

Royal Enfield Bike Sales - SQL Analysis

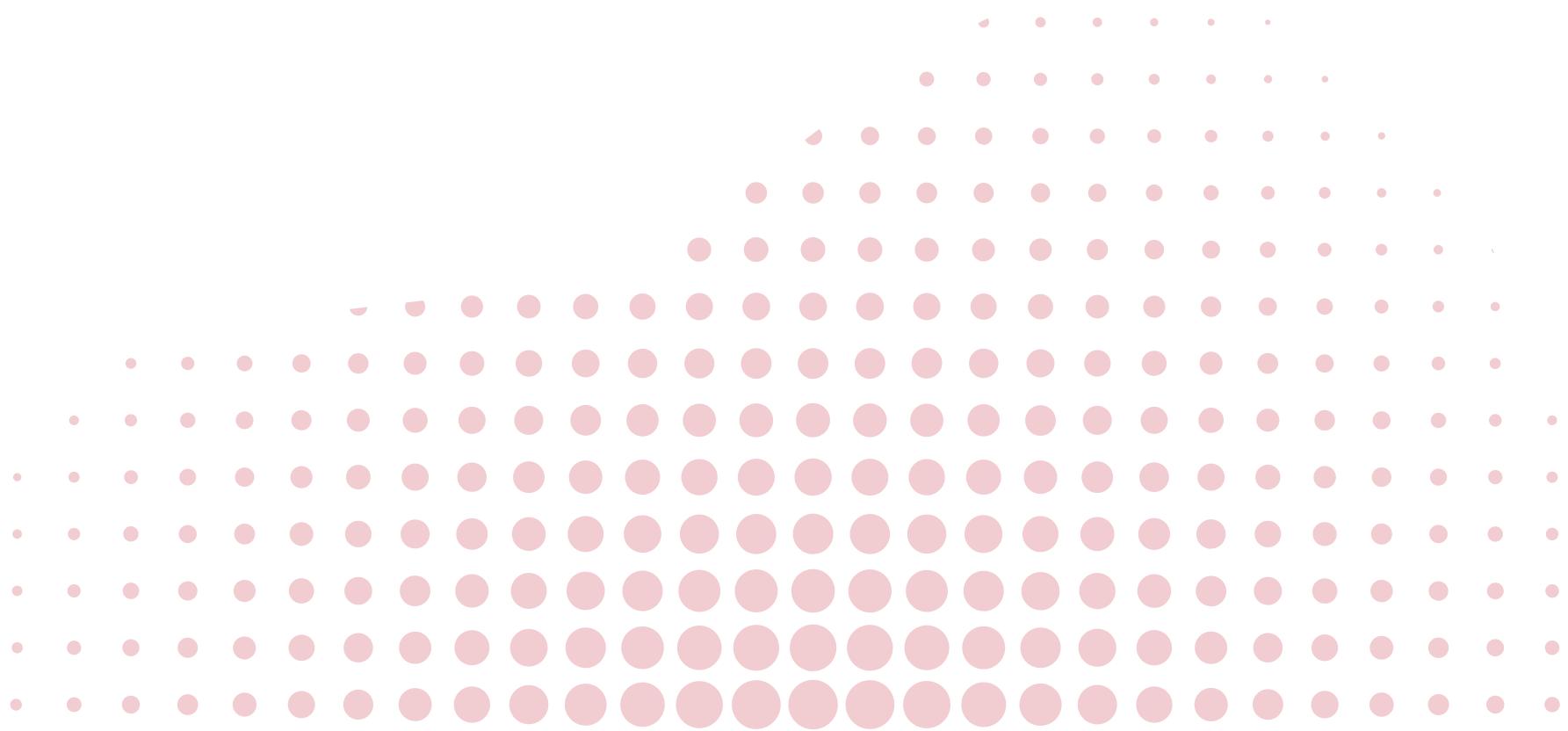


TABLES USED

- DEALERS TABLE
- SALES TABLE
- SERVICE RECORDS TABLE
- FEEDBACK TABLE
- BIKES TABLE
- CUSTOMERS TABLE

OBJECTIVE

The overall objective of the project appears to involve extracting meaningful insights from the provided datasets, understanding customer behavior, analyzing bike sales and pricing trends, tracking service history, and assessing dealer performance. This information could be valuable for decision-making, marketing strategies, and improving overall business operations related to bike sales and services.



1) Find the date of the first purchase for each customer ?

```
SELECT CustomerID  
      ,C.FirstName  
      ,C.LastName  
      ,MIN(SaleDate) AS First_Purchase  
  FROM Sales  
 JOIN Customers AS C USING (CustomerID)  
 GROUP BY CustomerID  
 ORDER BY First_Purchase;
```

OUTPUT

Query #1 Execution time: 15ms

CustomerID	FirstName	LastName	First_Purchase
1	Aarav	Sharma	2023-01-15
2	Aanya	Patel	2023-02-22
3	Aditya	Verma	2023-03-10
4	Advait	Singh	2023-04-05
5	Ahana	Kumar	2023-05-18
6	Aiden	Gupta	2023-06-02
7	Aisha	Das	2023-07-09
8	Akshay	Chatterjee	2023-08-14
9	Alia	Mukherjee	2023-09-20
10	Anaya	Joshi	2023-10-25
11	Yash	Sinha	2023-11-30
12	Zara	Nair	2023-12-05

2) Write a SQL query to find the top 3 most expensive bikes (based on price) for each year and model.

```
SELECT *
FROM (
SELECT BikeID
,Model
,Year
,Price
,RANK() OVER(PARTITION BY Year,Model ORDER BY Price DESC) AS PriceRank
FROM Bikes ) AS BikeRanks
WHERE PriceRank <= 3
GROUP BY BikeID
,Model
,Year
,Price
ORDER BY PriceRank ASC;
```

OUTPUT

Bikes Data				
BikeID	Model	Year	Price	PriceRank
47	Meteor 350	2023	220000	1
2	Bullet 500	2022	220000	1
117	Himalayan	2023	290000	1
77	Himalayan	2023	290000	1
157	Himalayan	2023	290000	1
33	Interceptor 350	2023	220000	1
156	Interceptor 650	2023	345000	1
196	Interceptor 650	2023	345000	1
76	Interceptor 650	2023	345000	1
116	Interceptor 650	2023	345000	1
98	Meteor 350	2023	220000	1

3) Retrieve Latest Service for Each Bike ?

```
SELECT BikeID, ServiceDate, ServiceDescription, ServiceCost  
FROM ServiceRecords  
WHERE (BikeID, ServiceDate) IN (  
    SELECT BikeID, MAX(ServiceDate) AS LatestServiceDate  
    FROM ServiceRecords  
    GROUP BY BikeID  
);
```

OUTPUT

Query #3 Execution time: 3ms

BikeID	ServiceDate	ServiceDescription	ServiceCost
1	2023-02-01	Regular Maintenance	5000.00
2	2023-03-15	Oil Change	3000.00
3	2023-04-10	Brake Inspection	2000.00
4	2023-05-05	Tire Replacement	6000.00
5	2023-06-18	Chain Adjustment	1500.00
6	2023-07-02	Spark Plug Replacement	1000.00
7	2023-08-09	Coolant Flush	2500.00
8	2023-09-14	Air Filter Replacement	1200.00
9	2023-10-20	Battery Check	800.00
10	2023-11-25	Suspension Tuning	4000.00
11	2024-01-01	Regular Maintenance	5000.00
12	2024-02-15	Oil Change	3000.00

4)Find the price difference between the current bike and the next bike in the same year?

```
SELECT  
    BikeID,  
    Model,  
    Year,  
    Price,  
    LEAD(Price) OVER (PARTITION BY Year ORDER BY Price) - Price AS PriceDifference  
FROM Bikes;
```

OUTPUT

Query #4 Execution time: 12ms

BikeID	Model	Year	Price	PriceDifference
1	Classic 350	2022	180000	10000
8	Meteor 350	2022	190000	10000
3	Thunderbird 350	2022	200000	10000
9	Interceptor 350	2022	210000	10000
2	Bullet 500	2022	220000	10000
7	Classic 500	2022	230000	10000
4	Himalayan	2022	240000	40000
10	Continental GT 535	2022	280000	20000
5	Interceptor 650	2022	300000	20000
6	Continental GT 650	2022	320000	null
12	Bullet 350	2023	175000	5000
18	Bullet 350	2023	180000	5000

5)Find the maximum sale amount for each month?



```
SELECT YEAR(SaleDate) AS SaleYear, MONTH(SaleDate) AS SaleMonth, MAX(SaleAmount) AS MaxSaleAmount  
FROM Sales  
GROUP BY SaleYear, SaleMonth;
```

OUTPUT

Query #5 Execution time: 3ms

SaleYear	SaleMonth	MaxSaleAmount
2023	1	180000.00
2023	2	200000.00
2023	3	300000.00
2023	4	230000.00
2023	5	240000.00
2023	6	280000.00
2023	7	200000.00
2023	8	190000.00
2023	9	210000.00
2023	10	185000.00
2023	11	175000.00

6) Concatenate the first and last names of customers, and display them in uppercase ?

```
SELECT CONCAT(UPPER.FirstName, ' ', UPPER.LastName) AS Fullname  
FROM Customers;
```

OUTPUT

Query #6 Execution time: 1ms

Fullname
AARAV SHARMA
AANYA PATEL
ADITYA VERMA
ADVAIT SINGH
AHANA KUMAR
AIDEN GUPTA
AISHA DAS
AKSHAY CHATTERJEE
ALIA MUKHERJEE
ANAYA JOSHI
YASH SINHA

7) Determine the quarter in which each sale occurred?

```
SELECT  
    SaleID,  
    SaleDate,  
    EXTRACT(QUARTER FROM SaleDate) AS quarter  
FROM Sales;
```

OUTPUT

Query #7 Execution time: 18ms

SaleID	SaleDate	quarter
1	2023-01-15	1
2	2023-02-22	1
3	2023-03-10	1
4	2023-04-05	2
5	2023-05-18	2
6	2023-06-02	2
7	2023-07-09	3
8	2023-08-14	3
9	2023-09-20	3
10	2023-10-25	4
11	2023-11-30	4
12	2023-12-05	4

8) Calculate the running total of service costs for each bike ?

```
SELECT  
    BikeID,  
    ServiceDate,  
    ServiceCost,  
    SUM(ServiceCost) OVER (PARTITION BY BikeID ORDER BY ServiceDate) AS RunningTotalCost  
FROM ServiceRecords;
```

OUTPUT

Query #8 Execution time: 1ms

BikeID	ServiceDate	ServiceCost	RunningTotalCost
1	2023-02-01	5000.00	5000.00
2	2023-03-15	3000.00	3000.00
3	2023-04-10	2000.00	2000.00
4	2023-05-05	6000.00	6000.00
5	2023-06-18	1500.00	1500.00
6	2023-07-02	1000.00	1000.00
7	2023-08-09	2500.00	2500.00
8	2023-09-14	1200.00	1200.00
9	2023-10-20	800.00	800.00
10	2023-11-25	4000.00	4000.00
11	2024-01-01	5000.00	5000.00
12	2024-02-15	3000.00	3000.00

9) Find the top dealers based on the total sales amount across all bikes?

```
SELECT
    d.DealerID,
    d.DealerName,
    SUM(s.SaleAmount) OVER (PARTITION BY d.DealerID) AS TotalSales
FROM Dealers d
JOIN Sales s ON d.DealerID = s.DealerID;
```

OUTPUT

Query #9 Execution time: 3ms

DealerID	DealerName	TotalSales
1	Royal Motors	180000.00
2	Classic Bikes	200000.00
3	Thunder Motors	300000.00
4	Himalayan Cycles	230000.00
5	Bullet Riders	240000.00
6	Interceptor Bikes	280000.00
7	Classic Motors	200000.00
8	Vintage Bikes	190000.00
9	Royal Wheels	210000.00
10	Enfield Paradise	185000.00
11	Eagle Motors	175000.00

10) Find the count of bikes sold in each year and categorize them into three groups: 'Low', 'Medium', and 'High' based on their prices?

```
SELECT
    YEAR(S.SaleDate) AS SaleYear,
    COUNT(B.BikeID) AS TotalBikesSold,
    SUM(CASE
        WHEN B.Price < 200000 THEN 1
        WHEN B.Price ≥ 200000 AND B.Price ≤ 300000 THEN 1
        ELSE 1
    END) AS 'Low',
    SUM(CASE
        WHEN B.Price ≥ 200000 AND B.Price ≤ 300000 THEN 1
        WHEN B.Price > 300000 THEN 1
        ELSE 0
    END) AS 'Medium',
    SUM(CASE
        WHEN B.Price > 300000 THEN 1
        ELSE 0
    END) AS 'High'
FROM
    Sales S
JOIN Bikes B ON S.BikeID = B.BikeID
GROUP BY
    SaleYear;
```

OUTPUT

Query #10 Execution time: 14ms

SaleYear	TotalBikesSold	Low	Medium	High
2023	12	12	8	1
2024	12	12	12	3
2025	12	12	8	2
2026	12	12	9	2
2027	12	12	9	1
2028	12	12	11	3
2029	12	12	8	2
2030	12	12	10	1
2031	4	4	3	1

11) Top 5 Bike Model with highest cost

```
SELECT Model, MAX(Price) AS High_Price  
FROM Bikes  
GROUP BY Model  
ORDER BY High_Price  
LIMIT 5;
```

OUTPUT

Model	High_Price
Bullet 350	200000
Thunderbird 350	210000
Classic 350	215000
Interceptor 350	220000
Meteor 350	220000

**12)Write a query to compare a bike model price in year 2022 and 2023.
Retrieve in two different column for 2022 and 2023**

```
SELECT
    Model,
    MAX( CASE WHEN Year = 2022 THEN Price END) AS Price_2022,
    MAX(CASE WHEN Year = 2023 THEN Price END) AS price_2023
FROM Bikes
GROUP BY Model;
```

OUTPUT

Model	Price_2022	price_2023
Classic 350	180000	215000
Bullet 500	220000	235000
Thunderbird 350	200000	210000
Himalayan	240000	290000
Interceptor 650	300000	345000
Continental GT 650	320000	340000
Classic 500	230000	255000
Meteor 350	190000	220000
Interceptor 350	210000	220000
Continental GT 535	280000	null
Bullet 350	null	200000

13) Retrieve the count of highly sold bike model in both the year with its SalesAmount

```
SELECT  
    Model,  
    COUNT(*) AS Count,  
    SUM(Price) AS TotalSalesAmount  
FROM Bikes  
GROUP BY Model  
ORDER BY Count DESC;
```

OUTPUT

Model	Count	Total Sales Amount
Meteor 350	26	5550000
Classic 350	24	4918000
Himalayan	24	6450000
Classic 500	24	5867000
Interceptor 650	23	7615000
Continental GT 650	23	7420000
Thunderbird 350	22	4494000
Bullet 500	13	2935000
Bullet 350	13	2506000
Interceptor 350	3	645000
Continental GT 535	1	280000

14)write a query to retrive how much bikes are sold by each dealer in year 2023(dealer name, bike sales count, total sales amount)

```
SELECT
    d.DealerName,
    COUNT(s.BikeID) AS BikeSalesCount,
    SUM(s.SaleAmount) AS TotalSalesAmount
FROM Sales s
JOIN Bikes b ON s.BikeID = b.BikeID
JOIN Dealers d ON s.DealerID = d.DealerID
WHERE YEAR(s.SaleDate) = 2023
GROUP BY d.DealerName;
```

OUTPUT

DealerName	BikeSalesCount	TotalSalesAmount
Royal Motors	1	180000.00
Classic Bikes	1	200000.00
Thunder Motors	1	300000.00
Himalayan Cycles	1	230000.00
Bullet Riders	1	240000.00
Interceptor Bikes	1	280000.00
Classic Motors	1	200000.00
Vintage Bikes	1	190000.00
Royal Wheels	1	210000.00
Enfield Paradise	1	185000.00
Eagle Motors	1	175000.00
Golden Bikes	1	250000.00

**15)From the above Dealers table Retrive count of dealers in each location
-- (eg. count of dealers in Delhi)**

```
SELECT
    Location,
    COUNT(*) AS DealerCount
FROM Dealers
GROUP BY Location;
```

OUTPUT

Location	DealerCount
Delhi	2
Mumbai	2
Bangalore	2
Chennai	2
Kolkata	2
Hyderabad	2
Pune	2
Ahmedabad	3
Jaipur	2
Lucknow	2
Chandigarh	2
Indore	2

16) Retrieve Model from bikes table and Max service cost of each bike with its description from servicerecord table -- (fetch top 5 records)

```
SELECT
    B.Model,
    MAX(SR.ServiceCost) AS MaxServiceCost,
    SR.ServiceDescription
FROM Bikes B
JOIN ServiceRecords SR ON B.BikeID = SR.BikeID
GROUP BY B.Model, SR.ServiceDescription
ORDER BY MaxServiceCost DESC
LIMIT 5;
```

OUTPUT

Model	MaxServiceCost	ServiceDescription
Bullet 350	6000.00	Tire Replacement
Continental GT 650	6000.00	Tire Replacement
Classic 500	6000.00	Tire Replacement
Himalayan	6000.00	Tire Replacement
Interceptor 650	6000.00	Tire Replacement

17) Retrieve top 5 comments from feedback table with rating 5 and rating 3

```
SELECT
    Rating, comments
FROM
    Feedback
WHERE Rating = 5
limit 5;

SELECT
    Rating, comments
FROM
    Feedback
WHERE Rating = 3
limit 5;
```

OUTPUT

Rating	comments
5	Excellent service and a great bike!
5	Love my new Royal Enfield! Great experience overall.
5	Smooth transaction, and the bike exceeded my expectations.
5	Absolutely thrilled with my Royal Enfield. Fantastic ride!
5	No complaints at all. Loving every moment with my new bike!

Query #8 Execution time: 0ms

Rating	comments
3	The bike is good, but had some issues with the paperwork.
3	Bike is great, but the dealer staff could be more knowledgeable.
3	Bike is good, but the dealer could improve customer service.
3	The bike is good, but had some issues with delivery logistics.
3	Bike is good, but the dealer could improve customer service.

