Commodities Export To European Countries

1. Project Overview and Objective

To create a data-driven solution that consolidates product quantity, unit pricing, and value information to calculate revenue efficiently, monitor sales performance, and provide actionable insights through clear visualizations.

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2. Data Sources

- **Source Description and Timeline:** India Data Portal
- **Domain**: Commerce

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3. Problem Statement

- To summarize and visualize key metrics such as total revenue, total quantity exported, average unit price, and product-wise performance to understand overall sales trends and patterns.
- To provide data-driven recommendations such as optimal pricing strategies, unit standardization approaches, inventory adjustments, and sales focus areas that can improve revenue and operational efficiency.
- To build predictive models using historical quantity, unit price, and revenue trends to forecast future sales volumes and revenue, enabling better planning and demand estimation.
- To provide data-driven recommendations such as inventory adjustments, and sales focus areas that can improve revenue and operational efficiency.

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4. Attribute (Column /Features) Details:

Attribute Name	Data Type	Description
Date	Date	Export date
Country Name	Text / String	Name of the Country
ISO Alpha 3 Code	String (Text)	Unique identifier of a country
Country Code	Numerical	Code of the Country

Region Name and Sub-Region	String (Text)	Name of the region and Sub-Region
Region Code	Numerical	Code of the region
Harmonised System Code	Integer / String	Unique numerical code used to classify goods that are traded
Commodity Name	String (Text)	Name of the commodity
Unit	String (Text)	Units of the quantity of commodity
Commodity Quantity	Numerical	Quantity of commodities which is being exported
Value	Numerical	Value fi the commodity in INR
Revenue	Numerical	Revenue in INR
Value Type	String (Text)	Type of the value
Revenue Type	String (Text)	Type of the revenue

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5. Tools & Technologies

- **Excel:** Data organization, cleaning, transformation.
- **Power BI:** Data modelling, DAX calculations, visualization, and interactive dashboard creation.

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6. Data Pre-Processing (Excel / Power Query)

Tasks Performed:

- **Data Cleaning & Transformation:** Handled missing values, standardized formats, and created calculated fields.
- **Filtering & Sorting:** Organized data to focus on relevant records.
- Convert the data into Fact and Dimension Table

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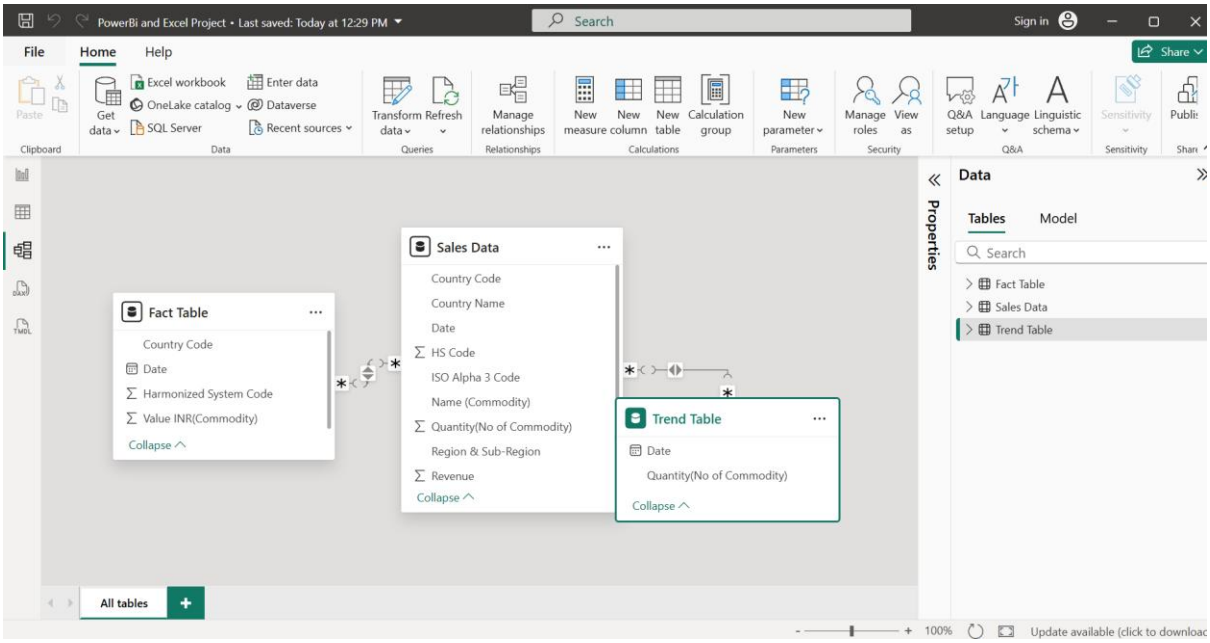
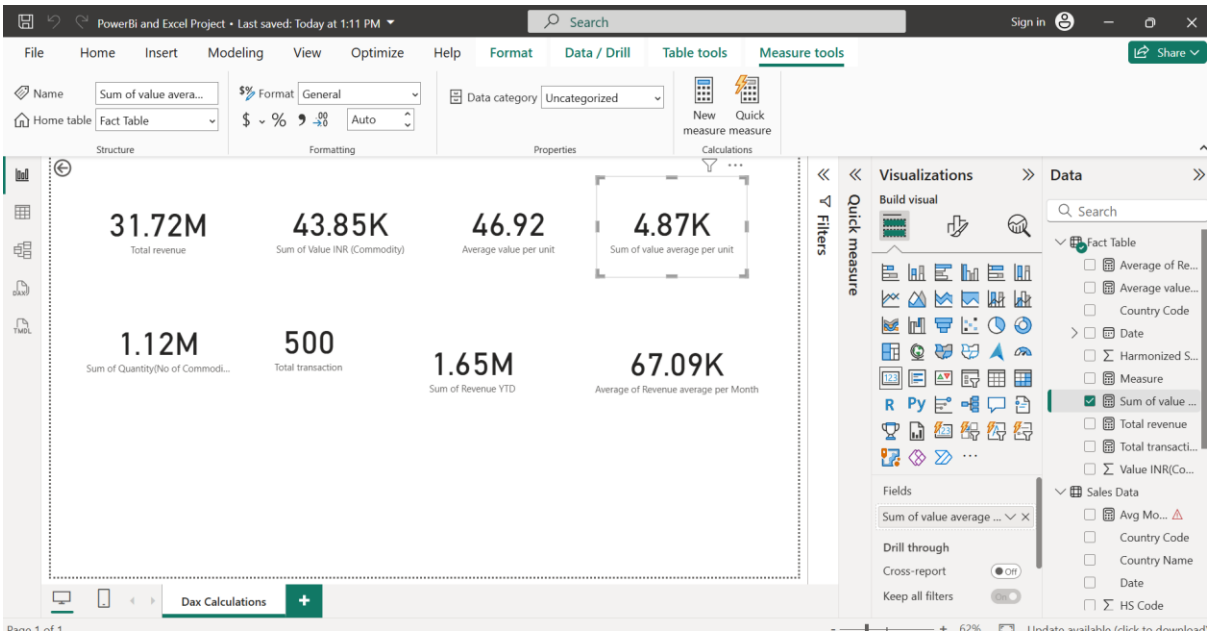
7. Data Modelling and DAX (Power BI)

- **Data Model:** Established relationships between tables, defined cardinality



- **Calculated Columns & DAX Measures:** Implemented DAX formulas for key metrics, such as Total sales, Sum of value, Sum of Quantities, Total transactions, Average value per unit, Sum of revenue Year to date, Sum of value vs Average per unit, Average revenue per month

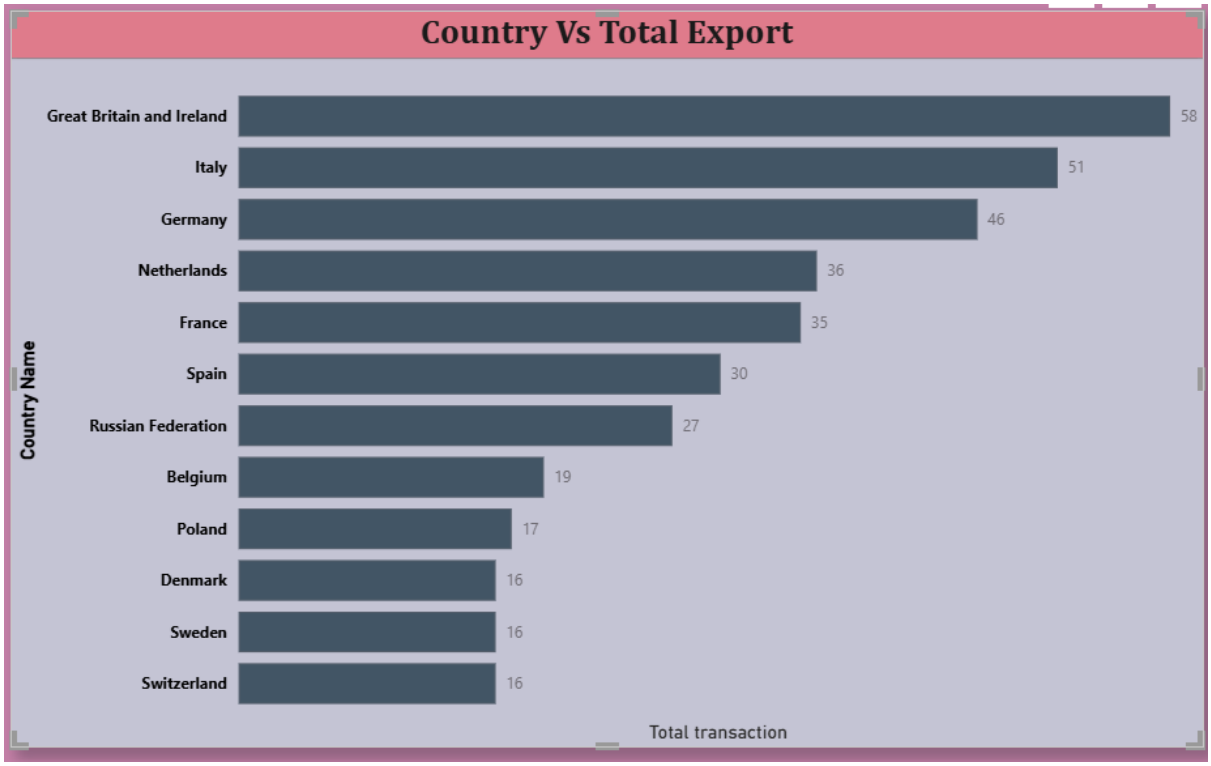


8. Analysis and Visualizations (Power BI)

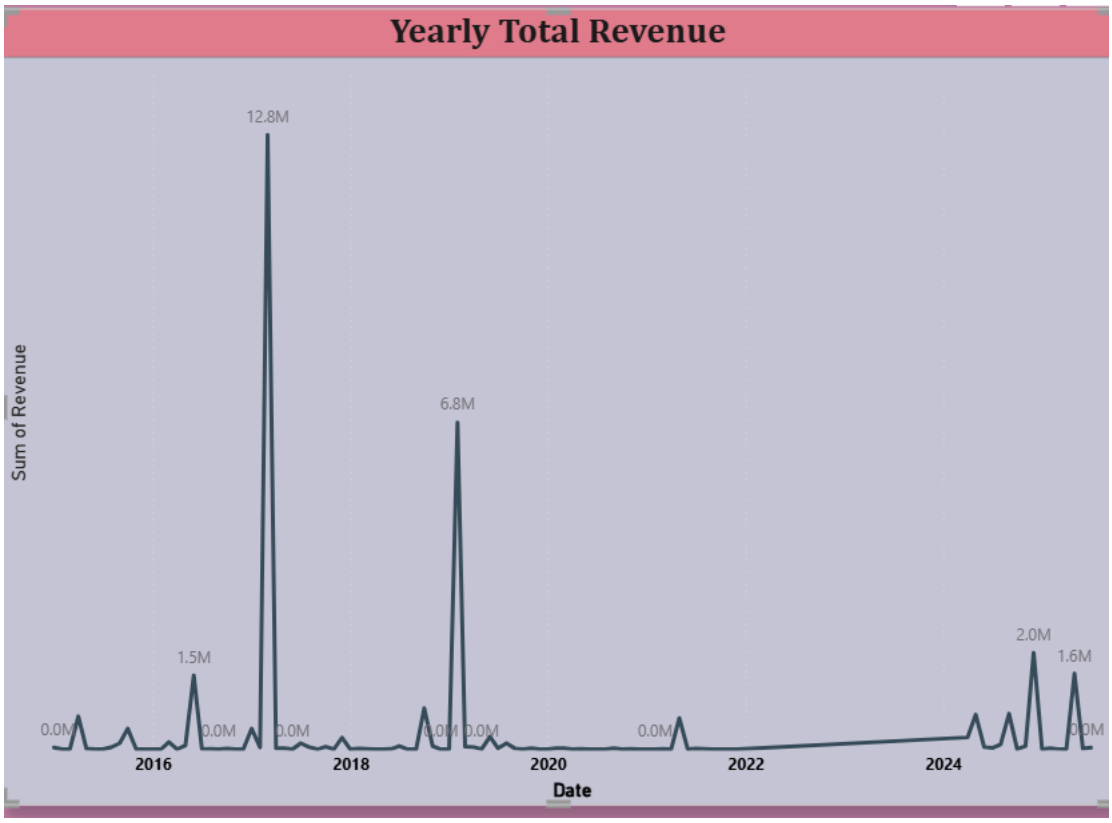
Dashboard Features:

- **Multiple Visualizations based on problem statement:**

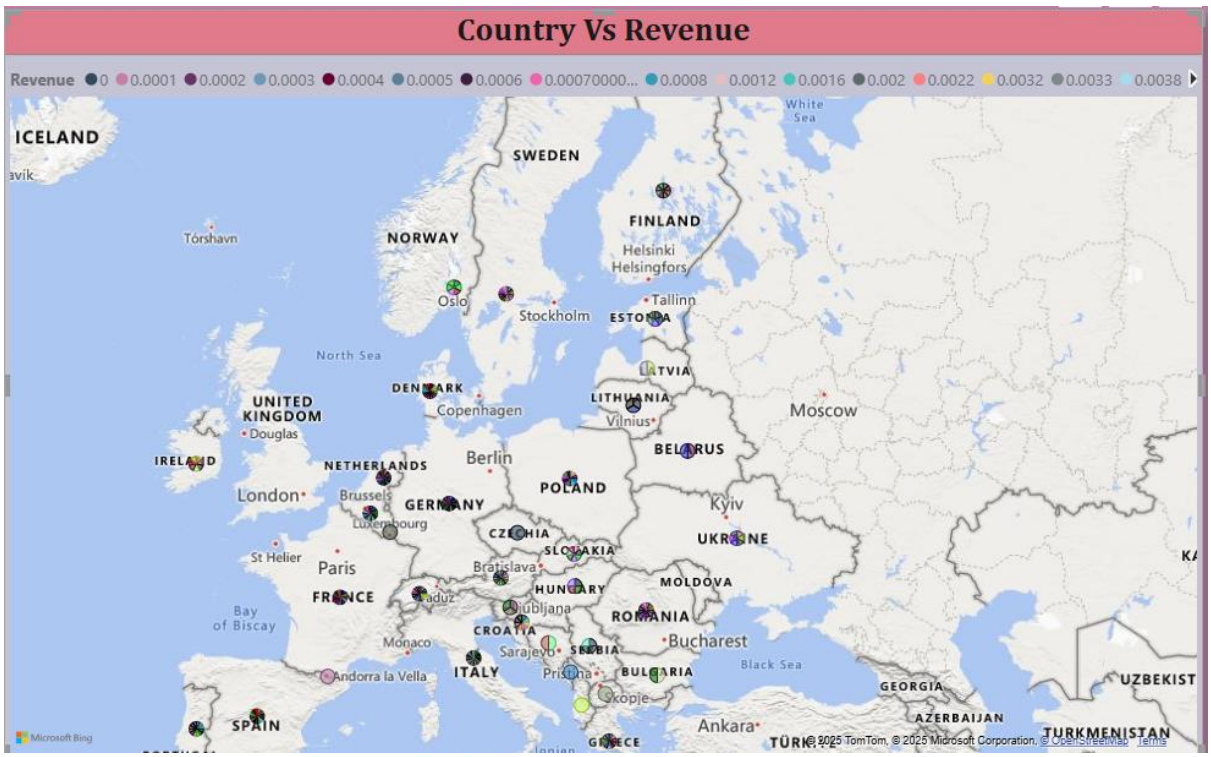
Stacked Bar Chart : Visualized the total number of commodities exported to each country every year



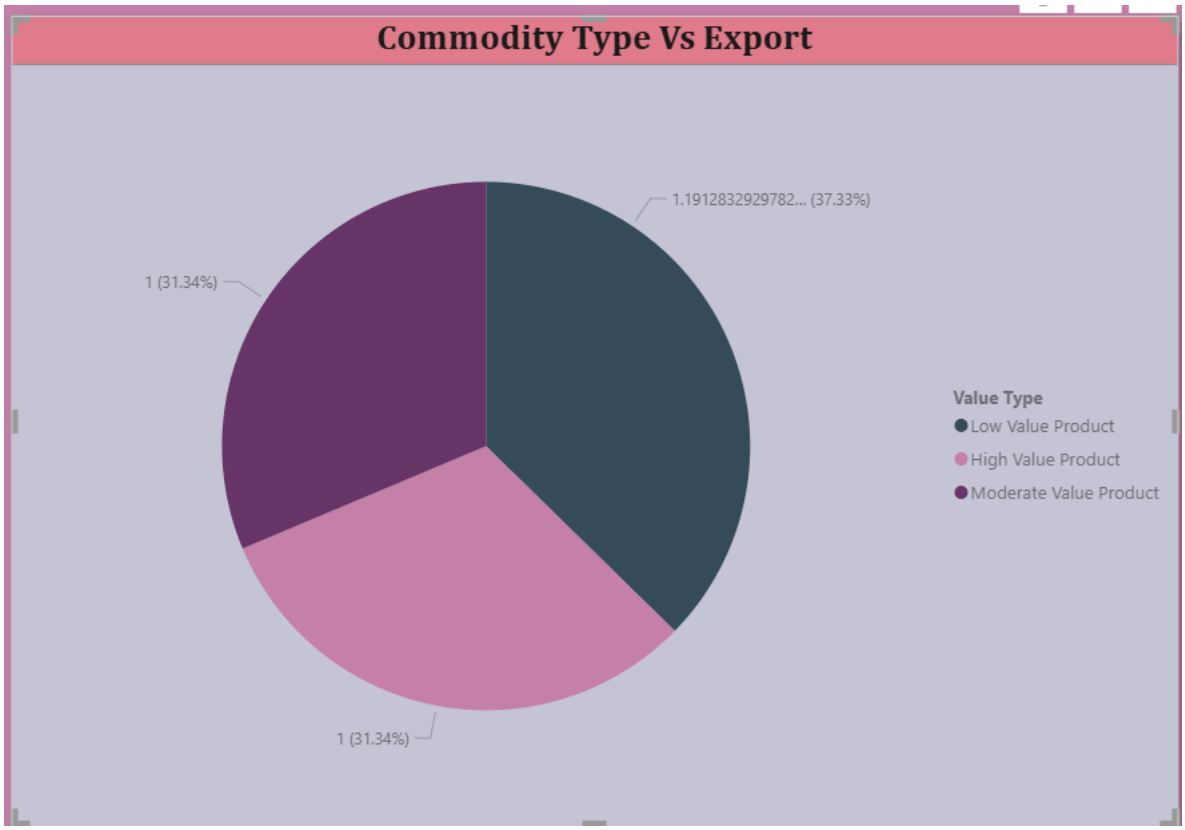
Line Chart: Visualized yearly revenue trend



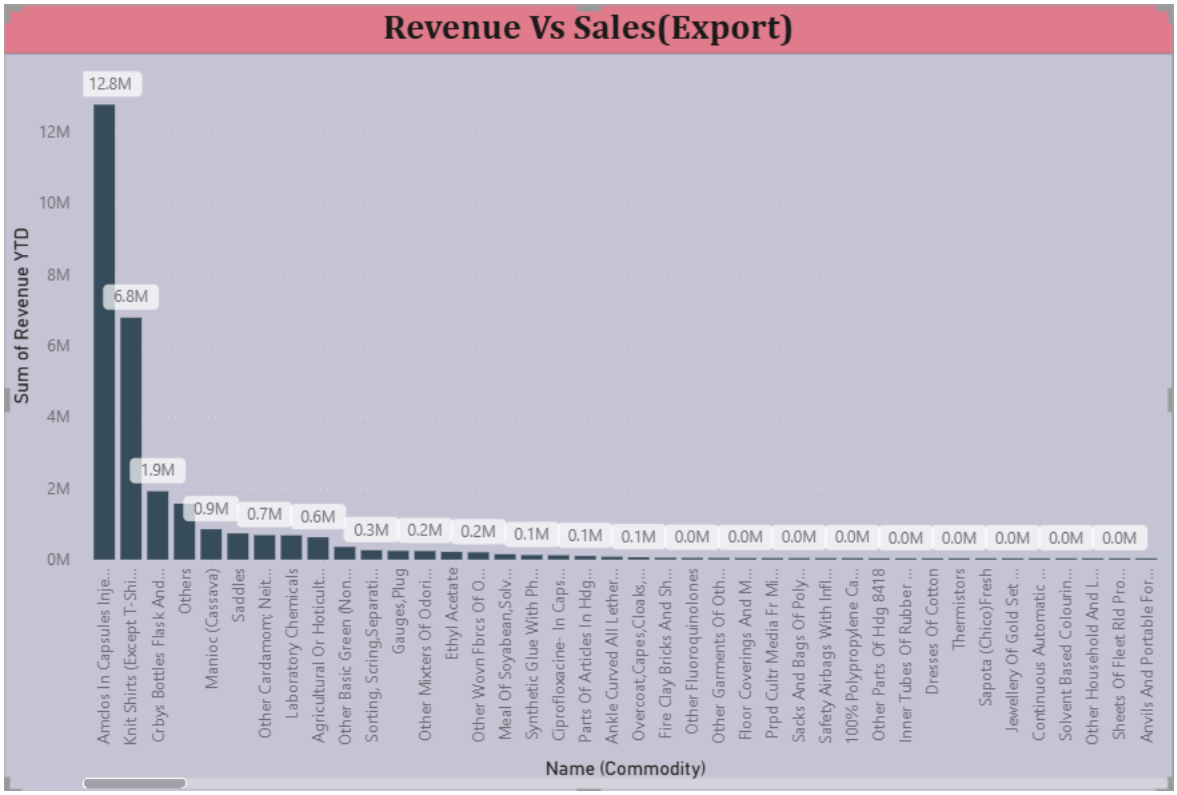
Map Chart: Visualized revenue details of each European country



Pie Chart: Visualized exported categories of commodity



Clustered Column Chart: Visualized revenue and the number of commodities exported



Scatter Plot Chart: Visualized the type of commodity which made the revenue

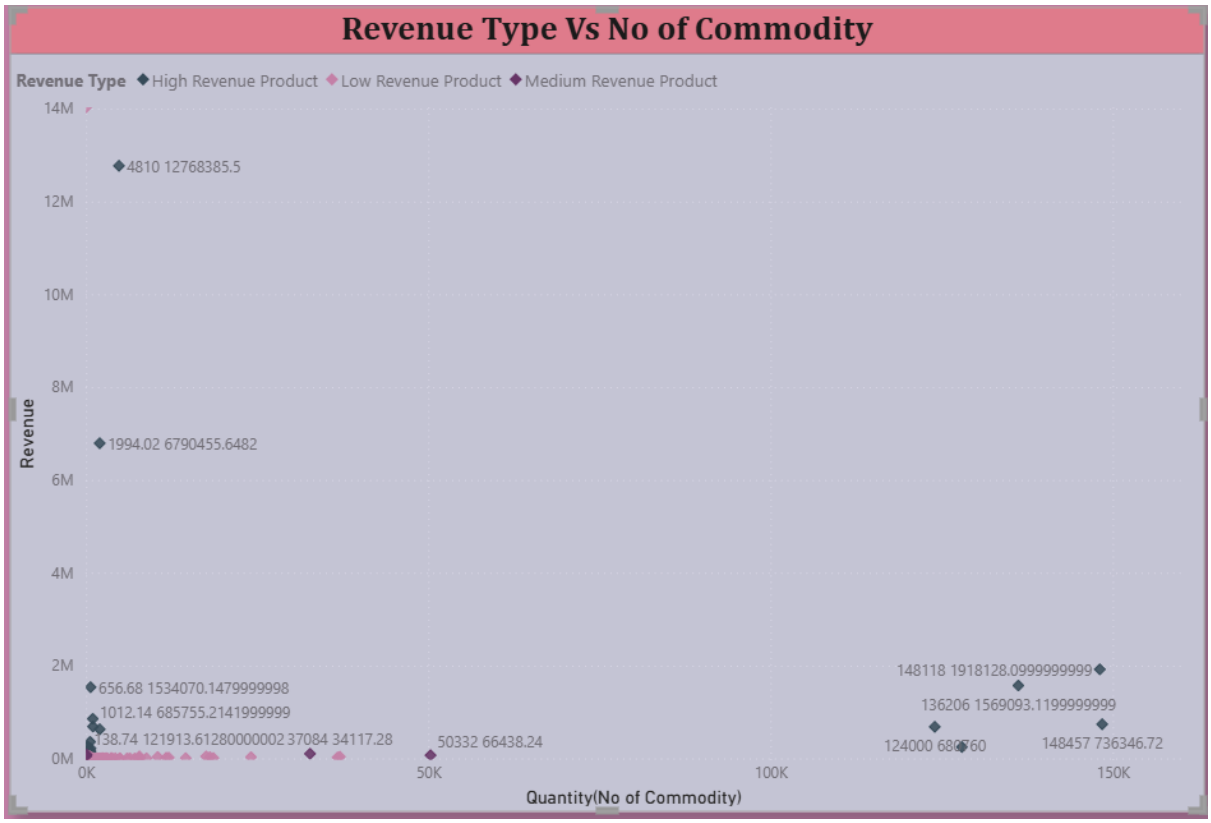


Table : Visualized yearly total sales of commodities of each country

Country Vs Exported Commodities Vs Year

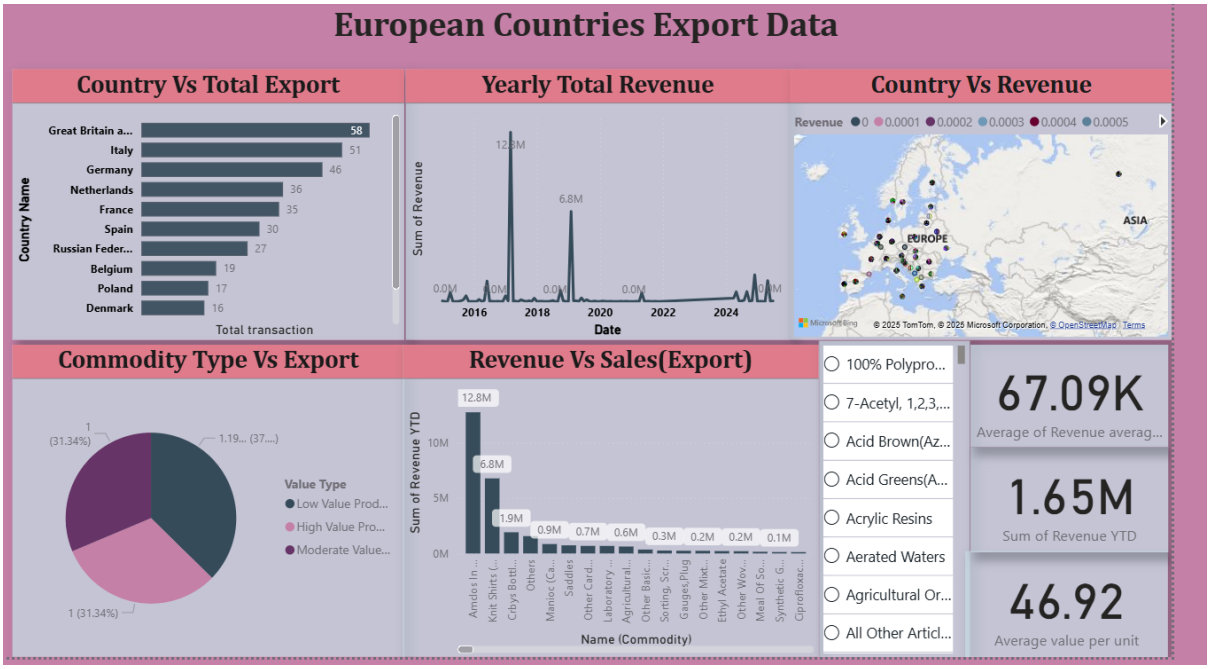
Country Name	2015	2016	2017	2018	2019	2020	2021	2024	2025	Total
Netherlands	3,33,237.99	3,33,237.99	3,33,237.99	3,33,237.99	3,33,237.99	3,33,237.99	3,33,237.99	3,33,237.99	3,33,237.99	**3,33,237.99**
France	2,00,808.89	2,00,808.89	2,00,808.89	2,00,808.89	2,00,808.89	2,00,808.89	2,00,808.89	2,00,808.89	2,00,808.89	**2,00,808.89**
Russian Federation	1,48,967.12	1,48,967.12	1,48,967.12	1,48,967.12	1,48,967.12	1,48,967.12	1,48,967.12	1,48,967.12	1,48,967.12	**1,48,967.12**
Poland	1,29,802.14	1,29,802.14	1,29,802.14	1,29,802.14	1,29,802.14	1,29,802.14	1,29,802.14	1,29,802.14	1,29,802.14	**1,29,802.14**
Finland			69,463.95	69,463.95	69,463.95		69,463.95	69,463.95	69,463.95	**69,463.95**
Belgium	44,093.99	44,093.99	44,093.99	44,093.99	44,093.99		44,093.99	44,093.99	44,093.99	**44,093.99**
Romania	40,323.75	40,323.75	40,323.75		40,323.75		40,323.75	40,323.75	40,323.75	**40,323.75**
Slovakia			33,207.30	33,207.30	33,207.30		33,207.30	33,207.30		**33,207.30**
Norway		28,601.73			28,601.73		28,601.73	28,601.73		**28,601.73**
Sweden	19,578.17	19,578.17	19,578.17	19,578.17	19,578.17	19,578.17	19,578.17	19,578.17	19,578.17	**19,578.17**
Italy	17,661.45	17,661.45	17,661.45	17,661.45	17,661.45	17,661.45	17,661.45	17,661.45	17,661.45	**17,661.45**
Malta			8,512.54			8,512.54	8,512.54	8,512.54	8,512.54	**8,512.54**
Great Britain and Ireland	7,767.98	7,767.98	7,767.98	7,767.98	7,767.98	7,767.98	7,767.98	7,767.98	7,767.98	**7,767.98**
Austria	7,439.20	7,439.20	7,439.20		7,439.20	7,439.20	7,439.20	7,439.20		**7,439.20**
Denmark	5,040.41			5,040.41	5,040.41	5,040.41	5,040.41		5,040.41	**5,040.41**
Netherlands Antilles										**3,003.52**
Belarus			2,792.01					2,792.01		**2,792.01**
Greece		2,774.14	2,774.14	2,774.14	2,774.14		2,774.14	2,774.14	2,774.14	**2,774.14**
Ireland	2,432.35						2,432.35	2,432.35	2,432.35	**2,432.35**
Portugal		2,212.32	2,212.32	2,212.32		2,212.32	2,212.32	2,212.32		**2,212.32**
Serbia					2,012.46	2,012.46		2,012.46		**2,012.46**
Switzerland	1,480.45	1,480.45	1,480.45	1,480.45	1,480.45	1,480.45	1,480.45			**1,480.45**
Germany	1,216.62	1,216.62	1,216.62	1,216.62	1,216.62	1,216.62	1,216.62	1,216.62	1,216.62	**1,216.62**
Spain	1,065.04	1,065.04	1,065.04	1,065.04	1,065.04	1,065.04	1,065.04	1,065.04	1,065.04	**1,065.04**
Croatia		664.69	664.69	664.69	664.69	664.69	664.69			**664.69**

Table : Visualized Each commodities total revenue

Commodity Vs Revenue

Name (Commodity)	Revenue
Wire Of Stainls Steel Thicker Than 1.5 Mm	6.7
Windscarn Wipers,Defrosters And Demisters	3.8
Wheat Or Meslin Flour	0.3
Water Pump	18.5
Wallets And Purses Of Leather	3,664.4
Vitamin E And Its Derivatives	53.5
Vat Green 1(Indanthrene Brill Green Bffb)	1,730.3
Valves,Inlet And Exhaust	40.5
Universal Plants Of Stainless Steel/Heat Rstngstl,Chromium Type<14 But>10 Mm	13,468.0
Ultramarin And Prptns Basd Thereon	16,324.3
Tyres Uses Other Than Motorcycles/ Scooters	4,401.2
Tyres For Motorcycles	499.3
Tyre Flaps Used In Other Vehicles	2,164.3
Tungsten Wire	4,161.7
Tubes,Pipes And Hoses Of Vulcnsd Rubber Not Reinforced/Otherwise Combined Wth Other Materials Without Fittings	0.0
Tubes Or Pipe Fittings	0.0
Tube Pipe and Hoses Of Other Plastics Rigid Nes	13,260.0
Trsrs,Slacks And Shorts Of Wool/Fine Animal Hair	0.0
Trousers,Shorts Etc Of Wool/Fine Anml Hair	33.6
Trousers,Bib And Brace Overalls,Breeches And Shorts Of Synthetic Fibres	0.0
Trousers,Bib And Brace Overalls,Breeches And Shorts Of Synthetic Fibres	1,24,297.4
Trousers,Bib And Brace Etc Of Other Fibres	13,602.5
Trousers Bib And Brace Overalls Breeches And Shorts Of Cotton For Mens And Boys	93.0
Trade Adevertising Materials Commercial Catalouge	1,770.7

- **Report /Dashboard**



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9. Insights & Conclusions

Key Insights: This report represents **commodity export performance** across **European countries**, capturing:

- Revenue (INR)
- Export quantity (number of commodities)
- Transactions
- Commodity types (Low / Moderate / High value)
- Time dimension (Year-wise data)

1. Descriptive Analysis:

Key Metrics Observed

- **Total Revenue:** ₹31.72M
- **Total Export Quantity:** ~1.12M units
- **Total Transactions:** ~500
- **Average Revenue per Unit:** ₹46.92
- **Revenue YTD:** ₹1.65M
- **Number of Commodities:** High diversification across categories
- Revenue is highly skewed, where **a** few commodities generate disproportionately high revenue
- Several commodities have large export volumes but minimal revenue **impact**
- Revenue peaks are observed in specific years (notably 2019–2020**)**, followed by fluctuations
- Top export destinations by transactions**:**
    - Great Britain & Ireland
    - Italy
    - Germany
    - Netherlands
    - France
- **Netherlands and France** consistently show high export value, indicating strong, stable markets and Netherlands is the highest exported country

  Descriptive Conclusion:

  The business is revenue-positive but **unevenly balanced**, with revenue concentrated in **specific commodities and countries**.

2. Diagnostic Analysis:

- High-value commodities (e.g., specialized steel products, chemicals, textiles) generate high revenue despite lower volumes
- Low-value commodities dominate volume but dilute overall revenue efficiency
- The Pareto effect (80/20 rule) is clearly visible:
- 20% of commodities contribute 70–80% of revenue
- Several commodities show:

  High export quantity + low revenue

  Indicates pricing, product positioning, or margin inefficiencies
- Some commodities show:

  Low volume + very high revenue

  These are premium or specialized products
- Countries with high transaction counts do not always correspond to high revenue

  Indicates:

  Market maturity differences

  Commodity mix variation by country

  Diagnostic Conclusion:

  Revenue volatility is driven more by **commodity mix and pricing**, not total export volume

3. Predictive Analysis:

- Revenue trend shows cyclical behaviour, suggesting:
  - Market seasonality
  - Policy or demand-driven fluctuations
- Export volumes remain relatively stable, while revenue fluctuates → price sensitivity risk
- If the current commodity mix continues:
  - Revenue growth will plateau
  - Operational load will increase without proportional revenue gain
- High-value commodities show:
  - More stable and predictable growth
  - Better candidates for forecasting future revenue

Predictive Conclusion:
Future revenue growth depends on shifting focus toward high-value commodities, not increasing export volume alone.

4. Prescriptive Analysis:

Sales & Revenue Optimization

- Scale high-value, low-volume commodities
- Re-evaluate pricing strategies for high-volume, low-revenue products
- Reduce focus on commodities with sustained low ROI

Market Strategy

- Strengthen relationships in **Netherlands, France, Germany**
- Identify underpenetrated countries with high-value potential

HR & Project Planning

- Align workforce planning with:
    - Peak export months
    - High-value commodity cycles
- Invest in training for specialized commodity handling

Prescriptive Conclusion:

Focus less on how much we export and more on what we export.

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10. Conclusions

This project successfully transforms complex commodity export data into a single, integrated decision-support system for executives, HR, and project managers.

By consolidating sales, revenue, commodity, country, and time-based data into one interactive report, the project moves the organization from static reporting to insight-driven strategy.

1. Clear Performance Visibility

The dashboard provides a transparent view of total revenue, sales volume, number of commodities exported, and transaction trends, enabling leadership to quickly assess overall business health.

2. Revenue Quality over Volume

Analysis reveals that revenue is highly concentrated in a small set of high-value commodities, while many high-volume exports contribute relatively low revenue. This insight shifts focus from "export more" to **"export smarter."**

3. Market & Commodity Focus

Certain European countries consistently generate higher value, highlighting **priority markets** for expansion. Commodity-level insights clearly identify:

- Products to **scale**

- Products to **optimize**
- Products to **review or deprioritize**

4. People & Project Alignment

The report connects sales demand with operational load, allowing HR and project managers to:

- Anticipate peak workload periods
- Plan hiring and training proactively
- Improve resource utilization and delivery efficiency

5. Forward-Looking Decision Making

Trend analysis and forecasting enable leadership to **anticipate future sales volumes and revenue**, supporting better:

- Budgeting
- Capacity planning
- Risk management