

Marketing Analytics for E-Commerce Marketplace

This project focuses on a leading e-commerce marketplace in India, where our objective is to measure, manage, and analyze business performance through a data-driven approach. Our analysis utilizes a comprehensive dataset encompassing key data points from multiple sources, such as customer profiles, orders, payments, reviews, products, and seller information.

Objective

To provide data-driven insights that inform business strategies and optimize operations across various dimensions, including customer engagement, seller performance, product offerings, and channel effectiveness.

Dataset Overview

Customers: Contains information about customers, including demographics and geographic locations.

Sellers: Details about sellers operating in the marketplace.

Products: Information on products available for sale, including descriptions and dimensions.

Orders: Overview of order transactions, including statuses and timestamps.

Order Items: Detailed information on individual items within each order.

Order Payments: Records of payment transactions associated with orders.

Order Review Ratings: Customer ratings for each order.

Geo-Location: Location data associated with customers and sellers.

Data Loading

Platform Used

- **Database:** MySQL

Data Preparation

Modified data types of key date-related columns to ensure consistent date formats across tables
Used SQL TRIM to remove any extraneous white spaces
Counted NULL values across tables to identify data quality issues and removed for data accuracy
Checks were performed on unique identifiers, such as customer_id and order_id, to detect and address duplicates

High-Level Metrics Calculation

```
-- Total Revenue --
SELECT SUM(payment_value) AS total_revenue FROM Order_Payments;
-- Total quantity --
SELECT SUM(order_item_id) AS total_quantity FROM Order_Items;
-- Total Products --
SELECT COUNT(DISTINCT product_id) AS total_products FROM Products;

-- Total Categories
SELECT COUNT(DISTINCT product_category_name) AS total_categories FROM Products;

-- Total Sellers
SELECT COUNT(DISTINCT seller_id) AS total_sellers FROM Sellers;

-- Total Locations (using zip code as a proxy for unique locations)
SELECT COUNT(DISTINCT geolocation_zip_code_prefix) AS total_locations FROM Geo_Location;

-- Total Payment methods
SELECT COUNT(DISTINCT payment_type) AS total_payment_methods FROM Order_Payments;
```

total_revenue
16008872.119998764

total_quantity
134936

total_products
32327

total_categories
71

total_sellers
3095

total_locations
19015

total_payment_methods
5

Business Problems and Solutions

Customer Acquisition Trends

Identify the number of new customers acquired each month.

```
SELECT  
    DATE_FORMAT(order_purchase_timestamp, '%m') AS month,  
    DATE_FORMAT(order_purchase_timestamp, '%Y') AS year,  
    COUNT(DISTINCT customer_id) AS new_customers  
FROM Orders  
GROUP BY year, month  
ORDER BY year, month;
```

month	year	new_customers
09	2016	1
10	2016	265
12	2016	1
01	2017	748
02	2017	1641
03	2017	2546
04	2017	2303
05	2017	3545
06	2017	3135
07	2017	3872
08	2017	4193
09	2017	4149
10	2017	4478
11	2017	7288
12	2017	5513
01	2018	7069
02	2018	6555
03	2018	7003
04	2018	6798
05	2018	6749
06	2018	6096
07	2018	6156
08	2018	6351

Customer Retention Analysis

Measure retention by calculating how many customers placed orders in consecutive months.

```

WITH MonthlyOrders AS (
    SELECT
        customer_id,
        DATE_FORMAT(order_purchase_timestamp, '%Y-%m') AS order_month
    FROM Orders
    GROUP BY customer_id, order_month
),
RetainedCustomers AS (
    SELECT
        order_month,
        COUNT(DISTINCT customer_id) AS retained_customers
    FROM MonthlyOrders
    GROUP BY order_month
)
SELECT * FROM RetainedCustomers ORDER BY order_month;

```

order_month	retained_customers
2016-09	1
2016-10	265
2016-12	1
2017-01	748
2017-02	1641
2017-03	2546
2017-04	2303
2017-05	3545
2017-06	3135
2017-07	3872
2017-08	4193
2017-09	4149
2017-10	4478
2017-11	7288
2017-12	5513
2018-01	7069
2018-02	6555
2018-03	7003
2018-04	6798
2018-05	6749
2018-06	6096
2018-07	6156
2018-08	6351

Revenue from Existing vs. New Customers (Month on Month)

Calculate revenue generated by existing and new customers month over month.

```

WITH FirstOrder AS (
    SELECT
        customer_id,
        MIN(DATE_FORMAT(order_purchase_timestamp, '%Y-%m')) AS first_order_month
    FROM Orders
    GROUP BY customer_id
),
MonthlyRevenue AS (
    SELECT
        DATE_FORMAT(O.order_purchase_timestamp, '%Y-%m') AS order_month,
        CASE
            WHEN F.first_order_month = DATE_FORMAT(O.order_purchase_timestamp, '%Y-%m')
            THEN 'New'
            ELSE 'Existing'
        END AS customer_type,
        SUM(OI.price) AS revenue
    FROM Orders O
    JOIN Order_Items OI ON O.order_id = OI.order_id
    JOIN FirstOrder F ON O.customer_id = F.customer_id
    GROUP BY order_month, customer_type
)
SELECT * FROM MonthlyRevenue ORDER BY order_month, customer_type;

```

order_month	customer_type	revenue
2016-09	New	134.97
2016-10	New	40325.11000000016
2016-12	New	10.9
2017-01	New	111712.46999999978
2017-02	New	232638.85999999623
2017-03	New	359198.85000000097
2017-04	New	340669.68000000005
2017-05	New	489159.25000000733
2017-06	New	421923.3700000056
2017-07	New	481604.52000000834
2017-08	New	554699.700000016
2017-09	New	607220.6700000161
2017-10	New	648247.6500000171
2017-11	New	987648.0700000345
2017-12	New	726033.1900000172
2018-01	New	924645.0000000359
2018-02	New	826437.13000003
2018-03	New	953356.2500000292
2018-04	New	973534.0900000283
2018-05	New	977544.6900000324
2018-06	New	855591.9700000214
2018-07	New	867486.4700000208
2018-08	New	838576.6400000236

Sales Seasonality & Trends

Analyze seasonality by looking at sales volume trends across months, weeks, and days.

```

SELECT
    DATE_FORMAT(order_purchase_timestamp, '%Y-%m') AS month,
    DATE_FORMAT(order_purchase_timestamp, '%W') AS day_of_week,
    DATE_FORMAT(order_purchase_timestamp, '%H') AS hour,
    SUM(OI.price) AS total_sales
FROM Orders O
JOIN Order_Items OI ON O.order_id = OI.order_id
GROUP BY month, day_of_week, hour
ORDER BY month, day_of_week, hour;
  
```

month	day_of_week	hour	total_sales
2016-09	Thursday	12	134.97
2016-10	Friday	00	134.7
2016-10	Friday	02	128.9
2016-10	Friday	08	620.97
2016-10	Friday	09	162.87
2016-10	Friday	10	1830.9099999999999
2016-10	Friday	11	428.5
2016-10	Friday	12	49
2016-10	Friday	14	350.70000000000005
2016-10	Friday	15	339.9
2016-10	Friday	16	331.79
2016-10	Friday	17	285.29
2016-10	Friday	19	308.9
2016-10	Friday	21	724.38
2016-10	Friday	22	329.54
2016-10	Friday	23	49
2016-10	Monday	00	49.9
2016-10	Monday	02	99.9
2016-10	Monday	04	44.89
2016-10	Monday	07	87.89
2016-10	Monday	08	169.9
2016-10	Monday	09	79.89
2016-10	Monday	10	225.70000000000002
2016-10	Monday	11	251.59000000000003
2016-10	Monday	12	216.79000000000002
2016-10	Monday	13	739.98
2016-10	Monday	14	88.7
2016-10	Monday	15	517.55
2016-10	Monday	16	471.78999999999996
2016-10	Monday	17	19
2016-10	Monday	18	147.9
2016-10	Monday	21	36.49
2016-10	Monday	22	353.69000000000005

Popular Products by Month, Seller, State, and Category

Identify popular products and categories by month, seller, state.

```

SELECT
    DATE_FORMAT(o.order_purchase_timestamp, '%Y-%m') AS month,
    s.seller_id,
    s.seller_state,
    p.product_category_name,
    oi.product_id,
    COUNT(oi.product_id) AS product_count
FROM Orders o
JOIN Order_Items oi ON o.order_id = oi.order_id
JOIN Sellers s ON oi.seller_id = s.seller_id
JOIN Products p ON oi.product_id = p.product_id
GROUP BY month, s.seller_id, s.seller_state, p.product_category_name, oi.product_id
ORDER BY product_count DESC
LIMIT 10;

```

month	seller_id	seller_state	product_category_name	product_id	product_count
2018-01	955fee9216a65b617aa5c0531780ce60	Andhra Pradesh	Furniture_Decor	aca2eb7d00ea1a7b8ebd4e68314663af	121
2018-05	7d13fc15225358621be4086e1eb0964	Andhra Pradesh	Watches_Gifts	53b36df67ebb7c41585e8d54d6772e08	107
2017-11	1f50f920176fa81dab994f9023523100	Andhra Pradesh	Garden_Tools	422879e10f46682990de24d770e7f83d	91
2018-05	955fee9216a65b617aa5c0531780ce60	Andhra Pradesh	Furniture_Decor	aca2eb7d00ea1a7b8ebd4e68314663af	90
2017-11	1f50f920176fa81dab994f9023523100	Andhra Pradesh	Garden_Tools	389d119b48cf3043d311335e499dc6b	87
2018-04	955fee9216a65b617aa5c0531780ce60	Andhra Pradesh	Furniture_Decor	aca2eb7d00ea1a7b8ebd4e68314663af	83
2017-11	1f50f920176fa81dab994f9023523100	Andhra Pradesh	Garden_Tools	53759a2ecddad2bb87a079a1f1519f73	82
2018-01	955fee9216a65b617aa5c0531780ce60	Andhra Pradesh	Cool_Stuff	54d9ac713e253fa1fae9c8003b011c2a	76
2017-06	813348c996469b40f2e028d5429d3495	Andhra Pradesh	Housewares	42a2c92a0979a949ca4ea89ec5c7b934	71
2018-02	de722cd6dad950a92b7d4f82673f8833	Andhra Pradesh	Computers_Accessories	3dd2a17168ec895c781a9191c1e95ad7	69

Popular Categories by State

```

SELECT
    customer_state,
    product_category_name,
    COUNT(*) AS category_sales
FROM Orders o
JOIN Order_Items OI ON O.order_id = OI.order_id
JOIN Products P ON OI.product_id = P.product_id
JOIN Customers C ON O.customer_id = C.customer_id
GROUP BY customer_state, product_category_name
ORDER BY category_sales DESC
LIMIT 10;

```

customer_state	product_category_name	category_sales
Andhra Pradesh	Bed_Bath_Table	6977
Andhra Pradesh	Health_Beauty	5878
Andhra Pradesh	Sports_Leisure	5184
Andhra Pradesh	Furniture_Decor	5117
Andhra Pradesh	Computers_Accessories	4730
Andhra Pradesh	Housewares	4450
Andhra Pradesh	Watches_Gifts	3574
Andhra Pradesh	Toys	2550
Andhra Pradesh	Garden_Tools	2457
Andhra Pradesh	Telephony	2366

Top 10 Most Expensive Products

Identify the 10 highest-priced products.

```

SELECT
    order_items.product_id,
    price,
    product_category_name
FROM Order_Items
JOIN products on order_items.product_id = products.product_id
ORDER BY product_category_name ,price DESC
LIMIT 10;

```

product_id	price	product_category_name
2b69866f22de8dad69c976771daba91c	2990	Agro_Industry_And_Commerce
b7a60a397d4efd05c1b5d398fb9f9097	2399	Agro_Industry_And_Commerce
cd2f5c10e4e8dbc701f0bb68a09fdfe8	2199	Agro_Industry_And_Commerce
eddb814fb553b6951f51b34c5f578ba0	1899	Agro_Industry_And_Commerce
d5dbb4d9ecbbf2e312169e4c8f1b57f0	1476.3	Agro_Industry_And_Commerce
5fb0955cb683eb6f65a1f613e502eef5	1390	Agro_Industry_And_Commerce
5fb0955cb683eb6f65a1f613e502eef5	1330	Agro_Industry_And_Commerce
ea1d59339533cb7f68f0319501d8e4d4	1234	Agro_Industry_And_Commerce
cd5df6a3db7a3d064a55af08289d762	1180	Agro_Industry_And_Commerce
cd5df6a3db7a3d064a55af08289d762	1180	Agro_Industry_And_Commerce

Customer Segmentation by revenue

Group customers by revenue levels.

```

WITH CustomerRevenue AS (
    SELECT
        customer_id,
        SUM(price) AS total_revenue
    FROM Orders O
    JOIN Order_Items OI ON O.order_id = OI.order_id
    GROUP BY customer_id
)
SELECT
    customer_id,
    CASE
        WHEN total_revenue >= 10000 THEN 'High Value'
        WHEN total_revenue >= 5000 THEN 'Medium Value'
        ELSE 'Low Value'
    END AS customer_segment
FROM CustomerRevenue;

```

customer_id	customer_segment
8afb90a97ee661103014329b1bcea1a2	Low Value
48ed31e735f1c420ed6ca3637b7c744d	Low Value
fcad74a7e0dff27c33e36cbd78280bf9	Low Value
3c628393675b42c6b5ef89461f68ecf	Low Value
1b9506de3da8fd318853195b13fb2dda	Low Value
337e39b83fac394e62eb7876f45ee981	Low Value
9583b047c90d4aa1c5c68b4065ba7f4e	Low Value
89a187407adfc8a32a4d6233a6a237d8	Low Value
45ba03e2c6bbb5dc48131ba32ec3ae5e	Low Value
0c7a95280b3f80eadd81c829e093dbec	Low Value
1c5b37d20011c637ad1a5b6d423c7483	Low Value
6a4ea2081853cd8dd8d7c69cdf86925a	Low Value
2e068340b3037f667ce3224bd59260af	Low Value
3971ac136496b4368c1431bb5bce0929	Low Value
57ee2ef64f17a5f9a4bf30489b06326c	Low Value
67214f2cd8744c2d6d53a74a226ad9de	Low Value

Seller Segmentation by revenue

Group sellers by revenue levels.

```

WITH SellerRevenue AS (
    SELECT
        s.seller_id,
        SUM(oi.price) AS total_revenue
    FROM Sellers s
    JOIN Order_Items oi ON s.seller_id = oi.seller_id
    GROUP BY s.seller_id
)

-- Segment Sellers Based on Revenue
SELECT
    seller_id,
    total_revenue,
    CASE
        WHEN total_revenue >= 100000 THEN 'High Revenue'
        WHEN total_revenue >= 50000 AND total_revenue < 100000 THEN 'Medium Revenue'
        ELSE 'Low Revenue'
    END AS revenue_group
FROM SellerRevenue
ORDER BY total_revenue DESC;

```

seller_id	total_revenue	revenue_group
4869f7a5dfa277a7dca6462dcf3b52b2	229472.6299999981	High Revenue
53243585a1d6dc2643021fd1853d8905	222776.04999999952	High Revenue
4a3ca9315b744ce9f8e9374361493884	200472.9199999949	High Revenue
fa1c13f2614d7b5c4749cbc52fecda94	194042.02999999846	High Revenue
7c67e1448b00f6e969d365cea6b010ab	187923.8899999995	High Revenue
7e93a43ef30c4f03f38b393420bc753a	176431.86999999982	High Revenue
da8622b14eb17ae2831f4ac5b9dab84a	160236.56999999538	High Revenue
7a67c85e85bb2ce8582c35f2203ad736	141745.53000000177	High Revenue
1025f0e2d44d7041d6cf58b6550e0bfa	138968.5499999995	High Revenue
955fee9216a65b617aa5c0531780ce60	135171.69999999914	High Revenue
46dc3b2cc0980fb8ec44634e21d2718e	128111.1900000011	High Revenue
6560211a19b47992c3666cc44a7e94c0	123304.83000000003	High Revenue
620c87c171fb2a6dd6e8bb4dec959fc6	114774.49999999843	High Revenue
7d13fca15225358621be4086e1eb0964	113628.96999999993	High Revenue
5dceca129747e92ff8ef7a997dc4f8ca	112155.52999999959	High Revenue
1f50f920176fa81dab994f9023523100	106939.20999999739	High Revenue
cc419e0650a3c5ba77189a1882b7556a	104288.42000000263	High Revenue
a1043baf471dff536d0c462352beb48	101901.16000000053	High Revenue
3d871de0142ce09b7081e2b9d1733cb1	94914.19999999965	Medium Revenue
edb1ef5e36e0c8cd84eb3c9b003e486d	79284.55000000002	Medium Revenue
ccc4bbb5f32a6ab2b7066a4130f114e3	74004.62000000001	Medium Revenue
f7ba60f8c3f99e7ee4042fdef03b70c4	68395	Medium Revenue
fe2032dab1a61af8794248c8196565c9	65959.61000000001	Medium Revenue
8581055ce74af1daba164fdbd55a40de	64925.30000000023	Medium Revenue
cca3071e3e9bb7d12640c9fbe2301306	64009.89000000051	Medium Revenue

Cross-Selling Analysis

Identify products frequently bought together.

```

SELECT
    oi1.product_id AS product_1,
    oi2.product_id AS product_2,
    COUNT(*) AS combo_count
FROM Order_Items oi1
JOIN Order_Items oi2 ON oi1.order_id = oi2.order_id
WHERE oi1.product_id < oi2.product_id
GROUP BY product_1, product_2
ORDER BY combo_count DESC
LIMIT 10;

```

product_1	product_2	combo_count
05b515fdc76e888aada3c6d66c201dff	270516a3f41dc035aa87d220228f844c	100
36f60d45225e60c7da4558b070ce4b60	e53e557d5a159f5aa2c5e995dfdf244b	48
710b7c26b7a742f497bba45fab91a25f	a9d9db064d4af4458eb3e139fe29167	36
62995b7e571f5760017991632bbfd311	ac1ad58efc1ebf66bfadc09f29bdedc0	36
35afc973633aaeb6b877ff57b2793310	99a4788cb24856965c36a24e339b6058	30
2ef36e1cae01b86d0ff0a2f50ff2bd53	53759a2ecddad2bb87a079a1f1519f73	30
308e4e21ae228a10f6370a243ae59995	90b58782fdd04cb829667fcc41fb65f5	30
18486698933fb64af6c0a255f7dd64c	dbb67791e405873b259e4656bf971246	26
58efb9b638561ce132216a9a612513e2	872db866d615db59612ac933f43d6b22	25
ad4b5def91ac7c575dbdf65b5be311f4	e6b314a2236c162ede1a879f1075430f	24

Payment Behavior: How Customers Are Paying

Analyze preferred payment methods

```

SELECT
    payment_type,
    COUNT(*) AS payment_count
FROM Order_Payments
GROUP BY payment_type
ORDER BY payment_count DESC;

```

payment_type	payment_count
credit_card	76795
UPI	19784
voucher	5775
debit_card	1529
not_defined	3

Channels Used by Most Customers

Identify which channels customers use most often.

SELECT

```

payment_type,
SUM(payment_value) AS total_payment_value,
COUNT(DISTINCT order_id) AS unique_transactions
FROM Order_Payments
GROUP BY payment_type
ORDER BY total_payment_value DESC;
```

payment_type	total_payment_value	unique_transactions
credit_card	12542084.189999491	76505
UPI	2869361.269999955	19784
voucher	379436.8700000005	3866
debit_card	217989.78999999963	1528
not_defined	0	3

Top and Bottom Rated Categories

Determine customer satisfaction based on ratings, identifying the Top rated categories and products.

SELECT

```
p.product_category_name,  
    AVG(rr.review_score) AS avg_rating  
FROM Order_Review_Ratings rr  
JOIN Order_Items oi ON rr.order_id = oi.order_id  
JOIN Products p ON oi.product_id = p.product_id  
GROUP BY p.product_category_name  
ORDER BY avg_rating DESC  
LIMIT 10; -- Modify for bottom ratings
```

product_category_name	avg_rating
Cds_Dvds_Musicals	4.6429
Fashion_Childrens_Clothes	4.5000
Books_General_Interest	4.4394
Books_Imported	4.4000
Costruction_Tools_Tools	4.3592
Books_Technical	4.3383
Luggage_Accessories	4.3095
Food_Drink	4.3036
Small_Appliances_Home_Oven_And_...	4.3026
Fashion_Sport	4.2581

BOTTOM

Determine customer satisfaction based on ratings, identifying the Bottom rated categories and products.

```
SELECT
```

```
    p.product_category_name,  
    AVG(rr.review_score) AS avg_rating  
FROM Order_Review_Ratings rr  
JOIN Order_Items oi ON rr.order_id = oi.order_id  
JOIN Products p ON oi.product_id = p.product_id  
GROUP BY p.product_category_name  
ORDER BY avg_rating asc  
LIMIT 10;
```

product_category_name	avg_rating
Security_And_Services	2.5000
Diapers_And_Hygiene	3.2564
Home_Comfort_2	3.3667
Office_Furniture	3.4844
Fashion_Male_Clothing	3.6212
Fixed_Telephony	3.6717
Party_Supplies	3.7674
Fashio_Female_Clothing	3.7800
La_Cuisine	3.7857
Audio	3.8082

Average Rating by Location, Seller, Product, Category, and Month

Aggregate the data by each dimension to find the average ratings:

```
SELECT  
    s.seller_state,  
    s.seller_id,  
    p.product_id,  
    p.product_category_name,  
    DATE_FORMAT(rr.review_creation_date, '%Y-%m') AS month,  
    AVG(rr.review_score) AS avg_rating  
FROM Order_Review_Ratings rr  
JOIN Order_Items oi ON rr.order_id = oi.order_id  
JOIN Sellers s ON oi.seller_id = s.seller_id  
JOIN Products p ON oi.product_id = p.product_id  
GROUP BY s.seller_state, s.seller_id, p.product_id, p.product_category_name, month  
ORDER BY avg_rating DESC;
```

seller_state	seller_id	product_id	product_category_name	month	avg_rating
Andhra Pradesh	620c87c171fb2a6dd6e8bb4dec959fc6	eaac4fc2977aa6f917c42e6f...	Health_Beauty	2018-07	5.0000
Gujarat	a5cba26a62bb4d0145b68b841e62e7f	c7df652246ed7b3300aa46...	Health_Beauty	2018-06	5.0000
Andhra Pradesh	1b45169b635ef59425637e9a33eb5fb3	3ad8e4577b866ce68d3a3e...	Housewares	2018-08	5.0000
Andhra Pradesh	71dc18fd8cbf5fd77f45dd8b427ab34	913eeafa4eb54c8a9bc9871...	Garden_Tools	2017-03	5.0000
Andhra Pradesh	693660429f9dc4ff704eb3d88dad5d7	50497261c5976a5ca9c115...	Electronics	2018-07	5.0000
Gujarat	cca3071e3e9bb7d12640c9fbe2301306	f99c1a9777ae7b608359a17...	Furniture_Decor	2017-02	5.0000
Andhra Pradesh	31344c16881c08a8a72c6d2eb29918c1	fca62108387e25005784da2...	Furniture_Decor	2018-08	5.0000
Andhra Pradesh	f35b3c613c4fb2275f4185d0a3c59ec	81b02d54e048c9d96b5946...	Sports_Leisure	2018-04	5.0000
Andhra Pradesh	c679fb69a36e1d8349e8c50a217b4d58	07e00c385280d659de8eb0...	Housewares	2018-08	5.0000
Andhra Pradesh	d1ef48b38bac7e83111c4a0ae398f	a5d22340ec8e3ee661b5f00...	Small_Appliances	2018-05	5.0000
Chhattisgarh	184a67a8f9f63234d3a92340bbdb727f	526e3614968c6b294ebd9d...	Furniture_Decor	2017-11	5.0000
Andhra Pradesh	44073f8b7e41514de3b7815dd023714f	29b85c2f1e54fd02b0373...	Furniture_Decor	2017-04	5.0000
Gujarat	34056b8b55c1775a22af2331670a799c	81f869ddb8b8e77514002be...	Auto	2018-08	5.0000
Chhattisgarh	b335c59ab742751a85db9c411a86739	eae6d611cea1d7613fe3a4...	Housewares	2017-08	5.0000
Gujarat	7008613ea464bad5cb9b83456e1e6a8f	3cebb9158a3aa0b3f78ee0f...	Sports_Leisure	2018-01	5.0000
Andhra Pradesh	3d871de0142ce09b7081e2b9d1733cb1	708695ee28aee6fc879a6c9...	Stationery	2018-02	5.0000
Gujarat	e333046ce6517bd8bb510291d44f0130	b694ddbdde0943a2ebcaa7b...	Housewares	2018-06	5.0000
Andhra Pradesh	c013e57c075a06e5b5c48ee03c525719	e2c843e2762213223f21e02...	Pet_Shop	2018-08	5.0000
Gujarat	febab0275244b9a49a623f0bd13ca2f	3fd97d8c7b1654308652003...	Housewares	2018-04	5.0000
Andhra Pradesh	827f8f69dfa529c561901c4f2e0f332f	200e98f100c16f05a43db060...	Fashion_Shoes	2017-09	5.0000
Andhra Pradesh	3c7c4a49ec3c6550809089c6a2ca9370	005030ef108f58b46b78116f...	Perfumery	2018-02	5.0000
Orissa	1b4c3a6f53068fb6944d2d005c9fc89	c9bd28e8a4220a0f0723c7b7...	Computers_Accessories	2017-05	5.0000
Andhra Pradesh	2f74af7a0ee5636f12c2336f9ffed47	0dcba1dbafdc389972874b...	Sports_Leisure	2017-12	5.0000
Haryana	e9779976487b77c6d4ac45f75ec7afe9	f1c44a4cc70e40d42d98ac...	Drinks	2017-09	5.0000
Andhra Pradesh	1025f0e2d44d7041d6cf58b6550e0bfa	bd121e63c181b55f2204d15...	Furniture_Decor	2018-08	5.0000
Chhattisgarh	b499c00f28f4b7069ff6550a8fc1348a	8060b4a1aeeccf25a9ada1fc...	Furniture_Decor	2018-08	5.0000
Andhra Pradesh	128639473a139ac03e5f5ade55873a5	6a709b701952f3257fb1beb...	Air_Conditioning	2018-03	5.0000
Gujarat	1835b56ce799e6a4dc4edd053f04066	0f0143975760d1205a4285a...	Bed_Bath_Table	2018-02	5.0000

Top 5 Products by Revenue in Each month

Identify the top 5 products by revenue within each category.

```

WITH RankedProducts AS (
    SELECT
        oi.product_id,
        p.product_category_name,
        SUM(oi.price) AS total_revenue,
        RANK() OVER (PARTITION BY p.product_category_name ORDER BY SUM(oi.price) DESC) AS product_rank
    FROM
        Order_Items oi
    JOIN
        Products p ON oi.product_id = p.product_id
    GROUP BY
        oi.product_id, p.product_category_name
)
SELECT
    product_id,
    product_category_name,
    total_revenue,
    product_rank
FROM
    RankedProducts
WHERE
    product_rank <= 5
ORDER BY
    product_category_name, product_rank;

```

product_id	product_category_name	total_revenue	product_rank
11250b0d4b709fee92441c5f34122aed	Agro_Industry_And_Commerce	9111	1
423a6644f0aa529e8828ff1f91003690	Agro_Industry_And_Commerce	8043	2
672e757f331900b9deea127a2a7b79fd	Agro_Industry_And_Commerce	6885	3
c183fd5d2abf05873fa6e1014ed9e06c	Agro_Industry_And_Commerce	5934.6	4
2b69866f22de8dad69c976771daba91c	Agro_Industry_And_Commerce	2990	5
12485f9cddeb6ca179826ede539554ad	Air_Conditioning	3899.91	1
83ca77d87b187321faaeee535adbce26c	Air_Conditioning	2469.8500000000004	2
0e34187d4312b97b5e698836d28ed040	Air_Conditioning	2193	3
e932008cf0ea7c93a077dd8d7e5f49eb	Air_Conditioning	1855	4
ccb162ed569f47d83f62aebe5700d7ad	Air_Conditioning	1807	5
4fe644d766c7566dbc46fb851363cb3b	Art	10803.719999999983	1
1bdf5e6731585cf01aa8169c7028d6ad	Art	6499	2
cbf96c04205dc933b89e025748c2a057	Art	487.5	3
4c6aedb2bfbc47f59db757dfc22c607	Art	438	4
986c47683f9e701e110a0cc525dfac87	Art	340	5
b9976e9c22fb1540bd71d1bcd2989475	Arts_And_Craftmanship	641.45	1
6bb18295cc019bf3b6dc7c773411d530	Arts_And_Craftmanship	289.49	2
43506d2b6b5e0535079f88c7dc51c4de	Arts_And_Craftmanship	238	3
ec0895370885d025efeb8e72e7fa699	Arts_And_Craftmanship	129.9	4
43f224fb79bae5b22585eb868fe3b84b	Arts_And_Craftmanship	99.8	5
13db47eae724e2848e12b71a617a3a41	Audio	12992.649999999998	1
9bfc55df037ce3ac01bfd84781adf7e5	Audio	9441.939999999999	2
db5efde3ad0cc579b130d71c4b2db522	Audio	9425.779999999997	3
dca8cbb1c9d8a2db0fbcc0c36b8d1a7bc	Audio	2501	4
e6b6e13cf71449a457269f425b89d74	Audio	1987.900000000008	5
fd0065af7f09af4b82a0ca8f3eed1852	Auto	21999.890000000003	1
1dec4c88c685d5a07bf01dc0b0fb9f8	Auto	19965	2
f4f67ccaece962d013a4e1d7dc3a61f7	Auto	13139.800000000014	3
4fcbb3d9a5f4871e8362dfedb0b064	Auto	12819.299999999983	4
f22c9d6ce2431ff939aad39e026cc7ef	Auto	10799.09999999999	5
25c38557cf793876c5abdd5931f922db	Baby	38907.32000000001	1
cac9e5692471a0700418aa3400b9b2b1	Baby	10006.849999999988	2
8aa6223e400af9c97b07c75993142721	Baby	8435.559999999994	3
41cd333a4af5e36df81fc0b83ccf8e2d	Baby	6975.9	4
83b00325c13c44245b2c3a2befa62a0e	Baby	6159.619999999994	5
99a4788cb24856965c36a24e339b6058	Bed_Bath_Table	43025.56000000037	1
f1c7f353075ce59d8a6f3cf58f419c9c	Bed_Bath_Table	29997.360000000004	2
84f456958365164420fcf80fbe4c7fab	Bed_Bath_Table	10304.959999999994	3
2a2d22ae30e026f1893083c8405ca522	Bed_Bath_Table	9950.499999999989	4
25f86162fee18735ffdb762dc10d7c	Bed_Bath_Table	9523.799999999988	5

Find Top 5 Sellers by Monthly Sales

Rank sellers based on monthly sales volume within each month.

```
WITH MonthlySales AS (
    SELECT
        seller_id,
        DATE_FORMAT(order_purchase_timestamp, '%Y-%m') AS month,
        SUM(oi.price) AS monthly_sales
    FROM
        Orders o
    JOIN
        Order_Items oi ON o.order_id = oi.order_id
    GROUP BY
        seller_id, month
),
RankedSellers AS (
    SELECT
        seller_id,
        month,
        monthly_sales,
        RANK() OVER (PARTITION BY month ORDER BY monthly_sales DESC) AS seller_rank
    FROM
        MonthlySales
)
SELECT
    seller_id,
    month,
    monthly_sales,
    seller_rank
FROM
    RankedSellers
WHERE
    seller_rank <= 5
ORDER BY month, seller_rank;
```

seller_id	month	monthly_sales	seller_rank
ecccfa2bb93b34a3bf033cc5d1dcfc69	2016-09	134.97	1
620c87c171fb2a6dd6e8bb4dec959fc6	2016-10	4887.6	1
822b63912576852aea9a8436d72317b7	2016-10	2849.9700000000003	2
46dc3b2cc0980fb8ec44634e21d2718e	2016-10	2244.8999999999996	3
76d5af76d0271110f9af36c92573f765	2016-10	1447	4
7e93a43ef30c4f03f38b393420bc753a	2016-10	1399	5
48efc9d94a9834137efd9ea76b065a38	2016-12	10.9	1
620c87c171fb2a6dd6e8bb4dec959fc6	2017-01	4658.9000000000015	1
ccc4bbb5f32a6ab2b7066a4130f114e3	2017-01	4424.2	2
cca3071e3e9bb7d12640c9fbe2301306	2017-01	4418.900000000001	3
76d5af76d0271110f9af36c92573f765	2017-01	4381.79	4
fa1c13f2614d7b5c4749cbc52fecda94	2017-01	3745	5
7e93a43ef30c4f03f38b393420bc753a	2017-02	9154.880000000001	1
620c87c171fb2a6dd6e8bb4dec959fc6	2017-02	7748.399999999993	2
e3b4998c7a498169dc7bce44e6bb6277	2017-02	6735	3
7c67e1448b00f6e969d365cea6b010ab	2017-02	4900.039999999996	4
da8622b14eb17ae2831f4ac5b9dab84a	2017-02	4853.7	5
7e93a43ef30c4f03f38b393420bc753a	2017-03	12520.5	1
fa1c13f2614d7b5c4749cbc52fecda94	2017-03	9266.08	2
620c87c171fb2a6dd6e8bb4dec959fc6	2017-03	9090.99999999995	3
e2a1ac9bf33e5549a2a4f834e70df2f8	2017-03	8999.67	4
7c67e1448b00f6e969d365cea6b010ab	2017-03	6896.90999999997	5
59417c56835dd8e2e72f91f809cd4092	2017-04	18666	1
620c87c171fb2a6dd6e8bb4dec959fc6	2017-04	11648.29999999999	2
7e93a43ef30c4f03f38b393420bc753a	2017-04	11277.84	3
7a67c85e85bb2ce8582c35f2203ad736	2017-04	7566.39999999991	4
4a3ca9315b744ce9f8e9374361493884	2017-04	7318.29999999989	5
7e93a43ef30c4f03f38b393420bc753a	2017-05	24495.94999999997	1
7a67c85e85bb2ce8582c35f2203ad736	2017-05	15878.709999999975	2
4a3ca9315b744ce9f8e9374361493884	2017-05	12912.799999999976	3
5c243662ce92d84573bfaff24c3e3700	2017-05	10973.49999999998	4
46dc3b2cc0980fb8ec44634e21d2718e	2017-05	7344.74999999996	5
b1b3948701c5c72445495bd161b83a4c	2017-06	16759.72	1
7e93a43ef30c4f03f38b393420bc753a	2017-06	14708.54	2
7a67c85e85bb2ce8582c35f2203ad736	2017-06	11865.009999999984	3
4a3ca9315b744ce9f8e9374361493884	2017-06	9552.49999999987	4
fe2032dab1a61af8794248c8196565c9	2017-06	8738.39999999998	5
37be5a7c751166fbc5f8ccba4119e043	2017-07	18464.98999999998	1

Monthly and Cumulative Revenue

Calculate cumulative revenue for each month.

```

WITH MonthlyRevenue AS (
    SELECT
        DATE_FORMAT(order_purchase_timestamp, '%Y-%m') AS month,
        SUM(oi.price) AS monthly_revenue
    FROM
        Orders o
    JOIN
        Order_Items oi ON o.order_id = oi.order_id
    GROUP BY
        month
)
SELECT
    month,
    monthly_revenue,
    SUM(monthly_revenue) OVER (ORDER BY month) AS cumulative_revenue
FROM
    MonthlyRevenue
ORDER BY
    month;

```

month	monthly_revenue	cumulative_revenue
2016-09	134.97	134.97
2016-10	40325.11000000013	40460.08000000013
2016-12	10.9	40470.980000000134
2017-01	111712.4699999998	152183.44999999992
2017-02	232638.85999999597	384822.30999999586
2017-03	359198.8499999994	744021.1599999953
2017-04	340669.67999999976	1084690.839999995
2017-05	489159.25000000078	1573850.09000000026
2017-06	421923.37000000407	1995773.46000000067
2017-07	481604.52000000986	2477377.9800000167
2017-08	554699.7000000152	3032077.680000032
2017-09	607220.6700000156	3639298.3500000476
2017-10	648247.6500000175	4287546.000000065
2017-11	987648.0700000349	5275194.0700001
2017-12	726033.1900000195	6001227.260000119
2018-01	924645.0000000369	6925872.260000156
2018-02	826437.1300000297	7752309.390000186

Running Total of Quantity

Calculate a running total of quantity sold for each product.

```

SELECT
    oi.product_id,
    o.order_id,
    SUM(oi.price) OVER (PARTITION BY oi.product_id ORDER BY o.order_purchase_timestamp
                        ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW) AS running_total_revenue
FROM
    Orders o
JOIN
    Order_Items oi ON o.order_id = oi.order_id
ORDER BY
    oi.product_id, o.order_purchase_timestamp;

```

product_id	order_id	running_total_revenue
00066f42aeeb9f3007548bb9d3f33c38	f30149f4a8882a08895b6a242aa0d612	101.65
00088930e925c41fd95ebfe695fd2655	f5eda0ded77c1293b04c953138c8331d	129.9
0009406fd7479715e4bef61dd91f2462	0bf736fd0fd5169d60de3699fcfcf986	229
000b8f95fc9e0096488278317764d19	6f0dfb5b5398b271cc6bbd9ee263530e	58.9
000b8f95fc9e0096488278317764d19	3aba44d8e554ab4bb8c09f6f78032ca8	117.8
000d9be29b5207b54e86aa1b1ac54872	a6c1ae4d48280b5b3c43231ac6af701	199
0011c512eb256aa0dbbb544d8dffcf6e	bb9552306cf6879fde49f4ba3bd94299	52
00126f27c813603687e6ce486d909d01	d44be4540d1a35533a9f5c89377b77f1	249
00126f27c813603687e6ce486d909d01	c9a34c30282dc36d017bc912f8d8dc91	498
001795ec6f1b187d37335e1c4704762e	19e2f4888f56504ec0f7e0765c9e36dc	38.9
001795ec6f1b187d37335e1c4704762e	8833f31fc345a814293e41677c701c27	77.8
001795ec6f1b187d37335e1c4704762e	7a411701d358d7be1e457ec66ceb4731	116.69999999999999
001795ec6f1b187d37335e1c4704762e	c432657bb18ddf7f48b7227db09048d4	155.6
001795ec6f1b187d37335e1c4704762e	c432657bb18ddf7f48b7227db09048d4	194.5
001795ec6f1b187d37335e1c4704762e	ffda7f88e6a571a9e73a0c9c778e606d	233.4
001795ec6f1b187d37335e1c4704762e	dd436680fb2d38edb26277f5b8379dc	272.3
001795ec6f1b187d37335e1c4704762e	dd436680fb2d38edb26277f5b8379dc	311.2
001795ec6f1b187d37335e1c4704762e	c78ef951d29d8e1af5f1f807a64af309	350.09999999999999
001b237c0e9bb435f2e54071129237e9	a006aaefd88b5bb6c7ddcecc74916db3	78.9
001b72dfd63e9833e8c02742adf472e3	ce76ffbfb04b7dc8293ca658f75963cc	34.99
001b72dfd63e9833e8c02742adf472e3	ce76ffbfb04b7dc8293ca658f75963cc	69.98
001b72dfd63e9833e8c02742adf472e3	544317d6ff28d37495220e2bf024a1ae	104.97

3-Month Moving Average of Revenue

- Calculate the 3-month moving average of revenue.

```

WITH Monthly_Revenue AS (
    SELECT
        DATE_FORMAT(o.order_purchase_timestamp, '%Y-%m') AS month,
        SUM(oi.price) AS monthly_revenue
    FROM
        Orders o
    JOIN
        Order_Items oi ON o.order_id = oi.order_id
    GROUP BY
        month
)
SELECT
    month,
    monthly_revenue,
    AVG(monthly_revenue) OVER (ORDER BY month ROWS BETWEEN 2 PRECEDING AND CURRENT ROW) AS moving_avg_revenue
FROM
    Monthly_Revenue
ORDER BY
    month;

```

month	monthly_revenue	moving_avg_revenue
2016-09	134.97	134.97
2016-10	40325.11000000013	20230.040000000066
2016-12	10.9	13490.326666666711
2017-01	111712.4699999998	50682.82666666664
2017-02	232638.85999999597	114787.40999999859
2017-03	359198.8499999994	234516.72666666505
2017-04	340669.67999999976	310835.796666665
2017-05	489159.2500000078	396342.5933333356
2017-06	421923.37000000407	417250.76666667056
2017-07	481604.52000000986	464229.0466666739
2017-08	554699.7000000152	486075.8633334306
2017-09	607220.6700000156	547841.6300000135
2017-10	648247.6500000175	603389.3400000161
2017-11	987648.0700000349	747705.4633333561
2017-12	726033.1900000195	787309.6366666906
2018-01	924645.0000000369	879442.086666697
2018-02	826437.1300000297	825705.1066666953
2018-03	953356.25000003	901479.4600000322
2018-04	973534.0900000294	917775.823333363
2018-05	977544.6900000273	968145.010000029
2018-06	855591.9700000203	935556.9166666922
2018-07	867486.4700000233	900207.7100000236
2018-08	828576.6100000228	853885.0966666922

Customer Purchase Frequency

Rank customers based on the number of purchases made in each month.

```

WITH CustomerPurchaseFrequency AS (
  SELECT
    customer_id,
    DATE_FORMAT(order_purchase_timestamp, '%Y-%m') AS month,
    COUNT(order_id) AS total_purchases,
    RANK() OVER (PARTITION BY DATE_FORMAT(order_purchase_timestamp, '%Y-%m') ORDER BY COUNT(order_id) DESC) AS purchase_frequency_rank
  FROM
    Orders
  GROUP BY
    customer_id,
    month
)
SELECT
  customer_id,
  month,
  total_purchases,
  purchase_frequency_rank
FROM
  CustomerPurchaseFrequency
WHERE
  purchase_frequency_rank <= 5
ORDER BY
  month,
  purchase_frequency_rank;

```

customer_id	month	total_purchas...	purchase_frequency_ra...
86dc2ffce2dff336de2f386a786e574	2016-09	1	1
3a4ccb2c6fb972d301b8f9edfbf81fb	2016-10	1	1
01fc05160cf790b9ed54ec795ff07688	2016-10	1	1
076a5ddb5b1240c532093a399dcb47f5	2016-10	1	1
1124aa987445b3d3f42412a375522a89	2016-10	1	1
d70f382aefc5e3273ba95831d8588930	2016-10	1	1
7155051815aa96d970a1a40583f95e8b	2016-10	1	1
c2c97a4df7be5639a8976ed8b8516e81	2016-10	1	1
5f767a0a4e820c2361c11dab364d3f98	2016-10	1	1
abb98ee37acc21973e1d4464133ddb49	2016-10	1	1
6b3ed42b480bc5831a094f35dc11b668	2016-10	1	1
96fc2a988f8ec40a078ab92f1623bdd4	2016-10	1	1
46fc16f07712c5cdcc55911a3297e16	2016-10	1	1
924743e5e7df4683b9f051c4b9961e9e	2016-10	1	1
85f0e92957e9fb9c5f72ba5378f492a0	2016-10	1	1
2bea781be88980e68fb5bbac765fccdb	2016-10	1	1
ac68706c6f747bf0f7e7986a7ba40155	2016-10	1	1
0f51eea87ae9e277d0f099d51637772d	2016-10	1	1
7ec40b22510fdbea1b08921dd39e63d8	2016-10	1	1
bd0342f59a3b8ddc416bd048b2b5d0fb	2016-10	1	1
8e941206a8be5ff6eff0de04fa1629e5	2016-10	1	1
b75d72658f51fcf274b14adf1446590a	2016-10	1	1
cabe1ec4e4c40db3c14ab19cc09bbd9a	2016-10	1	1
1013b3cb87e89aa951b7f556f8c26d33	2016-10	1	1

Percentile Analysis for Product Prices

- Calculate the percentile rank of each product's price within its category.

```
PERCENTILE Analysis for Product Prices
SELECT oi.product_id,
       p.product_category_name,
       oi.price,
       PERCENT_RANK() OVER (PARTITION BY p.product_category_name ORDER BY oi.price) AS price_percentile
FROM Order_Items oi
JOIN Products p ON oi.product_id = p.product_id;
```

product_id	product_category_name	price	price_percentile
8a67e4e6cc6f2abf65fe2164ea51b219	Agro_Industry_And_Commerce	12.99	0
ac4bd2aec3f990363aa853e4f17709d3	Agro_Industry_And_Commerce	13	0.004739336492890996
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991
3bebad3cf2c8d1a8d3ce97174643e054	Agro_Industry_And_Commerce	19.5	0.009478672985781991

Revenue Contribution by Top Customer

Calculate the cumulative revenue contribution of the top 10% of customers.

```

WITH Customer_Revenue AS (
    SELECT o.customer_id,
           SUM(oi.price) AS total_revenue
      FROM Orders o
     JOIN Order_Items oi ON o.order_id = oi.order_id
     GROUP BY o.customer_id
),
Revenue_Rank AS (
    SELECT customer_id,
           total_revenue,
           NTILE(10) OVER (ORDER BY total_revenue DESC) AS decile
      FROM Customer_Revenue
)
SELECT decile,
       SUM(total_revenue) AS revenue_contribution,
       (SUM(total_revenue) * 100.0 / (SELECT SUM(total_revenue) FROM Customer_Revenue)) AS percentage_contribution
  FROM Revenue_Rank
 WHERE decile = 1 -- This selects the top 10% customers
  GROUP BY decile;

```

decile	revenue_contribution	percentage_contribution
1	5414849.030000467	40.964483105505195

Monthly New Customer Count

Find the number of new customers acquired each month.

```

-- Monthly New Customer Count --
SELECT DATE_FORMAT(first_purchase_date, '%Y-%m') AS month, COUNT(customer_id) AS new_customers
FROM (
    SELECT customer_id, MIN(order_purchase_timestamp) AS first_purchase_date
      FROM Orders
     GROUP BY customer_id
) AS first_purchases
GROUP BY month;
```

month	new_customers
2017-10	4478
2018-07	6156
2018-08	6351
2017-11	7288
2018-02	6555
2017-07	3872
2017-05	3545
2017-01	748
2018-06	6096
2018-03	7003
2018-01	7069
2017-12	5513
2017-09	4149
2018-05	6749
2017-08	4193

Top 10 Revenue-Generating Products by Category

Top 10 products by revenue for each category.

```

SELECT product_id, product_category_name, total_revenue
FROM (
    SELECT oi.product_id,
        p.product_category_name,
        SUM(oi.price) AS total_revenue,
        RANK() OVER (PARTITION BY p.product_category_name ORDER BY SUM(oi.price) DESC) AS revenue_rank
    FROM Order_Items AS oi
    JOIN Products AS p ON oi.product_id = p.product_id
    GROUP BY oi.product_id, p.product_category_name
) AS ranked_products
WHERE revenue_rank <= 10;

```

product_id	product_category_name	total_revenue
11250b0d4b709fee92441c5f34122aed	Agro_Industry_And_Commerce	9111
423a6644f0aa529e8828ff1f91003690	Agro_Industry_And_Commerce	8043
672e757f331900b9deea127a2a7b79fd	Agro_Industry_And_Commerce	6885
c183fd5d2abf05873fa6e1014ed9e06c	Agro_Industry_And_Commerce	5934.6
2b69866f22de8dad69c976771daba91c	Agro_Industry_And_Commerce	2990
c89226b8a795ae3d6bca9d90b20dbf04	Agro_Industry_And_Commerce	2821.5
5fb0955cb683eb6f65a1f613e502eef5	Agro_Industry_And_Commerce	2720
b7a60a397d4efd05c1b5d398fb9f9097	Agro_Industry_And_Commerce	2399
cd5df6a3db7a3d064a55afd08289d762	Agro_Industry_And_Commerce	2360
cd2f5c10e4e8dbc701f0bb68a09fdfe8	Agro_Industry_And_Commerce	2199
12485f9cdebb6ca179826ede539554ad	Air_Conditioning	3899.91
83ca77d87b187321faaee535adbce26c	Air_Conditioning	2469.8500000000004
0e34187d4312b97b5e698836d28ed040	Air_Conditioning	2193
e932008cf0ea7c93a077dd8d7e5f49eb	Air_Conditioning	1855
ccb162ed569f47d83f62aebd5700d7ad	Air_Conditioning	1807
f2a1b32f85cad59ff2a8444154ac25f0	Air_Conditioning	1710
a1d54bd2293d947527d70e04dbe2a93e	Air_Conditioning	1599
d7cdcd31629bb225ebecd727c780d9f	Air_Conditioning	1554
f0f2af23f970208fe4132a77aca3c63f	Air_Conditioning	1458
49b59dec916cd9070cf9fb07dee32976	Air_Conditioning	1400
4fe644d766c7566dbc46fb851363cb3b	Art	10803.719999999983
1bdf5e6731585cf01aa8169c7028d6ad	Art	6499

Most Expensive Products Sold by Each Seller

Identify the highest-priced product sold by each seller.

```

SELECT oi.seller_id, oi.product_id, oi.price
FROM Order_Items AS oi
JOIN (
    SELECT seller_id, MAX(price) AS max_price
    FROM Order_Items
    GROUP BY seller_id
) AS max_prices ON oi.seller_id = max_prices.seller_id AND oi.price = max_prices.max_price;

```

seller_id	product_id	price
5996cddab893a4652a15592fb58ab8db	557d850972a7d6f792fd18ae1400d9b6	810
702835e4b785b67a084280efca355756	a9c404971d1a5b1cbc2e4070e02731fd	7.6
2e90cb1677d35cfe24eef47d441b7c87	fa11ecd35f999783e96ac500532d9d45	189.9
2709af9587499e95e803a6498a5a56e9	f9d774a1820f792952eea079a40a7c6b	154
e38db885400cd35c71dfd162f2c1dbcfc	ce130b350f529a1d6288f927da7404ea	64.9
1690cada046eb7e92c12f98b1f8a8167	23f91e3d76be3938bfad0ff292392502	249
b410bdd36d5db7a65dc42b7ead933b8	f8b624d4e475bb8d1bddf1b65c6a64f6	179
bf0d50a6410d487dc97d2baac0a8c0be	66f09a6de4f2ef63aaf5349b60a0e0c0	27.9
6a38087bc8ad4f89ff453561005f6dea	87ea2f45559e10519513a20b24147316	158.9
abbf6046bbdf1028606a5bc7f00c99e7	958cd4fc82ce0223c757f47bc9d67e23	362.45
e38db885400cd35c71dfd162f2c1dbcfc	23227b07fc69250d2fa4be6602011aea	64.9
e38db885400cd35c71dfd162f2c1dbcfc	23227b07fc69250d2fa4be6602011aea	64.9
77530e9772f57a62c906e1c21538ab82	11a0fdc4251f15bb96dbfff7ef5475eb	299
392353362d22cc2c236e1ee81ff19890	9b08a09bf2fd9731cfca8cb3db24457c	39.97
392353362d22cc2c236e1ee81ff19890	9b08a09bf2fd9731cfca8cb3db24457c	39.97
392353362d22cc2c236e1ee81ff19890	9b08a09bf2fd9731cfca8cb3db24457c	39.97
c03121937e54a93fcc1825c3098bbb6e	9fb9a39f2e393018aaeb432394aff48f	149
0ec28cec4046a4a199b6de9b4c891d97	b74cc46deca5ba8f6a2226df8041a0b7	146.9
a3b0df0065e264a91b7bbf5f844af5cd	a6cef514bc1c722ff447863e87e4d77d	127.48
71dc18fd8cbf5fd77f45dd8b427abb34	913eeafa4eb54c8a9bcb9871dfd94a0ca	120

Top 5 Locations with Highest Average Order Value

Identify the top 5 locations with the highest average order value.

```

SELECT c.customer_city AS location,
       AVG(order_value) AS avg_order_value
FROM (
    SELECT o.customer_id,
           oi.order_id,
           SUM(oi.price) AS order_value
    FROM Orders AS o
    JOIN Order_Items AS oi ON o.order_id = oi.order_id
    GROUP BY o.customer_id, oi.order_id
) AS customer_orders
JOIN Customers AS c ON customer_orders.customer_id = c.customer_id
GROUP BY c.customer_city
ORDER BY avg_order_value DESC
LIMIT 5;

```

location	avg_order_value
Naravarikuppam	2200
Uttar Durgapur	2199
Tiruppur	1997
Moth	1989
Dubrajpur	1799

Percentage of Orders Delivered on Time

Calculate the percentage of orders delivered on time

```

SELECT (COUNT(
CASE
WHEN order_delivered_customer_date <= order_estimated_delivery_date
THEN 1
END) * 100.0
/ COUNT(*)) AS on_time_delivery_percentage
FROM Orders;

```

on_time_delivery_percent...
91.88741

Names Starting with a Specific Letter

- Names Starting with a Specific Letter
- **SELECT** customer_id, customer_city
FROM Customers
WHERE customer_city **LIKE** 'A%';
-- Ending--
- **SELECT** customer_id, customer_city
FROM Customers
WHERE customer_city **LIKE** '%A';
- **SELECT** product_category_name
FROM Products
WHERE product_category_name **LIKE** '%To%';

Retrieve customers whose names start with "A".

customer_id	customer_city
06b8999e2fba1a1fbc88172c00ba8bc7	Adilabad
18955e83d337fd6b2def6b18a428ac77	Adoni
4e7b3e00288586ebd08712fdd0374a03	Akkarampalle
b2b6027bc5c5109e529d4dc6358b12c3	Akkayapalle
4f2d8ab171c80ec8364f7c12e35b23ad	Alwal
879864dab9bc3047522c92c82e1212b8	Amadalavalasa
fd826e7cf63160e536e0908c76c3f441	Akkarampalle
5e274e7a0c3809e14aba7ad5aae0d407	Amalapuram
5adf08e34b2e993982a47070956c5c65	Anakapalle
4b7139f34592b3a31687243a302fa75b	Anantapur
9fb35e4ed6f0a14a4977cd9aea4042bb	Asifabad
eabebad39a88bb6f5b52376faec28612	Akkarampalle
9b8ce803689b3562defaad4613ef426f	Akkarampalle
2938121a40a20953c43caa8c98787fcb	Akkarampalle

Retrieve customers whose names end with "A".

customer_id	customer_city
879864dab9bc3047522c92c82e1212b8	Amadalavalasa
b2d1536598b73a9abd18e0d75d92f0a3	Bandarulanka
1f1c7bf1c9b041b292af6c1c4470b753	Bapatla
c5c61596a3b6bd0cee5766992c48a9a1	Bestavaripeta
49d0ea0986edde72da777f15456a0ee0	Bethamcheria
690172ab319622688d3b4df42f676898	Bhainsa
df0aa5b8586495e0ddf6b601122e43a1	Chatakonda
41c8f4b570869791379a925899a6af8a	Bestavaripeta

Retrieve product names containing the word "to" anywhere in the name.

product_category_name
Toys
Construction_Tools_Safety
Garden_Tools
Auto
Toys
Toys
Auto
Toys
Garden_Tools
Auto
Construction_Tools_Construction
Garden_Tools
Auto
Auto
Garden_Tools
Toys
Auto
Auto

Key Findings

High Revenue Products and Sellers:

A small percentage of sellers and products contribute disproportionately to the platform's revenue. High-revenue items and vendors indicate strong demand or competitive advantage, providing insights for priority partnerships, inventory stocking, and platform promotions.

Popular Product Categories:

Certain categories, such as health & beauty, home decor, and electronics, show consistent popularity. Seasonal items or categories, such as garden tools and sports, also fluctuate with specific times of the year. Understanding these patterns enables efficient inventory management and targeted seasonal promotions.

Geographic Demand Variations:

Demand for product categories varies by region. For example, urban areas might have higher demand for electronics, while rural areas may prioritize agriculture-related products. Customizing marketing efforts regionally can improve conversion rates and engagement.

Conclusions

Invest in High-Performing Categories and Products:

By analyzing and focusing on high-performing categories and best-selling products, the marketplace can optimize its inventory, reduce stockout risks, and increase customer satisfaction by consistently offering in-demand items.

Implement Tiered Customer Loyalty Programs:

Differentiating loyalty programs based on customer segment (high, medium, and low value) allows for personalized engagement and drives repeat business. High-value customers may benefit from exclusive discounts or early access to new products, while low-value segments could be incentivized with smaller discounts on essentials.

Maximize Cross-Selling Opportunities:

Leverage data-driven insights to display "frequently bought together" products, offer complementary items on product pages, and encourage customers to build their basket with personalized recommendations at checkout.

Targeted Product and Seller Promotions:

Implement seller support programs for emerging or trending product categories, allowing them to gain visibility and capture seasonal demand.