**Product Supply Chain Management**

-- 1.Total Revenue by Product Type:

-- Calculate the total revenue generated by each product type. This can help identify the most profitable products

select Product\_type, round(sum(Revenue\_generated),2) as TotalRevenue from ProductDetails

group by Product\_type

order by TotalRevenue desc

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-- 2. Shipping Costs by Carrier

-- Calculating the average shipping costs for each shipping carrier to evaluate which carrier is the most cost-effective

select Shipping\_carriers, round(avg(Shipping\_costs),2) as Average\_Cost from Shipping

group by Shipping\_carriers;

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-- 3. Total Products Sold by Location:

-- Determining the total number of products sold in each location to understand regional demand

select Location, sum(Number\_of\_products\_sold) as Product\_sold from ProductDetails p

join Shipping s

on p.Product\_id=s.Product\_id

group by Location

order by Product\_sold desc;

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-- 4. Defect Rates by Inspection Results:

-- The total Product and defect rates for different inspection results to assess product quality

select count(Product\_id) as TotalProducts, Inspection\_results, round(avg(Defect\_rates), 2) defective\_rate from Inspection

group by Inspection\_results

order by TotalProducts Desc

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-- 5. Top 5 Shipping Carriers by Cost Efficiency:

-- Determine the top 5 shipping carriers with the lowest average shipping costs per product shipped

select p.Product\_type, Shipping\_carriers, avg(Shipping\_costs) as avg\_shippingcost,

dense\_rank() over(partition by Product\_type order by avg(Shipping\_costs)) as drank

from ProductDetails p

join Shipping s

ON s.Product\_id=p.Product\_id

group by Shipping\_carriers, Product\_type;

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--6.Top Best Selling Product:

SELECT Top 1

    Product\_type,

    Product\_id,

    Number\_of\_products\_sold

FROM

    ProductDetails

ORDER BY

    Number\_of\_products\_sold DESC

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-- 7. Ranking Products by Profitability:

-- Write a query to rank products based on profitability, where profitability is calculated as (Revenue generated - Manufacturing costs - Shipping costs)

select p.Product\_id, Product\_type, (Revenue\_generated - i.Manufacturing\_costs - s.Shipping\_costs) as Profitability,

dense\_rank() over(partition by  Product\_type order by (Revenue\_generated - i.Manufacturing\_costs - s.Shipping\_costs)desc )

as Profitability\_Rank from ProductDetails p

join InventoryManagement i

ON i.Product\_id=p.Product\_id

join Shipping s

ON s.Product\_id=p.Product\_id

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--8.Total Revenue for High-Value Customers and Available Stocks

SELECT

    p.Product\_type,

    sum(p.Revenue\_generated) as TotalRevenue,

    p.Customer\_demographics,

    sum(i.Stock\_levels)as TotalStocksAvailable

FROM

    ProductDetails p

JOIN

    InventoryManagement I

ON p.Product\_id = i.Product\_id

Group by

p.Customer\_demographics,p.Product\_type,p.Customer\_demographics

order by TotalRevenue desc

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--9.Total Sold Product and Available Stocks by Product

SELECT

         p.Product\_type, sum(p.Number\_of\_products\_sold) as TotalSold,sum(im.Stock\_levels) TotalStocksAvailable

FROM

        InventoryManagement im

JOIN ProductDetails p

ON im.Product\_id = p.Product\_id

GROUP by p.Product\_type

ORDER by TotalSold Desc

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--10. Find Shipping Details for Products with Long Manufacturing Lead Time:

SELECT

    s.Product\_id,

    s.Shipping\_times,

    s.Shipping\_carriers,

    s.Shipping\_costs,

    s.Transportation\_modes,

    s.Location,i.Manufacturing\_lead\_time

FROM

    Shipping s

JOIN

    InventoryManagement i ON s.Product\_id = i.Product\_id

Order by

    i.Manufacturing\_lead\_time desc

