

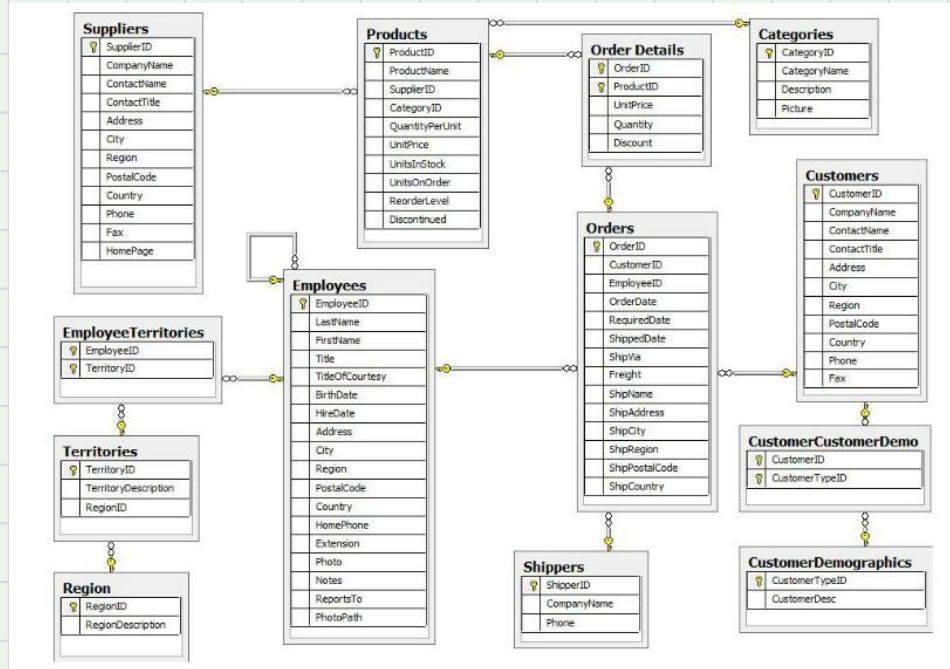


Northwind Case Study Report

Izzah Luxfiati

About Database

The Northwind database is a sample database used by Microsoft. The database contains the sales data for Northwind Traders, a fictitious specialty foods export import company.



NB : Rename Order Details table to OrderDetails to simplify the query process

Tools

1. ETL - Microsoft SQL Server Management Studio
2. Visualization - Looker Studio (Google Data Studio)
3. Flowchart - drawio (<https://app.diagrams.net/>)

Objective

1. Sales Analysis
2. Product Analysis
3. Customer Analysis

Link Dashboard

Dashboard Sales Analysis

<https://datastudio.google.com/reporting/da670d46-4bf8-4b41-afad-c604666c938b>

Dashboard Product Analysis

<https://datastudio.google.com/reporting/1f91184b-c386-4ed3-b4ea-95906bda15d1>

Dashboard Customer Analysis

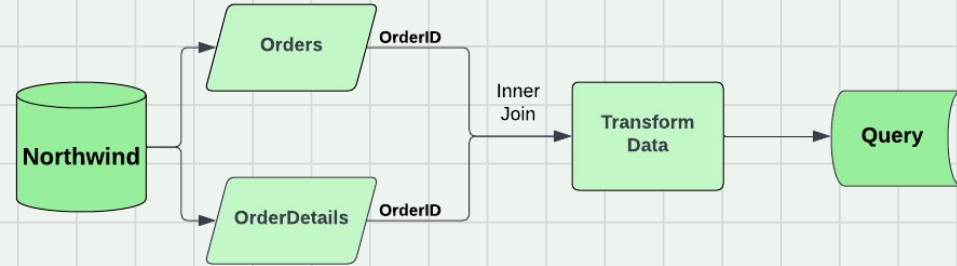
<https://lookerstudio.google.com/reporting/dde7cbf8-c38c-49b9-bf3b-070a12581f35>

01.

Sales Analysis

Study Case 1

For their annual sales review, the sales & marketing team wants to analyze sales trend in the period 4 July 1996 - 4 May 1998. They want make a query that consist of year, month, the number of customers who place orders, the number of products ordered, and total sales.

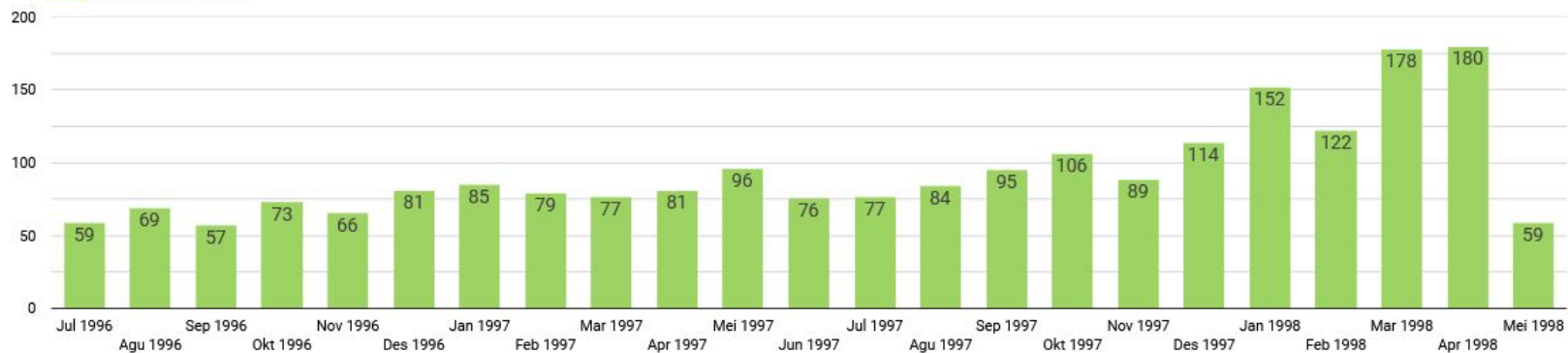


```
SELECT
YEAR(a.OrderDate) AS Year,
MONTH(a.OrderDate) AS Month,
COUNT(a.CustomerID) AS Customer_Amount,
SUM(b.Quantity) AS Order_Quantity,
ROUND(SUM((b.UnitPrice * b.Quantity) - ((b.UnitPrice * b.Quantity) * b.Discount)), 2) AS Sales
FROM Orders AS a
INNER JOIN OrderDetails AS b
ON a.OrderID = b.OrderID
GROUP BY YEAR(a.OrderDate), MONTH(a.OrderDate)
ORDER BY Year, Month
```

Output Table

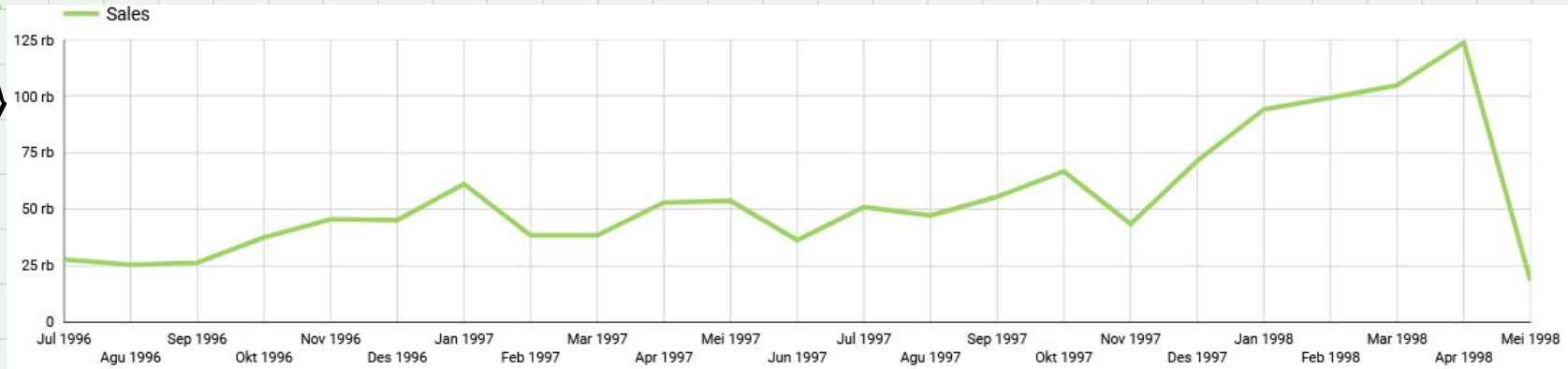
Year	Month	Customer_Amount	Order_Quantity	Sales
1996	7	59	1462	27861,89
1996	8	69	1322	25485,28
1996	9	57	1124	26381,4
1996	10	73	1738	37515,72
1996	11	66	1735	45600,04
1996	12	81	2200	45239,63
1997	1	85	2401	61258,07
1997	2	79	2132	38483,64
1997	3	77	1770	38547,22
1997	4	81	1912	53032,95
1997	5	96	2164	53781,29
1997	6	76	1635	36362,8
1997	7	77	2054	51020,86
1997	8	84	1861	47287,67
1997	9	95	2343	55629,24
1997	10	106	2679	66749,23
1997	11	89	1856	43533,81
1997	12	114	2682	71398,43
1998	1	152	3466	94222,11
1998	2	122	3115	99415,29
1998	3	178	4065	104854,15
1998	4	180	4680	123798,68
1998	5	59	921	18333,63

Customer Amount



Sold Product Amount





Analysis :

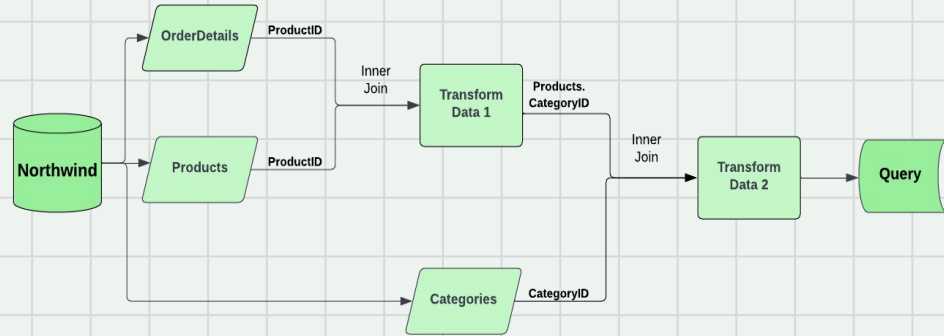
1. Significant increase in sales occurred in the period December 1997 - April 1998
2. This was due to an increase in the number of customers and sold products in that period

Recommendation :

The sales increase is a good thing for the marketing team and it will be good if marketing team analyze the reason behind those increase to catch another market chance & apply the best strategy in the next periode. The marketing team should maintain and increase sales targets for the next few months based on the latest sales trends.

Study Case 2

The sales & marketing team also wants to analyze the total sales and order quantity in each product category in the period 4 July 1996 - 4 May 1998 to know in which product category, customers buy the most and buy the least product. They want make a query that consist of category name, sales, and product order quantity



SELECT

c.CategoryName,

ROUND(SUM(((a.UnitPrice * a.Quantity) - ((a.UnitPrice * a.Quantity) * a.Discount))),2) **AS** Sales,

SUM(a.Quantity) **AS** Order_Quantity

FROM OrderDetails **AS** a

INNER JOIN Products **AS** b

ON a.ProductID = b.ProductID


INNER JOIN Categories **AS** c

ON b.CategoryID = c.CategoryID


GROUP BY CategoryName

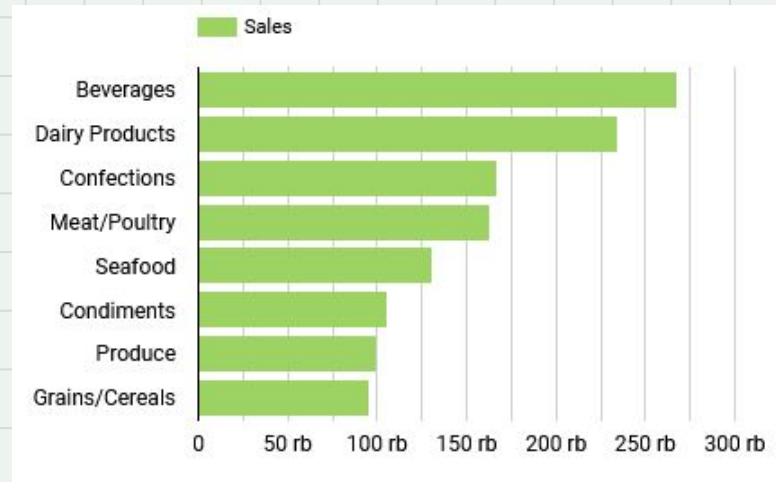
ORDER BY Sales **DESC**

Output Table



CategoryName	Sales	Order_Quantity
Beverages	267868,18	9532
Dairy Products	234507,29	9149
Confections	167357,22	7906
Meat/Poultry	163022,36	4199
Seafood	131261,74	7681
Condiments	106047,08	5298
Produce	99984,58	2990
Grains/Cereals	95744,59	4562





Analysis :

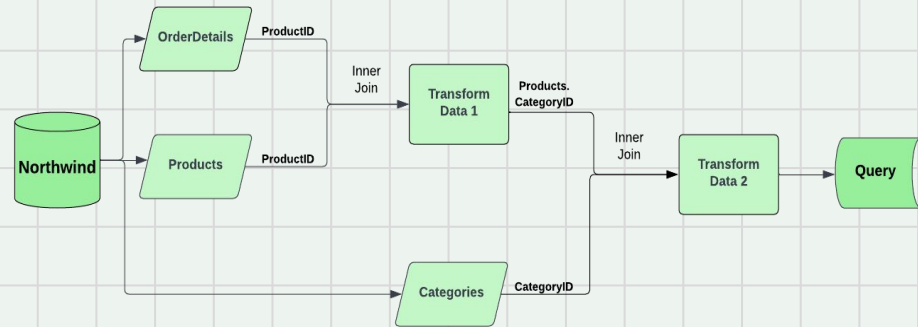
1. The most purchased product and has the highest number of sales is beverages product category. The second and the third are daily products & confections product categories.
2. The least purchased product is produce product category. The lowest number of sales is in grains/cereals product categories.

Recommendation :

1. For products that have a low order quantity, the marketing team should carry out promotions to increase the attractiveness of buyers for these products.
2. if in the next period, the marketing team focuses more on increasing sales revenue, then optimizing the promotion and sales of meal/poultry products is a good opportunity. Because meal/poultry products is the second product that least to be purchased but the total sales is quite high (unit price is high).

Study Case 3


In the next month, Northwind company celebrates the company's 50th anniversary, company management agreed to give a 15% special discount for the top 10 products that have the most sales. The discount is given for a week from the company's anniversary day. The sales & marketing team will make a new list of unit price for top 10 product that have the most sales, they want make a query that consist of product name, product category, sales, rank, unit price, and unit price after discount




SELECT

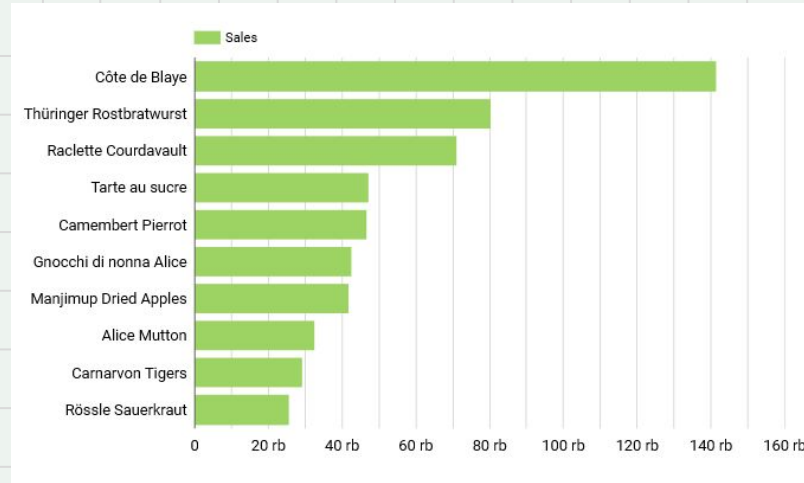
```
TOP 10 b.ProductName AS Product_Name,
c.CategoryName AS Product_Category,
ROUND(SUM(((a.UnitPrice * a.Quantity) - ((a.UnitPrice * a.Quantity) * a.Discount))), 2) AS Sales,
ROW_NUMBER() OVER (ORDER BY ROUND(SUM(((a.UnitPrice * a.Quantity) - ((a.UnitPrice * a.Quantity) * a.Discount))), 2) DESC) AS Rank,
b.UnitPrice AS Unit_Price,
CAST((b.UnitPrice - (b.UnitPrice * 0.15)) AS DECIMAL(10, 2)) AS Discount_Price
FROM OrderDetails AS a
INNER JOIN Products AS b
ON a.ProductID = b.ProductID
INNER JOIN Categories AS c
ON b.CategoryID = c.CategoryID
GROUP BY b.ProductName, c.CategoryName, b.UnitPrice
```

Output Table



Product_Name	Product_Category	Sales	Rank	Unit_Price	Discount_Price
Côte de Blaye	Beverages	141396,74	1	263,5	223.98
Thüringer Rostbratwurst	Meat/Poultry	80368,67	2	123,79	105.22
Raclette Courdavault	Dairy Products	71155,7	3	55	46.75
Tarte au sucre	Confections	47234,97	4	49,3	41.91
Camembert Pierrot	Dairy Products	46825,48	5	34	28.90
Gnocchi di nonna Alice	Grains/Cereals	42593,06	6	38	32.30
Manjimup Dried Apples	Produce	41819,65	7	53	45.05
Alice Mutton	Meat/Poultry	32698,38	8	39	33.15
Carnarvon Tigers	Seafood	29171,88	9	62,5	53.13
Rössle Sauerkraut	Produce	25696,64	10	45,6	38.76





Analysis :

Côte de Blaye products are one of the products that have the most sales compared to other products. Côte de Blaye products are the only products that have sales value above 100,000, while the other top 9 products have sales under 100,000.


Recommendation :

To attract the attention of buyers with discounts on these top 10 products and to maintain sales revenue in the next month, the marketing team should carry out discount promotions not only for loyal customers, but also need to make offers to potential new customers. This discount is not only used to maintain customer loyalty but also this will be good opportunity to attract many potential new customers too.




Study Case 4

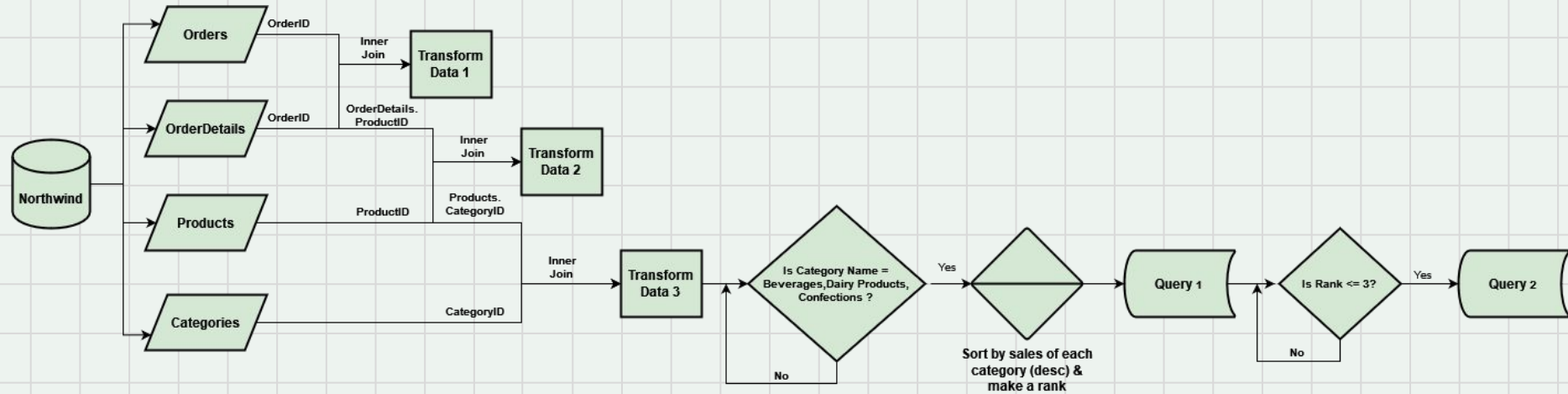
The sales & marketing team want to analyze sales based on country. They want to see The top 3 countries that have the most sales in beverages, dairy product, and confections product category. They want make a query that consist of product category, country, sales and rank.



```
WITH table1 AS(
SELECT
    d.CategoryName AS Product_Category, a.ShipCountry AS Country,
    ROUND(SUM(((b.UnitPrice * b.Quantity) - ((b.UnitPrice * b.Quantity) * b.Discount))), 2) AS Sales,
    ROW_NUMBER() OVER (PARTITION BY d.CategoryName
    ORDER BY ROUND(SUM(((b.UnitPrice * b.Quantity) - ((b.UnitPrice * b.Quantity) * b.Discount))), 2) DESC) AS Rank
FROM Orders AS a
INNER JOIN OrderDetails AS b
    ON a.OrderID = b.OrderID
INNER JOIN Products AS c
    ON b.ProductID = c.ProductID
INNER JOIN Categories AS d
    ON c.CategoryID = d.CategoryID
WHERE d.CategoryName IN ('Beverages', 'Dairy Products', 'Confections')
GROUP BY d.CategoryName, a.ShipCountry)

SELECT *
FROM table1
WHERE Rank <= 3
```

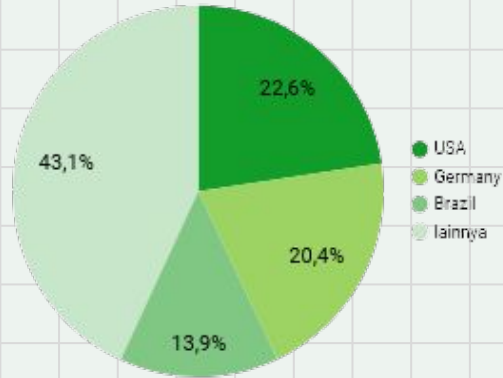




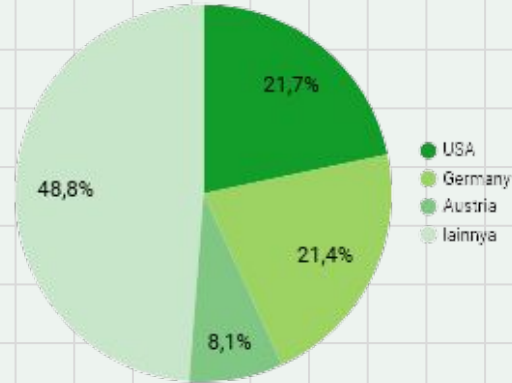
Output Table

Product_Category	Country	Sales	Rank
Beverages	USA	60520,97	1
Beverages	Germany	54634,12	2
Beverages	Brazil	37193,44	3
Confections	USA	36314,93	1
Confections	Germany	35878,6	2
Confections	Austria	13534,41	3
Dairy Products	Germany	49640,95	1
Dairy Products	USA	37902,05	2
Dairy Products	Austria	28106,74	3

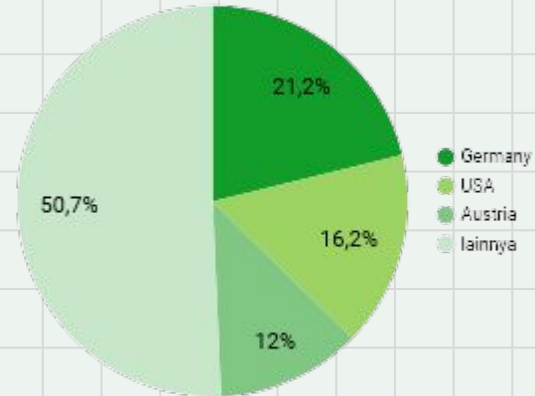
Top 3 Countries
In Beverages Sales



Top 3 Countries
In Confections Sales

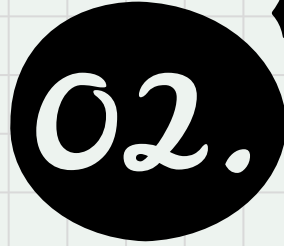


Top 3 Countries
In Dairy Product Sales



Analysis :


1. USA and Germany are the 2 countries that have the most sales for these three product categories.
2. Austria is the third country with the most sales for the confections & dairy products category




Product Analysis

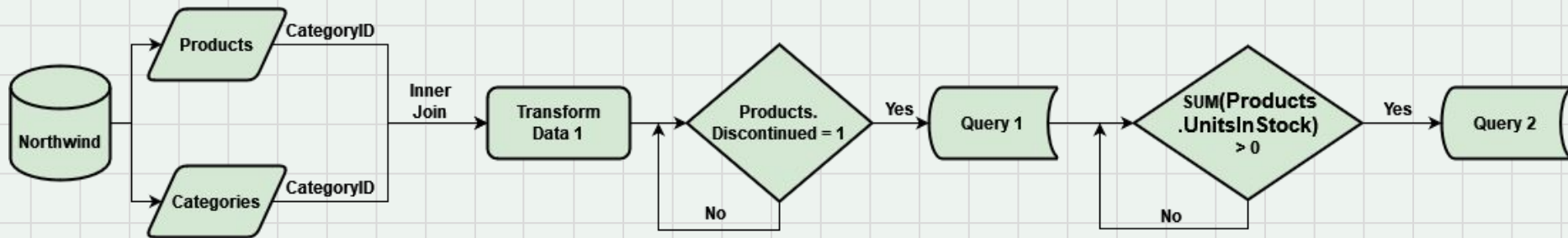
Study Case 1

Product development team decided not to continue selling certain products, they wanted to make a list of discontinued products that still have remaining stock. They will give 30% discount for that product. They need a query that consist of product name, product category, amount of remaining stock, unit price, and discount price.



```
SELECT
a.ProductName AS Product_Name,
b.CategoryName AS Product_Category,
SUM(a.UnitsInStock) AS Stock,
a.UnitPrice AS Unit_Price,
CAST((a.UnitPrice - (a.UnitPrice * 0.3)) AS DECIMAL(10,2)) AS Discount_Price
FROM Products AS a
INNER JOIN Categories AS b
ON a.CategoryID = b.CategoryID
WHERE a.Discontinued = 1
GROUP BY a.ProductName, b.CategoryName, a.UnitPrice
HAVING SUM(a.UnitsInStock) > 0
```

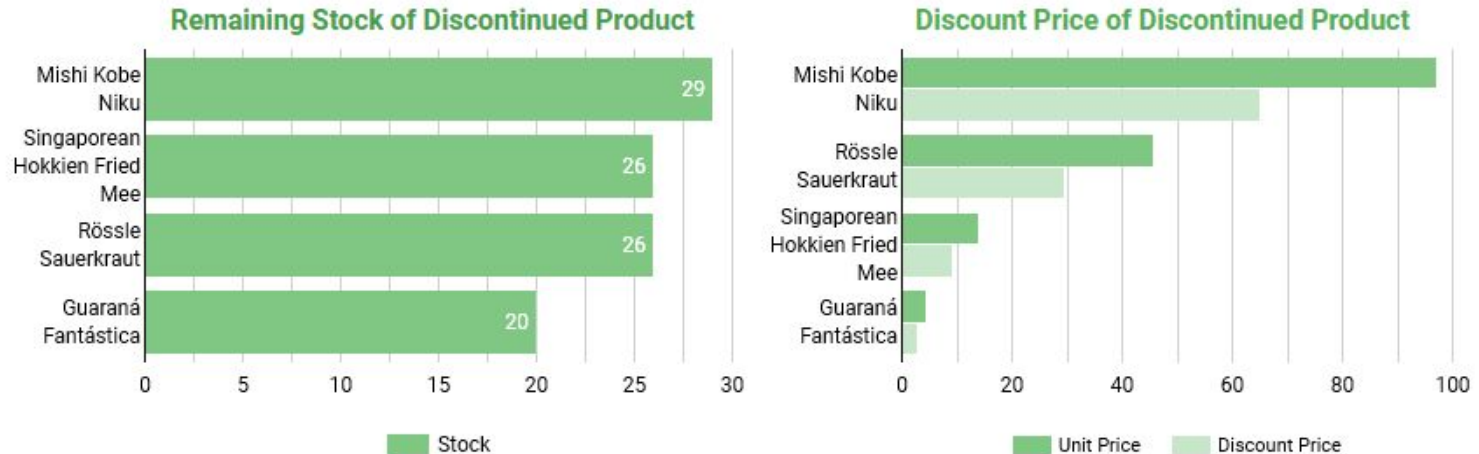




Output Table


Product_Name	Product_Category	Stock	Unit_Price	Discount_Price
Guaraná Fantástica	Beverages	20	4,5	3.15
Mishi Kobe Niku	Meat/Poultry	29	97	67.90
Rössle Sauerkraut	Produce	26	45,6	31.92
Singaporean Hokkien Fried Mee	Grains/Cereals	26	14	9.80

There are 4 discontinued product with remaining stock. The product will be discounted by 30% from the unit price




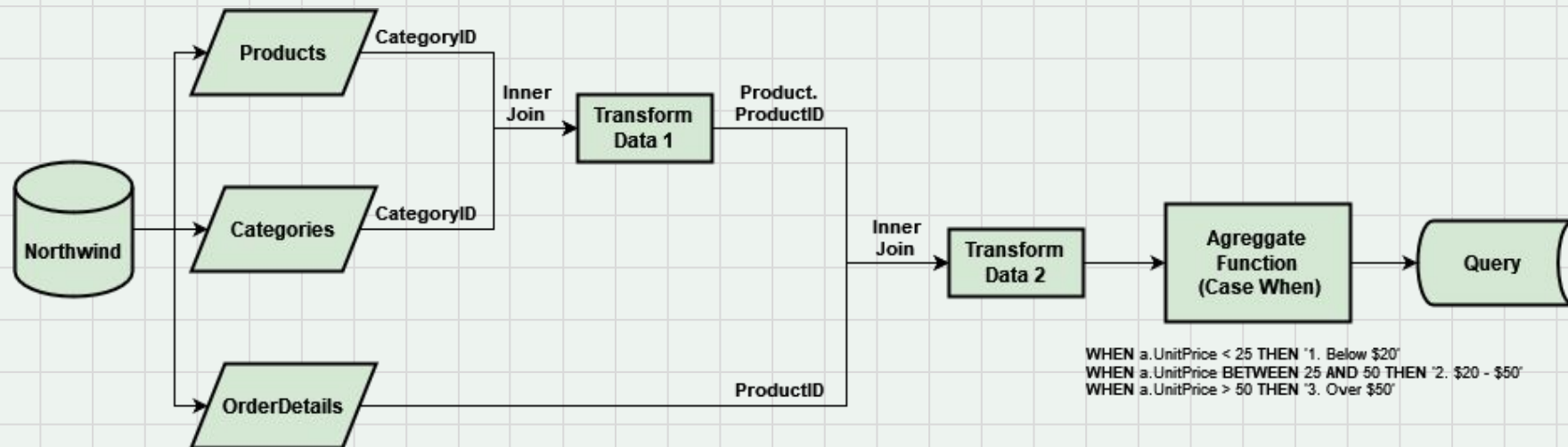
Study Case 2

Product development team wants to know how each product category performs according to their prices range (below 25, 25-50, over 50). They want to make a query that consists of product category, price ranges, order quantity, and sales.



```
SELECT
b.CategoryName AS Product_Category,
CASE WHEN a.UnitPrice < 25 THEN '1. Below $20'
      WHEN a.UnitPrice BETWEEN 25 AND 50 THEN '2. $20 - $50'
      WHEN a.UnitPrice > 50 THEN '3. Over $50'
END AS Price_Range,
SUM(c.Quantity) AS Order_Quantity,
ROUND(SUM(((c.UnitPrice * c.Quantity) - ((c.UnitPrice * c.Quantity) * c.Discount))),2) AS Sales
FROM Products AS a
INNER JOIN Categories AS b
ON a.CategoryID = b.CategoryID
INNER JOIN OrderDetails AS c
ON a.ProductID = c.ProductID
GROUP BY b.CategoryName,
CASE WHEN a.UnitPrice < 25 THEN '1. Below $20'
      WHEN a.UnitPrice BETWEEN 25 AND 50 THEN '2. $20 - $50'
      WHEN a.UnitPrice > 50 THEN '3. Over $50'
END
ORDER BY Product_Category,, Price_Range
```







Output Table

Product_Category	Price_Range	Order_Quantity	Sales
Beverages	1. Below \$20	8329	102944,75
Beverages	2. \$20 - \$50	580	23526,7
Beverages	3. Over \$50	623	141396,74
Condiments	1. Below \$20	3577	55084,39
Condiments	2. \$20 - \$50	1721	50962,69
Confections	1. Below \$20	5392	62609,88
Confections	2. \$20 - \$50	2201	82183,99
Confections	3. Over \$50	313	22563,36
Dairy Products	1. Below \$20	3915	49021,8
Dairy Products	2. \$20 - \$50	3738	114329,79
Dairy Products	3. Over \$50	1496	71155,7
Grains/Cereals	1. Below \$20	2559	31193,56
Grains/Cereals	2. \$20 - \$50	2003	64551,03
Meat/Poultry	1. Below \$20	1658	22154,64
Meat/Poultry	2. \$20 - \$50	1700	53272,55
Meat/Poultry	3. Over \$50	841	87595,17
Produce	1. Below \$20	701	10423,99
Produce	2. \$20 - \$50	1403	47740,94
Produce	3. Over \$50	886	41819,65
Seafood	1. Below \$20	5663	65109,93
Seafood	2. \$20 - \$50	1479	36979,94
Seafood	3. Over \$50	539	29171,88

Beverages

	Price Category	Order Quantity ▾	Sales
1.	Below \$25	8.329	102.944,76
2.	Over \$50	623	141.396,74
3.	Between \$25-\$50	580	23.526,7







Dairy Products

	Price Category	Order Quantity ▾	Sales
1.	Between \$25-\$50	4.282	136.441,99
2.	Below \$25	3.915	49.021,83
3.	Over \$50	952	49.043,5





Confections

	Price Category	Order Quantity ▾	Sales
1.	Below \$25	5.705	69.743,73
2.	Between \$25-\$50	1.888	75.050,15
3.	Over \$50	313	22.563,36





Seafood

	Price Category	Order Quantity ▾	Sales
1.	Below \$25	5.663 	65.109,94 
2.	Between \$25-\$50	1.479 	36.979,93 
3.	Over \$50	539 	29.171,88 







Condiments

	Price Category	Order Quantity ▾	Sales
1.	Below \$25	3.577 	55.084,42 
2.	Between \$25-\$50	1.721 	50.962,7 







Grains / Cereals

	Price Category	Order Quantity ▾	Sales
1.	Below \$25	2.559 	31.193,56 
2.	Between \$25-\$50	2.003 	64.551,03 

Meat / Poultry

	Price Category	Order Quantity ▾	Sales
1.	Between \$25-\$50	1.700 	53.272,55 
2.	Below \$25	1.658 	22.154,64 
3.	Over \$50	841 	87.595,18 

Produce


	Price Category	Order Quantity ▾	Sales
1.	Between \$25-\$50	1.403 	47.740,94 
2.	Over \$50	886 	41.819,65 
3.	Below \$25	701 	10.423,99 

Analysis :


1. Beverages, confections, seafood, condiments, and grains/cereals with a price range below \$25 are product categories that have the most order quantity among the other price ranges with the same product category.
2. Dairy products, meat/poultry, and produce with a price range between \$25-\$50 are product categories that have the highest number of orders among the other price ranges with the same product category.
3. Beverage & meat poultry with price range over \$50 are the product categories that have the most sales among the other price ranges with the same product category.
4. Dairy products, confections, grains/cereals, and produce with price range between \$25-\$50 are the product categories that have the most sales among the other price ranges with the same product category.
5. Seafood & condiments with price range over \$50 are the product categories that have the most sales among the other price ranges with the same product category.

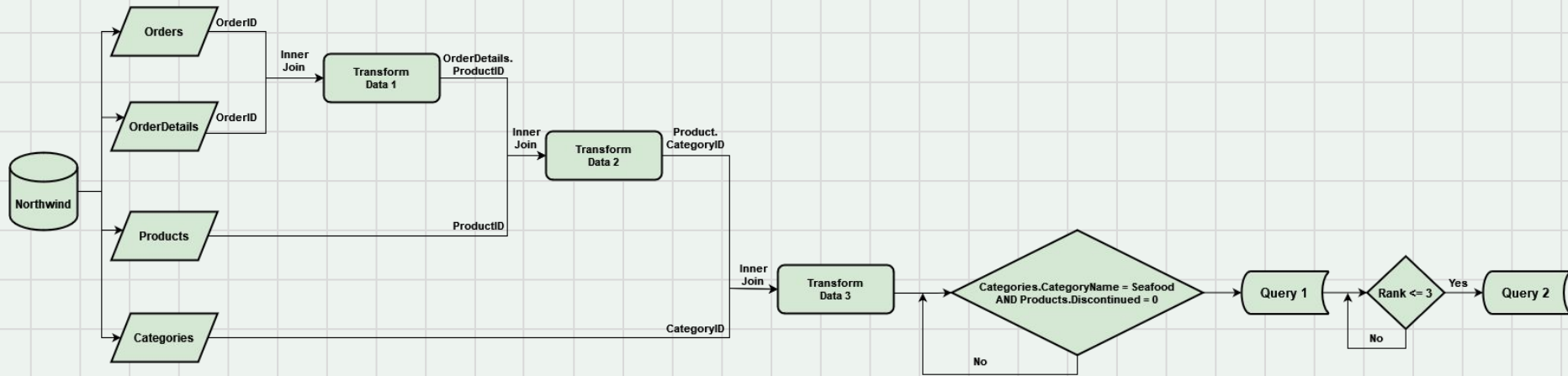
Study Case 3

Product development team created a new packaging design for seafood product category with the 3 lowest sales, The product must not include in discontinued product list. This innovation aims to attract customer interest and there is an additional cost of 1% from the previous product unit price. They want make a query that consist of product name, sales, rank, unit price, new price.



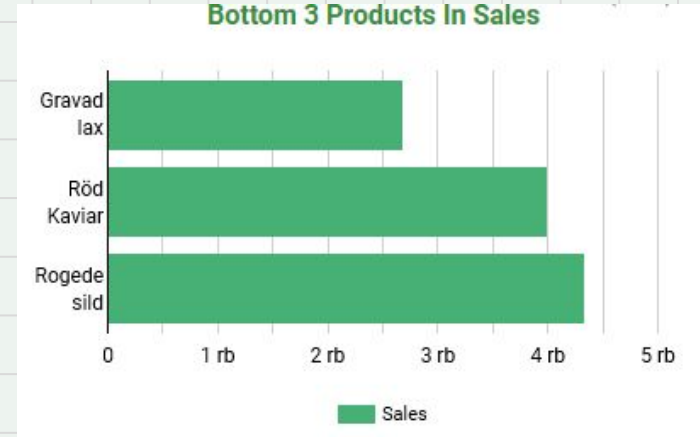
```
WITH table1 AS (  
  SELECT  
    c.ProductName AS Product_Name,  
    ROUND(SUM(((b.UnitPrice * b.Quantity) - ((b.UnitPrice * b.Quantity) * b.Discount))), 2) AS Sales,  
    ROW_NUMBER() OVER (PARTITION BY d.CategoryName  
      ORDER BY ROUND(SUM(((b.UnitPrice * b.Quantity) - ((b.UnitPrice * b.Quantity) * b.Discount))), 2) ASC) AS Rank,  
    c.UnitPrice AS Unit_Price,  
    CAST((c.UnitPrice + (c.UnitPrice * 0.01)) AS DECIMAL(10,2)) AS New_Price  
  FROM Orders AS a  
  INNER JOIN OrderDetails AS b  
    ON a.OrderID = b.OrderID  
  INNER JOIN Products AS c  
    ON b.ProductID = c.ProductID  
  INNER JOIN Categories AS d  
    ON c.CategoryID = d.CategoryID  
  WHERE d.CategoryName = 'Seafood' AND c.Discontinued = 0  
  GROUP BY c.ProductName, d.CategoryName, c.UnitPrice )  
  
  SELECT *  
  FROM table1  
  WHERE Rank <= 3
```





Output Table

Product_Name	Sales	Rank	Unit_Price	New_Price
Gravad lax	2688,4	1	26	26.26
Röd Kaviar	3997,2	2	15	15.15
Rogede sild	4338,18	3	9,5	9.60



Analysis :

1. Gravad lax, rod kaviae, rogede slid are seafood product that include in bottom 3 seafood products in sales, with sales under 4350
2. Gravad tax is the lowest product in sales in seafood product category.

Recommendation :

after carrying out packaging design innovations for the 3 seafood products with the lowest sales, in order to attract customer interest, further advertising should be carried out



Customer Analysis



Study Case 1

Customer relations team wants to group customers into several segments based on the frequency of purchases .
There are 3 categories customer :

1. Heavy Users

Customers who purchase the product most frequently. These tend to be the most avid and engaged customers. (order frequency > 50)

2. Average Users

Customers that semi-regularly purchase our product, but not frequently.
($20 \leq \text{order frequency} \leq 50$)

3. Light Users

Customers that use or purchase much less in proportion than to the other customers.
(order frequency < 20)

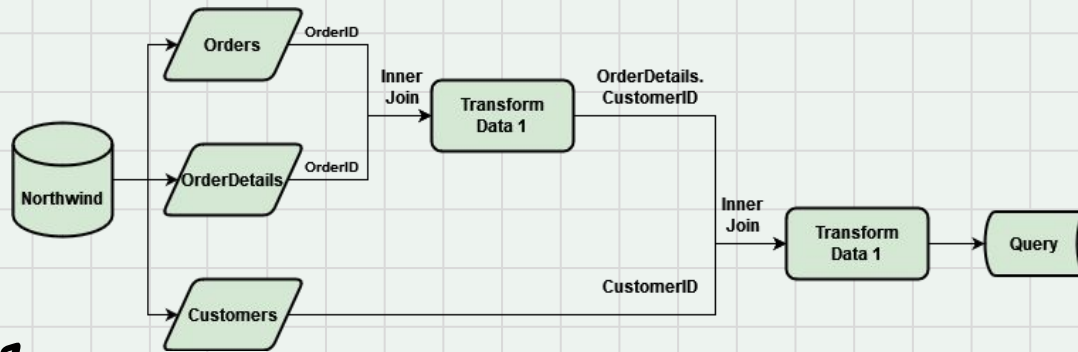
They want to make 2 queries :

1. Query 1

They want to make a list of customers who include into that category. This query consist of name of customer (company name), customer category, order frequency, order quantity.

2. Query 2

They want to know the order frequency, order quantity, & customer amount of each category.



Query 1

SELECT

c.CompanyName **AS** Company_Name,

CASE WHEN Count(a.OrderID) > 50 **THEN** 'Heavy Users'

WHEN Count(a.OrderID) **BETWEEN** 20 **AND** 50 **THEN** 'Average Users'

WHEN Count(a.OrderID) < 20 **THEN** 'Light Users'

END AS Customer_Category,

COUNT(a.OrderID) **AS** Order_Frequency,

SUM(b.Quantity) **AS** Order_Quantity

FROM Orders **AS** a

INNER JOIN OrderDetails **AS** b

ON a.OrderID = b.OrderID

INNER JOIN Customers **AS** c

ON a.CustomerID = c.CustomerID

GROUP BY c.CompanyName

ORDER BY Customer_Category, c.CompanyName



Output Table (Heavy Users)

Company_Name	Customer_Category	Order_Frequency	Order_Quantity
Berglunds snabbköp	Heavy Users	52	1001
Ernst Handel	Heavy Users	102	4543
Hungry Owl All-Night Grocers	Heavy Users	55	1684
QUICK-Stop	Heavy Users	86	3961
Rattlesnake Canyon Grocery	Heavy Users	71	1383
Save-a-lot Markets	Heavy Users	116	4958



Output Table (Average Users)

Company_Name	Customer_Category	Order_Frequency	Order_Quantity
Around the Horn	Average Users	30	650
Blondesddsl père et fils	Average Users	26	666
Bon app'	Average Users	44	980
Bottom-Dollar Markets	Average Users	35	956
B's Beverages	Average Users	22	293
Chop-suey Chinese	Average Users	22	465
Die Wandernde Kuh	Average Users	26	492
Eastern Connection	Average Users	21	569
Folk och få HB	Average Users	45	1234
Frankenversand	Average Users	48	1525
Furia Bacalhau e Frutos do Mar	Average Users	20	349
Godos Cocina Típica	Average Users	26	395
Great Lakes Food Market	Average Users	22	345
Hanari Carnes	Average Users	32	839
HILARION-Abastos	Average Users	45	1096
Island Trading	Average Users	23	295
Königlich Essen	Average Users	39	903
La maison d'Asie	Average Users	31	442
Lehmanns Marktstand	Average Users	39	794
LILA-Supermercado	Average Users	34	836



Output Table (Average Users)

Company_Name	Customer_Category	Order_Frequency	Order_Quantity
LINO-Delicateses	Average Users	35	970
Magazzini Alimentari Riuniti	Average Users	21	433
Mère Paillard	Average Users	32	966
Old World Delicatessen	Average Users	24	603
Ottilies Käseladen	Average Users	29	639
Piccolo und mehr	Average Users	23	624
Que Delícia	Average Users	24	394
Queen Cozinha	Average Users	40	1031
Reggiani Caseifici	Average Users	22	335
Ricardo Adocicados	Average Users	27	660
Richter Supermarkt	Average Users	30	810
Seven Seas Imports	Average Users	26	818
Split Rail Beer & Ale	Average Users	20	327
Suprêmes délices	Average Users	39	1072
Tortuga Restaurante	Average Users	29	384
Vaffeljernet	Average Users	31	792
Victuailles en stock	Average Users	25	434
Wartian Herkku	Average Users	37	737
White Clover Markets	Average Users	40	1063



Output Table (Light Users)

Company_Name	Customer_Category	Order_Frequency	Order_Quantity
Alfreds Futterkiste	Light Users	12	174
Ana Trujillo Emparedados y helados	Light Users	10	63
Antonio Moreno Taquería	Light Users	17	359
Blauer See Delikatessen	Light Users	14	140
Bólido Comidas preparadas	Light Users	6	190
Cactus Comidas para llevar	Light Users	11	115
Centro comercial Moctezuma	Light Users	2	11
Comércio Mineiro	Light Users	10	133
Consolidated Holdings	Light Users	7	87
Drachenblut Delikatessen	Light Users	10	160
Du monde entier	Light Users	9	80
Familia Arquibaldo	Light Users	19	357
Folies gourmandes	Light Users	16	354
France restauration	Light Users	6	69
Franchi S.p.A.	Light Users	10	54
Galería del gastrónomo	Light Users	8	42
Gourmet Lanchonetes	Light Users	19	315
GROSELLA-Restaurante	Light Users	4	34
Hungry Coyote Import Store	Light Users	9	122



Output Table (Light Users)

Company_Name	Customer_Category	Order_Frequency	Order_Quantity
La corne d'abondance	Light Users	11	83
Laughing Bacchus Wine Cellars	Light Users	8	62
Lazy K Kountry Store	Light Users	2	20
Let's Stop N Shop	Light Users	10	181
Lonesome Pine Restaurant	Light Users	14	134
Maison Dewey	Light Users	17	320
Morgenstern Gesundkost	Light Users	11	172
North/South	Light Users	6	30
Océano Atlántico Ltda.	Light Users	11	132
Pericles Comidas clásicas	Light Users	14	208
Princesa Isabel Vinhos	Light Users	10	184
Rancho grande	Light Users	12	92
Romero y tomillo	Light Users	14	91
Santé Gourmet	Light Users	16	161
Simons bistro	Light Users	15	378
Spécialités du monde	Light Users	6	48
The Big Cheese	Light Users	7	46
The Cracker Box	Light Users	8	59
Toms Spezialitäten	Light Users	14	253



Output Table (Light Users)

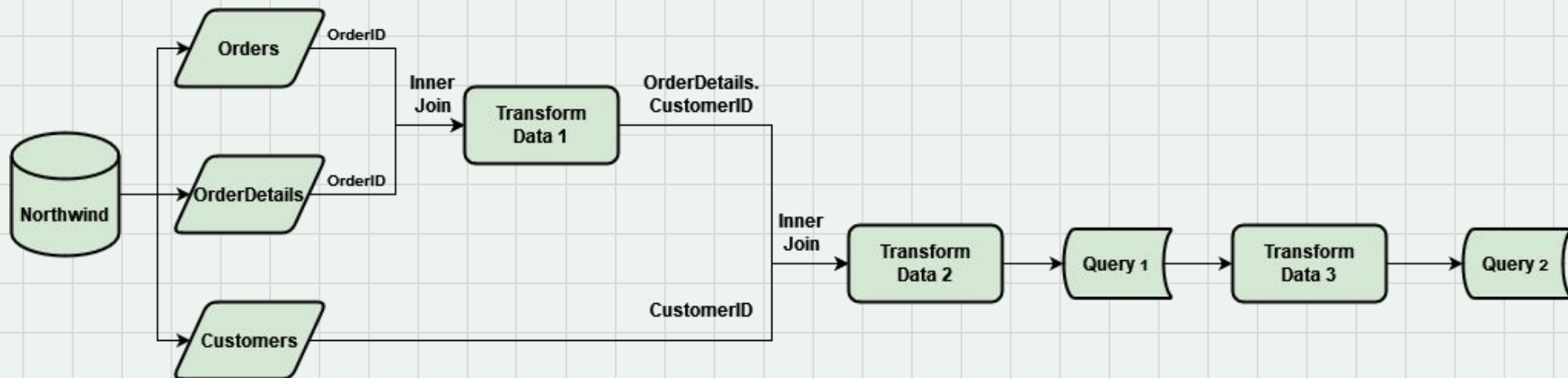
Company_Name	Customer_Category	Order_Frequency	Order_Quantity
Tradição Hipermercados	Light Users	13	251
Trail's Head Gourmet Provisioners	Light Users	9	89
Vins et alcools Chevalier	Light Users	10	98
Wellington Importadora	Light Users	19	267
Wilman Kala	Light Users	17	148
Wolski Zajazd	Light Users	16	205



Query 2

```
WITH table1 AS(
SELECT
  c.CompanyName AS Company_Name,
  CASE WHEN Count(a.OrderID) > 50 THEN 'Heavy Users'
        WHEN Count(a.OrderID) BETWEEN 20 AND 50 THEN 'Average Users'
        WHEN Count(a.OrderID) < 20 THEN 'Light Users'
        END AS Customer_Category,
  COUNT(a.OrderID) AS Order_Frequency,
  SUM(b.Quantity) AS Order_Quantity,
  CAST(SUM((b.Quantity * b.UnitPrice) - ((b.Quantity * b.UnitPrice) * b.Discount)) AS DECIMAL(10,2)) AS Purchase_Amount
FROM Orders AS a
INNER JOIN OrderDetails AS b
  ON a.OrderID = b.OrderID
INNER JOIN Customers AS c
  ON a.CustomerID = c.CustomerID
GROUP BY c.CompanyName)

SELECT
  Customer_Category,
  COUNT(Company_Name) AS Customer_Amount,
  SUM(Order_Frequency) AS Order_Frequency,
  SUM(Order_Quantity) AS Order_Quantity
FROM table1
GROUP BY Customer_Category
ORDER BY Order_Frequency DESC
```

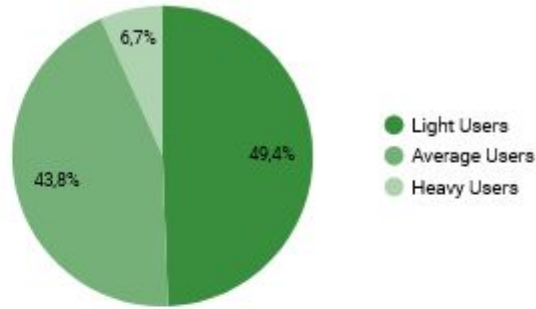
Output Table

Customer_Category	Customer_Amount	Order_Frequency	Order_Quantity
Average Users	39	1184	27216
Light Users	44	489	6571
Heavy Users	6	482	17530

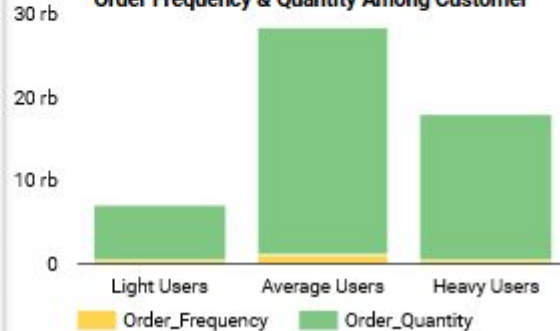
Customer Segmentation List

Category ▾	Customer
1. Light Users	Wolski Zajazd
2. Light Users	Wilman Kala
3. Light Users	Wellington Importad...
4. Light Users	Vins et alcools Chev...
5. Light Users	Trail's Head Gourmet...
6. Light Users	Tradição Hipermerca...
7. Light Users	Toms Spezialitäten
8. Light Users	The Cracker Box
9. Light Users	The Big Cheese
10. Light Users	Spécialités du monde
11. Light Users	Simons bistro
12. Light Users	Santé Gourmet
13. Light Users	...
14. Light Users	...
15. Light Users	...
16. Light Users	...
17. Light Users	...
18. Light Users	...
19. Light Users	...
20. Light Users	...
21. Light Users	...
22. Light Users	...
23. Light Users	...
24. Light Users	...
25. Light Users	...
26. Light Users	...
27. Light Users	...
28. Light Users	...
29. Light Users	...
30. Light Users	...
31. Light Users	...
32. Light Users	...
33. Light Users	...
34. Light Users	...
35. Light Users	...
36. Light Users	...
37. Light Users	...
38. Light Users	...
39. Light Users	...
40. Light Users	...
41. Light Users	...
42. Light Users	...
43. Light Users	...
44. Light Users	...
45. Light Users	...
46. Light Users	...
47. Light Users	...
48. Light Users	...
49. Light Users	...
50. Light Users	...
51. Light Users	...
52. Light Users	...
53. Light Users	...
54. Light Users	...
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68. Light Users	...
69. Light Users	...
70. Light Users	...
71. Light Users	...
72. Light Users	...
73. Light Users	...
74. Light Users	...
75. Light Users	...
76. Light Users	...
77. Light Users	...
78. Light Users	...
79. Light Users	...
80. Light Users	...
81. Light Users	...
82. Light Users	...
83. Light Users	...
84. Light Users	...
85. Light Users	...
86. Light Users	...
87. Light Users	...
88. Light Users	...
89. Light Users	...
90. Light Users	...
91. Light Users	...
92. Light Users	...
93. Light Users	...
94. Light Users	...
95. Light Users	...
96. Light Users	...
97. Light Users	...
98. Light Users	...
99. Light Users	...
100. Light Users	...

Percentage of Customer Amount



Order Frequency & Quantity Among Customer



Analysis :

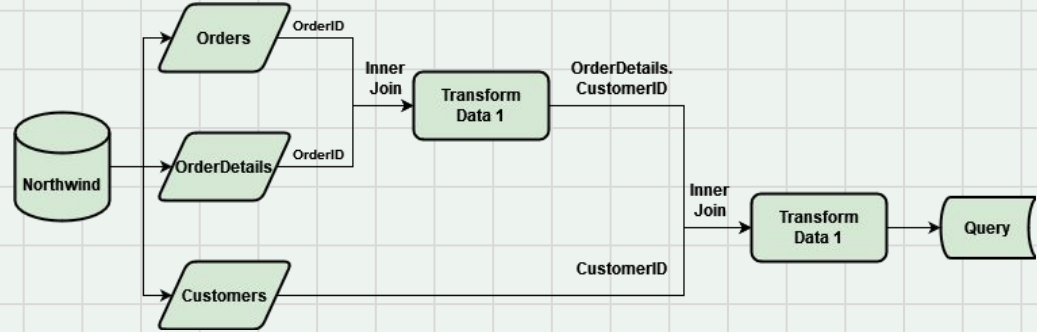
1. Customers who are classified as light users have the highest customer amount (49,4%). Light users have the lowest order frequency and order quantity.
2. While customers who are classified as heavy users have the least customer amount (6.7%).
3. Average users have the highest order frequency and order quantity.

Recommendation :

Customer relations team should target the right method to retain the customer loyalty in heavy & average users, such as using reward program. Marketing team should use the right marketing strategies for each category, and turn light user into average and heavy users.

Study Case 2

The customer relations team wants to know the total discount given to the customer and wants to analyze how the discount is related to the number of purchases. They want to make a query that consist of customer name (company name), total discount, purchase amount, rank based on total discount.



SELECT

```
b.CompanyName AS Company_Name,  
CAST(SUM(c.Discount) AS DECIMAL(10,2)) AS Total_Discount,  
CAST(SUM((c.Quantity * c.UnitPrice) - ((c.Quantity * c.UnitPrice) * c.Discount)) AS DECIMAL(10,2)) AS Purchase  
FROM Orders AS a  
INNER JOIN Customers AS b  
  ON a.CustomerID = b.CustomerID  
INNER JOIN OrderDetails AS c  
  ON a.OrderID = c.OrderID  
GROUP BY b.CompanyName  
ORDER BY Total_Discount
```



Output Table

Company_Name	Total_Discount	Purchase
Save-a-lot Markets	9.60	104361.95
Ernst Handel	6.95	104874.98
Hungry Owl All-Night Grocers	6.25	49979.90
QUICK-Stop	5.95	110277.30
La maison d'Asie	3.90	9328.20
Folk och få HB	3.85	29567.56
Lehmans Marktstand	3.75	19261.41
Queen Cozinha	3.60	25717.50
LILA-Supermercado	3.30	16076.60
Bon app'	3.20	21963.25
Frankenversand	3.15	26656.56
LINO-Delicateses	3.10	16476.56
Berglunds snabbköp	3.00	24927.58
Bottom-Dollar Markets	2.95	20801.60
White Clover Markets	2.75	27363.60
Rattlesnake Canyon Grocery	2.49	51097.80
Victuailles en stock	2.30	9182.43
Die Wandernde Kuh	2.30	9588.43
Hanari Carnes	2.15	32841.37
Simons bistro	2.10	16817.10

Company_Name	Total_Discount	Purchase
Wartian Herkku	2.00	15648.70
Furia Bacalhau e Frutos do Mar	1.95	6427.42
Seven Seas Imports	1.90	16215.33
Mère Paillard	1.85	28872.19
Split Rail Beer & Ale	1.85	11441.63
Reggiani Caseifici	1.80	7048.24
Ottilies Käseladen	1.70	12496.20
Piccolo und mehr	1.65	23128.86
Old World Delicatessen	1.60	15177.46
Königlich Essen	1.55	30908.38
Great Lakes Food Market	1.55	18507.45
Wellington Importadora	1.55	6068.20
HILARION-Abastos	1.50	22768.76
Que Delícia	1.45	6664.81
Chop-suey Chinese	1.30	12348.88
Gourmet Lanchonetes	1.30	8414.14
Ricardo Adocicados	1.30	12450.80
Richter Supermarkt	1.25	19343.78
Toms Spezialitäten	1.25	4778.14
Familia Arquibaldo	1.20	4107.55



Output Table

Company_Name	Total_Discount	Purchase
Suprêmes délices	1.15	24088.78
Let's Stop N Shop	1.10	3076.47
Magazzini Alimentari Riuniti	1.05	7176.22
Godos Cocina Típica	1.05	11446.36
Alfreds Futterkiste	1.05	4273.00
Antonio Moreno Taquería	1.00	7023.98
Maison Dewey	1.00	9736.07
Vaffeljernet	1.00	15843.92
Tradição Hipermercados	0.95	6850.66
Princesa Isabel Vinhos	0.90	5044.94
Blondesddsl père et fils	0.75	18534.08
Around the Horn	0.70	13390.65
Bólido Comidas preparadas	0.70	4232.85
Eastern Connection	0.50	14761.04
North/South	0.00	649.00
Lonesome Pine Restaurant	0.00	4258.60
Lazy K Kountry Store	0.00	357.00
Wilman Kala	0.00	3161.35
Ana Trujillo Emparedados y helados	0.00	1402.95
Du monde entier	0.00	1615.90

Company_Name	Total_Discount	Purchase
France restauration	0.00	3172.16
Vins et alcools Chevalier	0.00	1480.00
Galería del gastrónomo	0.00	836.70
Laughing Bacchus Wine Cellars	0.00	522.50
Romero y tomillo	0.00	1467.29
Centro comercial Moctezuma	0.00	100.80
Comércio Mineiro	0.00	3810.75
Wolski Zajazd	0.00	3531.95
Island Trading	0.00	6146.30
Océano Atlántico Ltda.	0.00	3460.20
Blauer See Delikatessen	0.00	3239.80
Folies gourmandes	0.00	11666.90
Hungry Coyote Import Store	0.00	3063.20
Morgenstern Gesundkost	0.00	5042.20
Franchi S.p.A.	0.00	1545.70
Santé Gourmet	0.00	5735.15
Pericles Comidas clásicas	0.00	4242.20
Rancho grande	0.00	2844.10
Cactus Comidas para llevar	0.00	1814.80
La corne d'abondance	0.00	1992.05



Output Table

Company_Name	Total_Discount	Purchase
Spécialités du monde	0.00	2423.35
GROSELLA-Restaurante	0.00	1488.70
Drachenblut Delikatessen	0.00	3763.21
B's Beverages	0.00	6089.90
Tortuga Restaurante	0.00	10812.15
The Big Cheese	0.00	3361.00
Consolidated Holdings	0.00	1719.10
The Cracker Box	0.00	1947.24
Trail's Head Gourmet Provisioners	0.00	1571.20



Analysis :


From that scatter plot, there is positive correlation between discount and total purchase. It means that the more the number of discounts given, the number of purchases will also increase

Recommendation :


Customer relations team can use discount stimuli to increase total sales and maintain customer loyalty

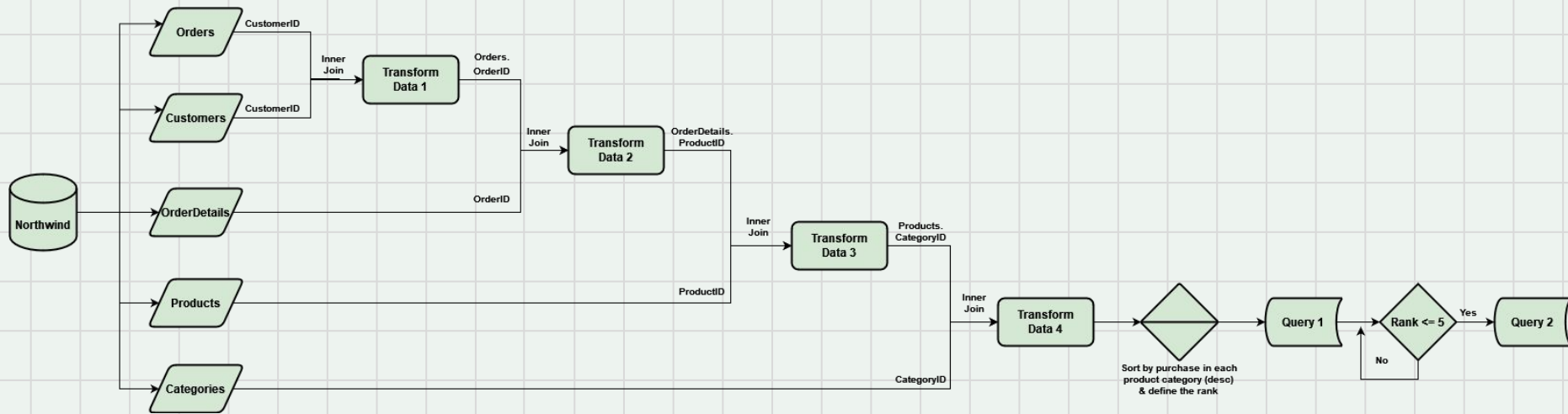
Study Case 3


The customer relations team wants to know the top 5 customers who have the highest purchase value for each product category. They want to make a query that consist of product category, name customer (company name), purchase amount, rank.



```
WITH table1 AS (  
  SELECT  
    e.CategoryName AS Product_Category,  
    b.CompanyName AS Company_Name,  
    CAST(SUM((c.Quantity * c.UnitPrice) - ((c.Quantity * c.UnitPrice) * c.Discount)) AS DECIMAL(10,2)) AS Purchase,  
    ROW_NUMBER() OVER (PARTITION BY e.CategoryName ORDER BY  
      SUM((c.Quantity * c.UnitPrice) - ((c.Quantity * c.UnitPrice) * c.Discount)) DESC) AS Rank  
  FROM Orders AS a  
  INNER JOIN Customers AS b  
    ON a.CustomerID = b.CustomerID  
  INNER JOIN OrderDetails AS c  
    ON a.OrderID = c.OrderID  
  INNER JOIN Products AS d  
    ON c.ProductID = d.ProductID  
  INNER JOIN Categories AS e  
    ON d.CategoryID = e.CategoryID  
  GROUP BY e.CategoryName, b.CompanyName)  
  
SELECT *  
FROM table1  
WHERE Rank <= 5
```







Output Table


Product_Category	Company_Name	Purchase	Rank
Beverages	QUICK-Stop	36216.43	1
Beverages	Hanari Carnes	20084.15	2
Beverages	Rattlesnake Canyon Grocery	19208.15	3
Beverages	Ernst Handel	12709.30	4
Beverages	Great Lakes Food Market	11694.38	5

Product_Category	Company_Name	Purchase	Rank
Condiments	Ernst Handel	14070.06	1
Condiments	QUICK-Stop	9214.93	2
Condiments	Save-a-lot Markets	7873.00	3
Condiments	White Clover Markets	4174.13	4
Condiments	Folk och få HB	3651.50	5

Product_Category	Company_Name	Purchase	Rank
Confections	QUICK-Stop	18530.09	1
Confections	Ernst Handel	12815.76	2
Confections	Save-a-lot Markets	11900.07	3
Confections	Rattlesnake Canyon Grocery	10947.21	4
Confections	Bottom-Dollar Markets	5856.88	5

Product_Category	Company_Name	Purchase	Rank
Dairy Products	Ernst Handel	24496.46	1
Dairy Products	Save-a-lot Markets	21107.10	2
Dairy Products	QUICK-Stop	13800.85	3
Dairy Products	Frankenversand	10552.10	4
Dairy Products	Hungry Owl All-Night Grocers	9010.11	5

Product_Category	Company_Name	Purchase	Rank
Grains/Cereals	Ernst Handel	12737.70	1
Grains/Cereals	Save-a-lot Markets	8298.10	2
Grains/Cereals	QUICK-Stop	5310.90	3
Grains/Cereals	Rattlesnake Canyon Grocery	4831.30	4
Grains/Cereals	Mère Paillardé	4553.85	5



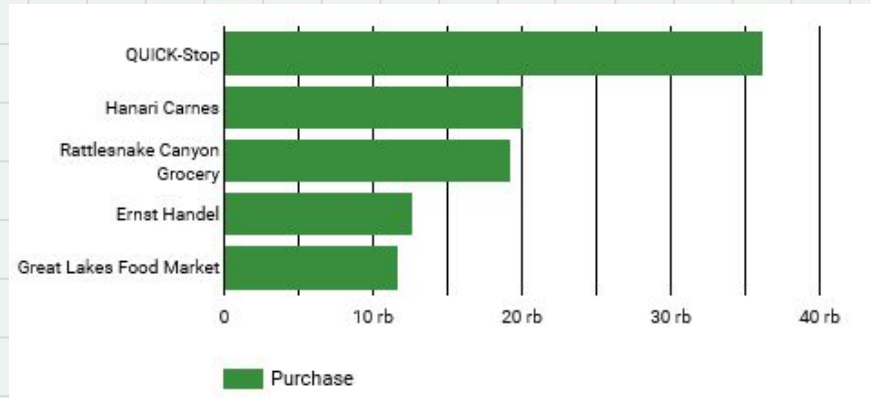
Output Table

Product_Category	Company_Name	Purchase	Rank
Meat/Poultry	Save-a-lot Markets	27659.18	1
Meat/Poultry	Hungry Owl All-Night Grocers	20914.23	2
Meat/Poultry	QUICK-Stop	9754.96	3
Meat/Poultry	Ernst Handel	8325.56	4
Meat/Poultry	Richter Supermarkt	6522.84	5

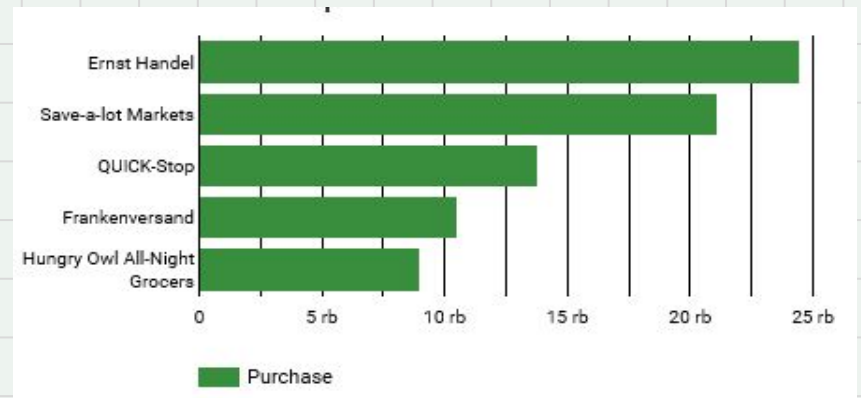
Product_Category	Company_Name	Purchase	Rank
Produce	Ernst Handel	12469.67	1
Produce	QUICK-Stop	8081.40	2
Produce	Folk och få HB	6464.00	3
Produce	Save-a-lot Markets	3887.90	4
Produce	Bon app'	3718.75	5

Product_Category	Company_Name	Purchase	Rank
Seafood	Save-a-lot Markets	13604.60	1
Seafood	QUICK-Stop	9367.74	2
Seafood	Ernst Handel	7250.48	3
Seafood	Hungry Owl All-Night Grocers	6899.18	4
Seafood	Bon app'	5368.58	5

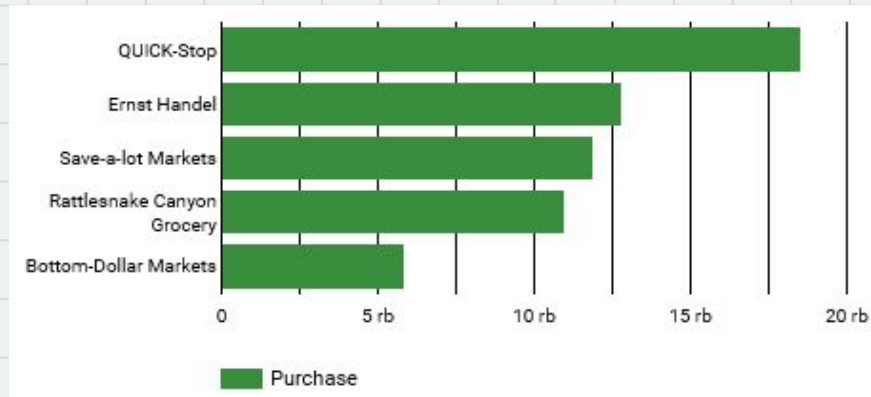
Top 5 Customers in Beverages Sales



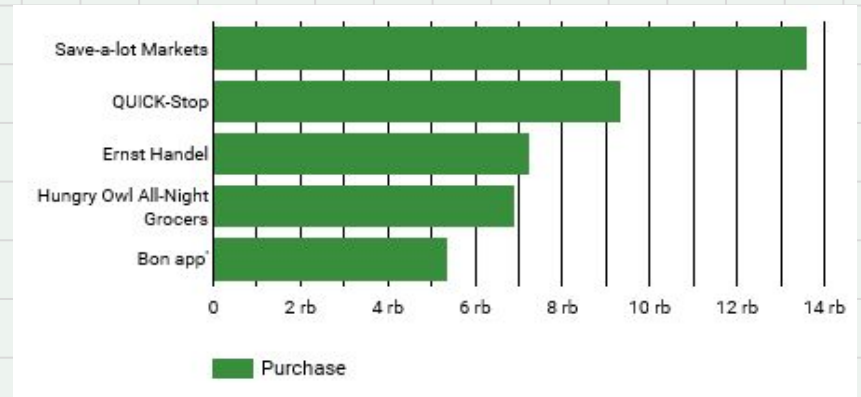
Top 5 Customers in Dairy Products Sales



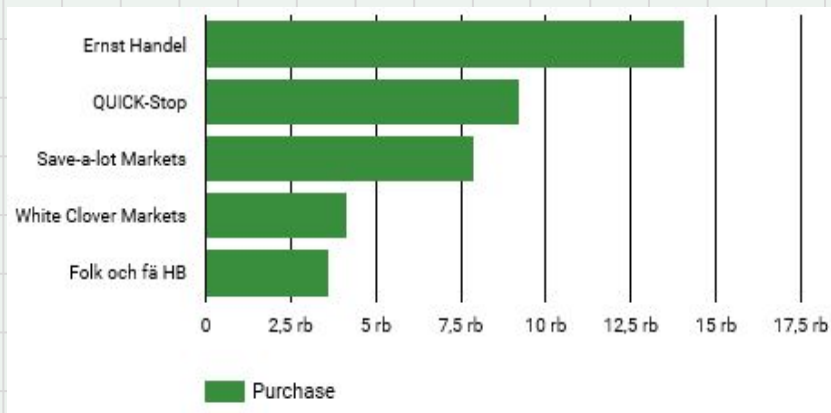
Top 5 Customers in Confections Sales



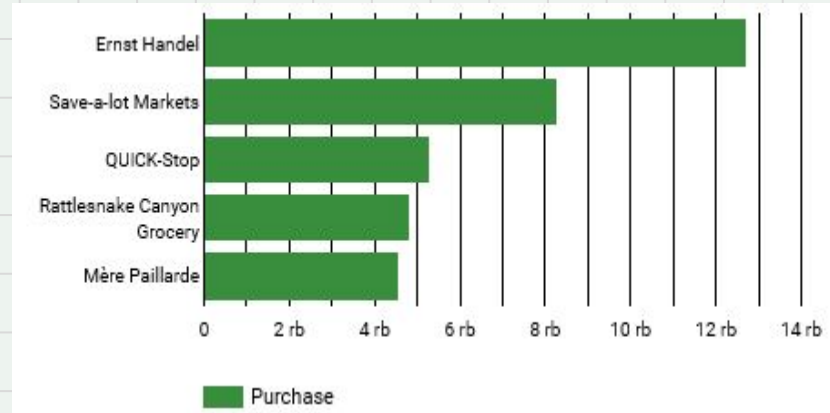
Top 5 Customers in Seafood Sales



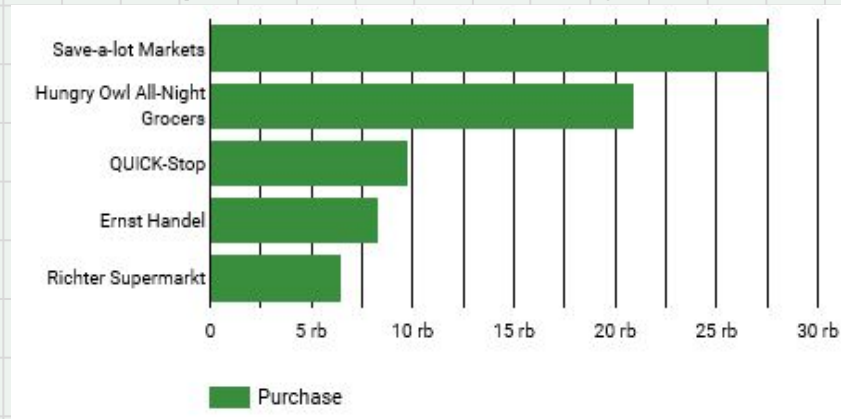
Top 5 Customers in Condiments Sales



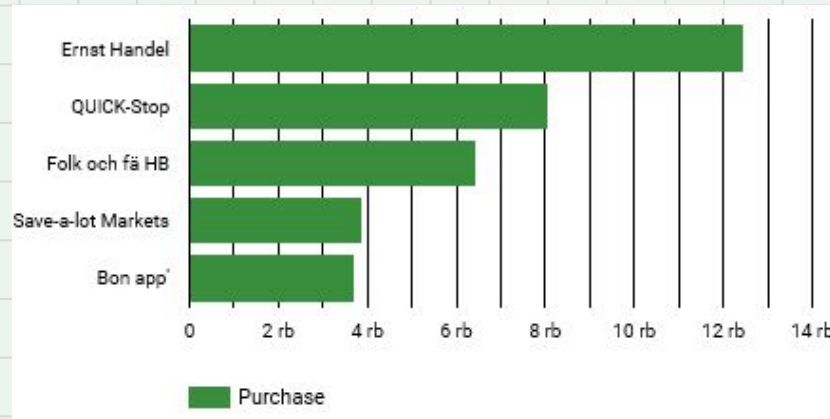
Top 5 Customers in Grains / Cereals Sales



Top 5 Customers in Meat / Poultry Sales



Top 5 Customers in Product Sales



Analysis :

In every product category, Quick Stop & Ernst Handel is always in the top 5 consumers with high purchase rates. The same thing happened to the Save a Lot Market, but only on the beverages product category, the Save a Lot Market was not included in the top 5 customer category



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