Project Name: Northwind Analytics

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Executive Summary

This document summarizes the process, decisions made, and key findings from the Proof of Concept (POC) project named Northwind Analytics. The project utilized Power BI for data visualization, focusing on the Northwind database.

Process

Data Gathering:

The project sourced data from the Northwind database, provided by Northwind, and underwent crucial transformations using Power Query in Power BI. Key data cleaning steps included replacing null values with "NA" and null numbers with 0.

Data Model Creation:

Tables such as Product, Customers, Categories, Employees, and the Order Details fact table were included in the data model. The star schema method was employed for establishing relationships between the central fact table and dimension tables. Transformations involved merging columns, such as Last Name and First Name, and deriving business metrics through calculated columns.

Dashboard Design:

The dashboard featured two primary views: "Key Insights" and "Profit Margin."

Key Insights View:

1. KPIs for Revenue and Sales Quantity:

- Utilized DAX formulas to calculate the total sum of revenue and count of sales quantity, providing a quick overview.

2. Bar Chart for Quantity and Revenue by Market:

- Visualized sales quantity and revenue by market (country) to identify high-performing markets and areas for growth.

3. Line Chart for Revenue Trend:

- Displayed revenue trends over time (mm-yy), aiding in identifying patterns and making decisions for future growth.

4. Pie Chart for Revenue by Category:

- Categorized revenue by product category for a comprehensive understanding of product performance.

5. Map Visualization:

- Geographical representation to visualize sales performance by region.

6. Slicers:

- Included slicers for easy analysis by year, month, and category.

Profit Margin View:

1. KPIs for Revenue, Profit Margin, and Sales Quantity:

- Highlighted key performance indicators for a quick assessment of product profitability.

2. Table for Revenue, Profit Margin, and Profit Margin % by Country:

- Provided detailed insights into profit margins across different countries.

3. Revenue and Profit Trend Graph:

- Displayed trends in revenue and profit over time (month and year).

4. Bar Charts for Top and Bottom Performers:

- Visualized top 5 customers, top 5 products, and bottom 5 products for strategic decision-making.

5. Slicers:

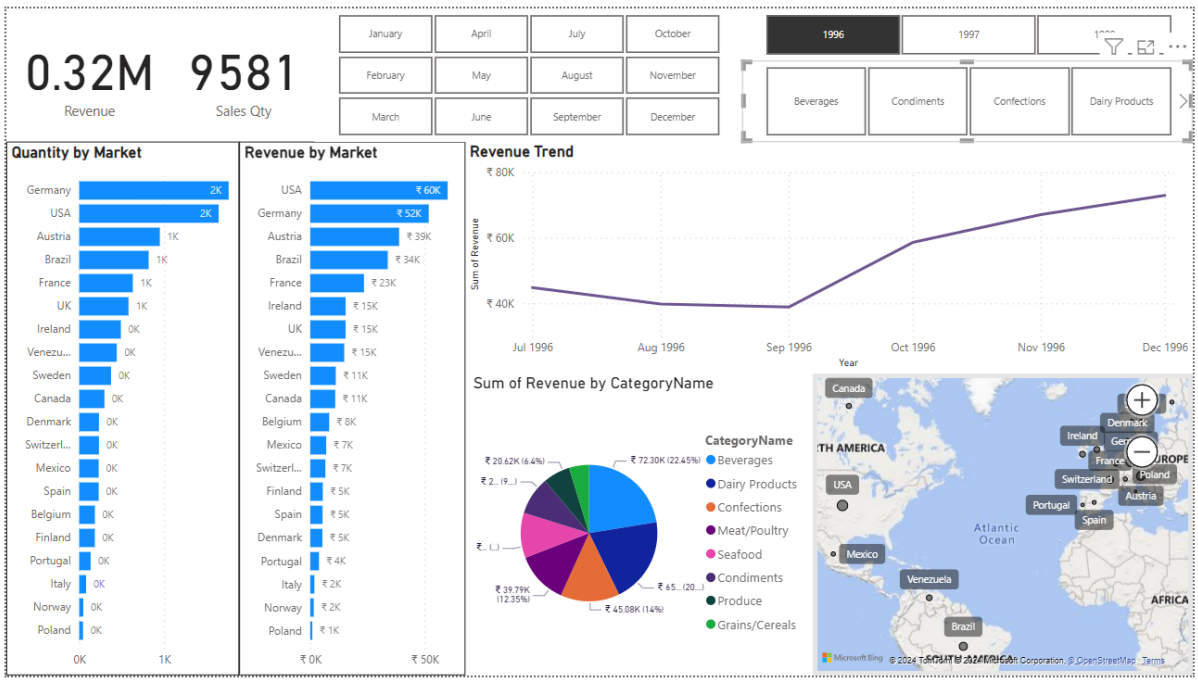
- Included slicers for flexible analysis by year, month, and category.

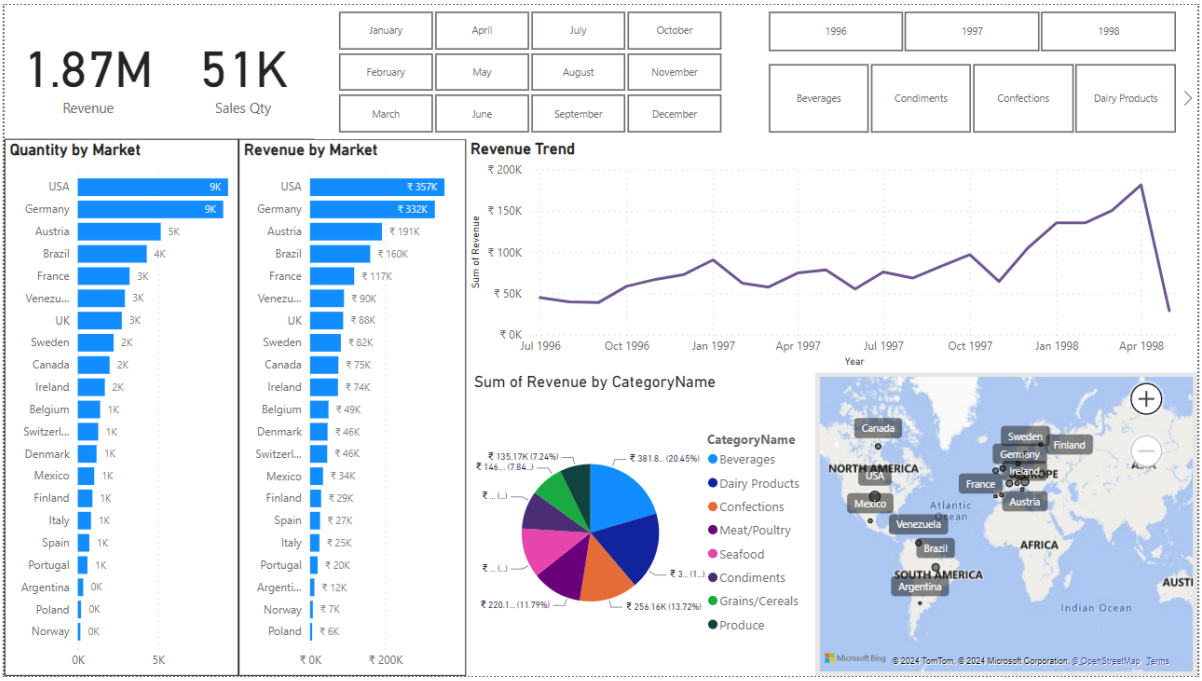
Next Steps

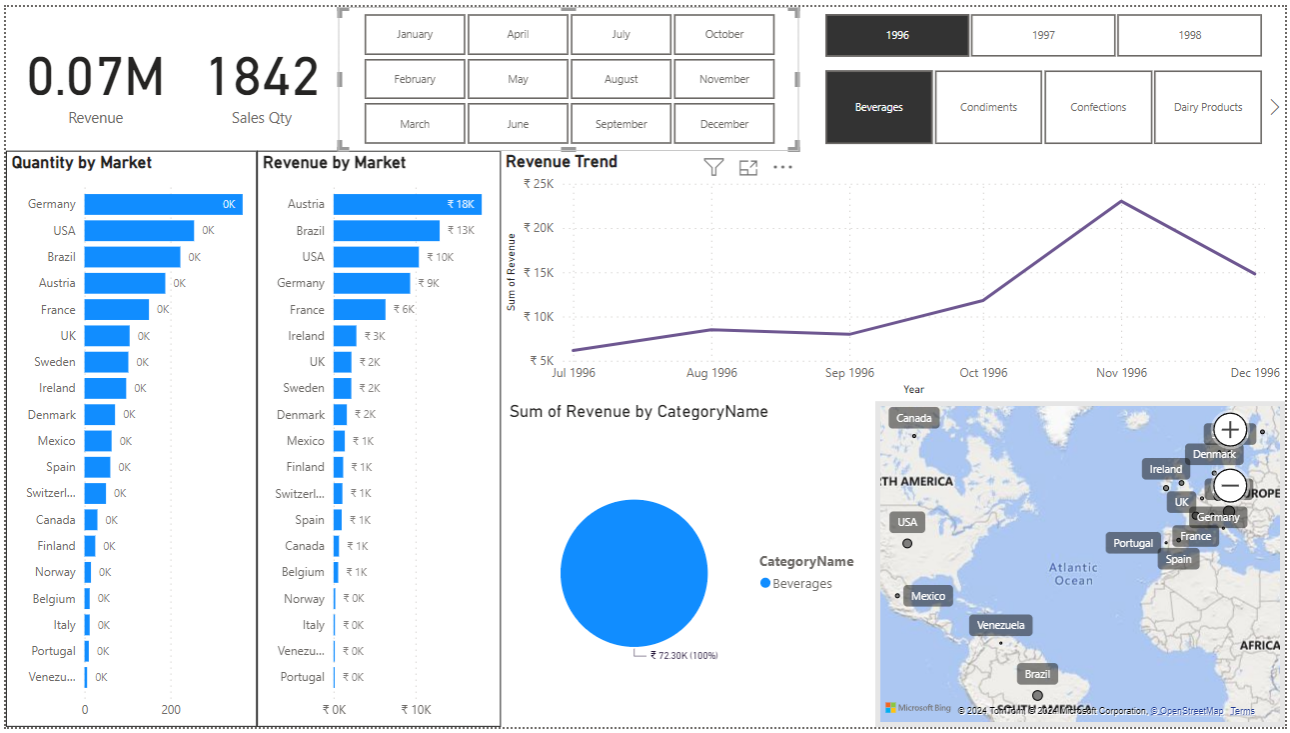
Considering the success of the POC, future steps involve expanding data sources, exploring real-time updates, and integrating user feedback for continuous improvement. Integration of the dashboard into existing workflows is also recommended.

Appendix: Dashboard Visuals

In this section, visual representations of the Power BI dashboard are provided to offer a more tangible understanding of the insights derived from the Northwind Analytics project. The screenshots showcase key views, including "Key Insights" and "Profit Margin," along with relevant visualizations that aid in sales analysis and decision-making. Please refer to the following screenshots for a comprehensive overview.


0.32M
Revenue
9581
Sales Qty
January
February
March
April
May
June
July
August
September
October
November
December
1996
1997
Beverages
Condiments
Confections
Dairy Products
Quantity by Market
Germany 2K
USA 2K
Austria 1K
Brazil 1K
France 1K
UK 1K
Ireland 0K
Venezu... 0K
Sweden 0K
Canada 0K
Denmark 0K
Switzerl... 0K
Mexico 0K
Spain 0K
Belgium 0K
Finland 0K
Portugal 0K
Italy 0K
Norway 0K
Poland 0K
0K
1K
Revenue by Market
USA ₹ 60K
Germany ₹ 52K
Austria ₹ 39K
Brazil ₹ 34K
France ₹ 23K
Ireland ₹ 15K
UK ₹ 15K
Venezu... ₹ 15K
Sweden ₹ 11K
Canada ₹ 11K
Belgium ₹ 8K
Mexico ₹ 7K
Switzerl... ₹ 7K
Finland ₹ 5K
Spain ₹ 5K
Denmark ₹ 5K
Portugal ₹ 4K
Italy ₹ 2K
Norway ₹ 2K
Poland ₹ 1K
₹ 0K
₹ 50K
Revenue Trend
Sum of Revenue
₹ 80K
₹ 60K
₹ 40K
Jul 1996
Aug 1996
Sep 1996
Oct 1996
Nov 1996
Dec 1996
Year
Sum of Revenue by CategoryName
₹ 20.62K (6.4%)
₹ 72.30K (22.45%)
₹ 39.79K (12.35%)
₹ 45.08K (14%)
CategoryName
Beverages
Dairy Products
Confections
Meat/Poultry
Seafood
Condiments
Produce
Grains/Cereals
Canada
USA
Mexico
Venezuela
Brazil
Ireland
Denmark
France
Switzerland
Poland
Austria
Portugal
Spain
Atlantic Ocean
AFRICA


1.87M
Revenue
51K
Sales Qty
January
February
March
April
May
June
July
August
September
October
November
December
1996
1997
1998
Beverages
Condiments
Confections
Dairy Products
Quantity by Market
USA 9K
Germany 9K
Austria 5K
Brazil 4K
France 3K
Venezu... 3K
UK 3K
Sweden 2K
Canada 2K
Ireland 2K
Belgium 1K
Switzerl... 1K
Denmark 1K
Mexico 1K
Finland 1K
Italy 1K
Spain 1K
Portugal 1K
Argentina 0K
Poland 0K
Norway 0K
0K
5K
Revenue by Market
USA ₹ 357K
Germany ₹ 332K
Austria ₹ 191K
Brazil ₹ 160K
France ₹ 117K
Venezu... ₹ 90K
UK ₹ 88K
Sweden ₹ 82K
Canada ₹ 75K
Ireland ₹ 74K
Belgium ₹ 49K
Denmark ₹ 46K
Switzerl... ₹ 46K
Mexico ₹ 34K
Finland ₹ 29K
Spain ₹ 27K
Italy ₹ 25K
Portugal ₹ 20K
Argenti... ₹ 12K
Norway ₹ 7K
Poland ₹ 6K
₹ 0K
₹ 200K
Revenue Trend
Sum of Revenue
₹ 200K
₹ 150K
₹ 100K
₹ 50K
₹ 0K
Jul 1996
Oct 1996
Jan 1997
Apr 1997
Jul 1997
Oct 1997
Jan 1998
Apr 1998
Year
Sum of Revenue by CategoryName
₹ 135.17K (7.24%)
₹ 381.8... (20.45%)
₹ 220.1... (11.79%)
₹ 256.16K (13.72%)
CategoryName
Beverages
Dairy Products
Confections
Meat/Poultry
Seafood
Condiments
Grains/Cereals
Produce
Canada
USA
Mexico
Venezuela
Brazil
Argentina
Sweden
Finland
Germany
Ireland
France
Austria
NORTH AMERICA
SOUTH AMERICA
AFRICA
Atlantic Ocean
Indian Ocean


0.07M
Revenue
1842
Sales Qty
January
April
July
October
February
May
August
November
March
June
September
December
1996
1997
1998
Beverages
Condiments
Confections
Dairy Products
Quantity by Market
Germany
USA
Brazil
Austria
France
UK
Sweden
Ireland
Denmark
Mexico
Spain
Switzerl...
Canada
Finland
Norway
Belgium
Italy
Portugal
Venezu...
0
200
Revenue by Market
Austria ₹ 18K
Brazil ₹ 13K
USA ₹ 10K
Germany ₹ 9K
France ₹ 6K
Ireland ₹ 3K
UK ₹ 2K
Sweden ₹ 2K
Denmark ₹ 2K
Mexico ₹ 1K
Finland ₹ 1K
Switzerl... ₹ 1K
Spain ₹ 1K
Canada ₹ 1K
Belgium ₹ 1K
Norway ₹ 0K
Italy ₹ 0K
Venezu... ₹ 0K
Portugal ₹ 0K
₹ 0K
₹ 10K
Revenue Trend
Sum of Revenue
₹ 25K
₹ 20K
₹ 15K
₹ 10K
₹ 5K
Jul 1996
Aug 1996
Sep 1996
Oct 1996
Nov 1996
Dec 1996
Year
Sum of Revenue by CategoryName
CategoryName
Beverages
₹ 72.30K (100%)
Canada
Denmark
Ireland
UK
Germany
USA
France
Portugal
Spain
Mexico
Venezuela
Brazil
Atlantic Ocean
AFRICA
Microsoft Bing
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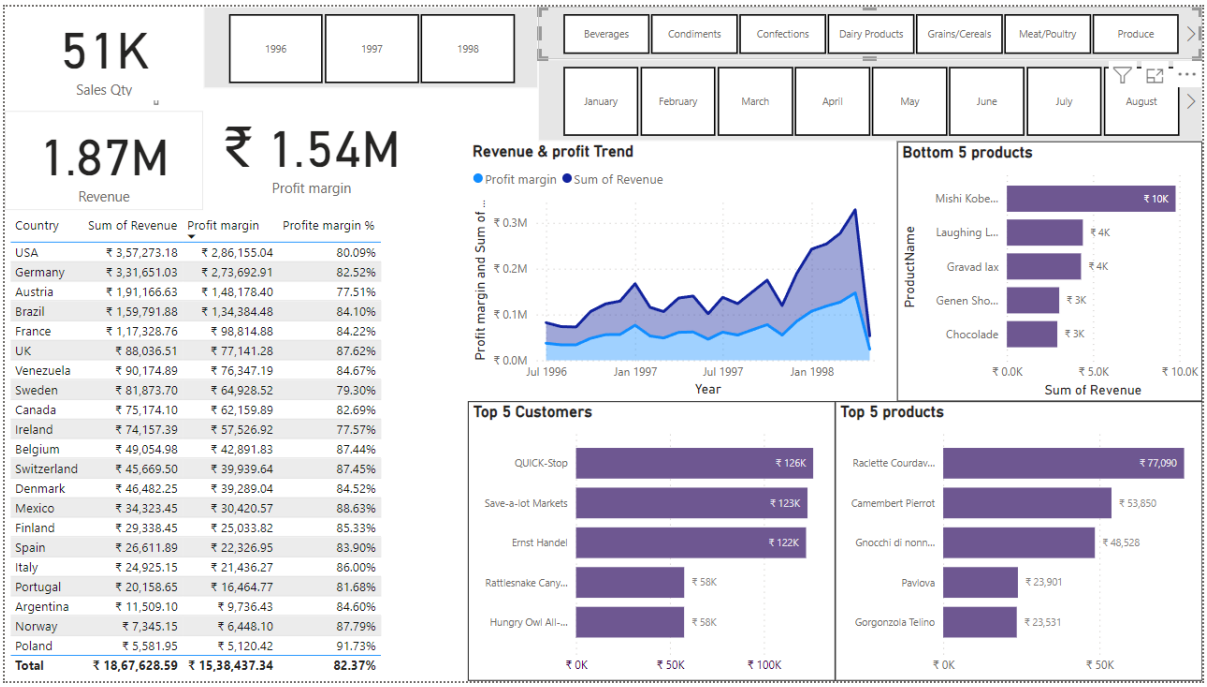
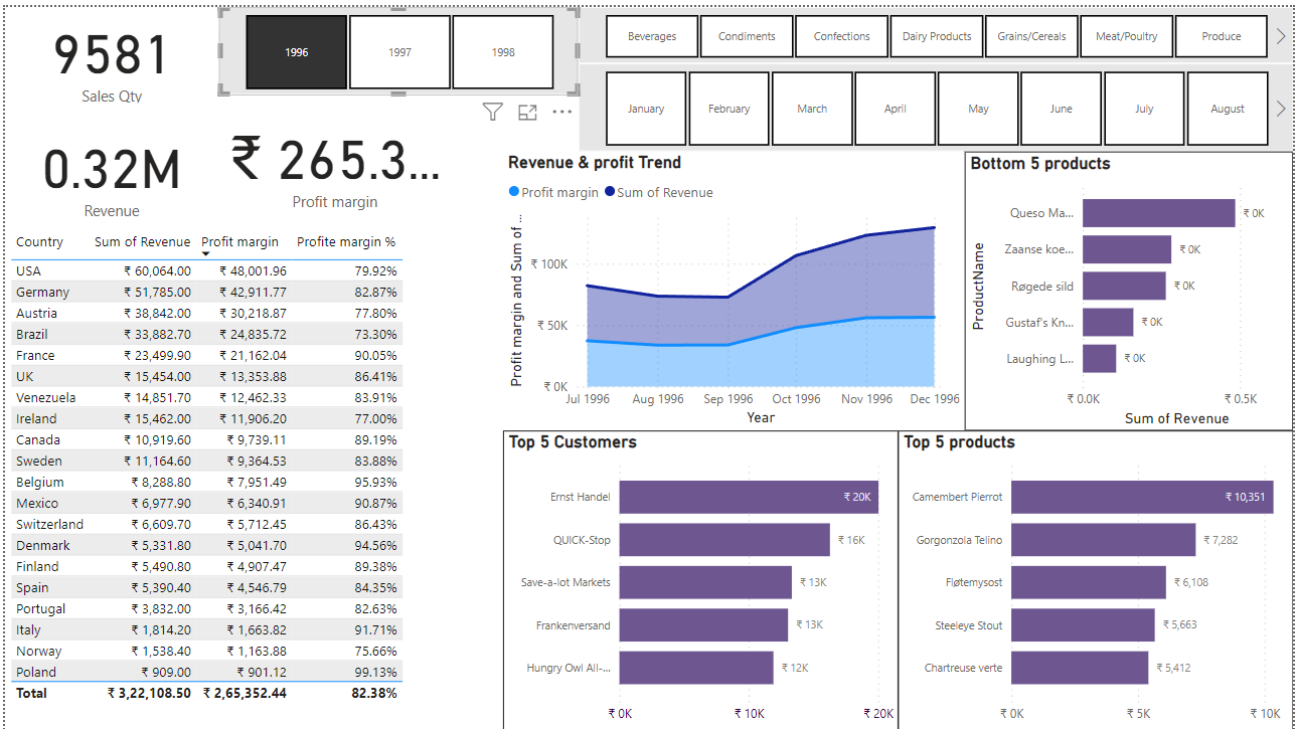
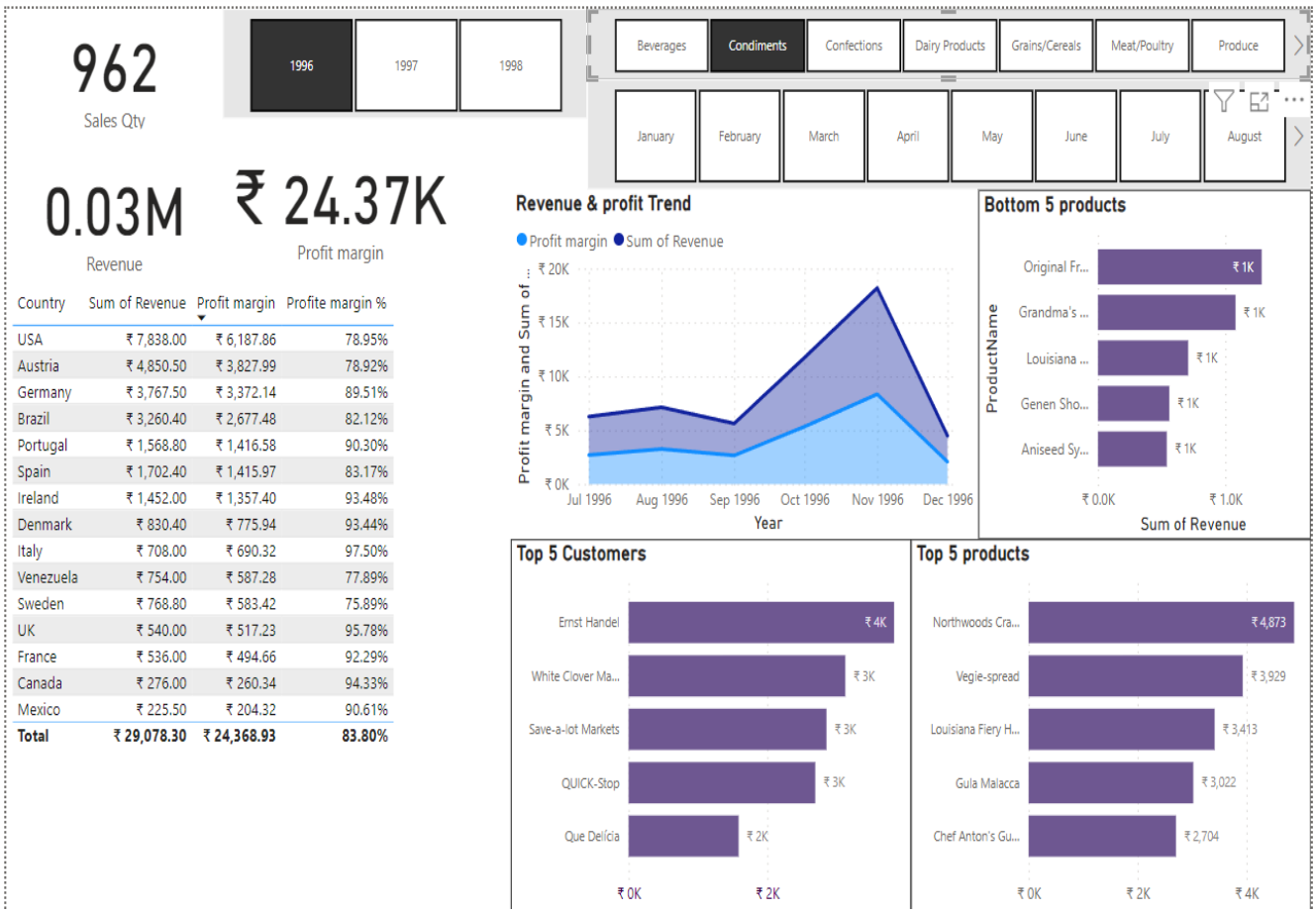


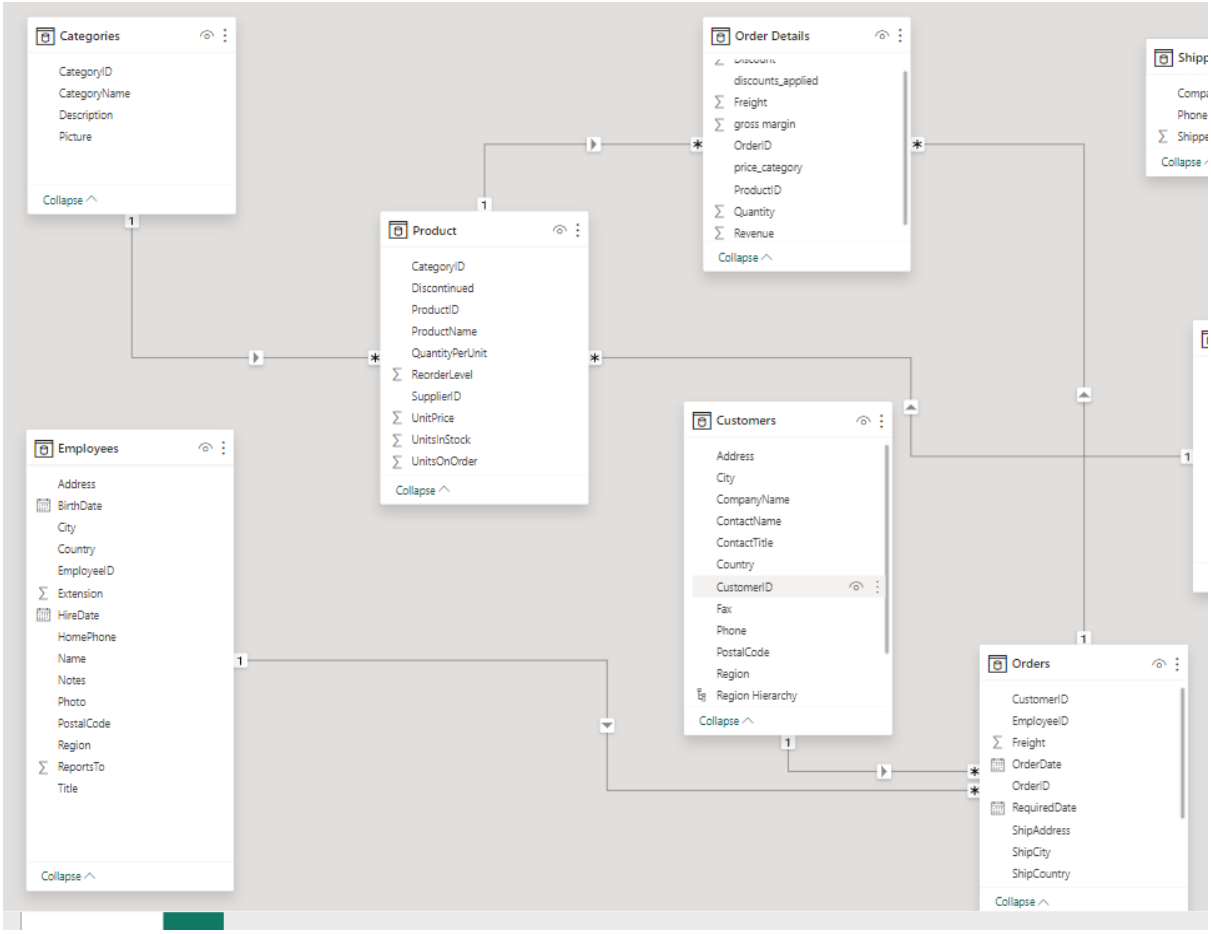
Country	Sum of Revenue	Profit margin	Profite margin %
USA	₹ 3,57,273.18	₹ 2,86,155.04	80.09%
Germany	₹ 3,31,651.03	₹ 2,73,692.91	82.52%
Austria	₹ 1,91,166.63	₹ 1,48,178.40	77.51%
Brazil	₹ 1,59,791.88	₹ 1,34,384.48	84.10%
France	₹ 1,17,328.76	₹ 98,814.88	84.22%
UK	₹ 88,036.51	₹ 77,141.28	87.62%
Venezuela	₹ 90,174.89	₹ 76,347.19	84.67%
Sweden	₹ 81,873.70	₹ 64,928.52	79.30%
Canada	₹ 75,174.10	₹ 62,159.89	82.69%
Ireland	₹ 74,157.39	₹ 57,526.92	77.57%
Belgium	₹ 49,054.98	₹ 42,891.83	87.44%
Switzerland	₹ 45,669.50	₹ 39,939.64	87.45%
Denmark	₹ 46,482.25	₹ 39,289.04	84.52%
Mexico	₹ 34,323.45	₹ 30,420.57	88.63%
Finland	₹ 29,338.45	₹ 25,033.82	85.33%
Spain	₹ 26,611.89	₹ 22,326.95	83.90%
Italy	₹ 24,925.15	₹ 21,436.27	86.00%
Portugal	₹ 20,158.65	₹ 16,464.77	81.68%
Argentina	₹ 11,509.10	₹ 9,736.43	84.60%
Norway	₹ 7,345.15	₹ 6,448.10	87.79%
Poland	₹ 5,581.95	₹ 5,120.42	91.73%
Total	**₹ 18,67,628.59**	**₹ 15,38,437.34**	**82.37%**



Country	Sum of Revenue	Profit margin	Profite margin %
USA	₹ 60,064.00	₹ 48,001.96	79.92%
Germany	₹ 51,785.00	₹ 42,911.77	82.87%
Austria	₹ 38,842.00	₹ 30,218.87	77.80%
Brazil	₹ 33,882.70	₹ 24,835.72	73.30%
France	₹ 23,499.90	₹ 21,162.04	90.05%
UK	₹ 15,454.00	₹ 13,353.88	86.41%
Venezuela	₹ 14,851.70	₹ 12,462.33	83.91%
Ireland	₹ 15,462.00	₹ 11,906.20	77.00%
Canada	₹ 10,919.60	₹ 9,739.11	89.19%
Sweden	₹ 11,164.60	₹ 9,364.53	83.88%
Belgium	₹ 8,288.80	₹ 7,951.49	95.93%
Mexico	₹ 6,977.90	₹ 6,340.91	90.87%
Switzerland	₹ 6,609.70	₹ 5,712.45	86.43%
Denmark	₹ 5,331.80	₹ 5,041.70	94.56%
Finland	₹ 5,490.80	₹ 4,907.47	89.38%
Spain	₹ 5,390.40	₹ 4,546.79	84.35%
Portugal	₹ 3,832.00	₹ 3,166.42	82.63%
Italy	₹ 1,814.20	₹ 1,663.82	91.71%
Norway	₹ 1,538.40	₹ 1,163.88	75.66%
Poland	₹ 909.00	₹ 901.12	99.13%
Total	**₹ 3,22,108.50**	**₹ 2,65,352.44**	**82.38%**



Country	Sum of Revenue	Profit margin	Profite margin %
USA	₹ 7,838.00	₹ 6,187.86	78.95%
Austria	₹ 4,850.50	₹ 3,827.99	78.92%
Germany	₹ 3,767.50	₹ 3,372.14	89.51%
Brazil	₹ 3,260.40	₹ 2,677.48	82.12%
Portugal	₹ 1,568.80	₹ 1,416.58	90.30%
Spain	₹ 1,702.40	₹ 1,415.97	83.17%
Ireland	₹ 1,452.00	₹ 1,357.40	93.48%
Denmark	₹ 830.40	₹ 775.94	93.44%
Italy	₹ 708.00	₹ 690.32	97.50%
Venezuela	₹ 754.00	₹ 587.28	77.89%
Sweden	₹ 768.80	₹ 583.42	75.89%
UK	₹ 540.00	₹ 517.23	95.78%
France	₹ 536.00	₹ 494.66	92.29%
Canada	₹ 276.00	₹ 260.34	94.33%
Mexico	₹ 225.50	₹ 204.32	90.61%
Total	**₹ 29,078.30**	**₹ 24,368.93**	**83.80%**


Categories
CategoryID
CategoryName
Description
Picture
Collapse
Order Details
discounts_applied
Freight
gross margin
OrderID
price_category
ProductID
Quantity
Revenue
Collapse
Product
CategoryID
Discontinued
ProductID
ProductName
QuantityPerUnit
ReorderLevel
SupplierID
UnitPrice
UnitsInStock
UnitsOnOrder
Collapse
Employees
Address
BirthDate
City
Country
EmployeeID
Extension
HireDate
HomePhone
Name
Notes
Photo
PostalCode
Region
ReportsTo
Title
Collapse
Customers
Address
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CompanyName
ContactName
ContactTitle
Country
CustomerID
Fax
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Region
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EmployeeID
Freight
OrderDate
OrderID
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ShipAddress
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