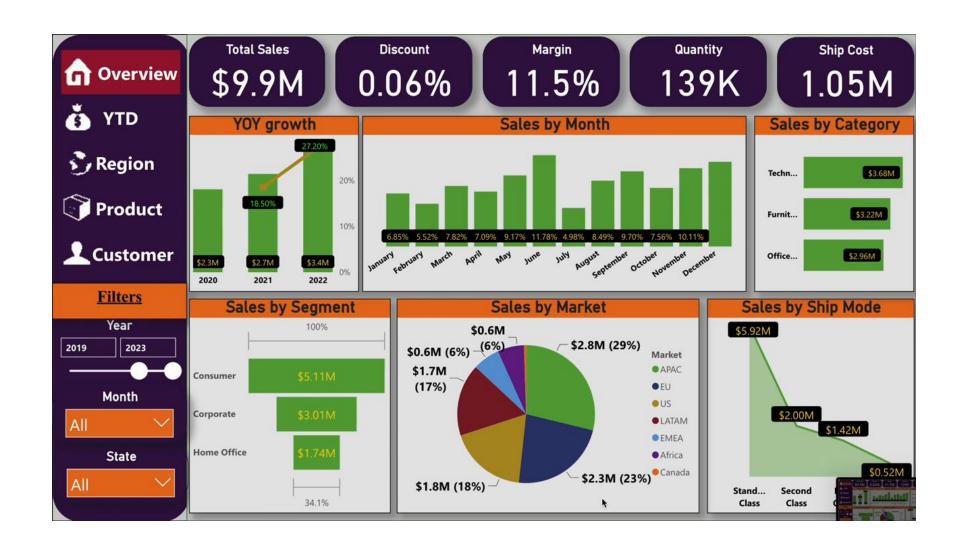
Real-time Sales
Insights: Power BI
Dashboard with
Azure Data Pipeline
Integration

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Real Time Report(Video): <a href="https://www.youtube.com/watch?v=A0VhRYIxJ9A">https://www.youtube.com/watch?v=A0VhRYIxJ9A</a>

### **Project Overview**

- The project aims to develop a real-time Power BI dashboard integrated with an Azure data pipeline to provide stakeholders with live insights into sales performance from an on-premises SQL database.
- This dashboard will empower users to make data-driven decisions and monitor key sales metrics in real-time.

### Power BI Dashboard Requirements

- 1. Visualizations: Create visual representations like line charts, bar graphs, and tables for sales trends, regional comparisons, and product-wise analytics.
- 2. KPIs: Display KPIs such as total sales, year-over-year growth, and top-selling products.
- 3. Filters and Interactivity: Provide filters for region, product category, and date range for interactive analysis
- **4. Real-time Updates**: Ensure real-time data updates with minimal latency for live insights.
- 5. Security Measures: Implement role-based access control and data encryption for dashboard security.

### Project Planning

- Initiation Phase
- Development Phase
- Testing and Quality Assurance
- Challenged Faced
- Lessons Learned and continuous improvement

#### **Initiation Phase**

- Stakeholder Identification
  - Sales Managers
  - Customer service Managers
  - Operations Managers
- Methodology Used
  - Adopted an Agile approach, allowing for iterative development.
  - Utilized ETL processes for Azure data pipeline development.

### Development Phase





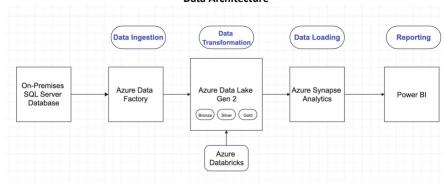
DATA PIPELINE DEVELOPMENT

POWER BI DASHBOARD CREATION

#### Data Pipeline Development

Orchestrated the Azure data pipeline, encompassing data extraction from the on-premises SQL database, transformation, and loading into Azure services.

#### **Data Architecture**



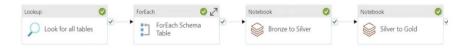
- Step 1: Environment Setup- Created required resources on Azure portal.
- Step 2: Data Ingestion- Tables from SQL database is copied to bronze layer in Data Lake.



Table is copied for each value from Lookup.



Step 3: Data Transformation- Data Transformed in two layers silver and gold.



# Challenges and Solutions

Overcame data latency issues by optimizing data extraction processes and introducing incremental data loading strategies.

**Step 4: Data Loading-** Data is loaded in Serverless SQL pool from gold layer.

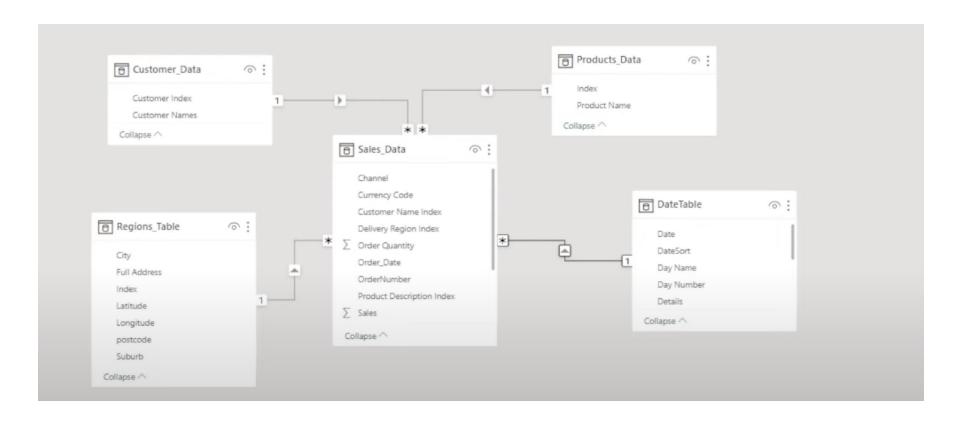


**Step 5: Data Reporting-** Power BI connected with SQL Serverless pool through Azure Synapse Analytics.

Step 6: Security and Governance- Azure Active Directory, Azure Key Vault.

## Power BI Report creation

#### Data Modelling- Star Schema





# Key DAX functions used

- CALCULATE
- RELATED
- ALLEXCEPT
- FILTER
- ALL SELECTED
- SUMMARIZE
- RANKX
- TIME INTELLIGIENCE

## Challenges Faced

Challenge1- To calculate YTD, YTM for **fiscal year** 

Resolution-Exclusively created custom calendar table with DAX to implement time intelligence functions

<b>F</b>	Date 🔻	Month 💌	Month Sort Order	Fiscal Qtr	Year ▼	YTD 🔻	Month Sort Order CY
	24 5 4 20		12	Q-1	2022	rusc	2
	24 February 20		12	Q4	2022	False	2
铝	25 February 202	Feb	12	Q4	2022	False	2
	26 February 20	Feb	12	Q4	2022	False	2
D)	27 February 20	Feb	12	Q4	2022	False	2
	28 February 20	Feb	12	Q4	2022	False	2
	01 March 2023	Mar	1	Q1	2023	True	3
	02 March 2023	Mar	1	Q1	2023	True	3
	03 March 2023	Mar	1	Q1	2023	True	3
	04 March 2023	Mar	1	Q1	2023	True	3
	05 March 2023	Mar	1	Q1	2023	True	3
	06 March 2023	Mar	1	Q1	2023	True	3
	07 March 2023	Mar	1	Q1	2023	True	3
	08 March 2023	Mar	1	Q1	2023	True	3
	09 March 2023	Mar	1	Q1	2023	True	3
	10 March 2023	Mar	1	Q1	2023	True	3
	11 March 2023	Mar	1	Q1	2023	True	3
	12 March 2023	Mar	1	Q1	2023	True	3
	13 March 2023	Mar	1	Q1	2023	True	3
	14 March 2023	Mar	1	Q1	2023	True	3
	15 March 2023	Mar	1	Q1	2023	True	3
	16 March 2023	Mar	1	Q1	2023	True	3
	17 March 2023	Mar	1	Q1	2023	True	3
	18 March 2023	Mar	1	01	2023	True	3

### Challenges Faced

Challenge 2: Faced **many to many relationship issues** between a fact and dimension table.

Resolution: Performed data validation in dimension table to eliminate duplicate records.

Challenge 3: To ensure compliance with company's data governance policies.

Resolution: Utilizing Power BI's security features like **row-level security**, establishing data governance standards

Challenge 3: User's lacked knowledge on **Power BI service** and data preprocessing.

Resolution: Provided comprehensive training sessions, creating user-friendly documentation, and encouraging hands-on workshops to promote user engagement.

### Testing and quality Assurance

**UAT Coordination**: Collaborated with end-users or stakeholders to conduct UAT sessions to validate the dashboard against user requirements and expectations.

**Test Reports**: Generated comprehensive test reports detailing test scenarios, results, issues encountered, and resolutions applied.

**Interactivity Testing:** Tested dashboard interactivity, including filters, slicers, and drill-down functionalities, to ensure smooth user experience.

**Scheduled Refresh:** Leveraged alerts and subscriptions in Power BI not only keeps stakeholders informed but can also help ensure data refresh and system reliability

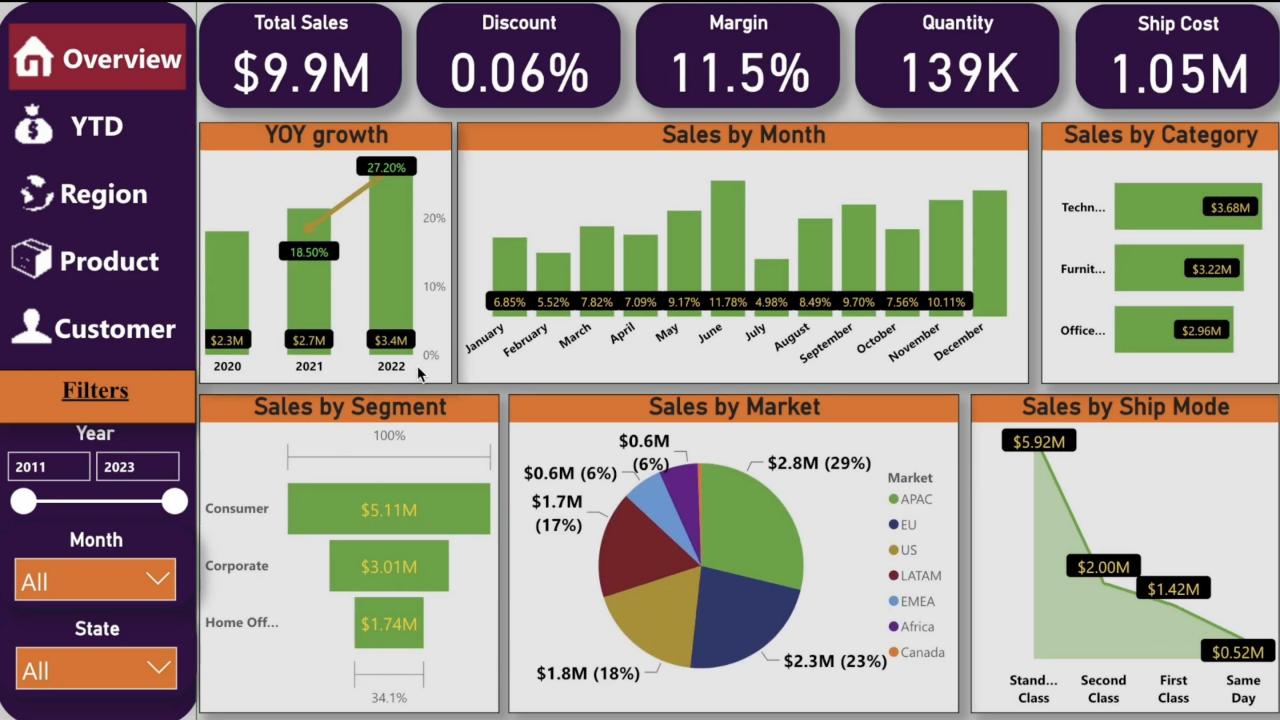
#### Conclusion

#### Lessons Learned

- Explored various data transfer methods, identified bottlenecks, and learned techniques to optimize data transfer speeds, crucial for real-time analytics.
- Embraced the iterative development approach driven by user feedback to iteratively improve the dashboard's relevance and usefulness.

#### Continuous improvement

 Identified the potential of integrating AI-driven predictive analytics to forecast sales trends, optimize inventory, or predict customer behavior, enabling deeper insights and proactive decision-making.







Margin
11.25%!
LY: 11.68% (-3.66%)

\$1.51M! LY: 35,00,000 (-56.76%)

Target

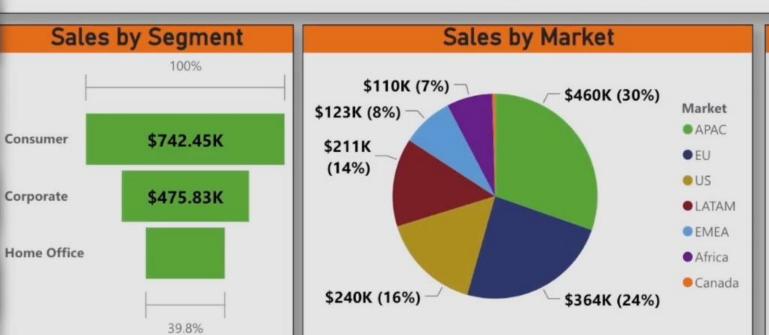
\$3.10M

In December 2023

**Forecast** 



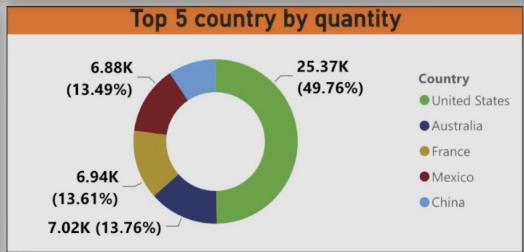












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