SQL CASE STUDY

ANALYZING PRODUCTS AND SALES DATA

INTRODUCTION

Imagine a retail business that sells a variety of products. This business is interested in optimizing its operations and decision-making processes using a database. The database contains information about various aspects of the business, such as products, customers, inventory, suppliers, logistics, and costs.

DATA DESCRIPTION

1 - PRODUCT TYPE- The category or type of the product.

2 - SKU- The Stock Keeping Unit, a unique identifier for each product.

3 - PRICE - The unit price of the product.

4 - VACANCY- Information regarding product availability.

5 - NUMBER OF PRODUCTS SOLD - The quantity of products sold.

6 - REVENUE GENERATED - The total revenue generated by each product.

7- CUSTOMER DEMOGRAPHICIES - Details about the customers.

8 - STOCK LEVELS - The current quantity of products in stock.

9-LEAD TIMES - Time required for product procurement.

10- ORDER QUANTATIES - The quantity of products ordered.

11- SHIPPING TIMES - Time taken for products to reach customers.
12- SHIPPING CARRIERS - The carriers responsible for product delivery
13- SHIPPING COSTS - The expenses associated with product shipping.
14- SUPPLIER NAME - Information about product suppliers.
15- LOCATION - The location data related to products.
16- LEAD TIME - The time required for order fulfillment.
17- PRODUCTION VOLUMES- The volume of products manufactured
18- MANUFACTURING LEAD TIME - The time required for products.
19- MANUFACTURING COSTS -The expenses involved in manufacturing.
20- INSPECTION RESULTS - Information related to quality control.
21- DEFECTS RATE - Rates of product defects.
22- TRANSPORTATION MODES -Modes used for product transportation.
23- ROUTES- Specific routes for product delivery.

Retrieve the average price for all products:

```sql
--Retrieve the average price for all products:
SELECT AVG(Price) AS AveragePrice FROM dbo.Products;
```

OUTPUT

Find the product with the highest price:

```sql
--Find the product with the highest price:
SELECT TOP 1 ProductType, SKU, Price
FROM dbo.Products
ORDER BY Price DESC;
```

OUTPUT

Results | Messages

	ProductType	SKU	Price
1	skincare	SKU14	99.00

Calculate the total revenue generated for each product type:

```sql
--Calculate the total revenue generated for each product type:
SELECT ProductType, SUM(RevenueGenerated) AS TotalRevenue
FROM dbo.Products
GROUP BY ProductType;
```

OUTPUT

Results | Messages

	ProductType	TotalRevenue
1	cosmetics	161519.00
2	haircare	174454.00
3	skincare	241629.00

Find the top 5 customers who have purchased the most products:

```
SELECT CAST(CustomerDemographics AS NVARCHAR(MAX)) AS CustomerDemographics,
    SUM(ProductsSold) AS TotalPurchased
FROM dbo.Products
GROUP BY CAST(CustomerDemographics AS NVARCHAR(MAX))
ORDER BY TotalPurchased DESC;
```

OUTPUT

	CustomerDemographics	TotalPurchased
1	Unknown	15211
2	Female	12801
3	Non-binary	10580
4	Male	7507

Determine the total shipping costs for each shipping carrier:

```sql
--Determine the total shipping costs for each shipping carrier:
SELECT [ShippingCarriers], SUM([ShippingCosts]) AS TotalCost
FROM dbo.Products
GROUP BY [ShippingCarriers];
```

OUTPUT

ShippingCarriers	TotalCost
Carrier A	155.54
Carrier B	236.89
Carrier C	162.39

Find the supplier with the shortest lead time:

```
SELECT [SupplierName], MIN([LeadTime]) AS ShortestLeadTime
FROM dbo.Products
GROUP BY [SupplierName]
ORDER BY ShortestLeadTime DESC;
```

OUTPUT

	SupplierName	ShortestLeadTime
1	Supplier 3	5
2	Supplier 2	2
3	Supplier 1	1
4	Supplier 4	1
5	Supplier 5	1

Calculate the total manufacturing costs for each product type:

```sql
SELECT ProductType, SUM([ManufacturingCosts]) AS TotalManufacturingCosts
FROM dbo.Products
GROUP BY ProductType;
```

OUTPUT

	ProductType	TotalManufacturingCosts
1	cosmetics	1119.35
2	haircare	1647.56
3	skincare	1959.73

Identify products with defect rates above a certain threshold (e.g., 5%):

```
SELECT ProductType, SKU
 FROM dbo.Products
 WHERE [DefectRates] > 0.05;
```

OUTPUT

	ProductType	SKU
1	haircare	SKU0
2	skincare	SKU1
3	skincare	SKU10
4	haircare	SKU12
5	skincare	SKU13
6	skincare	SKU14
7	skincare	SKU15
8	skincare	SKU16
9	cosmetics	SKU17
10	haircare	SKU18
11	skincare	SKU19
12	haircare	SKU2
13	skincare	SKU20
14	haircare	SKU22
15	cosmetics	SKU23
16	haircare	SKU24
17	haircare	SKU25
18	haircare	SKU26
19	cosmetics	SKU27
20	cosmetics	SKU28
21	cosmetics	SKU29
22	skincare	SKU3

	ProductType	SKU
24	skincare	SKU31
25	skincare	SKU32
26	cosmetics	SKU33
27	skincare	SKU34
28	cosmetics	SKU35
29	skincare	SKU36
30	skincare	SKU37
31	cosmetics	SKU38
32	skincare	SKU39
33	skincare	SKU4
34	skincare	SKU40
35	skincare	SKU42
36	haircare	SKU43
37	cosmetics	SKU44
38	haircare	SKU45
39	haircare	SKU46
40	skincare	SKU47
41	haircare	SKU48
42	cosmetics	SKU49
43	haircare	SKU5
44	cosmetics	SKU50
45	haircare	SKU51
46	skincare	SKU52
47	skincare	SKU53

Thank You