

Welcome!

North Wind Database:
company that imports and
exports specialty foods globally.





CONTENT

1

PHASE I Modeling

Mapping & Schema

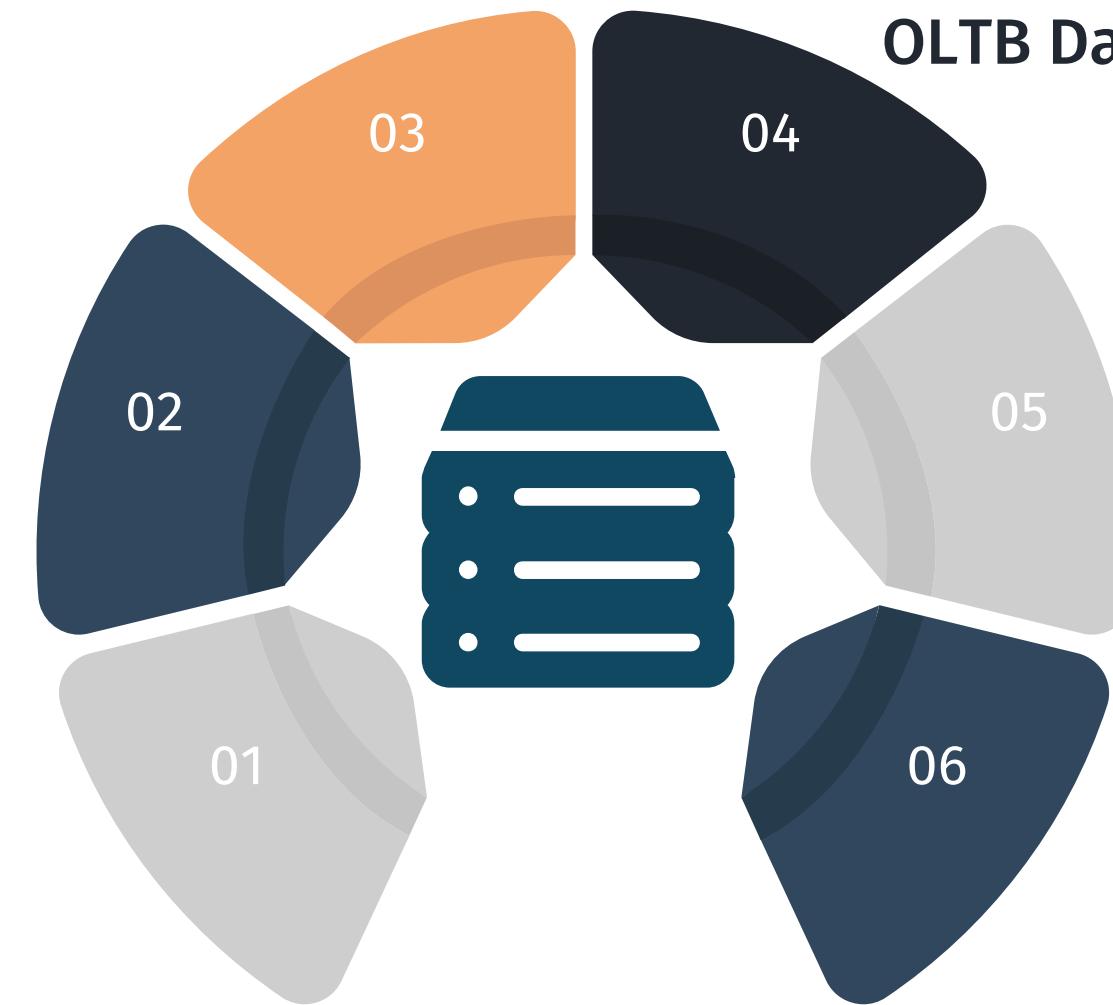
North Wind
Project Overview.

Mett Our Team

OLTB Database

SQL Queries

DWH Modeling

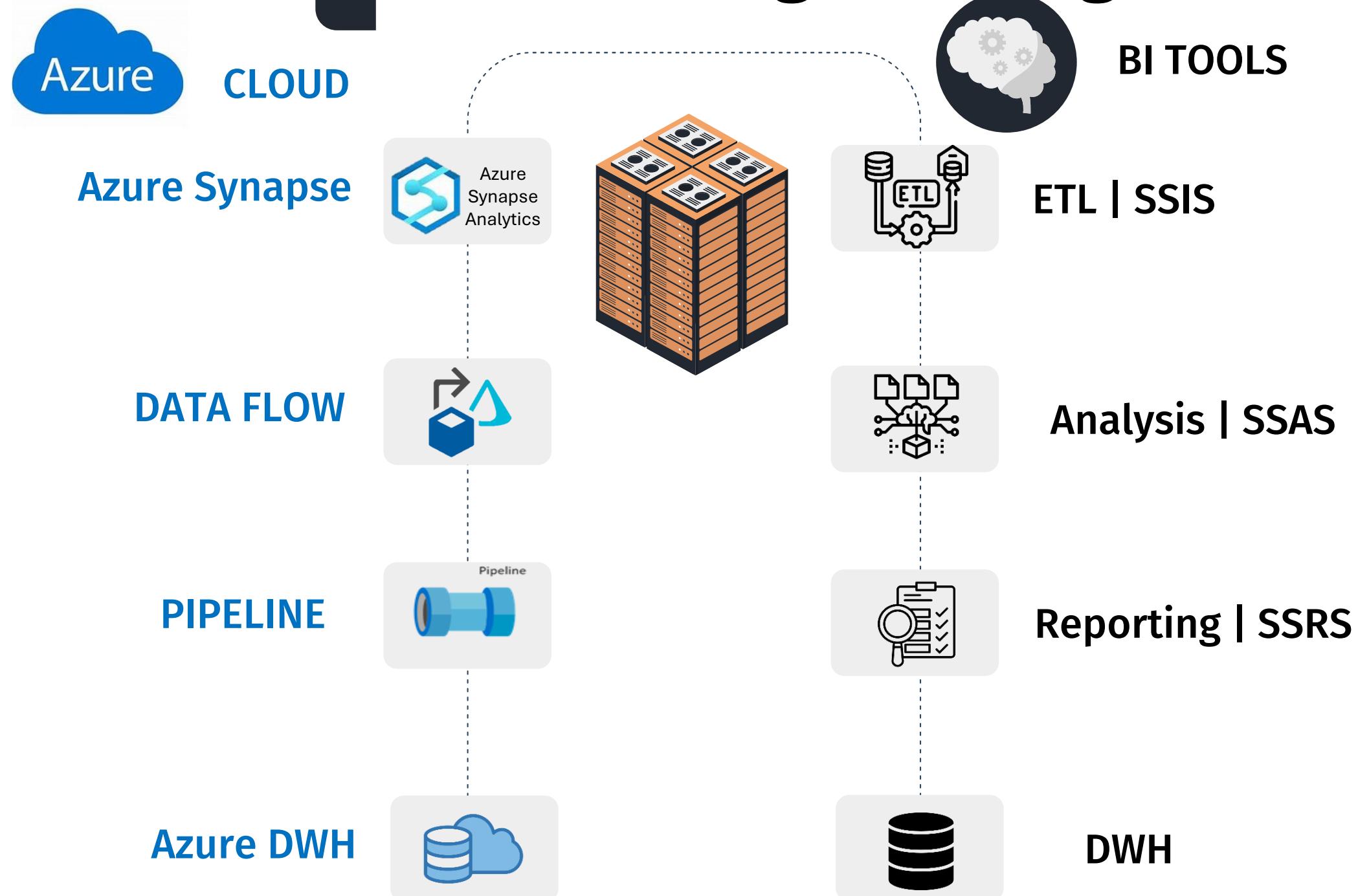




CONTENT

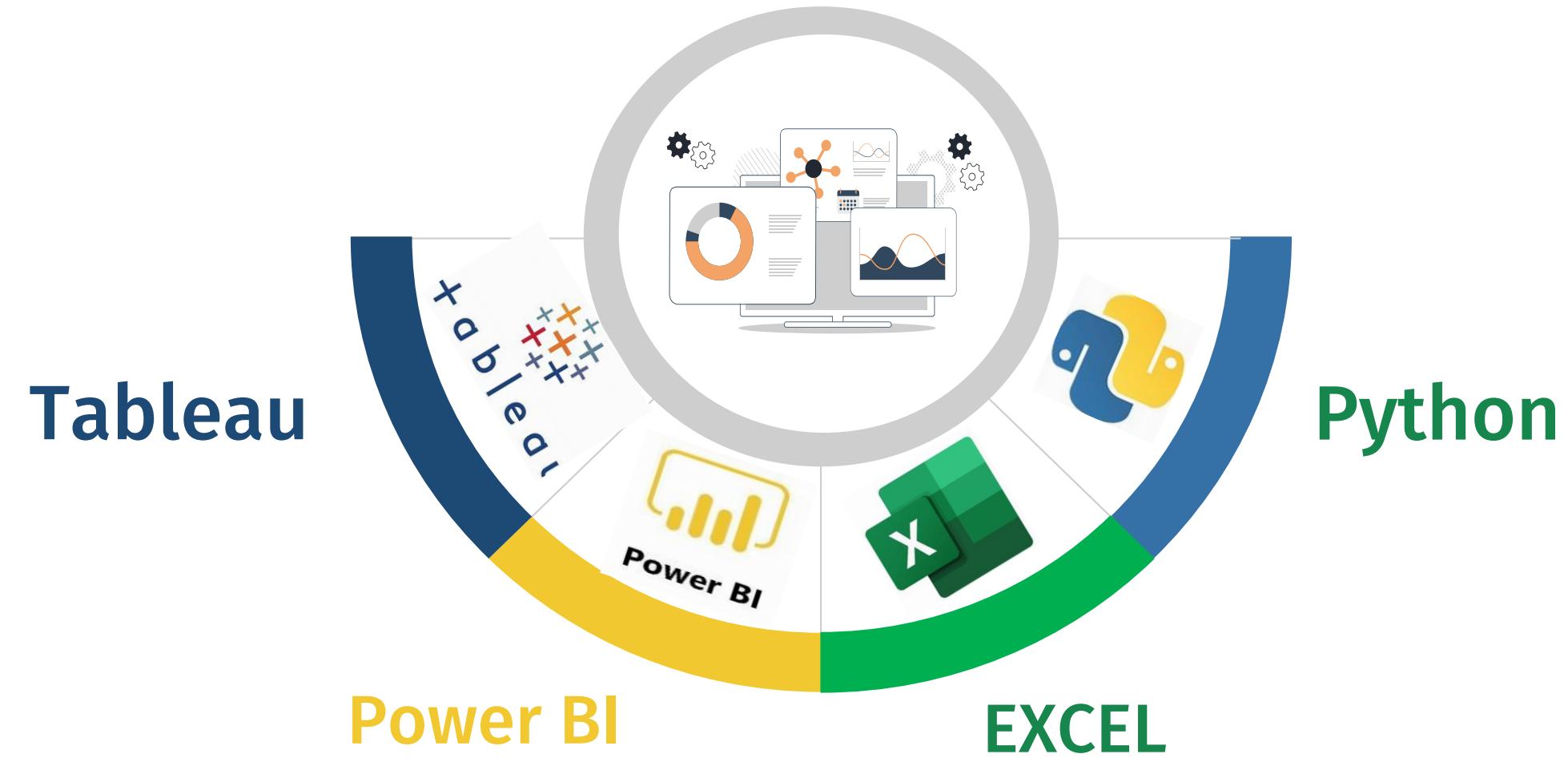
2

PHASE | Engineering



3

PHASE | DASHBOARD & VISUALIZATION



Our team of experts

Ahmed Awadallah

Bi Developer



Mahmoud Ali

Bi Developer



Yara Refaat

Bi Developer

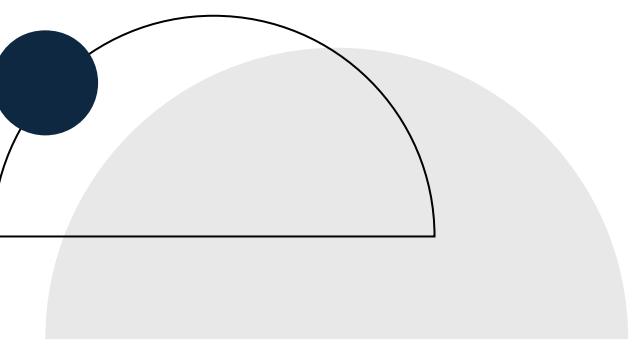


Nada Abd-Ellatef

Bi Developer



North Wind Project Overview



 North Wind is a company that imports and exports specialty foods globally.



 A Company Simulation
It models the operations of a company involved in global import and export of specialty foods.



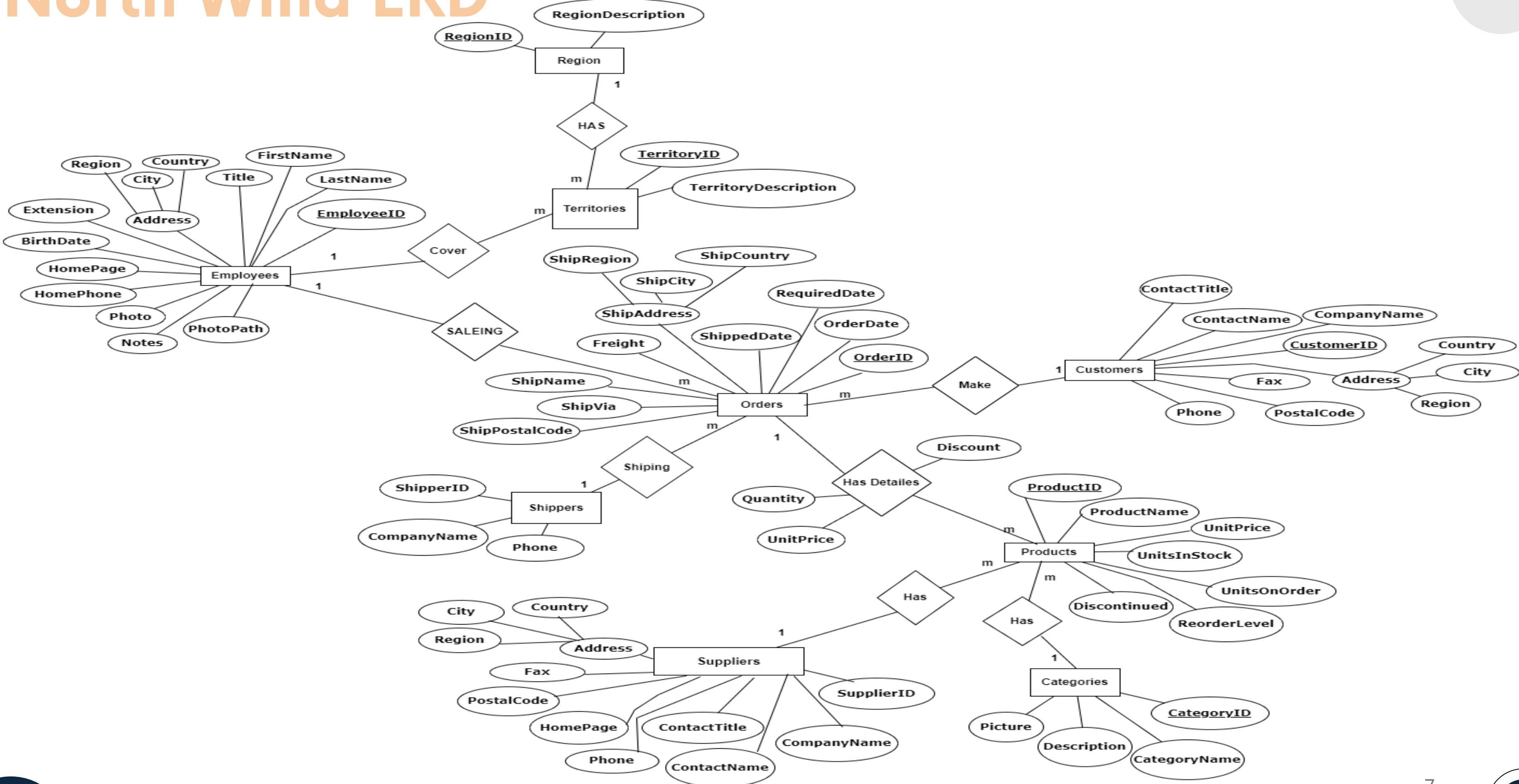
Key Business Entities
The database includes essential entities like customers, employees, orders, suppliers, and products, useful for reporting and analysis.

 **Interactive Dashboards**
Created with Power BI and Tableau, offering a complete business intelligence solution.

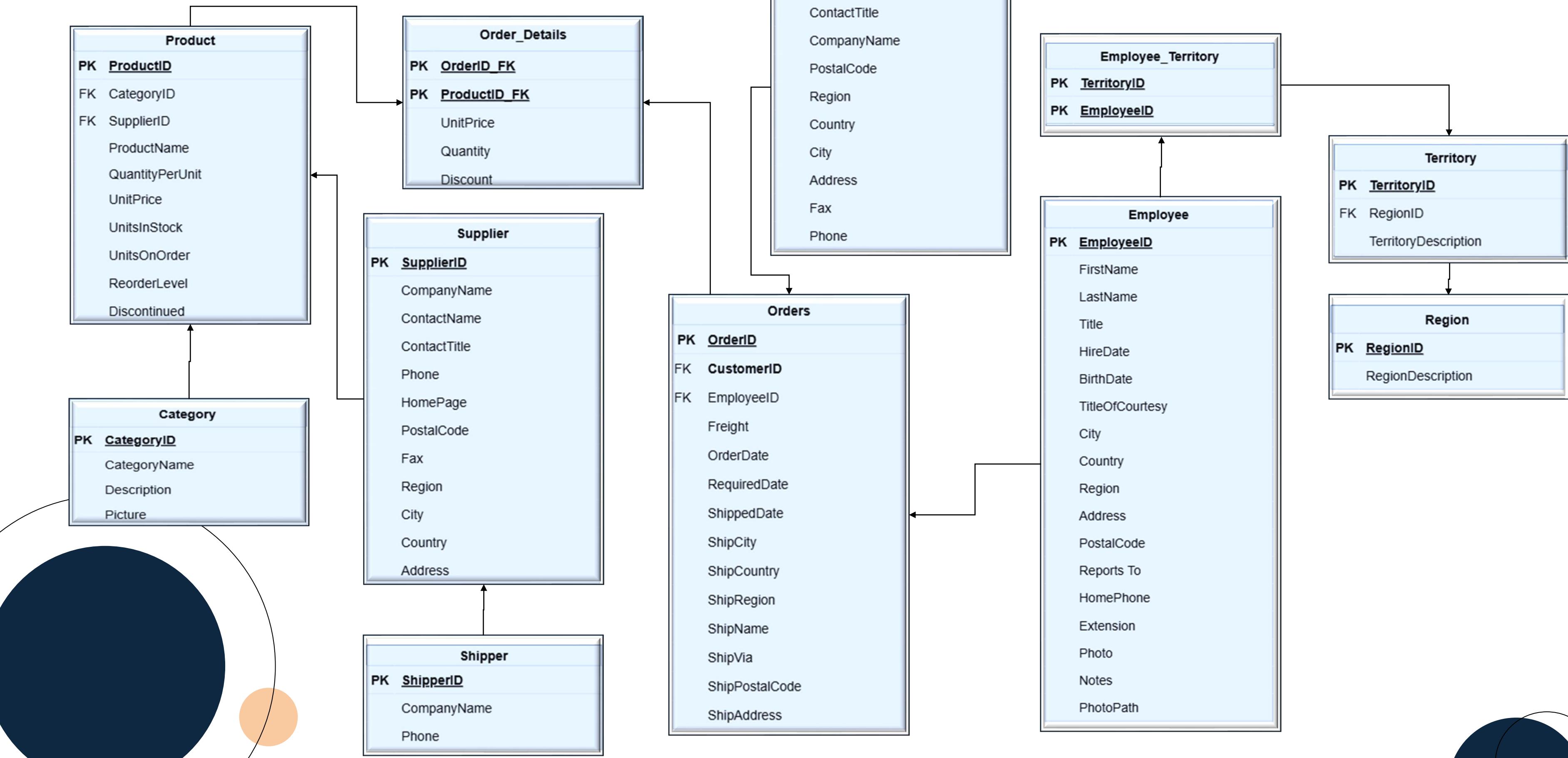
 **Integration, Analysis & Reporting**
In addition to utilizing SSRS for reporting and analysis, the Northwind dataset has been further enhanced through SSIS for data integration, SSAS for multidimensional analysis, showcasing the power of business intelligence.



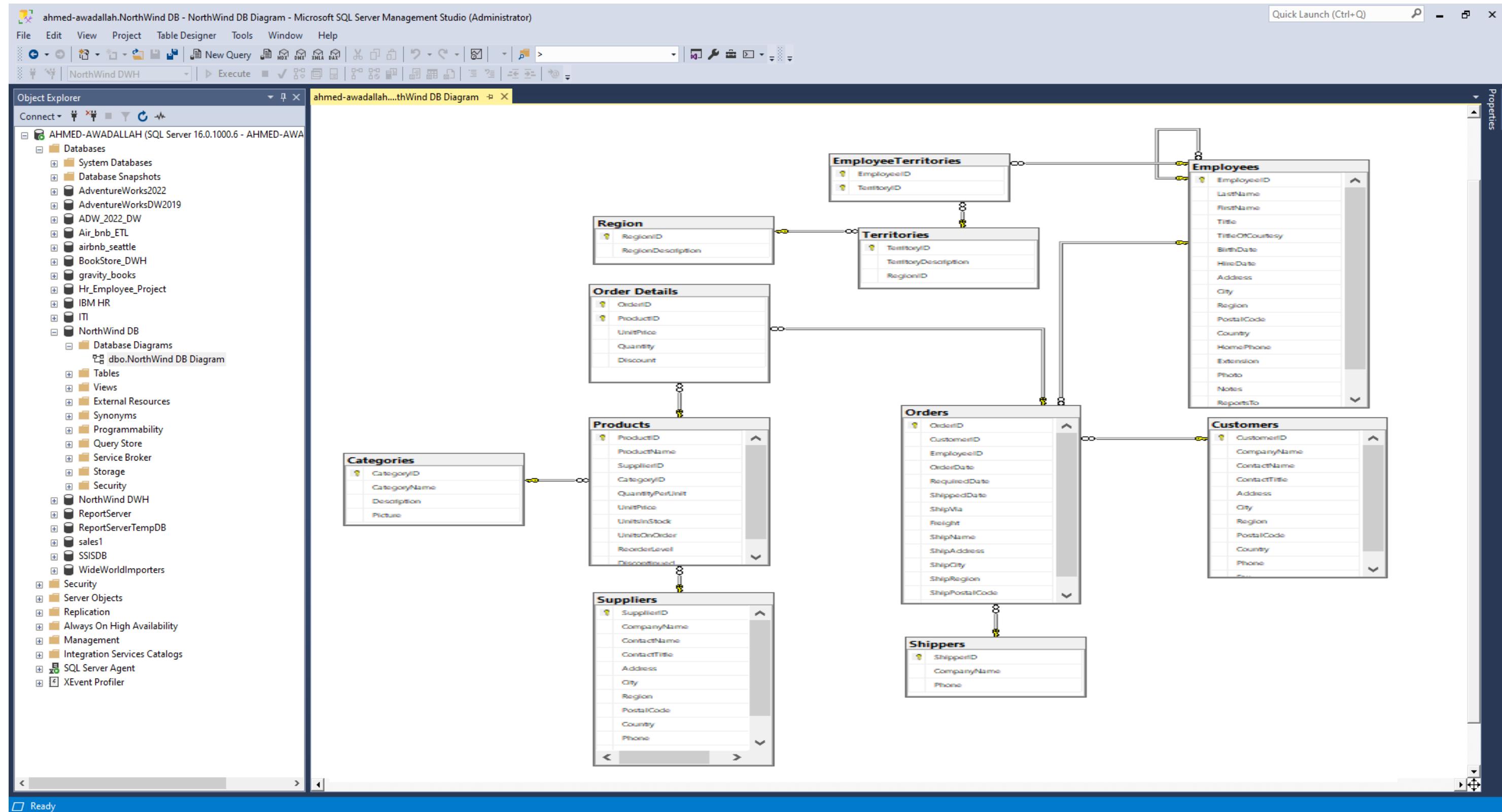
North Wind ERD



Mapping & Schema



OLTP Database



Sql Analysis

Create 14 views

The screenshot shows the Microsoft SQL Server Management Studio interface with two panes. The left pane, titled 'Object Explorer', shows the 'NorthWind DB' structure, including tables like 'Customers', 'Products', and 'Orders'. The right pane, titled 'VIEWs.sql - AHMED-AWADALLAH.NorthWind DB (AHMED-AWADALLAH\Office_local (76)) - Microsoft SQL Server Management Studio', contains the following SQL code:

```
/* North Wind Views */

Create or Alter View "Customer and Suppliers by City" AS
SELECT City, CompanyName, ContactName, 'Customers' AS Relationship
FROM Customers
UNION SELECT City, CompanyName, ContactName, 'Suppliers'
FROM Suppliers
ORDER BY City, CompanyName
GO

Create or Alter View "Alphabetical list of products" AS
SELECT Products.*, Categories.CategoryName
FROM Categories INNER JOIN Products ON Categories.CategoryID = Products.CategoryID
WHERE ((Products.Discontinued)=0)
GO

Create or Alter View "Current Product List" AS
SELECT Product_List.ProductID, Product_List.ProductName
FROM Products AS Product_List
WHERE ((Product_List.Discontinued)=0)
ORDER BY Product_List.ProductName
GO

Create or Alter View "Orders Qry" AS
SELECT Orders.OrderID, Orders.CustomerID, Orders.EmployeeID, Orders.OrderDate, Orders.RequiredDate,
Orders.ShippedDate, Orders.ShipVia, Orders.Freight, Orders.ShipName, Orders.ShipAddress, Orders.ShipCity,
Orders.ShipRegion, Orders.ShipPostalCode, Orders.ShipCountry,
Customers.CompanyName, Customers.Address, Customers.City, Customers.Region, Customers.PostalCode, Customers.Country
FROM Customers INNER JOIN Orders ON Customers.CustomerID = Orders.CustomerID
GO

Create or Alter View "Products Above Average Price" AS
SELECT Products.ProductName, Products.UnitPrice
FROM Products
WHERE Products.UnitPrice > (SELECT AVG(UnitPrice) From Products)
ORDER BY Products.UnitPrice DESC
GO

Create or Alter View "Products by Category" AS
SELECT Categories.CategoryName, Products.ProductName, Products.QuantityPerUnit, Products.UnitsInStock, Products.Discontinued
FROM Categories INNER JOIN Products ON Categories.CategoryID = Products.CategoryID
WHERE Products.Discontinued <> 1
ORDER BY Categories.CategoryName, Products.ProductName
```

The status bar at the bottom indicates 'Query executed successfully.'

6 Stored Procedure

The screenshot shows the Microsoft SQL Server Management Studio interface with two panes. The left pane, titled 'Object Explorer', shows the 'NorthWind DB' structure. The right pane, titled 'VIEWs.sql - AHMED-AWADALLAH.NorthWind DB (AHMED-AWADALLAH\Office_local (76)) - Microsoft SQL Server Management Studio', contains the following SQL code:

```
/* North Wind stored procedures */

Create or Alter PROCEDURE CustOrdersDetail @OrderID int
AS
SELECT ProductName,
UnitPrice=ROUND(Od.UnitPrice, 2),
Quantity,
Discount=CONVERT(int, Discount * 100),
ExtendedPrice=ROUND(CONVERT(money, Quantity * (1 - Discount) * Od.UnitPrice), 2)
FROM Products P, [Order Details] Od
WHERE Od.ProductID = P.ProductID and Od.OrderID = @OrderID
GO

Create or Alter PROCEDURE CustOrdersOrders @CustomerID nchar(5)
AS
SELECT OrderID,
OrderDate,
RequiredDate,
ShippedDate
FROM Orders
WHERE CustomerID = @CustomerID
ORDER BY OrderID
GO

Create or Alter PROCEDURE CustOrderHist @CustomerID nchar(5)
AS
SELECT ProductName, Total=SUM(Quantity)
FROM Products P, [Order Details] OD, Orders O, Customers C
WHERE C.CustomerID = @CustomerID
AND C.CustomerID = O.CustomerID AND O.OrderID = OD.OrderID AND OD.ProductID = P.ProductID
GROUP BY ProductName
GO

Create or Alter PROCEDURE SalesByCategory
@CategoryName nvarchar(15), @OrdYear nvarchar(4) = '1998'
IF @OrdYear != '1996' AND @OrdYear != '1997' AND @OrdYear != '1998'
BEGIN
SELECT @OrdYear = '1998'
END
```

The status bar at the bottom indicates 'Query executed successfully.'

Stored procedures

```
ALTER procedure [dbo].[Sales by Year]
    @Beginning_Date DateTime, @Ending_Date DateTime AS
SELECT Orders.ShippedDate, Orders.OrderID, "Order Subtotals".Subtotal,
DATENAME(yy,ShippedDate) AS Year
FROM Orders INNER JOIN "Order Subtotals" ON Orders.OrderID = "Order
Subtotals".OrderID
WHERE Orders.ShippedDate Between @Beginning_Date And @Ending_Date
```

The [Sales by Year] procedure retrieves order details, including the shipping date, order ID, and subtotal, for orders shipped between a specified start and end date. It also extracts the year from the shipping date, making it useful for generating yearly sales reports.

Stored procedures Cont.

```
ALTER procedure [dbo].[Employee Sales by Country]
@Beginning_Date DateTime, @Ending_Date DateTime AS
SELECT Employees.Country, Employees.LastName, Employees.FirstName, Orders.ShippedDate,
Orders.OrderID, "Order Subtotals".Subtotal AS SaleAmount
FROM Employees INNER JOIN
    (Orders INNER JOIN "Order Subtotals" ON Orders.OrderID = "Order Subtotals".OrderID)
    ON Employees.EmployeeID = Orders.EmployeeID
WHERE Orders.ShippedDate Between @Beginning_Date And @Ending_Date
```

The `'[Employee Sales by Country]'` procedure retrieves sales data, showing each employee's country, name, the shipping date, order ID, and the corresponding sale amount (subtotal) for orders shipped between a specified start and end date. It joins the `Employees`, `Orders`, and `"[Order Subtotals]"` tables, providing insights into employee performance across different countries.

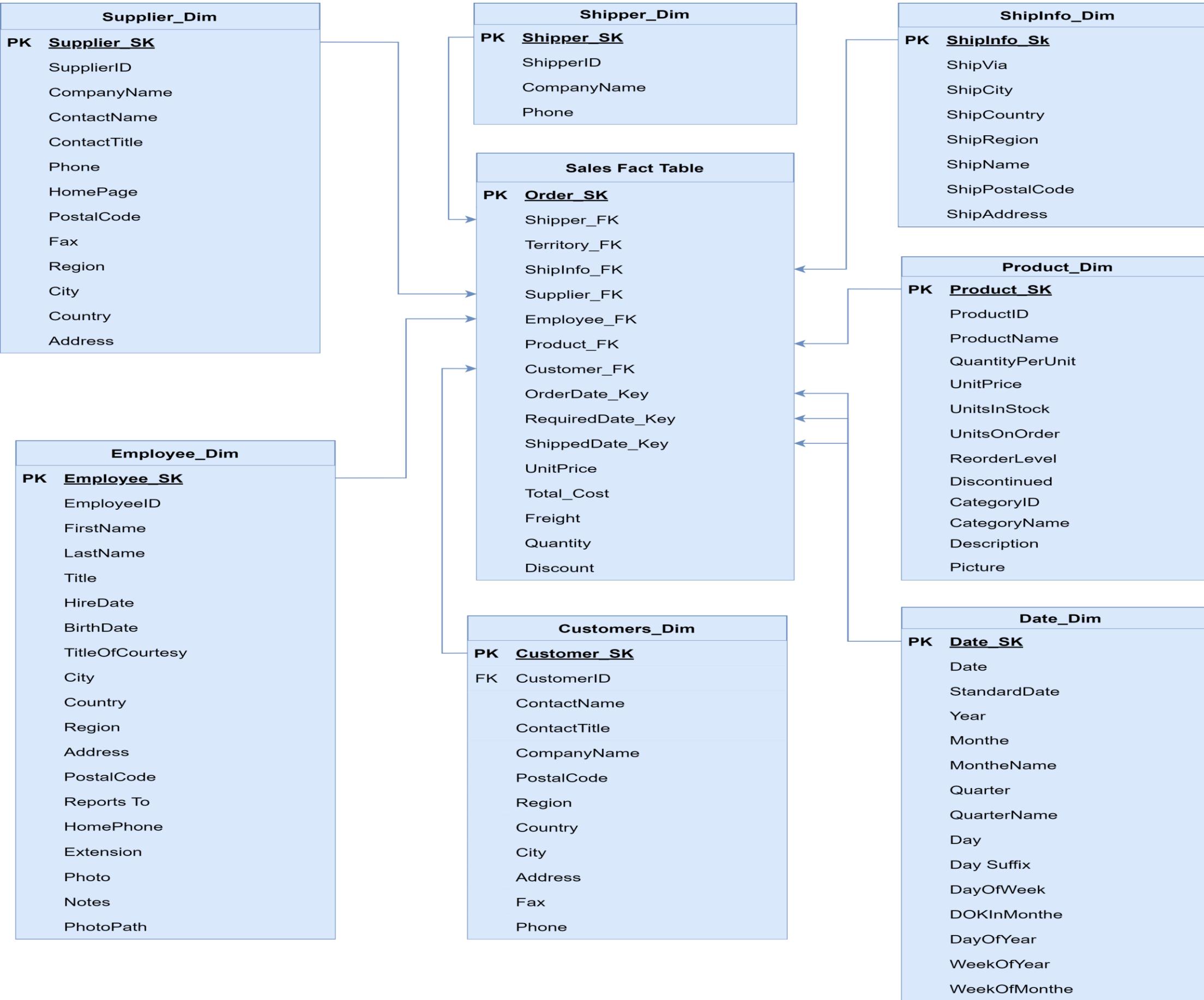
Stored procedures Cont.

```
ALTER PROCEDURE [dbo].[SalesByCategory]
    @CategoryName nvarchar(15), @OrdYear nvarchar(4) = '1998'
AS
IF @OrdYear != '1996' AND @OrdYear != '1997' AND @OrdYear != '1998'
BEGIN
    SELECT @OrdYear = '1998'
END

SELECT ProductName,
    TotalPurchase=ROUND(SUM(CONVERT(decimal(14,2), OD.Quantity * (1-OD.Discount) * OD.UnitPrice)), 0)
FROM [Order Details] OD, Orders O, Products P, Categories C
WHERE OD.OrderID = O.OrderID
    AND OD.ProductID = P.ProductID
    AND P.CategoryID = C.CategoryID
    AND C.CategoryName = @CategoryName
    AND SUBSTRING(CONVERT(nvarchar(22), O.OrderDate, 111), 1, 4) = @OrdYear
GROUP BY ProductName
ORDER BY ProductName
```

The `'[SalesByCategory]'` procedure retrieves the total purchase amount for each product in a specified category and year, defaulting to 1998 if the provided year is not 1996, 1997, or 1998. It joins the `Order Details`, `Orders`, `Products`, and `Categories` tables, calculating total sales by multiplying the quantity, discount, and unit price, and groups the results by product name for the selected category and year.

DWH Mapping



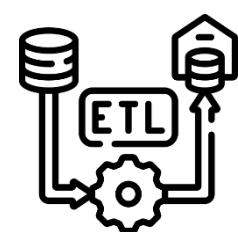
Star Schema

6 Dimensions

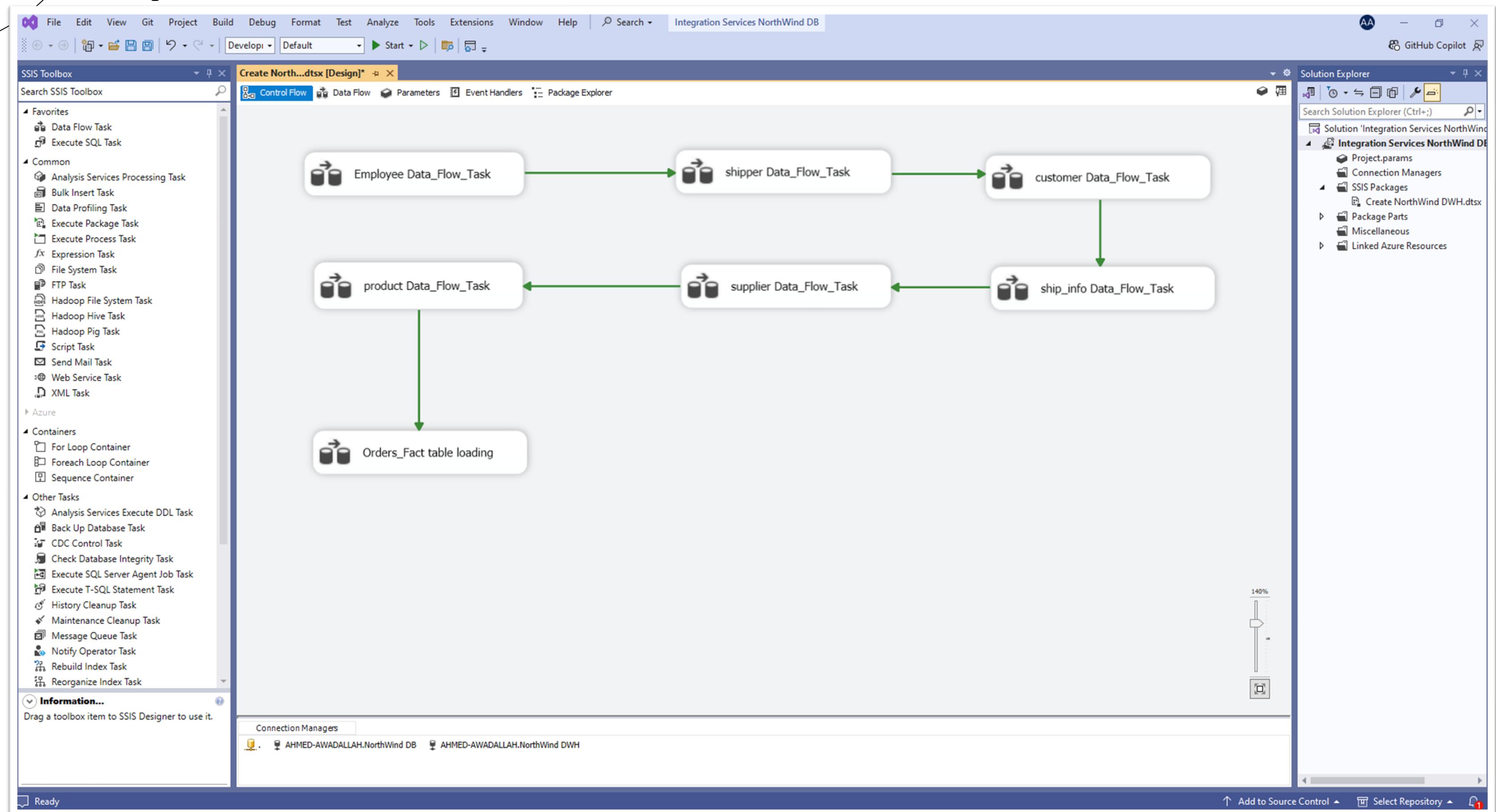
faster query execution

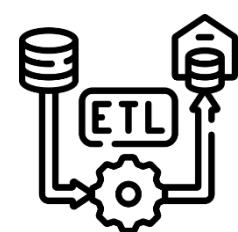
straightforward structure

Role Playing Dimension

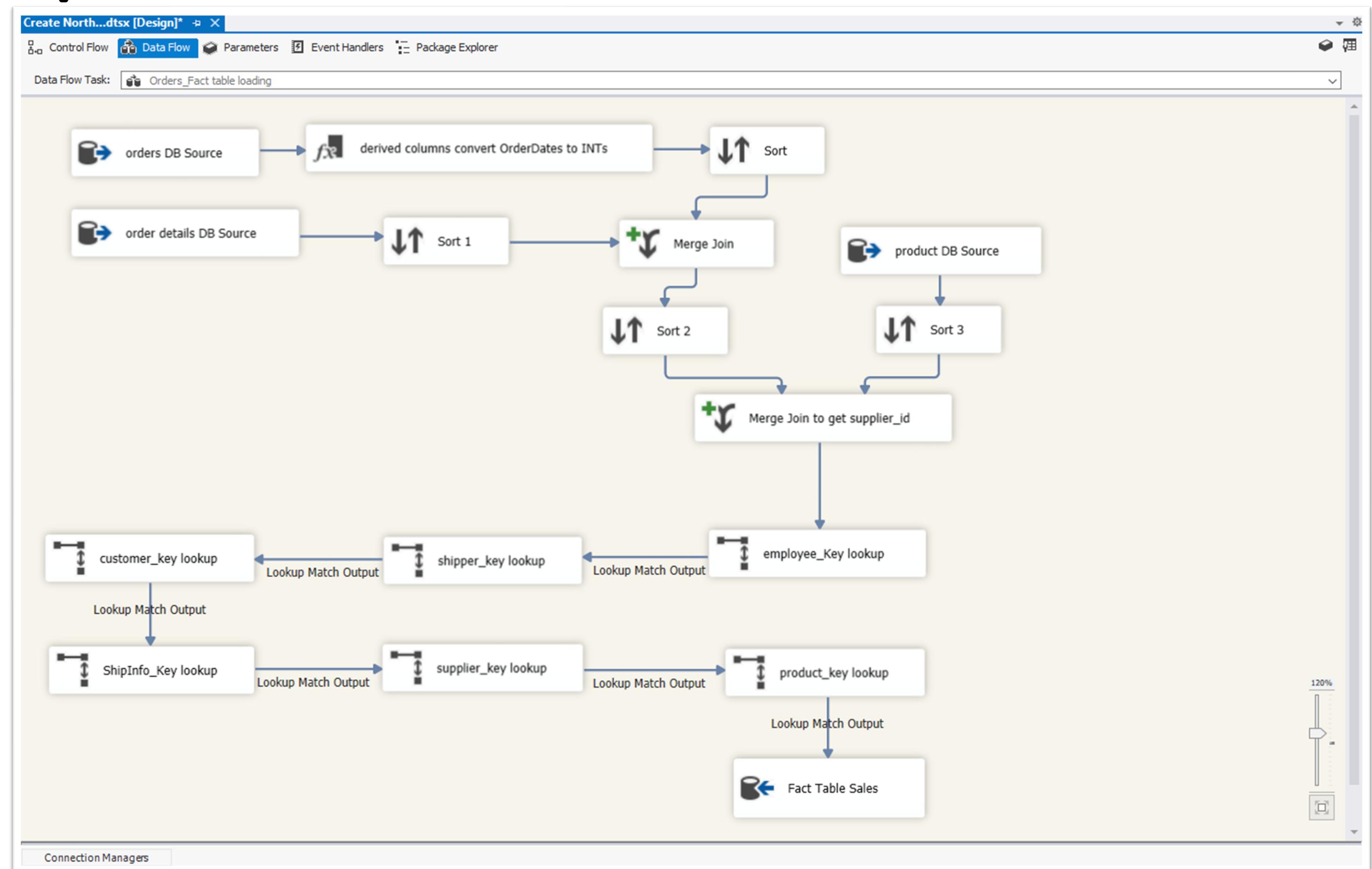


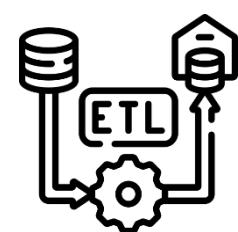
ETL | SSIS



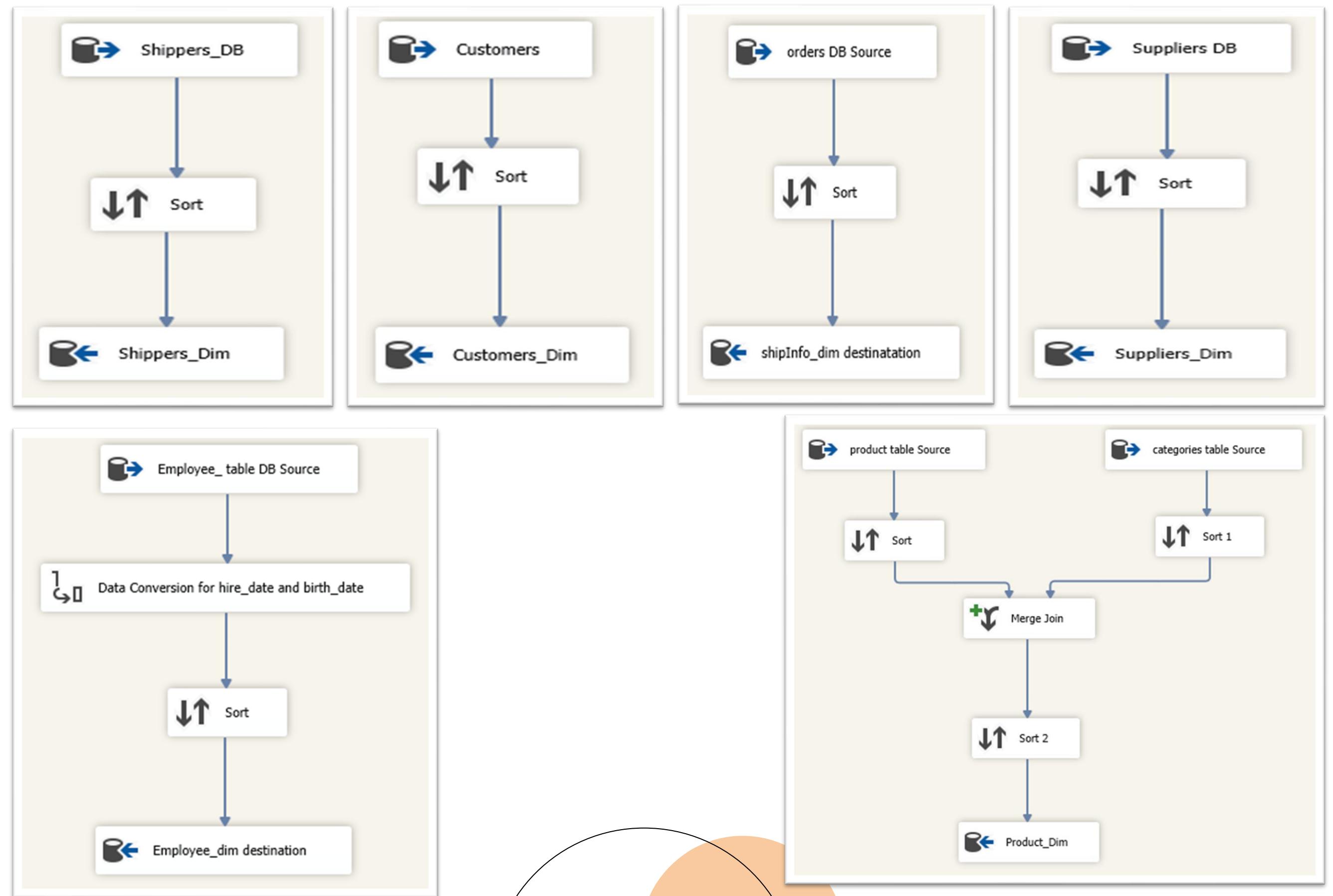


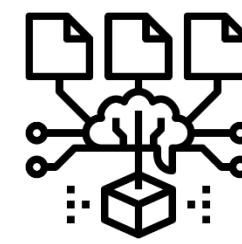
ETL | SSIS





ETL | SSIS





Analysis | SSAS

Screenshot of the Microsoft Analysis Services (SSAS) Management Studio interface, showing the Cube Browser window.

The window title is "Employee Performance | Employee Performance_cub".

The ribbon menu includes: Cube Structure, Dimension Usage, Calculations, KPIs, Actions, Partitions, Aggregations, Perspectives, Translations, and Browser.

The Language dropdown is set to "Default".

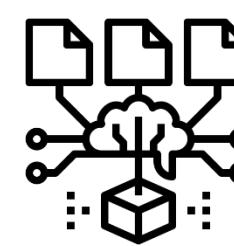
The toolbar includes: Edit as Text, Import..., MDX, and various navigation and search icons.

The left pane displays the cube structure:

- EmployeePerformance_cub**
 - Measures**
 - Fact Table Sales
 - Cost
 - Quantity
 - KPIs**
 - Employee Dim**
 - Employee Name
 - Employee SK
 - First Name
 - Last Name

The right pane shows a table with the following data:

Employee Name	Quantity	Cost
Andrew Fuller	6055	203561.6
Anne Dodsworth	2670	93123.13
Janet Leverling	7852	248732.4
Laura Callahan	5913	156541.1
Margaret Peac...	9798	287275.9
Michael Suyama	3527	89278.31
Nancy Davolio	7812	230161.6
Robert King	4654	162796.4
Steven Buchanan	3036	89407.28



Analysis | SSAS

Screenshot of the Microsoft Analysis Services (SSAS) Management Studio interface, showing the Cube Editor.

The ribbon menu at the top includes: Cube Structure, Dimension Usage, Calculations, KPIs, Actions, Partitions, Aggregations, Perspectives, Translations, and Browser.

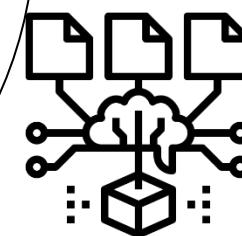
The Language dropdown is set to Default, and the MDX dropdown is selected.

The left sidebar displays the cube structure:

- Evaluate_shipping_costs_cube**
 - Measures**
 - Fact Table Sales**
 - Cost
 - Freight
 - Quantity
 - KPIs**
 - Ship Info Dim**
 - Ship City
 - Ship Country
 - Ship Info Sk
 - Ship Region
- Search Model**
- <All>**

The main pane shows a table with the following data:

Company Name	Ship Country	Ship City	Freight	Quantity	Cost
Federal Shipping	Argentina	Buenos Aires	109.98	61	1320.28
Federal Shipping	Austria	Graz	5614.47	1414	39164.57
Federal Shipping	Austria	Salzburg	949.08	179	13908.48
Federal Shipping	Belgium	Bruxelles	77.3	66	2261.8
Federal Shipping	Belgium	Charleroi	1020.59	492	10426.89
Federal Shipping	Brazil	Campinas	686.29	177	6628.64
Federal Shipping	Brazil	Resende	142.77	33	841.965
Federal Shipping	Brazil	Rio de Janeiro	381.15	259	3897.412
Federal Shipping	Brazil	Sao Paulo	1014.88	393	8282.789
Federal Shipping	Canada	Montréal	673.03	307	6892.242
Federal Shipping	Canada	Tsawassen	1449.78	546	15303.5
Federal Shipping	Canada	Vancouver	28.82	62	551.32
Federal Shipping	Denmark	Århus	954.37	351	7260.666
Federal Shipping	Denmark	Kobenhavn	418.5	190	12980.42
Federal Shipping	Finland	Helsinki	140.58	64	1324.78
Federal Shipping	Finland	Oulu	408.05	240	4392.385



Analysis | SSAS

customer_behavior [Design]

Cube Structure Dimension Usage Calculations KPIs Actions Partitions Aggregations Perspectives Translations Browser

Language: Default

Edit as Text Import... MDX

Dimension Hierarchy Operator Filter Expression Param...

<Select dimension>

Metadata

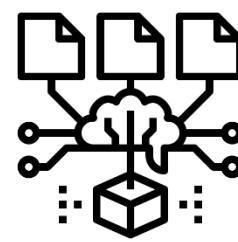
Search Model

<All>

Customer_Behavior_cube

- Measures
 - Fact Table Sales
 - Cost
 - Discount
 - Quantity
- KPIs
- Customers Dim
 - City
 - Company Name
 - Country
 - Customer SK

Company Name	Country	City	Discount	Quantity	Cost
Alfreds Futterkiste	Germany	Berlin	1.05	174	5012.568
Ana Trujillo Emparedados y helados	Mexico	México D.F.	0	63	1709.54
Antonio Moreno Taquería	Mexico	México D.F.	1	359	8177.726
Around the Horn	UK	London	0.7	650	15249.48
Berglunds snabbköp	Sweden	Luleå	3	1001	31782.92
Blauer See Delikatessen	Germany	Mannheim	0	140	3591.21
Blondesddsl père et fils	France	Strasbourg	0.7500001	666	21062.46
Bólido Comidas preparadas	Spain	Madrid	0.7	190	5731.25
Bon app'	France	Marseille	3.199999	980	27784.72
Bottom-Dollar Markets	Canada	Tsawassen	2.95	956	24761.61
B's Beverages	UK	London	0	293	6653.05
Cactus Comidas para llevar	Argentina	Buenos A...	0	115	1973.6
Centro comercial Moctezuma	Mexico	México D.F.	0	11	107.3
Chop-suey Chinese	Switzer...	Bern	1.3	465	13821.36
Comércio Mineiro	Brazil	Sao Paulo	0	133	4279.59



Analysis | SSAS

Screenshot of the Microsoft Analysis Services (SSAS) Management Studio interface, showing the Cube Browser window.

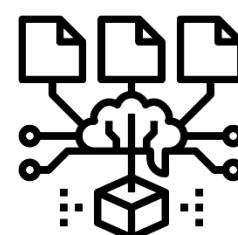
The window title is "Analysis | SSAS". The ribbon menu includes: Cube Structure, Dimension Usage, Calculations, KPIs, Actions, Partitions, Aggregations, Perspectives, Translations, and Browser (selected).

The left sidebar shows the "best-selling_products_categories" cube structure:

- Measures:
 - Fact Table Sales
 - Cost
- KPIs
- Product Dim:
 - Category ID
 - Category Name
 - Product Name
 - Product SK

The main area displays a table of product data:

Product Name	Category Name	Cost
Alice Mutton	Meat/Poultry	21823.73
Aniseed Syrup	Condiments	9855.1
Boston Crab ...	Seafood	5469.443
Camembert P...	Dairy Products	12027.41
Carnarvon Ti...	Seafood	20101.11
Chai	Beverages	17574.16
Chang	Beverages	14579.87
Chartreuse v...	Beverages	17382.26
Chef Anton's...	Condiments	2344.103
Chef Anton's...	Condiments	26692.87
Chocolade	Confections	16287.33
Côte de Blaye	Beverages	26289.87
Escargots de...	Seafood	29740.99
Filo Mix	Grains/Cereals	49097.07
Flotemysost	Dairy Products	22445.2
Geitost	Dairy Products	8238.909



Analysis | SSAS

Screenshot of the Microsoft Analysis Services (SSAS) Management Studio interface, showing the design view of a cube.

The top menu bar shows three open cubes: "Track sales ba....cube [Design]", "sales_overTime....cube [Design]", and "best-selling_p...s(cube [Design]).

The ribbon menu includes: Cube Structure, Dimension Usage, Calculations, KPIs, Actions, Partitions, Aggregations, Perspectives, Translations, and Browser.

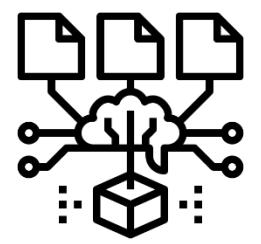
The toolbar includes: Refresh, Undo, Redo, Language dropdown (set to Default), and various MDX and data manipulation icons.

The left sidebar displays the cube structure:

- Metadata
- Search Model
- <All>
- Track sales based on suppliers_dv
 - Measures
 - Fact Table Sales
 - KPIs
 - Supplier Dim
 - City
 - Company Name
 - Country
 - Supplier SK

The main pane shows a table of data:

Dimension	Hierarchy	Operator	Filter Expression	Param...
<Select dimension>				
Company Name	Quantity	Cost		
Aux joyeux ec...	1416	172...		
Bigfoot Breweries	1573	291...		
Cooperativa d...	1050	319...		
Escargots Nou...	534	761...		
Exotic Liquids	2213	463...		
Forêts d'éables	1686	739...		
Formaggi Forti...	2500	604...		
Gai pâturage	3073	142...		
G'day, Mate	2108	778...		
Grandma Kelly'...	1436	495...		
Heli Süßwaren ...	1436	469...		
Karkki Oy	1736	360...		
Leka Trading	1878	530...		
Lyngbysild	1056	148...		
Ma Maison	1658	290...		
Mayumi's	1417	204...		



Analysis | SSAS

Screenshot of the Microsoft Analysis Services (SSAS) Management Studio interface, showing the Cube Browser window.

The ribbon menu at the top includes: Cube Structure, Dimension Usage, Calculations, KPIs, Actions, Partitions, Aggregations, Perspectives, Translations, and Browser. The Browser tab is selected.

The left sidebar contains navigation links: Edit as Text, Import..., MDX, Refresh, Language: Default, and a toolbar with various icons.

The main area displays a table of data:

Year	Quarter	Month Name	Cost
1996	3	August	309...
1996	3	July	341...
1996	3	September	309...
1996	4	December	599...
1996	4	November	556...
1996	4	October	465...
1997	1	February	462...
1997	1	January	736...
1997	1	March	465...
1997	2	April	656...
1997	2	June	445...
1997	2	May	690...
1997	3	August	596...
1997	3	July	640...
1997	3	September	706...
1997	4	December	883...

The left pane shows the cube structure:

- sales_overTime_cube**
 - Measures
 - Fact Table Sales
 - Cost
 - KPIs
 - Order Date
 - Order Date.Date SK
 - Order Date.Month
 - Order Date.Month Name
 - Order Date.Quarter
 - Order Date.Year
 - Required Date



Reporting | SSRS

Screenshot of the Microsoft Visual Studio IDE showing the Report Data view for a report titled "Customers Orders".

The report displays a table of customer information:

Customer ID	Contact Name	Phone	Total Orders	Customer Type
ROMEY	Alejandra Camino	(91) 745 6200	5	Casual
MORGK	Alexander Feuer	0342-023176	5	Casual
ANATR	Ana Trujillo	(5) 555-4729	4	Casual
TRADH	Anabela Domingues	(11) 555-2167	6	Casual
GOURL	André Fonseca	(11) 555-9482	9	Average
EASTC	Ann Devon	(171) 555-0297	8	Casual
LAMAI	Annette Roulet	61.77.61.10	14	VIP
ANTON	Antonio Moreno	(5) 555-3932	7	Casual
FAMIA	Aria Cruz	(11) 555-9857	7	Casual
SPLIR	Art Braunschweiger	(307) 555-4680	9	Average
QUEDE	Bernardo Batista	(21) 555-4252	9	Average
FRANR	Carine Schmitt	40.32.21.21	3	Casual
LILAS	Carlos González	(9) 331-6954	14	VIP
HILAA	Carlos Hernández	(5) 555-1340	18	VIP
MAISD	Catherine Dewey	(02) 201 24 67	7	Casual
BERGS	Christina Berglund	0921-12 34 65	18	VIP
LACOR	Daniel Tonini	30.59.84.10	4	Casual
SPECD	Dominique Perrier	(1) 47.55.60.10	4	Casual
GALED	Eduardo Saavedra	(93) 203 4560	5	Casual
CONSH	Elizabeth Brown	(171) 555-2282	3	Casual
BOTTM	Elizabeth Lincoln	(604) 555-4729	14	VIP
LINOD	Felipe Izquierdo	(8) 34-56-12	12	VIP
LONEP	Fran Wilson	(503) 555-9573	8	Casual
CENTC	Francisco Chang	(5) 555-3392	1	Casual
BLONP	Frédérique Citeaux	88.60.15.31	11	VIP

The report interface includes a toolbar, a search bar, and a preview pane.

Screenshot of the Microsoft Visual Studio IDE showing the Report Data view for the same report "Customers Orders".

The report structure is visible:

- Report Data pane: Shows the built-in fields and report items.
- Report Preview pane: Shows the report title "Customers Orders" and the table structure.
- Report Designer pane: Shows the table structure with fields like Customer ID, Contact Name, Phone, Total Orders, and Customer Type.
- Toolbars and menus are visible at the top.



Reporting | SSRS

Employee Performance For : Steven Buchanan & Michael Suyama

Employee ID	Employee Name	Total Orders	Total Sales	Average Sale Value
6	Michael Suyama	67	35814.9400	534.5513
5	Steven Buchanan	42	25621.5000	610.0357

[&ReportName]

«Expr»

Employee ID	Employee Name	Total Orders	Total Sales	Average Sale Value
[EmployeeID]	[EmployeeName]	[TotalOrders]	[TotalSales]	[AverageSaleValue]

Reporting | SSRS

Northwind Report

Product Details

product ID	product Name	Category Name	Quantity	Unit Price	Discount	Actual Cost
1	Chai	Beverages	35	18.0000	0.25	472.5
1	Chai	Beverages	20	14.4000	0	288
1	Chai	Beverages	40	18.0000	0	720
1	Chai	Beverages	25	18.0000	0	450
1	Chai	Beverages	20	18.0000	0.05	342
1	Chai	Beverages	2	18.0000	0	36
1	Chai	Beverages	15	14.4000	0	216
1	Chai	Beverages	4	18.0000	0.25	54
1	Chai	Beverages	45	14.4000	0.2	518.4

Northwind Report

Product Details

product ID	product Name	Category Name	Quantity	Unit Price	Discount	Actual Cost
[productID]	[productName]	[CategoryName]	[Quantity]	[UnitPrice]	[Discount]	[ActualCost]

[&ExecutionTime] [PageNumber]/[OverallTotalPages]

Row Groups: =(table1_Details_Group)

Column Groups:



Reporting | SSRS

Screenshot of the Microsoft Visual Studio IDE showing the Report Designer window for an SSRS report titled "Shipping Information".

The report displays a table of shipping information with three columns: Company Name, Order ID, and Shipping Cost.

Company Name	Order ID	Shipping Cost
Federal Shipping	10248	97.1400
	10255	593.3200
	10257	245.7300
	10259	6.5000
	10262	144.8700
	10263	584.2400
	10264	7.3400
	10266	25.7300
	10268	132.5800
	10273	380.3500
	10276	27.6800
	10277	251.5400
	10283	339.2400

Screenshot of the Microsoft Visual Studio IDE showing the Report Designer window for an SSRS report titled "Shipping Information".

The report displays a table of shipping information with three columns: Company Name, Order ID, and Shipping Cost.

Company Name	Order ID	Shipping Cost
[CompanyName]	[Order_ID]	[Sum(Freight)]

The report structure includes a main title "Shipping Information" and a table definition. The table has three columns: "Company Name", "Order ID", and "Shipping Cost". The "Shipping Cost" column uses an expression: [Sum(Freight)].

The report also shows the "Row Groups" pane, which contains a group named "(CompanyName)" with a single item "matrix1_CompanyName".

Reporting | SSRS

Design Preview

Select A City Bend, Cuxhaven, Mon ▾ View Report

1 of 1 100% Find | Next

 Supplier_Info

Suppliers in : Bend & Cuxhaven & Montceau & Zaandam

Supplier ID	Contact Name	Company Name	Contact Title	Address	City	Postal Code	Country	Fax	Phone
13	Sven Petersen	Nord-Ost-Fisch Handelsgesellschaft mbH	Coordinator Foreign Markets	Frahredder 112a	Cuxhaven	27478	Germany	(04721) 8714	(04721) 8713
16	Cheryl Saylor	Bigfoot Breweries	Regional Account Rep.	3400					
22	Dirk Luchte	Zaanse Snoepfabriek	Accounting Manager						
27	Marie Delamare	Escargots Nouveaux	Sales Manager						

9/3/2024 12:40:22 PM

Design Preview

Select A City city

 [ReportName]

«Expr»

Supplier ID	Contact Name	Company Name	Contact Title	Address	City	Postal Code	Country	Fax	Phone
[SupplierID]	[ContactName]	[CompanyName]	[ContactTitle]	[Address]	[City]	[PostalCode]	[Country]	[Fax]	[Phone]

[ExecutionTime] [ReportServerUrl]



Azure Database

Microsoft Azure [Upgrade](#)

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- NorthwindProject
- finalprojectaccoun
- Azure subscription 1

NorthWindAzureDB (ahmedazure/NorthWindAzureDB) | Query editor (preview)

SQL database

Overview Activity log Tags Diagnose and solve problems Query editor (preview) (selected) Mirror database in Fabric (preview)

NorthWindAzureDB (ahmedbi)

Showing limited object explorer here. For full capability please click here to open Azure Data Studio.

dbo.Order Details dbo.Customers dbo.Orders dbo.Products (selected)

Create New Row Save Refresh Discard Delete Row

Search to filter items...

ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder
1	Chai	1	1	10 boxes x 20 bags	18.0000	39	0
2	Chang	1	1	24 - 12 oz bottles	19.0000	17	40
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10.0000	13	70
4	Chef Anton's Cajun ...	2	2	48 - 6 oz jars	22.0000	53	0
5	Chef Anton's Gumb...	2	2	36 boxes	21.3500	0	0
6	Grandma's Boysenb...	3	2	12 - 8 oz jars	25.0000	120	0
7	Uncle Bob's Organi...	3	7	12 - 1 lb pkgs.	30.0000	15	0
8	Northwoods Cranb...	3	2	12 - 12 oz jars	40.0000	6	0
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97.0000	29	0
10	Ikura	4	8	12 - 200 ml jars	31.0000	31	0
11	Queso Cabrales	5	4	1 kg pkg.	21.0000	22	30
12	Queso Manchego L...	5	4	10 - 500 g pkgs.	38.0000	86	0
13	Konbu	6	8	2 kg box	6.0000	24	0
14	Tofu	6	7	40 - 100 g pkgs.	23.2500	35	0
15	Genen Shouyu	6	2	24 - 250 ml bottles	15.5000	39	0
16	Pavlova	7	3	32 - 500 g boxes	17.4500	29	0
17	Alice Mutton	7	6	20 - 1 kg tins	39.0000	0	0
18	Carnarvon Tigers	7	8	16 kg pkg.	62.5000	42	0
19	Teatime Chocolate ...	8	3	10 boxes x 12 pieces	9.2000	25	0
20	Sir Rodney's Marma...	8	3	30 gift boxes	81.0000	40	0
21	Sir Rodney's Scones	8	3	24 pkgs. x 4 pieces	10.0000	3	40

Showing 1 - 7 of 7. Display count: au... ▾

Ready

Azure Database

Views | Stored Procedure

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- ahmedazure
- synapsefinalproject
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- NorthwindProject
- finalprojectaccoun
- Azure subscription 1

Group by none

Search

Overview

Activity log

Tags

Diagnose and solve problems

Query editor (preview)

Mirror database in Fabric (preview)

Settings

Data management

Integrations

Power Platform

Security

Intelligent performance

Monitoring

Automation

Help

Tables

Views

- dbo.Alphabetical list of products
- dbo.Category Sales for 1997
- dbo.Current Product List
- dbo.Customer and Suppliers by City
- dbo.Invoices
- dbo.Order Details Extended
- dbo.Order Subtotals
- dbo.Orders Qry
- dbo.Product Sales for 1997
- dbo.Products Above Average Price
- dbo.Products by Category
- dbo.Quarterly Orders
- dbo.Sales by Category
- dbo.Sales Totals by Amount
- dbo.Summary of Sales by Quarter
- dbo.Summary of Sales by Year
- sys.database_firewall_rules

Stored Procedures

- System Stored Procedures
- dbo.CustOrderHist
- dbo.CustOrdersDetail
- dbo.CustOrdersOrders
- dbo.Employee Sales by Country
- dbo.Sales by Year
- dbo.SalesByCategory
- dbo.Ten Most Expensive Products

Query 12

Run Cancel query Save query Export data as Show only Editor Open Copilot

```
1 SELECT TOP (1000) * FROM [dbo].[Sales by Category]
```

Results

CategoryID	CategoryName	ProductName	ProductSales
6	Meat/Poultry	Alice Mutton	17604.6000
2	Condiments	Aniseed Syrup	1724.0000
8	Seafood	Boston Crab Meat	9814.7300
1	Beverages	CÃ'te de Blaye	49198.0900
4	Dairy Products	Camembert Pierrot	20505.4000
8	Seafood	Carnarvon Tigers	15950.0000
1	Beverages	Chai	4887.0000
1	Beverages	Chang	7038.5500
1	Beverages	Chartreuse verte	4475.7000
2	Condiments	Chef Anton's Cajun Seasoning	5214.8800

Showing 1 - 7 of 7. Display count: au... ▾

Ready



Azure Synapse

Data Flow



Microsoft Azure | Synapse Analytics > synapsefinalproject

Search

Synapse live | Validate all | Publish all

Develop | Data flow validation output

Filter resources by name

SQL scripts | Data flows

OrderDetails | CustomersDim | Employee_Dim | FactTableSales | Product_Dim | ShipInfo_Dim | Shippers_Dim

Validate | Data flow debug

Import data from OrderDetails | Left outer join on 'OrderDetails' and 'Orders' | Renaming join1 to select1 with columns 'OrderID, ProductID, UnitPrice, Quantity, Discount, CustomerID, EmployeeID, ' | Left outer join on 'select1' and 'Products' | Renaming join2 to select2 with columns 'OrderID, ProductID, UnitPrice, Quantity, Discount, CustomerID, EmployeeID, ' | DateToString | DateToInt

Import data from Orders | Products

Orders | Products

CustomerID | ProductID | EmployeeID | SupplierID | Shipinfo_Id | Shipinfo_Id | Freight | UnitPrice | Quantity | Discount | OrderDate | RequiredDate | ShippedDate

Customer_Fk | Product_Fk | Employee_Fk | Supplier_Fk | Shipper_Fk | ShiplInfo_Fk | Freight | UnitPrice | Quantity | Discount | OrderDate_Key | RequiredDate_Key | ShippedDate_Key

Mapping | Settings | Errors | Optimize | Inspect | Data preview

Your data flow has been validated.

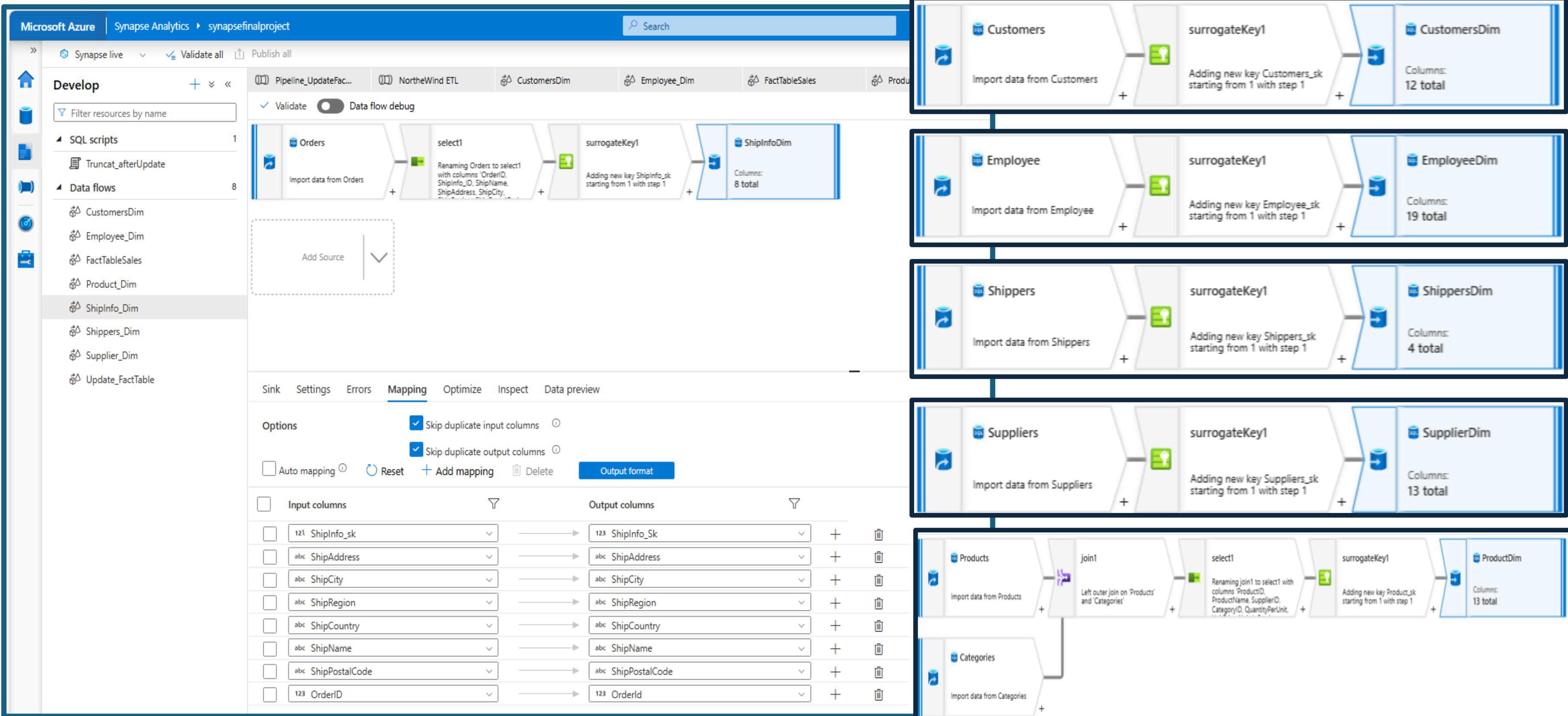
No errors were found.

Close



Azure Synapse

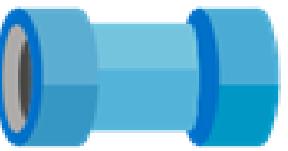
Data Flow





Azure Synapse

Pipeline



Microsoft Azure | Synapse Analytics > synapsefinalproject

Search

Synapse live Validate all Publish all

Integrate

Pipelines

- NortheWind ETL
- Pipeline_UpdateFactTable

Activities

- Synapse
- Move and transform
- Azure Data Explorer
- Azure Function
- Batch Service
- Databricks
- Data Lake Analytics
- General
- HDInsight
- Iteration & conditionals
- Machine Learning

Validate Debug Add trigger Data flow debug

Pipeline_UpdateFactTable

NorthWind ETL

General Settings Parameters User properties

Name * Create FactTableSales Learn more

Description

Activity state Activated Deactivated

Timeout 0:12:00:00

Retry 0

Retry interval (sec) 30

Secure output

Secure input

```
graph LR; A[Create Employee Dim] --> B[Create Supplier Dim]; B --> C[Create CustomersDim]; C --> D[Create Shippers Dim]; D --> E[Create ShipInfo Dim]; E --> F[Create FactTableSales]
```

Azure Synapse

Update Fact Table



Microsoft Azure | Synapse Analytics > synapsefinalproject

Synapse live Validate all Publish all

Develop

Filter resources by name

Data flows

- CustomersDim
- Employee_Dim
- FactTableSales
- Product_Dim
- ShipInfo_Dim
- Shippers_Dim
- Supplier_Dim
- Update_FactTable

Validate Data flow debug

OrdersChanges → select1 → DateToString → DateToInt → UpdateFactTableSales

Import data from Orders_Changes
Renaming OrdersChanges to select1 with columns 'ProductID, OrderID, Shipvia, CustomerID, EmployeeID, ShippedDate'.

Creating/updating the columns 'ProductID, OrderID, Shipvia, CustomerID, EmployeeID, ShippedDate'.

Columns: 13 total

Add Source

Sink Settings Errors Mapping Optimize Inspect Data preview

Options

- Skip duplicate input columns
- Skip duplicate output columns

Auto mapping Reset Add mapping Delete Output format

14 mappings: 1 column(s) from the output schema left unmapped

Input columns Output columns

Input columns	Output columns
123 OrderID	123 Order_ID
abc CustomerID	123 Customer_Fk
123 ProductID	123 Product_Fk
123 EmployeeID	123 Employee_Fk
123 SupplierID	123 Supplier_Fk
123 Shipvia	123 Shipper_Fk
123 Shipvia	123 ShipInfo_Fk
e ^x Freight	e ^x Freight
e ^x UnitPrice	e ^x UnitPrice
123 Quantity	123 Quantity
1.2f Discount	1.2f Discount
123 OrderDate	123 OrderDate_Key
123 RequiredDate	123 RequiredDate_Key
123 ShippedDate	123 ShippedDate_Key

Microsoft Azure | Synapse Analytics > synapsefinalproject

Synapse live Validate all Publish all

Integrate

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- Synapse
- Move and transform
- Azure Data Explorer
- Azure Function
- Batch Service

Data flow

- Update_FactTable



Azure DWH

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NorthWindAzDWH (ahmedazure/NorthWindAzDWH) | Query editor (preview)

SQL database

Group by none

Name ↑

NorthWindAzureDB (ahmedazure/)

ahmedazure

synapsefinalproject

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NorthwindProject

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Search

Login New Query Open query Feedback Getting started

Overview

Activity log

Tags

Diagnose and solve problems

Query editor (preview)

Mirror database in Fabric (preview)

Settings

Data management

Integrations

Power Platform

Security

Intelligent performance

Monitoring

Automation

Help

Tables

dbo.Customers_Dim

dbo.Date_Dim

dbo.Employee_Dim

dbo.Fact Table Sales

dbo.Product_Dim

dbo.ShipInfo_Dim

dbo.Shippers_Dim

dbo.Supplier_Dim

Views

Stored Procedures

Showing 1 - 7 of 7. Display count:

NorthWindAzDWH (ahmedbi)

Showing limited object explorer here. For full capability please click here to open Azure Data Studio.

dbo.Fact Table Sales

Create New Row Save Refresh Discard Delete Row

Search to filter items...

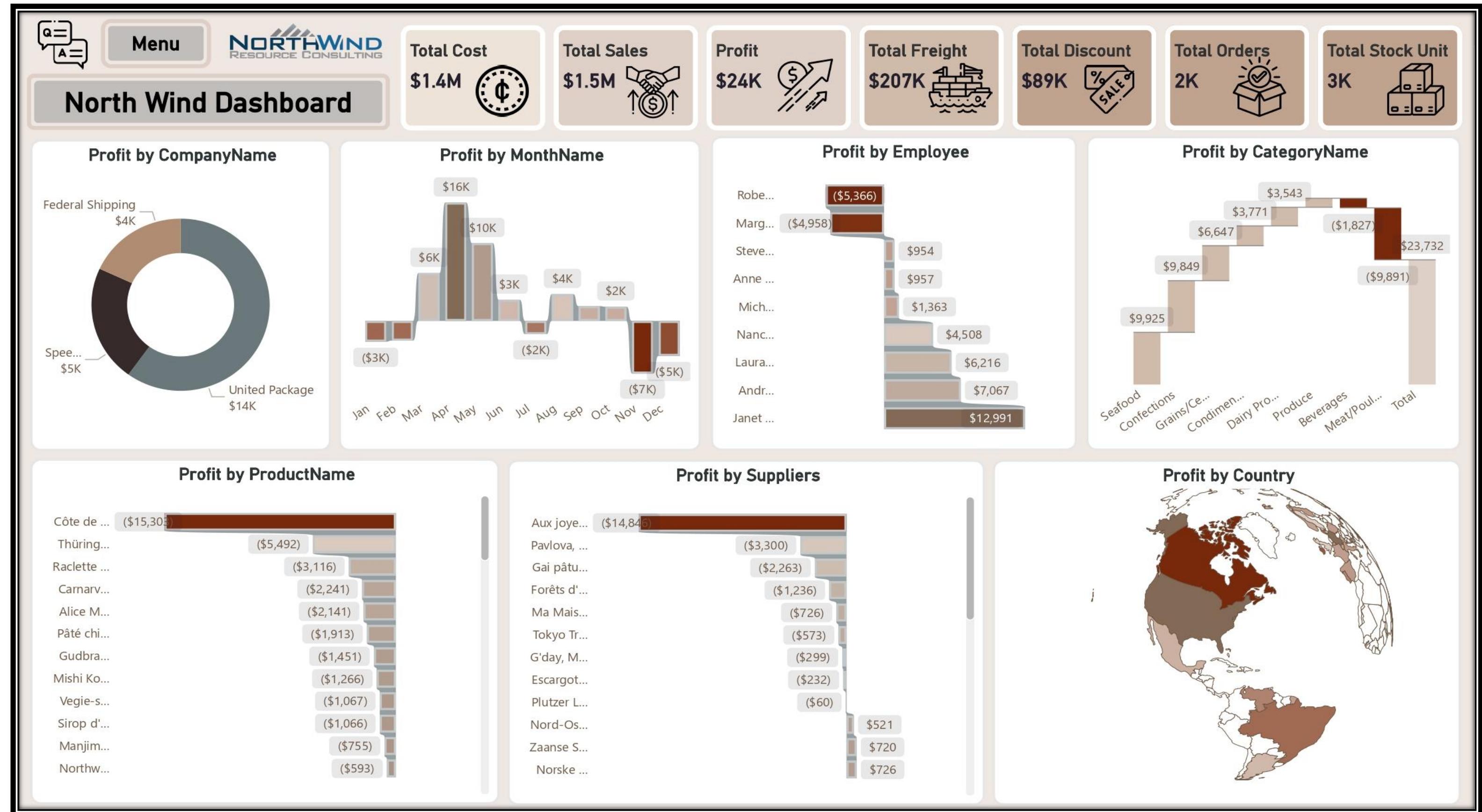
Order_ID	Customer_Fk	Product_Fk	Employee_Fk	Supplier_Fk	Shipper_Fk	ShipInfo_Fk	Freight
10294	65	1	4	1	2	47	147.2600
10285	63	1	1	1	2	38	76.8300
10370	14	1	6	1	2	123	1.1700
10413	41	1	3	1	2	166	95.6600
10354	58	1	8	1	3	107	53.8000
10348	86	1	4	1	2	101	0.7800
10317	48	1	6	1	1	70	12.6900
10406	62	1	7	1	1	159	108.0400
10335	37	2	7	1	2	88	42.1100
10298	37	2	6	1	2	51	168.2200
10435	16	2	8	1	2	188	9.2100
10418	63	2	4	1	1	171	17.5500
10327	24	2	2	1	1	80	63.3600
10393	71	2	1	1	3	146	126.5600
10342	25	2	4	1	2	95	54.8300
10258	20	2	1	1	1	11	140.5100
10264	24	2	6	1	3	17	3.6700
10255	68	2	9	1	3	8	148.3300
10289	11	3	7	1	3	42	22.7700
10405	47	3	1	1	1	158	34.8200
10344	89	4	4	2	2	97	23.2900

Ready



Power BI

Power Bi Dashboard





Power Bi Dashboard





Power BI

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Power Bi Dashboard

Menu NORTHWIND
RESOURCE CONSULTING

Suppliers Analysis

Profit by Month

Month	Profit
Jan	-\$3K
Feb	\$6K
Mar	\$16K
Apr	\$10K
May	\$3K
Jun	-\$2K
Jul	\$4K
Aug	\$2K
Sep	\$1K
Oct	-\$1K
Nov	-\$7K
Dec	\$2K

Total Freight by CompanyName

CompanyName	Total Freight
Aux joyeux ecclésias...	\$9.9K
Bigfoot Breweries	\$5.4K
Cooperativa de Qu...	\$5.2K
Escargots Nouveaux	\$1.0K
Exotic Liquids	\$10.4K
Forêts d'érables	\$7.8K
Formaggi Fortini s...	\$9.4K
Gai pâturage	\$15.7K
G'day, Mate	\$8.2K
Grandma Kelly's H...	\$6.0K
Heli Süßwaren Gm...	\$6.2K
Karkki Oy	\$6.2K
Leka Trading	\$8.1K
Lyngbysild	\$3.9K
Ma Maison	\$4.4K

Avg Delivery Time by Country and City

Supplier x ProductName x

Aux joyeux ecclésias...
Aux joyeux ecclésias... \$178,435
Plutzer Lebensmittel... \$165,371
Gai pâturage \$135,898
Pavlova, Ltd. \$123,827
G'day, Mate \$74,140

Côte de Blaye \$164,161
Chartreuse verte \$14,274

Total Cost \$1,449,367

Supplier	Total Orders	Total Quantity	Total Cost	Total Stock Unit
Svensk Sjöföda AB	51	1223	\$22,940.0	224
New England Seafood Cannery	88	2084	\$29,761.9	208
Plutzer Lebensmittelgroßmärkte AG	179	4072	\$165,370.6	205
Bigfoot Breweries	65	1573	\$25,554.0	183
PB Knäckebröd AB	34	928	\$12,528.0	165
Norske Meierier	105	2526	\$50,317.0	164
Grandma Kelly's Homestead	54	1436	\$45,295.0	141
Heli Süßwaren GmbH & Co. KG	59	1436	\$43,991.7	140
Ma Maison	69	1658	\$27,296.8	136
New Orleans Cajun Delights	70	1735	\$36,073.6	133
Karkki Oy	70	1736	\$31,876.8	132
Forêts d'érables	72	1686	\$70,577.4	130
Pavlova, Ltd.	163	3937	\$123,827.1	110
Total	2155	51317	\$1,449,367.3	3119



Power Bi Dashboard





Power BI

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Menu

NORTHWIND
RESOURCE CONSULTING

Shippers Analysis

Shippers

Federal Shipping			
645	15453	\$63,445	\$4,304
Total Orders	Total Quantity	Total Freight	Profit

Speedy Express			
646	15919	\$52,291	\$5,200
Total Orders	Total Quantity	Total Freight	Profit

United Package			
864	19945	\$91,570	\$14,228
Total Orders	Total Quantity	Total Freight	Profit

Shipper x ProductName x

United Package

Thüringer Rostbratw...
\$4,559

Camembert Pierrot
\$3,870

Raclette Courdavault
\$3,661

Côte de Blaye
\$3,387

United Package
\$91,570

Federal Shipping
\$63,445

Speedy Express
\$52,291

Total Freight
\$207,306

Total Orders and Avg Delivery Time by ShipName

The scatter plot displays the relationship between the number of total orders and the average delivery time across different shippers. The x-axis represents 'Total Orders' ranging from 0 to 100, and the y-axis represents 'Avg Delivery Time' ranging from 25 to 35. A horizontal regression line shows a slight negative trend, indicating that as the number of total orders increases, the average delivery time tends to decrease slightly.

ShipName	Total Orders	Total Quantity	Total Freight
Alfreds Futterkiste	3	38	\$88
Alfred's Futterkiste	9	136	\$331
Ana Trujillo Emparedados y helados	10	63	\$307
Antonio Moreno Taquería	17	359	\$667
Around the Horn	30	650	\$1,447
Berglunds snabbköp	52	1001	\$4,835
Blauer See Delikatessen	14	140	\$351
Blondel père et fils	26	666	\$1,980
Bólido Comidas preparadas	6	190	\$444
Bon app'	44	980	\$3,953
Bottom-Dollar Markets	35	956	\$2,172
B's Beverages	22	293	\$563
Cactus Comidas para llevar	11	115	\$159
Centro comercial Moctezuma	2	11	\$7
Chop-suey Chinese	22	465	\$940
Comércio Mineiro	10	133	\$469
Consolidated Holdings	7	97	\$117
Total	2155	51317	\$207,306

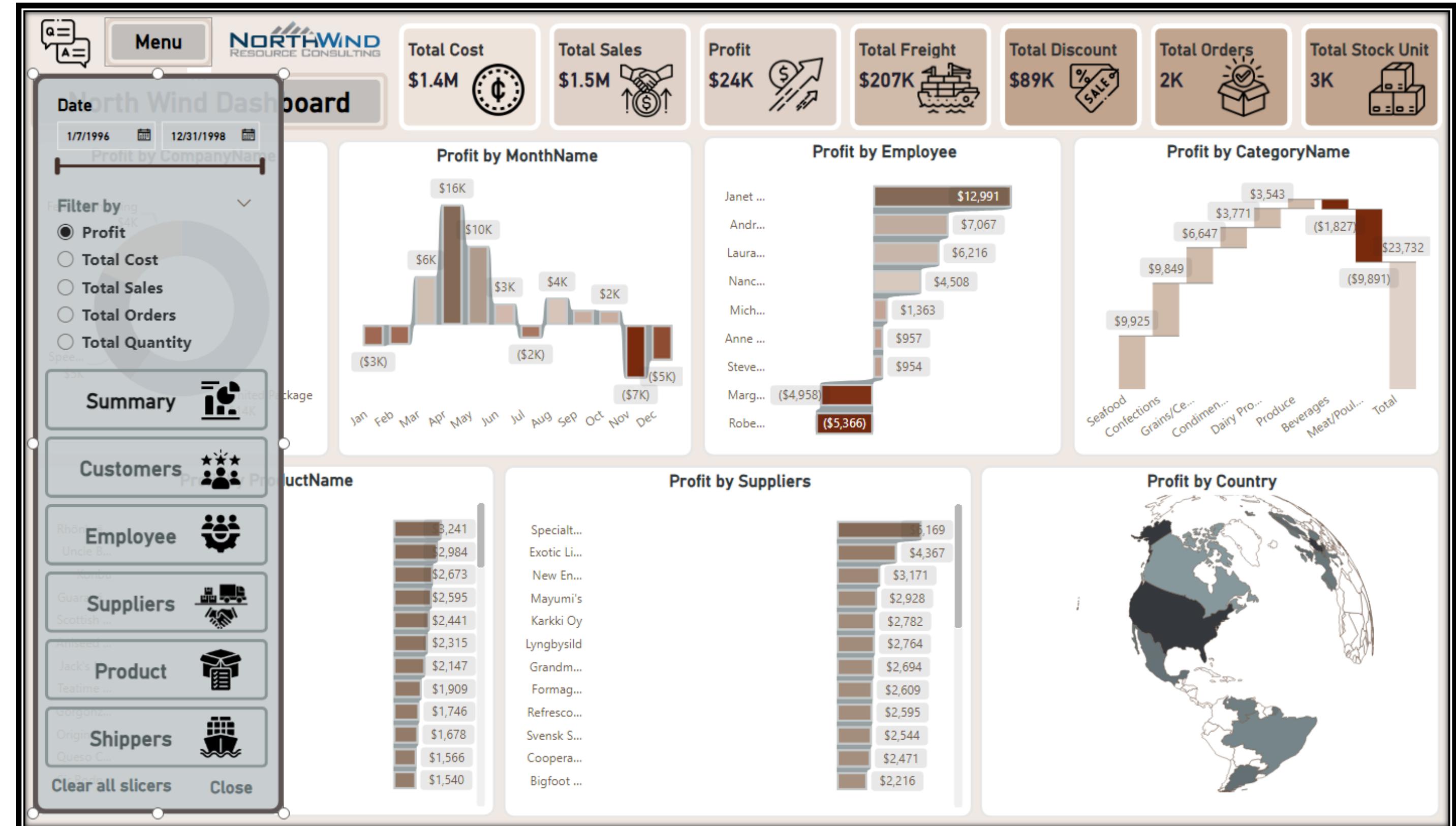


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Navigator





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Q&A

North Wind Project • Last saved: Today at 2:37 AM

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Cut Copy Format painter Paste Get data Excel workbook OneLake Server Enter Dataverse Recent sources Data Transform Refresh data New visual Text box More visuals Calculations Sensitivity Publish Copilot Clipboard

Clipboard

Home

Menu

NORTHWIND RESOURCE CONSULTING

Total Cost Total Sales Profit Total Freight Total Discount Total Orders Total Stock Unit

Total Sales by customers dim city

Showing results for Total Sales by customers dim city

A world map with bubbles of varying sizes representing total sales by customer dimension. The largest bubbles are in North America and Europe. The map includes labels for continents: NORTH AMERICA, EUROPE, ASIA, AFRICA, and SOUTH AMERICA. Oceans are labeled: Pacific Ocean, Atlantic Ocean, and Indian Ocean.

Microsoft Bing

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Filters (including highlights) from the source page have been applied.

Summary Customers Employee Suppliers Product Shippers +

Data

Search

Measure

Customers_Dim

Date_Dim

Employee_Dim

Fact Table Sales

Parameter

Product_Dim

ShipInfo_Dim

Shippers_Dim

Supplier_Dim

Page 1 of 6

101%



Tableau Dashboard





Tableau Dashboard

Orders Overview

Repeat Purchase Rate **9.89%**

Order Frequency **37.73**

Avg. Delivery Time **8 Days**

Discount Use Rate **38.89%**

Employee Avg. Fulfilment Time

Employee Name	Avg. Fulfilment Time (Days)
Steven Buchanan	6.5
Nancy Davolio	7.2
Andrew Fuller	8.1
Robert King	8.3
Janet Leverling	8.5
Michael Suyama	8.7
Laura Callahan	8.9
Margaret Peacock	9.1
Anne Dodsworth	10.1

Total Sales By Subcategory

Total Orders by Supplier

Supplier Name	Total Orders
Plutzer Lebensmittelgr...	179
Pavlova, Ltd.	163
Specialty Biscuits, Ltd.	126
Norske Meierier	105

Sales Around the World

Region	Value
Avg. Fulfill...	11
Total Cost	13,336
Total Discou...	537
Total Freight	940
Total Profit	-47
Total Orders	22

Tableau Dashboard

Inventory Management

Suppliers
29

Total Units in Stock
3,119

Supplier Avg. Lead Time

Lyngbysild	6.211
Escargots Nouveaux	6.333
Nord-Ost-Fisch Handelsgesellschaft mbH	6.806
PB Knäckebröd AB	7.030
Grandma Kelly's Homestead	7.551
Ma Maison	7.582
Exotic Liquids	7.636
Formaggi Fortini s.r.l.	7.647
Mayumi's	7.667
Refrescos Americanas LTDA	7.673
Zaanse Snoepfabriek	7.852
G'day, Mate	7.884
Gai pâturage	7.950
Bigfoot Breweries	8.113
Svensk Sjöföda AB	8.200
Pavlova, Ltd.	8.266
Forêts d'étables	8.310
Specialty Biscuits, Ltd.	8.525
New England Seafood Cannery	8.593
Cooperativa de Quesos 'Las Cabras'	8.680
New Orleans Cajun Delights	8.691
Norske Meierier	8.941
Pasta Buttini s.r.l.	8.944
Heli Süßwaren GmbH & Co. KG	9.051
Plutzer Lebensmittelgroßmärkte AG	9.070
Leka Trading	9.136
Tokyo Traders	9.300
Aux joyeux ecclésiastiques	9.509
Karkki Oy	10.091

Inventory Levels

Shipping Costs

Carrier	Cost
Federal Shipping	High
Speedy Express	Moderate
United Package	Low

Suppliers Around the World

© 2024 Mapbox © OpenStreetMap

Japan

No of Products :6

Genen Shouyu	2,316
Ikura	23,727
Konbu	8,019
Longlife Tofu	2,937
Mishi Kobe Niku	7,949
Tofu	9,223
Total	54,171

Reorder level Vs. Current Stock | Products

Product	Reorder Level	Current Stock
Bosto..	10	5
Carnar..	5	3
Chang	10	8
Chef A..	5	4
Côte d..	5	2
Flo Mix	10	7
Geitost	10	6
Gnocco..	10	9
Grand..	10	8
Guara..	5	4
Gustaf..	10	3
Inlagd ..	10	7
Jack's ..	10	5
Lakkal..	10	6
Longlif..	5	2
Louis..	10	4
Masca..	10	8
Mishi ..	5	3
Nord..	5	1
NuNuC..	10	9
Outba..	10	7
Pavlova..	10	4
Queso ..	10	6
Ravioli..	10	9
Röd Kä..	10	5
Rössle..	10	7
Schog..	10	8
Singap..	5	4
Sir Ro..	10	6
Spege..	5	3
Tarte ..	5	2
Tofu	5	4
Tunnb..	10	7
Valkoi..	10	6
Wimm..	10	8

Activate Windows

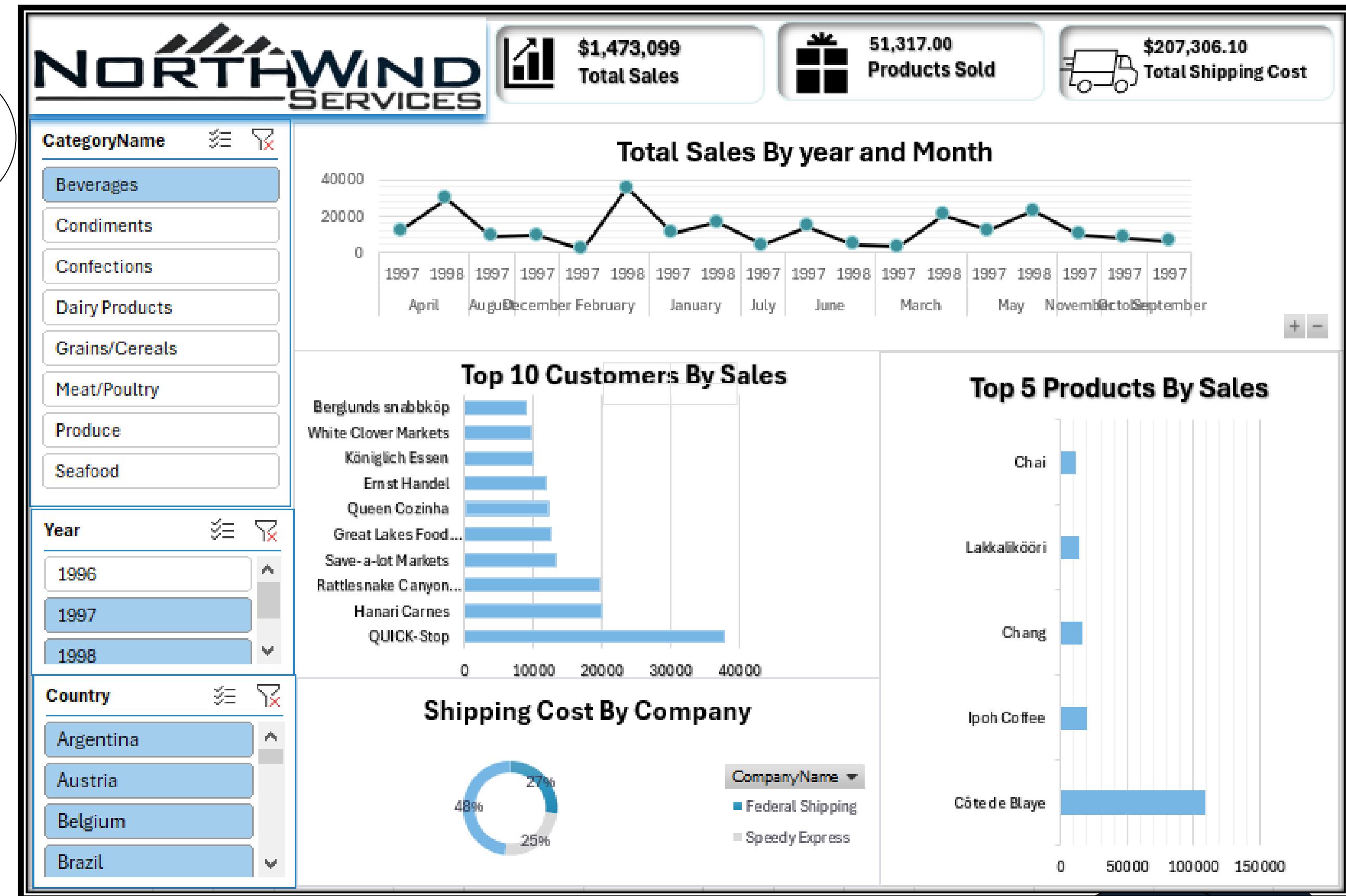
Go to Settings to activate W...

Tableau Dashboard





Excel Dashboard



Python Dashboard

Pandas

Plotly

Streamlit

```
NorthWind_streamlit.py
1 import streamlit as st
2 import pandas as pd
3 import numpy as np
4 import plotly.express as px
5 import plotly.graph_objects as go
6 from plotly.subplots import make_subplots
7
8 # Load CSV files
9 profit_month_df = pd.read_csv("Profit by Month.csv")
10 profit_employee_df = pd.read_csv("Profit by Employee.csv")
11 profit_product_df = pd.read_csv("Profit by ProductName.csv")
12 profit_supplier_df = pd.read_csv("Profit by Suppliers.csv")
13 profit_category_df = pd.read_csv("Profit by CategoryName.csv")
14 profit_shippers_df = pd.read_csv("Profit by Shippers.csv")
15 scateer_avgshio_df = pd.read_csv("Total Orders and Avg Delivery Time by ShipName.csv")
16 profit_country_df = pd.read_csv("Profit by Country.csv")
17 profit_customer_df = pd.read_csv("Top Customer by Profit.csv")
18
19 # Set the page configuration
20 st.set_page_config(page_title="NorthWind Dashboard", layout="wide")
21
22 # Load KPI data from card.csv
23 kpi_data = pd.read_csv('card.csv')
24
25 # Extract KPI values
26 total_cost = kpi_data['Total Cost'][0]
27 total_sales = kpi_data['Total Sales'][0]
28 profit = kpi_data['Profit'][0]
29 total_freight = kpi_data['Total Freight'][0]
30 total_discount = kpi_data['Total Discount'][0]
31 total_orders = kpi_data['Total Orders'][0]
32 total_stock_unit = kpi_data['Total Stock Unit'][0]
33
34
35 # Define a custom card template using HTML and inline CSS
36 def card(title, value, background_color="#f0f2f6", color="black"):
37     return f"""
38         <div style="background-color: {background_color}; padding: 1px; border-radius: 10px; margin-bottom: 10px; text-align: center; color: {color}; font-weight: bold;">
39             <h3 style="color: {color};">{title}</h3>
40             <p style="font-size: 24px; margin: 0; color: {color};">{value}</p>
41         </div>
42     """
43
44 # Create 7 columns for the KPIs
45 logo, kpi_col1, kpi_col2, kpi_col3, kpi_col4, kpi_col5, kpi_col6, kpi_col7 = st.columns(8)
46
47 # Display each KPI with custom styling using HTML
48
49
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```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\Office\Desktop\Northwind final project\Python analysis> streamlit run NorthWind_streamlit.py

You can now view your Streamlit app in your browser.

Local URL: http://localhost:8501
Network URL: http://192.168.1.4:8501

Python Dashboard

Pandas

Plotly

Streamlit

The screenshot displays a Python dashboard application being developed across three tabs: Pandas, Plotly, and Streamlit.

Pandas Tab: Shows code for creating bar charts for profit by Month, Employee, Product, Supplier, and Customer.

```
83 # Create bar charts using the function
84 fig_month = create_bar_chart(profit_month_df, 'Month', 'Profit', title='Profit by Month')
85 fig_employee = create_bar_chart(profit_employee_df, 'Profit', 'Employee', orientation='h', title='Profit by Employee')
86 fig_product = create_bar_chart(profit_product_df, 'Profit', 'ProductName', orientation='h', title='Profit by ProductName')
87 fig_supplier = create_bar_chart(profit_supplier_df, 'Profit', 'Suppliers', orientation='h', title='Profit by Suppliers')
88 fig_customer = create_bar_chart(profit_customer_df, 'Customer', 'Profit', title='Profit by Customer')
89
```

Plotly Tab: Shows code for a waterfall chart for Profit by Category and a scattergeo map plot for Profit by Country.

```
90 # Waterfall chart for Profit by Category
91 profits = profit_category_df['Profit'].tolist()
92 category_names = profit_category_df['CategoryName'].tolist()
93 fig_category = go.Figure(go.Waterfall(
94     name="20", orientation="v",
95     measure=[ "relative"] * len(profits) + [ "total"],
96     x=category_names + [ "Total"],
97     textposition="outside",
98     text=[ f'{p:+}' for p in profits] + [ "Total"],
99     y=profits + [ sum(profits)],
100     connector= { "line": { "color": "rgb(63, 63, 63)"}})
101))
102 fig_category.update_layout(
103     title='Profit by Category',
104     title_font_size=22,
105     xaxis_title='Category',
106     yaxis_title='Profit',
107     plot_bgcolor='white',
108     paper_bgcolor='white',
109     font=dict(family="Arial", size=12, color="black"),
110     xaxis=dict(showgrid=False, gridcolor='lightgrey'),
111     yaxis=dict(showgrid=False, gridcolor='lightgrey')
112)
```

```
113
114 # Pie chart for Profit by Shippers
115 fig_shippers = px.pie(profit_shippers_df, names='Shippers', values='Profit', hole=0.6)
116 fig_shippers.update_traces(marker=dict(colors=color_scheme), textposition="inside", text=profit_shippers_df["Shippers"])
117
118 # Scatter chart for orders by ship
119 TotalOrders = scatteer_avgshio_df['Total Orders'].tolist()
120 Ship_Name = scatteer_avgshio_df['ShipName'].tolist()
121
122 fig_ship = go.FigureWidget([go.Scatter(x=TotalOrders, y=Ship_Name, mode='markers')])
123 scatter = fig_ship.data[0]
124 colors = ['#a3a7e4'] * 100
125 scatter.marker.color = colors
126 scatter.marker.size = [10] * 100
127 fig_ship.layout.hovermode = 'closest'
```

Streamlit Tab: Shows the main Streamlit code for the dashboard.

```
141 # Create a subplot layout for all the charts
142 part1, part2, part3, part4, map = st.columns(5)
143
144 with part1 :
145     fig1 = make_subplots(
146         rows=2, cols=1,
147         subplot_titles=(
148             "Profit by Shippers",
149             "Profit by Suppliers"
150             "", ""
151         ),
152         specs=[[{"type": "domain"}, {"type": "bar"}])
153
154
155
156 # Add the individual charts to the layout
157 fig1.add_trace(fig_shippers.data[0], row=1, col=1)
158 fig1.add_trace(fig_supplier.data[0], row=2, col=1)
159
160 # Update the layout
161 fig1.update_layout(height=1000, width=1400, showlegend=False)
162
163 # Display the combined chart
164 st.write(fig1)
165
166 > with part2 : ...
167
168
169 > with part3 : ...
210
211 > with part4 : ...
232
```

The Streamlit tab also shows a preview of the dashboard interface, which includes a header with the Python logo and the title "Python Dashboard". Below the header, there are four cards corresponding to the tabs: Pandas, Plotly, and Streamlit, each displaying a small preview of its respective chart. The Streamlit card shows a detailed waterfall chart for profit by category.

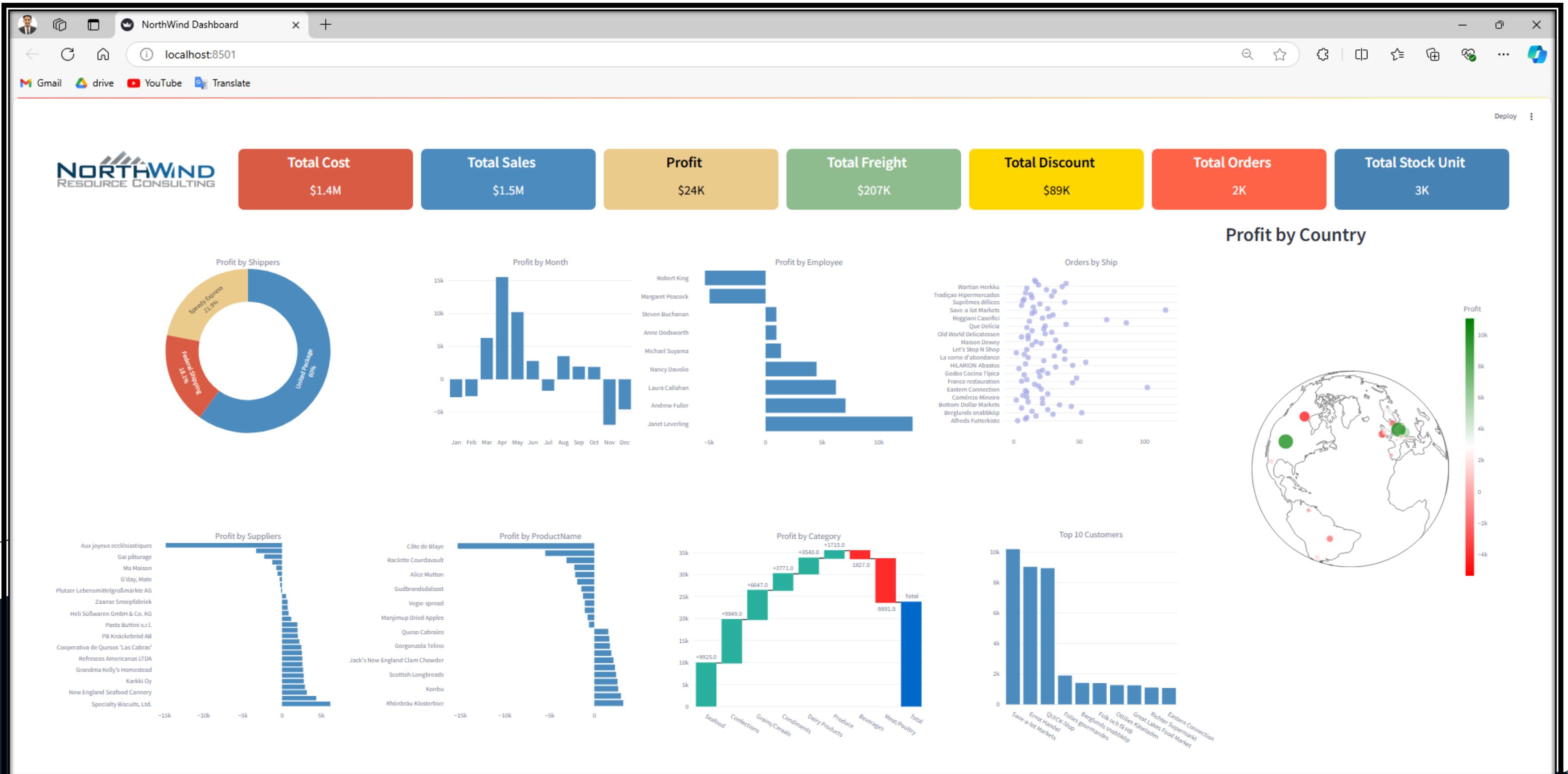
Code snippets from the Streamlit tab:

```
215     "Orders by Ship",
216     "Top 10 Customers"
217     "", ""
218     ),
219     specs=[[{"type": "bar"}, {"type": "bar"}]
220 )
221
222 # Add the individual charts to the layout
223 fig4.add_trace(fig_ship.data[0], row=1, col=1)
224 fig4.add_trace(fig_customer.data[0], row=2, col=1)
225
226 # Update the layout
227 fig4.update_layout(height=1000, width=1400 , showlegend=False)
228
229 # Display the combined chart
230 st.write(fig4)
231
232 with map :
233     st.markdown("## Profit by Country")
234     # Use absolute values of profit for marker size (positive sizes only)
235     profit_country_df['Profit_Abs'] = profit_country_df['Profit'].abs()
236
237     # Create the scattergeo map plot for Profit by Country, with color based on profit
238     fig_country = px.scatter_geo(
239         profit_country_df,
240         locations="Country",
241         locationmode='country names',
242         color="Profit",
243         hover_name="Country",
244         size="Profit_Abs", # Use absolute values for sizing
245         projection="orthographic",
246         color_continuous_scale=[(0, "red"), (0.5, "white"), (1, "green")], # Red for losses, green for profit
247         range_color=[profit_country_df['Profit'].min(), profit_country_df['Profit'].max()]
248     )
249
250
251 # Update layout of the map
252 fig_country.update_layout(
253     height=800,
254     margin=dict(l=50, r=50, t=50, b=50)
255 )
256
257 # Display the country map
258 st.write(fig_country)
259
```

Terminal output:

```
PS C:\Users\Office\Desktop\Northwind final project\Python analysis> streamlit run NorthWind_streamlit.py
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```



Our Recommendations :

Current Insights	Recommendations
various suppliers across the globe. Some suppliers have long lead times.	Focus on suppliers with faster lead times and negotiate better terms with slower suppliers.
The Repeat Purchase Rate is below 10%, indicating low customer loyalty.	customer retention strategies like loyalty programs or personalized.
Customers are primarily purchasing items in one category, missing opportunities to cross-sell related products.	Encourage cross-sell and upsell strategies by recommending related products during the purchase process.
Sales trends show seasonal, with some months performing better.	Use sales trends to plan marketing campaigns around peak periods and offer promotions during slower times.
Shipping costs vary , with some being more expensive than others.	Negotiate better shipping rates with carriers and choose the most cost-effective options.

