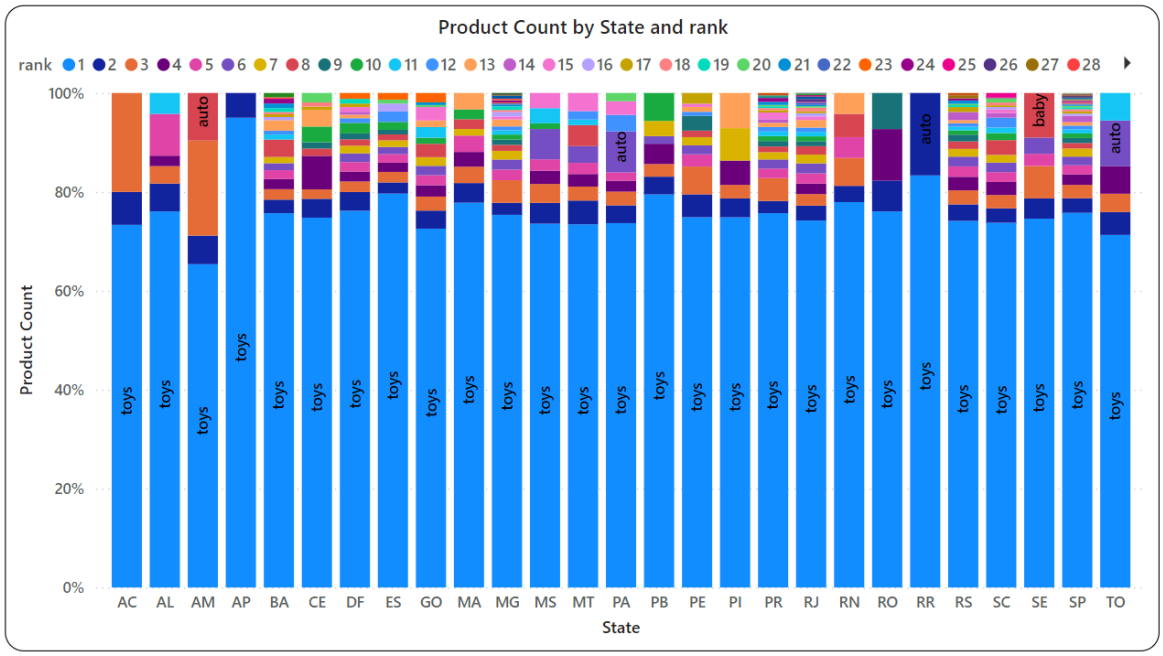
```
SELECT TOP 5(seller_id),
ROUND(SUM(payment_value),2) AS total_sales
   FROM OrderItems
JOIN Payments
   ON OrderItems.order_id=Payments.order_id
GROUP BY seller_id
ORDER BY total_sales DESC;
```



Findings: The top 5 sellers have significantly contributed to increased sales and profit.

Top Product across States

```sql
WITH RankedProducts AS (
    SELECT customer_state, product_category_name,
        COUNT(product_category_name) AS product_COUNT,
        RANK() OVER (PARTITION BY customer_state ORDER BY COUNT(product_category_name)
DESC) AS ranking
    FROM Customers
        JOIN Orders ON Customers.customer_id = Orders.customer_id
        JOIN OrderItems ON Orders.order_id = OrderItems.order_id
    GROUP BY customer_state, product_category_name
)
SELECT customer_state, product_category_name, product_COUNT, ranking
FROM RankedProducts
WHERE ranking = 1
ORDER BY product_COUNT desc;
```

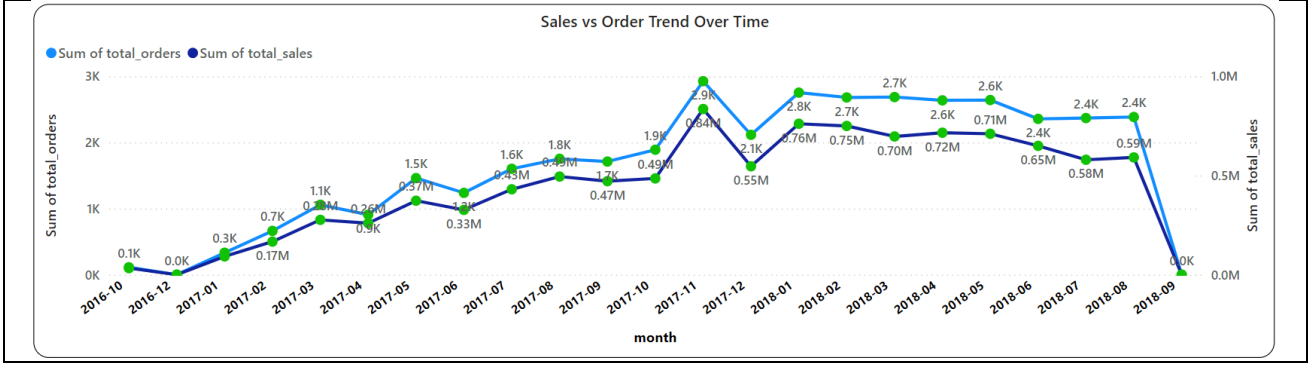


Findings: Toys have emerged as the leading product category across all states.

TIME SERIES FORCASTING

Sales and Orders trend over time

```
SELECT FORMAT(order_purchase_timestamp, 'yyyy-MM') AS month, COUNT(product_id) AS
total_orders, ROUND(SUM(payment_value),2) AS total_sales
FROM Orders
JOIN OrderItems
   ON Orders.order_id=OrderItems.order_id
JOIN Payments
   ON orderitems.order_id=Payments.order_id
GROUP BY FORMAT(order_purchase_timestamp, 'yyyy-MM')
ORDER BY FORMAT(order_purchase_timestamp, 'yyyy-MM');
```



Findings: The sales and order trends initially showed strong performance; however, they have gradually shifted to a downward trajectory, which requires immediate attention.

INSIGHTS

The analysis highlights several key findings regarding the company's performance. **SP, RJ, and MG** are identified as the most profitable states, contributing significantly to overall profits. The **Toys** category stands out as the primary source of revenue, showcasing high sales figures. Despite an upward trend in sales since the business began in **2016**, profits have declined sharply from **Qtr 1 to Qtr 4**. This downward trend in both sales and order patterns necessitates immediate attention and intervention to reverse the trajectory. Analyze the sales strategies employed in 2017 when profits peaked and assess what changes occurred that may have contributed to the downward trend. Implement best practices from that period.

Enhance customer service and engagement initiatives.

Consider seasonal promotions and bundle offers to stimulate sales.

Keep an eye on emerging trends in the toy industry.

Identify any inefficiency that could be impacting profitability.