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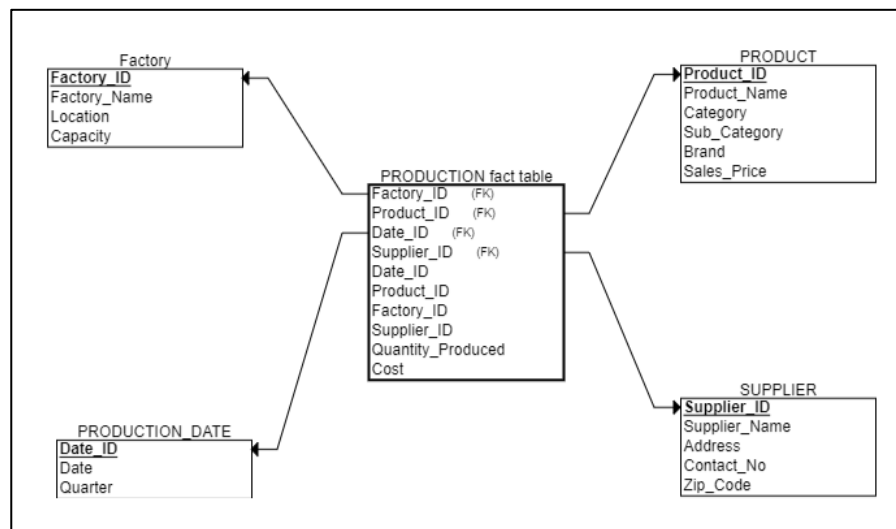
LABORATORY ACTIVITY-DATA WAREHOUSING

MANUFACTURING BUSINESS

Business Questions

1. What is the average cost per unit for each product category, considering the quantity produced and the total cost incurred.
2. Which top 10 products are the most profitable for the business, considering both production costs and sales revenue?
3. Which brand has the highest total quantity produced and what is the total cost of production for each brand?

DIMENSIONAL MODELING

TABLES WITH SAMPLE RECORDS

Factory

```
SQLQuery5.sql - D...6V5SM\Admin (55))  ⊕ ×
  ⊟SELECT TOP (1000) [Factory_ID]
        ,[Factory_Name]
        ,[Factory_Location]
        ,[Capacity]
    FROM [ManufacturingBusiness].[dbo].[Factory]
100 %   ▼  ◄
```

	Factory_ID	Factory_Name	Factory_Location	Capacity
1	2001	Factory A	Manila	1000
2	2002	Factory B	Cebu	1500
3	2003	Factory C	Davao	2000
4	2004	Factory D	Quezon City	1200
5	2005	Factory E	Cagayan de Oro	1800
6	2006	Factory F	Bacolod	2200
7	2007	Factory G	Iloilo	800
8	2008	Factory H	Baguio	1300
9	2009	Factory I	Pampanga	1700
10	2010	Factory J	Zamboanga	1900

Supplier

```
SQLQuery9.sql - D...6V5SM\Admin (65))  ⊕ ×
  ⊟SELECT TOP (1000) [Supplier_ID]
        ,[Supplier_Name]
        ,[Supplier_Address]
        ,[Contact_No]
        ,[Zip_Code]
    FROM [ManufacturingBusiness].[dbo].[Supplier]
100 %   ▼  ◄
```

	Supplier_ID	Supplier_Name	Supplier_Address	Contact_No	Zip_Code
1	4001	Beauty Supplies PH	123 Main St, Manila	123-456-7890	1000
2	4002	Cosmetic World	456 Elm St, Cebu	234-567-8901	2000
3	4003	Glamour Essentials	789 Oak St, Davao	345-678-9012	3000
4	4004	Makeup Kingdom	321 Pine St, Quezon City	456-789-0123	4000
5	4005	Skin Care Solutions	654 Maple St, Cagayan de Oro	567-890-1234	5000
6	4006	Beauty Haven	987 Birch St, Bacolod	678-901-2345	6000
7	4007	Beauty Trends	741 Cedar St, Iloilo	789-012-3456	7000
8	4008	Cosmetic Corner	852 Walnut St, Baguio	890-123-4567	8000
9	4009	Glow Cosmetics	963 Cherry St, Pampanga	901-234-5678	9000
10	4010	Glamourous Beauty	159 Pineapple St, Zamboanga	012-345-6789	0100

Production_Date

```sql
SELECT TOP (1000) [Date_ID]
      ,[Date_Produced]
      ,[Quarter_Produced]
  FROM [ManufacturingBusiness].[dbo].[Production_Date]
```

100 %

Results | Messages

	Date_ID	Date_Produced	Quarter_Produced
1	1001	2023-01-01	2023-01-01
2	1002	2023-02-01	2023-01-01
3	1003	2023-03-01	2023-01-01
4	1004	2023-04-01	2023-02-01
5	1005	2023-05-01	2023-02-01
6	1006	2023-06-01	2023-02-01
7	1007	2023-07-01	2023-03-01
8	1008	2023-08-01	2023-03-01
9	1009	2023-09-01	2023-03-01
10	1010	2023-10-01	2023-04-01
11	1011	2023-11-01	2023-04-01
12	1012	2023-12-01	2023-04-01
13	1013	2024-01-01	2024-01-01
14	1014	2024-02-01	2024-01-01
15	1015	2024-03-01	2024-01-01
16	1016	2024-04-01	2024-02-01
17	1017	2024-05-01	2024-02-01
18	1018	2024-06-01	2024-02-01
19	1019	2024-07-01	2024-03-01
20	1020	2024-08-01	2024-03-01
21	1021	2024-09-01	2024-03-01
22	1022	2024-10-01	2024-04-01
23	1023	2024-11-01	2024-04-01
24	1024	2024-12-01	2024-04-01
25	1025	2025-01-01	2025-01-01
26	1026	2025-02-01	2025-01-01
27	1027	2025-03-01	2025-01-01
28	1028	2025-04-01	2025-02-01
29	1029	2025-05-01	2025-02-01
30	1030	2025-06-01	2025-02-01
31	1031	2025-07-01	2025-03-01
32	1032	2025-08-01	2025-03-01

Product

```sql
SELECT TOP (1000) [Product_ID]
      ,[Product_Name]
      ,[Category]
      ,[Sub_Category]
      ,[Brand]
      ,[Sales_Price]
  FROM [ManufacturingBusiness].[dbo].[Product]
```

100 %

Results | Messages

	Product_ID	Product_Name	Category	Sub_Category	Brand	Sales_Price
1	3001	Lipstick	Makeup	Lipstick	Brand A	100.00
2	3002	Foundation	Makeup	Foundation	Brand B	110.00
3	3003	Eyeliner	Makeup	Eyeliner	Brand C	120.00
4	3004	Mascara	Makeup	Mascara	Brand D	130.00
5	3005	Blush	Makeup	Blush	Brand E	140.00
6	3006	Eyeshadow	Makeup	Eyeshadow	Brand F	150.00
7	3007	Concealer	Makeup	Concealer	Brand G	160.00
8	3008	Bronzer	Makeup	Bronzer	Brand H	170.00
9	3009	Highlighter	Makeup	Highlighter	Brand I	180.00
10	3010	Lip Gloss	Makeup	Lip Gloss	Brand J	190.00
11	3011	Lip Balm	Skincare	Lip Care	Brand K	200.00
12	3012	Shampoo	Hair Care	Shampoo	Brand L	210.00
13	3013	Conditioner	Hair Care	Conditioner	Brand M	220.00
14	3014	Face Mask	Skincare	Face Mask	Brand N	230.00
15	3015	Hair Serum	Hair Care	Serum	Brand O	240.00
16	3016	Eye Cream	Skincare	Eye Cream	Brand P	250.00
17	3017	Hair Gel	Hair Care	Styling Gel	Brand Q	260.00
18	3018	Body Lotion	Skincare	Body Lotion	Brand R	270.00
19	3019	Hand Cream	Skincare	Hand Cream	Brand S	280.00
20	3020	Hair Oil	Hair Care	Hair Oil	Brand T	290.00
21	3021	Facial Cleans...	Skincare	Cleanser	Brand A	300.00
22	3022	Liquid Found...	Makeup	Foundation	Brand A	310.00
23	3023	Lip Gloss	Makeup	Lip Gloss	Brand C	320.00
24	3024	Eyebrow Pencil	Makeup	Eyebrow	Brand C	330.00
25	3025	Highlighter	Makeup	Highlighter	Brand C	340.00
26	3026	Body Wash	Skincare	Body Wash	Brand A	350.00
27	3027	Hair Conditio...	Hair Care	Conditioner	Brand B	360.00
28	3028	Body Scrub	Skincare	Body Scrub	Brand H	370.00
29	3029	Setting Spray	Makeup	Setting Spray	Brand H	380.00

Product_Facts_Table

```sql
SELECT TOP (1000) [Date_ID]
      ,[Factory_ID]
      ,[Product_ID]
      ,[Supplier_ID]
      ,[QuantityProduced]
      ,[Cost]
  FROM [ManufacturingBusiness].[dbo].[Production_facts_table]
```
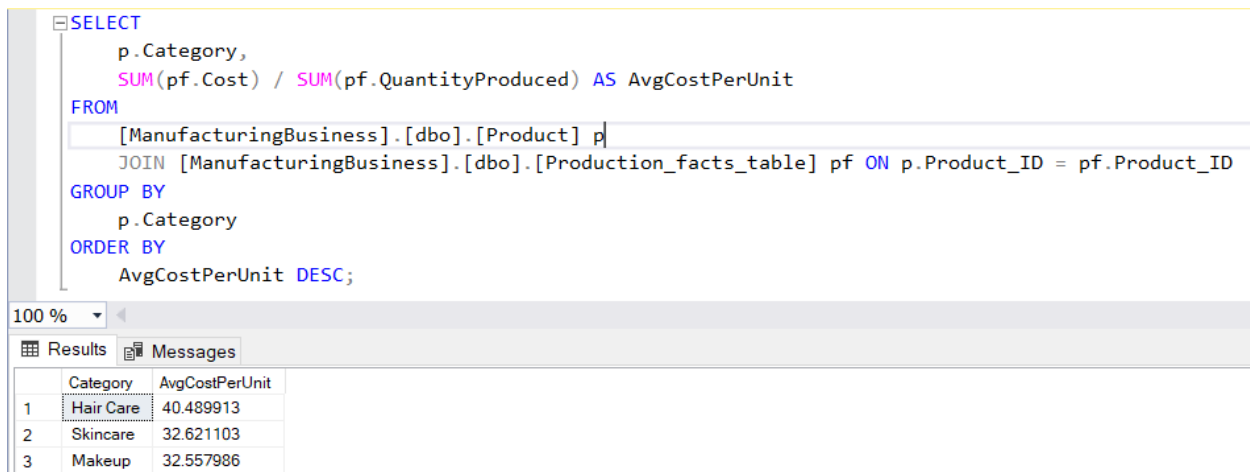
100 %

Results | Messages

	Date_ID	Factory_ID	Product_ID	Supplier_ID	QuantityProduced	Cost
1	1001	2001	3001	4001	120	6700.00
2	1002	2002	3002	4002	174	7050.00
3	1003	2003	3003	4003	500	7450.00
4	1004	2004	3004	4004	270	6878.00
5	1005	2005	3005	4005	680	7400.00
6	1006	2006	3006	4006	220	7100.00
7	1007	2007	3007	4007	80	6400.00
8	1008	2008	3008	4008	130	6650.00
9	1009	2009	3009	4009	170	6850.00
10	1010	2010	3010	4010	190	6950.00
11	1011	2001	3001	4001	120	6700.00
12	1012	2002	3002	4002	174	7050.00
13	1013	2003	3003	4003	500	7450.00
14	1014	2002	3011	4001	100	5500.00
15	1014	2004	3004	4004	270	6878.00
16	1015	2003	3012	4002	161	5850.00
17	1015	2005	3005	4005	680	7400.00
18	1016	2004	3013	4003	200	6000.00
19	1016	2006	3006	4006	220	7100.00
20	1017	2005	3014	4004	820	5990.00
21	1017	2007	3007	4007	80	6400.00
22	1018	2006	3015	4005	180	5900.00
23	1018	2008	3008	4008	130	6650.00
24	1019	2007	3016	4006	220	6100.00
25	1019	2009	3009	4009	170	6850.00
26	1020	2008	3017	4007	80	5400.00
27	1020	2010	3010	4010	190	6950.00
28	1021	2009	3018	4008	130	5650.00
29	1022	2010	3019	4009	170	5850.00

SQL QUERIES

QUESTION 1:

```sql
SELECT
    p.Category,
    SUM(pf.Cost) / SUM(pf.QuantityProduced) AS AvgCostPerUnit
FROM
    [ManufacturingBusiness].[dbo].[Product] p
    JOIN [ManufacturingBusiness].[dbo].[Production_facts_table] pf ON p.Product_ID = pf.Product_ID
GROUP BY
    p.Category
ORDER BY
        AvgCostPerUnit DESC;
```

RESULT:

QUESTION 2:

```sql
WITH ProfitableProducts AS (
  SELECT
    pf.Product_ID,
    p.Product_Name,
    SUM(pf.Cost) AS TotalCost,
    SUM(pf.QuantityProduced) AS TotalQuantity,
    SUM(pf.QuantityProduced * p.Sales_Price) AS TotalSalesRevenue,
    SUM(pf.QuantityProduced * p.Sales_Price) - SUM(pf.Cost) AS Profit
  FROM
    [ManufacturingBusiness].[dbo].[Product] p
    JOIN [ManufacturingBusiness].[dbo].[Production_facts_table] pf ON p.Product_ID = pf.Product_ID
  GROUP BY
    pf.Product_ID, p.Product_Name
)
SELECT TOP 10
    Product_Name,
    TotalCost,
    TotalQuantity,
    TotalSalesRevenue,
    Profit
FROM
    ProfitableProducts
ORDER BY
    Profit DESC;
```

RESULT:

```
WITH ProfitableProducts AS (
    SELECT
        pf.Product_ID,
        p.Product_Name,
        SUM(pf.Cost) AS TotalCost,
        SUM(pf.QuantityProduced) AS TotalQuantity,
        SUM(pf.QuantityProduced * p.Sales_Price) AS TotalSalesRevenue,
        SUM(pf.QuantityProduced * p.Sales_Price) - SUM(pf.Cost) AS Profit
```

100 %

Results | **Messages**

	Product_Name	TotalCost	TotalQuantity	TotalSalesRevenue	Profit
1	Face Mask	11980.00	1640	377200.00	365220.00
2	Blush	14800.00	1360	190400.00	175600.00
3	Eyeliner	14900.00	1000	120000.00	105100.00
4	Hair Oil	11900.00	380	110200.00	98300.00
5	Eye Cream	12200.00	440	110000.00	97800.00
6	Eye Makeup Remover	9100.00	220	99000.00	89900.00
7	Dry Skin Moisturizer	8950.00	190	93100.00	84150.00
8	Hand Cream	11700.00	340	95200.00	83500.00
9	Conditioner	12000.00	400	88000.00	76000.00
10	Dry Shampoo	9000.00	200	84000.00	75000.00

QUESTION 3:

```
SELECT
    p.Brand,
    SUM(pf.QuantityProduced) AS TotalQuantityProduced,
    SUM(pf.Cost) AS TotalCost
FROM
    [ManufacturingBusiness].[dbo].[Product] p
JOIN
    [ManufacturingBusiness].[dbo].[Production_facts_table] pf ON p.Product_ID = pf.Product_ID
GROUP BY
    p.Brand
ORDER BY
    TotalQuantityProduced DESC;
```

RESULT:

100 %

Results | **Messages**

	Brand	TotalQuantityProduced	TotalCost
1	Brand N	2300	47280.00
2	Brand C	1500	40800.00
3	Brand E	1360	14800.00
4	Brand H	1000	56400.00
5	Brand A	710	39150.00
6	Brand L	702	29600.00
7	Brand D	540	13756.00
8	Brand S	510	20550.00
9	Brand F	440	14200.00
10	Brand P	440	12200.00
11	Brand B	428	22300.00
12	Brand M	400	12000.00
13	Brand J	380	13900.00
14	Brand T	380	11900.00
15	Brand O	360	11800.00
16	Brand I	340	13700.00
17	Brand R	260	11300.00
18	Brand Q	240	19200.00
19	Brand K	200	11000.00
20	Brand G	160	12800.00