E-Commerce Order & Delivery Performance Analysis (Using MySQL and Power BI)

SECTION 1 — PROJECT OVERVIEW

Project Objective

To analyse e-commerce order data of Blinkit, Swiggy and JioMart and understand delivery performance, customer satisfaction, refunds, and platform efficiency using SQL. This project focuses on deriving business insights using basic to intermediate SQL queries.

Dataset Overview

- 100,000 rows of e-commerce orders
- Multiple quick-commerce platforms namely Blinkit, Swiggy and JioMart
- **Key fields**: order_id, customer_id, platform, order_time, delivery_time_minutes, product_category, order_value, customer_feedback, service_rating, delivery_delay and refund_requested

Tools Used

- **MySQL** — data analysis & business insights
- **Power BI** — dashboard

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Why This Analysis Matters

Efficient delivery and customer experience directly impact customer satisfaction, refunds, and business revenue. This analysis helps identify operational problem areas.

order_id	customer_id	platform	order_time	delivery_time_minutes	product_category	order_value	customer_feedback	service_rating	delivery_delay	refund_requested
ORD000001	CUST2824	JioMart	00:19:30	30	Fruits & Vegetables	382	Fast delivery & great service!	5	No	No
ORD000002	CUST1409	Blinkit	00:54:30	16	Dairy	279	Quick and reliable!	5	No	No
ORD000003	CUST5506	JioMart	00:21:29	25	Beverages	599	Items missing from order.	2	No	Yes
ORD000004	CUST5012	JioMart	00:19:30	42	Beverages	946	Items missing from order.	2	Yes	Yes
ORD000005	CUST4657	Blinkit	00:49:30	30	Beverages	334	Fast delivery & great service!	5	No	No
ORD000006	CUST3286	Blinkit	00:36:30	25	Personal Care	1939	Items missing from order.	2	No	Yes
ORD000007	CUST2679	JioMart	00:22:30	22	Personal Care	1693	Fast delivery & great service!	5	No	No
ORD000008	CUST9935	Swiggy Instamart	00:50:30	16	Personal Care	195	Horrible experience & never ordering again.	1	No	Yes
ORD000009	CUST2424	JioMart	00:51:30	39	Fruits & Vegetables	182	Very satisfied with the service.	5	No	No
ORD000010	CUST7912	JioMart	00:08:30	51	Grocery	1279	Very late delivery & not happy.	2	Yes	Yes

FIG 1: FIRST 10 RECORDS OUT OF 100K IN THE DATASET (FOR REFERENCE)

SECTION 2 — OVERALL BUSINESS HEALTH & ORDER EFFICIENCY

Query 1: Total Orders

Counts the total number of orders to understand the size and scale of the businesses.

```
SELECT COUNT(*) AS Total_Orders
FROM orders;
```

Total_Orders
100000

Query 2: Average Order Value & Delivery Time

Calculates the average order value and average delivery time to evaluate revenue per order and delivery efficiency.

```
SELECT
    ROUND(AVG(order_value), 2) AS "Avg_Order_Value (INR)",
    ROUND(AVG(delivery_time_minutes), 2) AS "Avg_Delivery_Time (Mins)"
FROM orders;
```

Avg_Order_Value (INR)	Avg_Delivery_Time (Mins)
590.99	29.54

Query 3: Average Service Rating

Finds the overall average customer rating to measure general customer satisfaction.

```
SELECT
    ROUND(AVG(service_rating), 2) AS Avg_Service_Rating
FROM orders;
```

Avg_Service_Rating
3.24

Key Insights:

- The dataset represents a high-volume e-commerce business.
- Average delivery time of 30 minutes reflects quick-commerce operations.
- Overall service rating of 3.24 indicates generally positive customer experience.

SECTION 3 — PLATFORM PERFORMANCE ANALYSIS

Query 4: Orders by Platform

Shows how total orders are distributed across platforms, helping identify high-volume platforms.

```sql
SELECT
    platform AS Platform ,
    COUNT(*) AS Total_Orders
FROM orders
GROUP BY platform
ORDER BY total_orders DESC;
```

Platform	Total_Orders
Swiggy Instamart	33449
Blinkit	33424
JioMart	33127

Query 5: Revenue by Platform

Calculates total revenue generated by each platform to measure financial contribution.

```sql
SELECT
    platform AS Platform,
    ROUND(SUM(order_value)/10000000, 2) AS "Revenue_In_Crores(INR)"
FROM orders
GROUP BY platform
ORDER BY "Revenue_In_Crores(INR)" DESC;
```

Platform	Revenue_In_Crores(INR)
Swiggy Instamart	1.98
Blinkit	1.97
JioMart	1.96

Query 6: Average Rating by Platform

Compares customer satisfaction levels across platforms using average service ratings.

```
SELECT
    platform AS Platform,
    ROUND(AVG(service_rating), 2) AS Avg_Rating
FROM orders
GROUP BY platform
ORDER BY Avg_Rating DESC;
```

Platform	Avg_Rating
JioMart	3.25
Swiggy Instamart	3.24
Blinkit	3.23

Key Insights:

- Platforms show comparable order volume and revenue contribution, indicating a competitive market.
- Some platforms perform better in customer satisfaction despite lower order volume.
- Platform-wise analysis helps identify operational strengths and weaknesses.

SECTION 4 — DELIVERY DELAYS & REFUNDS

Query 7: Delayed vs On-Time Orders

Counts delayed and on-time orders to understand the scale of delivery issues.

```
SELECT
    delivery_delay AS Delivery_Delay,
    COUNT(*) AS Total_Orders
FROM orders
GROUP BY delivery_delay;
```

Delivery_Delay	Total_Orders
Yes	13672
No	86328

Query 8: Impact of Delay on Ratings

Compares average service ratings between delayed and non-delayed deliveries

```
SELECT
    delivery_delay AS Delivery_Delay,
    ROUND(AVG(service_rating), 2) AS Avg_Rating
FROM orders
GROUP BY delivery_delay;
```

Delivery_Delay	Avg_Rating
Yes	3.23
No	3.24

Query 9: Delivery Delay vs Refund Requests

Analyses the relationship between delivery delays and refund requests.

```sql
SELECT
    delivery_delay AS Delivery_Delay,
    refund_requested AS Refund_Requested,
    COUNT(*) AS Orders
FROM orders
GROUP BY delivery_delay, refund_requested
ORDER BY delivery_delay;
```

Delivery_Delay	Refund_Requested	Orders
No	No	46807
No	Yes	39521
Yes	No	7374
Yes	Yes	6298

Key Insights:

- Delivery delays do not significantly affect ratings in the dataset.
- However, refund requests increase when deliveries are delayed.
- This indicates customers tolerate delays but expect refunds.

SECTION 5 — PRODUCT CATEGORIES & CUSTOMER EXPERIENCE INSIGHTS

Query 10: Orders by Product Category

Shows which product categories have the highest order volume.

```sql
SELECT
    product_category AS Product_Category,
    COUNT(*) AS Total_Orders
FROM orders
GROUP BY product_category
ORDER BY total_orders DESC;
```

Product_Category	Total_Orders
Dairy	16857
Grocery	16737
Snacks	16705
Fruits & Vegetables	16632
Beverages	16536
Personal Care	16533

Query 11: Average Delivery Time by Category

Compares delivery times across product categories to identify slow-moving categories.

```sql
SELECT
    product_category AS Product_Category,
    ROUND(AVG(delivery_time_minutes), 2) AS "Avg_Delivery_Time (Mins)"
FROM orders
GROUP BY product_category
ORDER BY "Avg_Delivery_Time (Mins)" DESC;
```

Product_Category	Avg_Delivery_Time (Mins)
Grocery	29.58
Personal Care	29.57
Dairy	29.56
Fruits & Vegetables	29.55
Beverages	29.50
Snacks	29.45

Query 12: Category-Wise Delay Percentage

Calculates the percentage of delayed deliveries for each product category.

```sql
SELECT
    product_category AS Product_Category,
    COUNT(*) AS Total_Orders,
    SUM(CASE WHEN delivery_delay = 'Yes' THEN 1 ELSE 0 END) AS Delayed_Orders,
    ROUND(
        SUM(CASE WHEN delivery_delay = 'Yes' THEN 1 ELSE 0 END) * 100.0 / COUNT(*),
        2
    ) AS Delay_Percentage
FROM orders
GROUP BY product_category
ORDER BY delay_percentage DESC;
```

Product_Category	Total_Orders	Delayed_Orders	Delay_Percentage
Grocery	16737	2313	13.82
Fruits & Vegetables	16632	2290	13.77
Dairy	16857	2312	13.72
Personal Care	16533	2254	13.63
Snacks	16705	2267	13.57
Beverages	16536	2236	13.52

Key Insights:

- Delivery performance varies across product categories.
- Category-level insights help optimize inventory and logistics.

SECTION 6 — CUSTOMER ISSUES & CONCLUSION

Query 13: Missing Item Complaints

Counts customer complaints related to missing items using keyword analysis.

```
SELECT COUNT(*) AS Missing_Item_Complaints
FROM orders
WHERE customer_feedback LIKE '%missing%';
```

Missing_Item_Complaints
7737

Query 14: Very Poor Experience Orders

Identifies the number of orders with very low service ratings.

```
SELECT COUNT(*) AS Low_Rating_Orders
FROM orders
WHERE service_rating <= 2;
```

Low_Rating_Orders
45819

Query 15: High-Value Orders with Poor Ratings

Finds high-value orders that resulted in poor customer experience, indicating potential revenue risk.

```
SELECT COUNT(*) AS High_Value_Bad_Experience
FROM orders
WHERE order_value > 1000
  AND service_rating <= 2;
```

High_Value_Bad_Experience
6979

Final Takeaways:

- Delivery delays strongly impact refunds, while ratings remain relatively stable.
- Platform and category-level analysis reveals operational gaps.
- Customer complaints highlight areas for service improvement.