GROUP 07

MILK MARKETING FIRM

GROUP 07

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CONTENT

INTRODUCTION

Problem Statement and Business Requirements

PROBLEM STATEMENT

Design a data warehouse for a milk marketing firm akin to **Amul** with a well-defined STAR Schema, information package diagrams and clearly show the business queries implemented on the warehouse.

BUSINESS DOMAINS

Procurement

Procurement of raw material (milk) from suppliers.

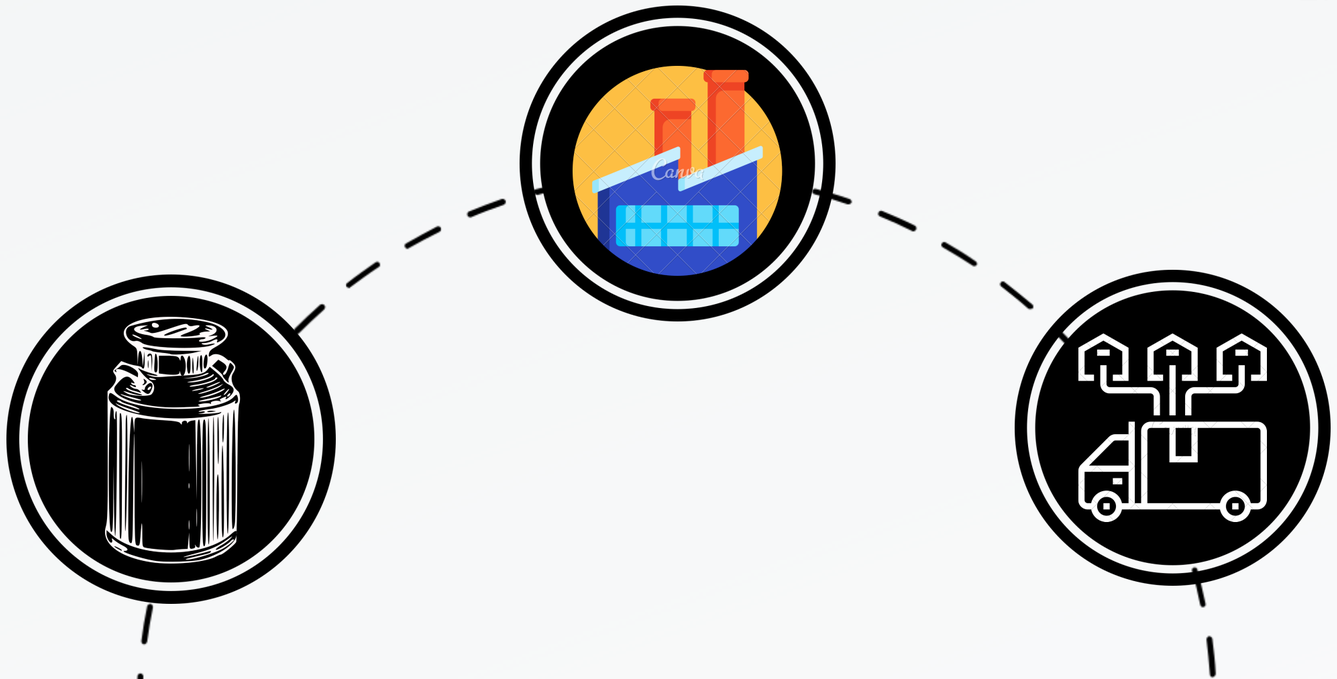
Manufacturing

Manufacturing of milk products from procured raw material in manufacturing plants.

Distribution

Distribution of manufactured milk products to :

1. Dedicated store outlets
2. Distributors



BUSINESS REQUIREMETNS

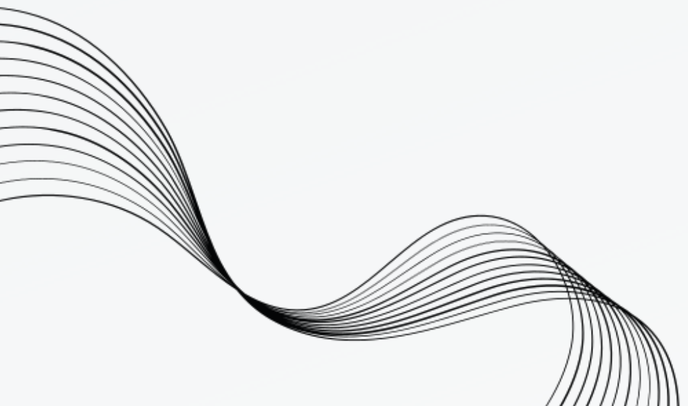
To extract strategic information such as :-

1. Calculating net profit by considering losses incurred on unsold items.
2. Calculating net profit that would have been yielded had all items that were manufactured were sold (What if? Analysis and Benchmarking).
3. Determining which items sell the least at dedicated company outlets with respect to quantity.
4. Determining which items sell the least at dedicated company outlets with respect to sales.
5. Determining which items sell the least at dedicated company outlets with respect to profit generated.
6. Calculating the profit earned at each store on a quarterly basis for a given year.
7. Determining the top suppliers that provided the highest total quantity of milk in a given year.

INFORMATION PACKAGE DIAGRAMS

Milk Procurement

Time	Location	Supplier	Procurement Product
Year	State	Name	Fat Content
Quarter	City	Address	Cost
Month	Pincode	Phone Number	Type
Date		Email	
Day Number			
Facts : Quantity, Procurement Cost			



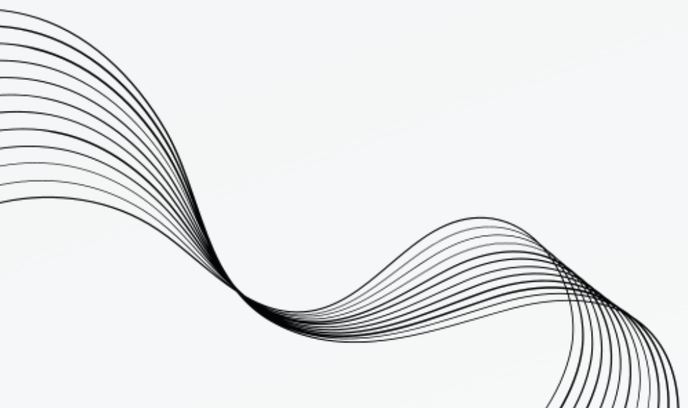
Milk Products Manufacturing

Time	Location	Plant	Product
Year	State	Name	Name
Quarter	City	Address	Type
Month	Pincode		Sub-type
Date			Selling Price
Day Number			Cost
			Shelf Life
Facts : Quantity, Manufacturing Cost			

Milk Products Distribution

Dedicated Store Outlets

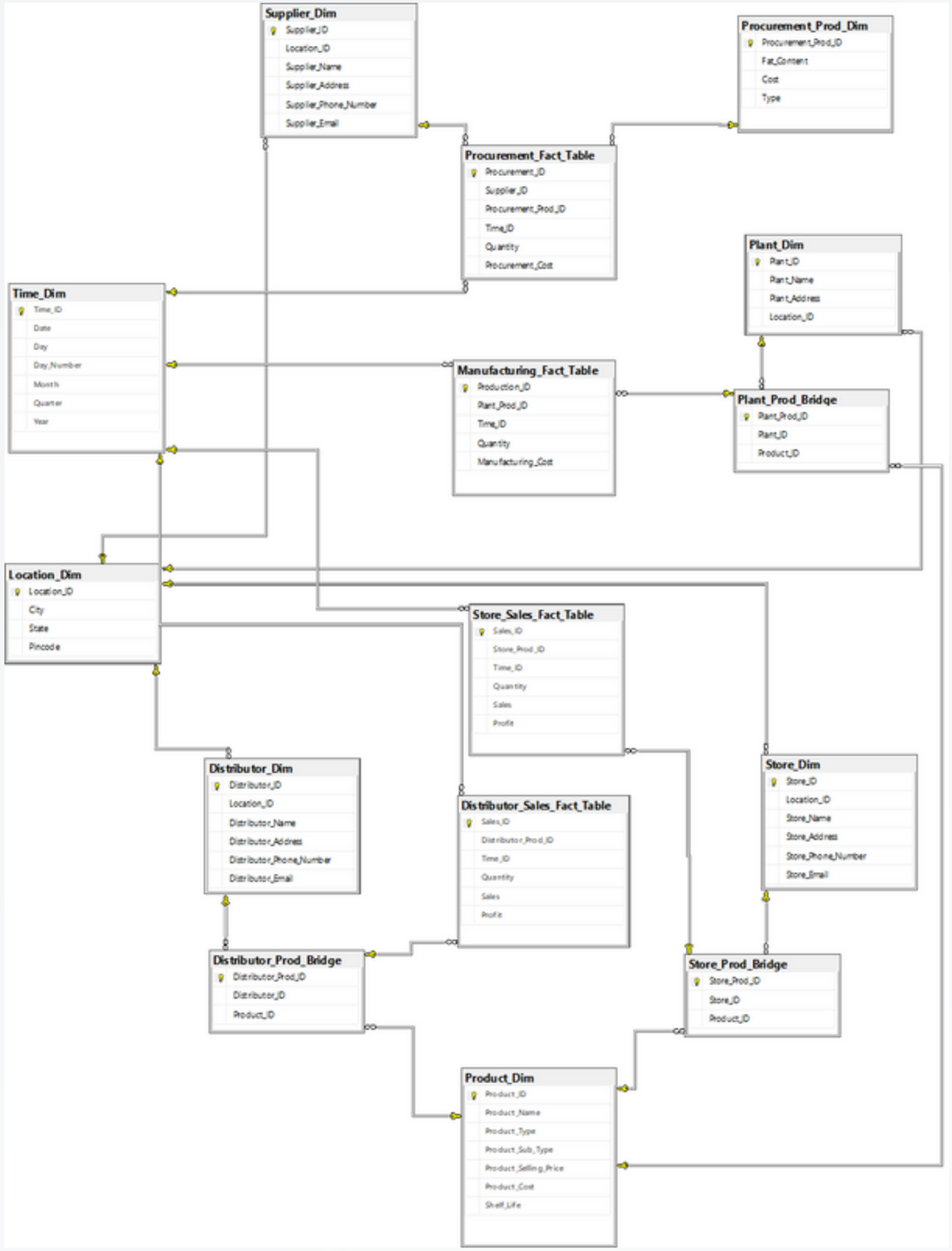
Time	Location	Store	Product
Year	State	Name	Name
Quarter	City	Address	Type
Month	Pincode	Phone Number	Sub-type
Date		Email	Selling Price
Day Number			Cost
			Shelf Life
Facts : Quantity, Sales, Profit			



Milk Products Distributors

Time	Location	Distributor	Product
Year	State	Name	Name
Quarter	City	Address	Type
Month	Pincode	Phone Number	Sub-type
Date		Email	Selling Price
Day Number			Cost
			Shelf Life
Facts : Quantity, Sales, Profit			

STAR SCHEMA


Supplier_Dim
Supplier_ID
Location_ID
Supplier_Name
Supplier_Address
Supplier_Phone_Number
Supplier_Email
Procurement_Prod_Dim
Procurement_Prod_ID
Fat_Content
Cost
Type
Procurement_Fact_Table
Procurement_ID
Supplier_ID
Procurement_Prod_ID
Time_ID
Quantity
Procurement_Cost
Plant_Dim
Plant_ID
Plant_Name
Plant_Address
Location_ID
Time_Dim
Time_ID
Date
Day
Day_Number
Month
Quarter
Year
Manufacturing_Fact_Table
Production_ID
Plant_Prod_ID
Time_ID
Quantity
Manufacturing_Cost
Plant_Prod_Bridge
Plant_Prod_ID
Plant_ID
Product_ID
Location_Dim
Location_ID
City
State
Pincode
Store_Sales_Fact_Table
Sales_ID
Store_Prod_ID
Time_ID
Quantity
Sales
Profit
Distributor_Dim
Distributor_ID
Location_ID
Distributor_Name
Distributor_Address
Distributor_Phone_Number
Distributor_Email
Distributor_Sales_Fact_Table
Sales_ID
Distributor_Prod_ID
Time_ID
Quantity
Sales
Profit
Store_Dim
Store_ID
Location_ID
Store_Name
Store_Address
Store_Phone_Number
Store_Email
Distributor_Prod_Bridge
Distributor_Prod_ID
Distributor_ID
Product_ID
Store_Prod_Bridge
Store_Prod_ID
Store_ID
Product_ID
Product_Dim
Product_ID
Product_Name
Product_Type
Product_Sub_Type
Product_Selling_Price
Product_Cost
Shelf_Life

BUSINESS QUERIES

QUERY 1

Calculate Net profit by subtracting losses on unsold items from total profit earned.

```
DECLARE @Total_Sales DECIMAL(10,2);
SET @Total_Sales = (SELECT SUM(Sales) from Store_Sales_Fact_Table) + (SELECT
SUM(Sales) from Distributor_Sales_Fact_Table)

-- Manufacturing cost involves the costs associated with both sold and unsold
items as all items were manufactured prior to distribution
DECLARE @Total_Manufacturing_Cost DECIMAL(10,2);
SET @Total_Manufacturing_Cost = (SELECT SUM(Manufacturing_Cost) from
Manufacturing_Fact_Table)

-- Subtracting sales and manufacturing cost will also take the manufacturing
costs associated with unsold items into account
SELECT @Total_Sales-@Total_Manufacturing_Cost AS 'Net Profit'
```

Output

	Net Profit
1	4752803.00

QUERY 2

Calculate Net profit that would have been yielded had all items that were manufactured were sold (What if? Analysis and Benchmarking).

```
/* CREATING TEMPORARY TABLE :- */
SELECT MFT.Quantity * PD.Product_Selling_Price AS Benchmark_Sales INTO #TEMP_TABLE FROM Manufacturing_Fact_Table MFT INNER JOIN
Plant_Prod_Bridge PPB ON MFT.Plant_Prod_ID = PPB.Plant_Prod_ID
INNER JOIN Product_Dim PD ON PD.Product_ID = PPB.Product_ID

DECLARE @Total_Sales_Benchmark DECIMAL(10,2);
SET @Total_Sales_Benchmark = (SELECT SUM(Benchmark_Sales) from #TEMP_TABLE)

-- Manufacturing cost involves the costs associated with both sold and unsold items as all items were manufactured prior to distribution
DECLARE @Total_Manufacturing_Cost DECIMAL(10,2);
SET @Total_Manufacturing_Cost = (SELECT SUM(Manufacturing_Cost) from Manufacturing_Fact_Table)

-- Subtracting sales and manufacturing cost will also take the manufacturing costs associated with unsold items into account
SELECT @Total_Sales_Benchmark-@Total_Manufacturing_Cost AS 'Net Profit (Benchmark)'
```

Output

	Net Profit (Benchmark)
1	11214400.00

QUERY 3

Determine which items sell the least at stores with respect to quantity.

```
SELECT PD.Product_Name, SUM(SFT.Quantity)
AS Total_Sales_in_Units FROM
Store_Sales_Fact_Table SFT INNER JOIN
Store_Prod_Bridge SB ON SB.Store_Prod_ID =
SFT.Store_Prod_ID INNER JOIN Product_Dim PD
ON SB.Product_ID = PD.Product_ID GROUP BY
Product_Name ORDER BY Total_Sales_in_Units
ASC;
```

Output

	Product_ID	Product_Name	Total_Sales_in_Units
1	10	Amul Dark Chocolate 150G	784
2	1	Amul A2 Cow Milk 1L	860
3	25	Amul Mishti Doi 200ml	1232
4	3	Amul Slim Trim 1L	1365
5	7	Amul Milk Chocolate 150G	1380
6	11	Amul Chocolate Ice-Cream	2440
7	8	Amul Milk Chocolate 40G	2514
8	24	Amul Curd 200ml	3132
9	15	Amul Butterscotch Ice-Cream 1L	3150
10	12	Amul Chocolate Ice-Cream 1L	4300
11	13	Amul Chocolate Ice-Cream	4305
12	19	Amul Ghee 1L	4740
13	2	Amul Cow Milk 1L	5272
14	14	Amul Butterscotch Ice-Cream	6330
15	4	Amul Taaza 1L	7632
16	22	Amul Shrikhand 50G	8118
17	5	Amul Gold 1L	8400
18	9	Amul Dark Chocolate 40G	8520
19	21	Amul Fresh Cream 25G	9633
20	16	Amul Butterscotch Ice-Cream	9693
21	23	Amul Lassi 200ml	10584
22	17	Amul Butter 200G	13430
23	18	Amul Butter Unsalted 200G	19596
24	20	Amul Cow Ghee 1L	22000
25	6	Amul Fruit N Nut Chocolate 40G	33566

QUERY 4

Determine which items sell the least at stores with respect to sales.

```
SELECT PD.Product_Name, SUM(SFT.Sales) AS
Total_Sales_in_INR FROM
Store_Sales_Fact_Table SFT INNER JOIN
Store_Prod_Bridge SB ON SB.Store_Prod_ID =
SFT.Store_Prod_ID INNER JOIN Product_Dim PD
ON SB.Product_ID = PD.Product_ID GROUP BY
Product_Name ORDER BY Total_Sales_in_INR
ASC;
```

Output

	Product_ID	Product_Name	Total_Sales_in_INR
1	25	Amul Mishti Doi 200ml	36960.00
2	3	Amul Slim Trim 1L	57330.00
3	24	Amul Curd 200ml	62640.00
4	8	Amul Milk Chocolate 40G	62850.00
5	1	Amul A2 Cow Milk 1L	73100.00
6	10	Amul Dark Chocolate 150G	78400.00
7	11	Amul Chocolate Ice-Cream	85400.00
8	13	Amul Chocolate Ice-Cream	86100.00
9	7	Amul Milk Chocolate 150G	138000.00
10	22	Amul Shrikhand 50G	162360.00
11	16	Amul Butterscotch Ice-Cream	193860.00
12	23	Amul Lassi 200ml	211680.00
13	9	Amul Dark Chocolate 40G	213000.00
14	14	Amul Butterscotch Ice-Cream	221550.00
15	21	Amul Fresh Cream 25G	240825.00
16	2	Amul Cow Milk 1L	295232.00
17	15	Amul Butterscotch Ice-Cream 1L	393750.00
18	4	Amul Taaza 1L	412128.00
19	12	Amul Chocolate Ice-Cream 1L	537500.00
20	5	Amul Gold 1L	554400.00
21	17	Amul Butter 200G	805800.00
22	6	Amul Fruit N Nut Chocolate 40G	839150.00
23	18	Amul Butter Unsalted 200G	1567680.00
24	19	Amul Ghee 1L	2370000.00
25	20	Amul Cow Ghee 1L	12100000.00

QUERY 5

Determine which items sell the least at stores with respect to profit generated.

```
SELECT PD.Product_Name, SUM(SFT.Profit) AS
Total_Profit_in_INR FROM
Store_Sales_Fact_Table SFT INNER JOIN
Store_Prod_Bridge SB ON SB.Store_Prod_ID =
SFT.Store_Prod_ID INNER JOIN Product_Dim PD
ON SB.Product_ID = PD.Product_ID GROUP BY
Product_Name ORDER BY Total_Profit_in_INR
ASC;
```

Output

	Product_ID	Product_Name	Total_Profit_in_INR
1	25	Amul Mishti Doi 200ml	7392.00
2	3	Amul Slim Trim 1L	10920.00
3	24	Amul Curd 200ml	12528.00
4	8	Amul Milk Chocolate 40G	12570.00
5	1	Amul A2 Cow Milk 1L	14620.00
6	10	Amul Dark Chocolate 150G	15680.00
7	11	Amul Chocolate Ice-Cream	17080.00
8	13	Amul Chocolate Ice-Cream	17220.00
9	7	Amul Milk Chocolate 150G	27600.00
10	22	Amul Shrikhand 50G	32472.00
11	16	Amul Butterscotch Ice-Cream	38772.00
12	23	Amul Lassi 200ml	42336.00
13	9	Amul Dark Chocolate 40G	42600.00
14	14	Amul Butterscotch Ice-Cream	44310.00
15	21	Amul Fresh Cream 25G	48165.00
16	2	Amul Cow Milk 1L	57992.00
17	15	Amul Butterscotch Ice-Cream 1L	78750.00
18	4	Amul Taaza 1L	83952.00
19	12	Amul Chocolate Ice-Cream 1L	107500.00
20	5	Amul Gold 1L	109200.00
21	17	Amul Butter 200G	161160.00
22	6	Amul Fruit N Nut Chocolate 40G	167830.00
23	18	Amul Butter Unsalted 200G	313536.00
24	19	Amul Ghee 1L	474000.00
25	20	Amul Cow Ghee 1L	2420000.00

QUERY 6

Determine which items sell the least at stores with respect to profit generated.

```
SELECT SPB.Store_ID, TD.Quarter, SUM(SSFT.Profit) AS 'Total Profit' INTO #TEMP_TABLE FROM
Store_Sales_Fact_Table SSFT
INNER JOIN Time_Dim TD ON SSFT.Time_ID=TD.Time_ID INNER JOIN Store_Prod_Bridge SPB ON
SSFT.Store_Prod_ID=SPB.Store_Prod_ID
WHERE TD.Year = 2022 GROUP BY SPB.Store_ID, TD.Quarter

SELECT Store_ID, Quarter, SUM([Total Profit]) AS 'Quarterly Profit' FROM #TEMP_TABLE GROUP
BY Store_ID,Quarter ORDER BY Quarter ASC
```

QUERY 6

Determine which items sell the least at stores with respect to profit generated.

Output

	Store_ID	Quarter	Quarterly Profit
1	3	1	12910.00
2	4	1	13992.00
3	6	1	7249.00
4	9	1	10954.00
5	10	1	6048.00
6	11	1	220000.00
7	13	1	4600.00
8	14	1	16116.00
9	17	1	3550.00
10	18	1	1708.00
11	20	1	4431.00
12	21	1	2184.00
13	22	1	9100.00
14	24	1	4308.00
15	26	1	9100.00
16	27	1	1392.00
17	29	1	1708.00
18	31	1	1708.00
19	32	1	220000.00
20	35	1	3705.00
21	36	1	26128.00
22	38	1	27184.00
23	39	1	1056.00
24	4	2	2095.00
25	8	2	6048.00
26	12	2	9747.00
27	14	2	4431.00
28	16	2	6048.00
29	17	2	6048.00

	Store_ID	Quarter	Quarterly Profit
30	19	2	9100.00
31	20	2	9100.00
32	22	2	12708.00
33	29	2	99108.00
34	31	2	3550.00
35	32	2	96192.00
36	33	2	42244.00
37	34	2	3920.00
38	35	2	4308.00
39	1	3	9100.00
40	5	3	3705.00
41	6	3	17600.00
42	7	3	6526.00
43	8	3	3550.00
44	9	3	1708.00
45	13	3	7916.00
46	14	3	16116.00
47	15	3	1708.00
48	19	3	13992.00
49	22	3	53750.00
50	23	3	16116.00
51	26	3	26128.00
52	29	3	233992.00
53	32	3	220000.00
54	34	3	4431.00
55	35	3	26128.00
56	36	3	1392.00
57	37	3	7249.00
58	38	3	220000.00

	Store_ID	Quarter	Quarterly Profit
47	15	3	1708.00
48	19	3	13992.00
49	22	3	53750.00
50	23	3	16116.00
51	26	3	26128.00
52	29	3	233992.00
53	32	3	220000.00
54	34	3	4431.00
55	35	3	26128.00
56	36	3	1392.00
57	37	3	7249.00
58	38	3	220000.00
59	2	4	26128.00
60	4	4	94800.00
61	6	4	3550.00
62	8	4	3705.00
63	11	4	4308.00
64	12	4	1056.00
65	14	4	4190.00
66	16	4	5487.00
67	18	4	15399.00
68	27	4	25242.00
69	28	4	2184.00
70	31	4	3444.00
71	32	4	3705.00
72	33	4	12958.00
73	34	4	19560.00
74	36	4	9100.00
75	39	4	11250.00

QUERY 7

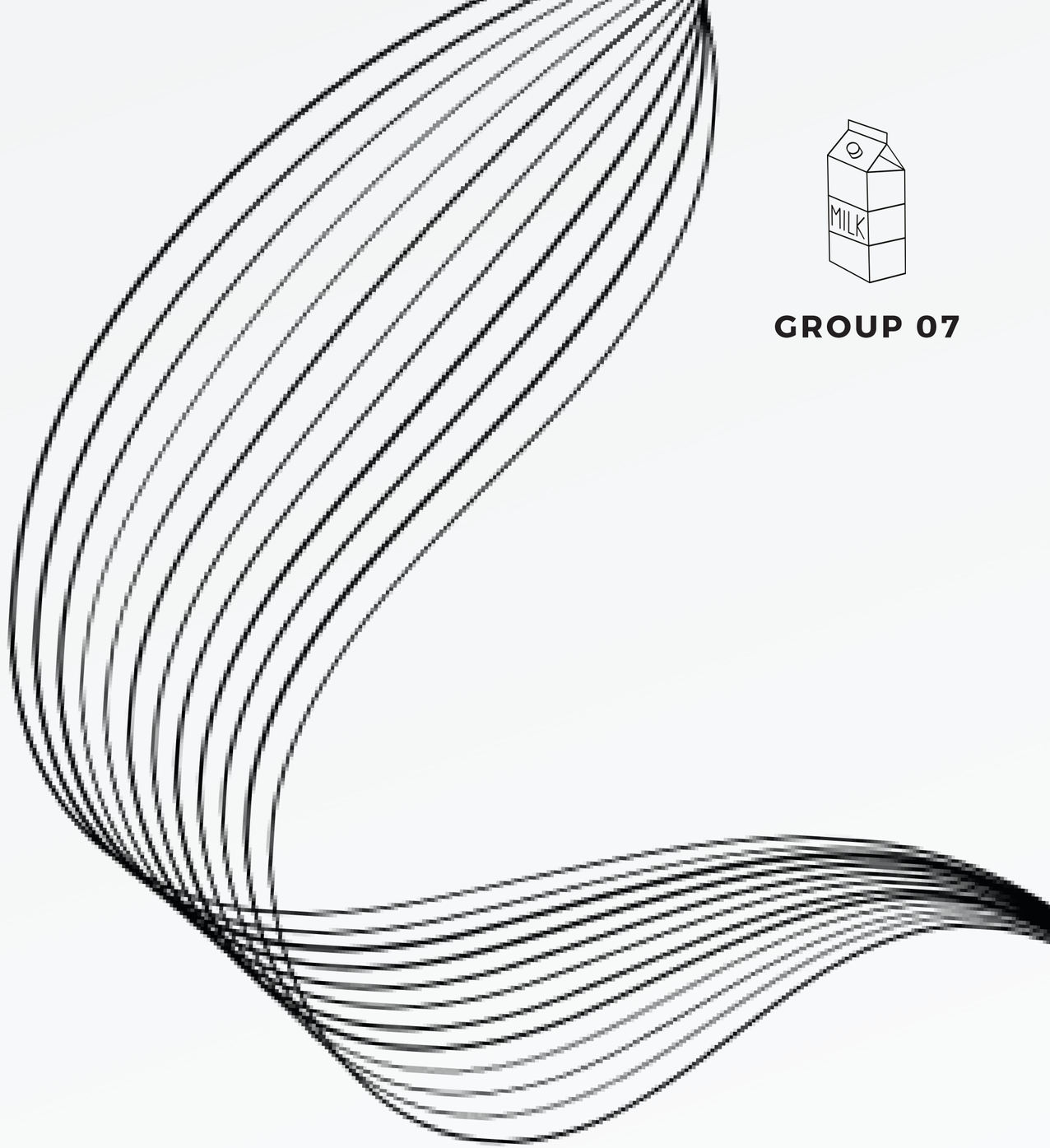
Determine the top 5 suppliers that provided the highest total quantity of products in 2022.

```
SELECT TOP 5
    Supplier_Name,
    SUM(Quantity) AS Total_Quantity
FROM Procurement_Fact_Table
JOIN Supplier_Dim ON Procurement_Fact_Table.Supplier_ID =
Supplier_Dim.Supplier_ID INNER JOIN Time_Dim TD ON
Procurement_Fact_Table.Time_ID = TD.Time_ID
WHERE TD.Year = 2022
GROUP BY Supplier_Name
ORDER BY 2 DESC;
```

Output

	Supplier_Name	Total_Quantity
1	Anjali Milk Suppliers	30300
2	Arti Milk Suppliers	26400
3	Geeta Milk Suppliers	26100
4	Jayant Milk Suppliers	24150
5	Rohit Milk Suppliers	18300

THANK YOU



GROUP 07