

A Project Report
On
“Retail Business Intelligence and Predictive Analytics”
By
Mr. Khan Abu Hashim Mohammad Farooque

Professional Program in
Data Analytics

Submitted to
DVOC INSTITUTE
(Grant Road)



Under Guidance of
Prof. Himanshu Thakur

INDEX

Chapter	Sub Chapter	Contents	Page No.
		Executive Summary	3
1		Introduction	4
2		Project Objectives	5
3		Problem Statements	5
4		Tools and Technology Used	6-7
	4.1	Microsoft Excel	
	4.2	SQL Server	
	4.3	Power BI	
	4.4	Dax	
	4.5	Power Query	
	4.6	Data Modelling and Business Intelligence Concept	
5		Scope of the Project	8
6		Data Description	9-10
7		Data Preparation	11-19
	7.1	Excel-Based Cleaning and Structuring	
	7.2	SQL Server Data Modelling and Validation	
8		Power BI Data Modelling and Dax Implementation	20-22
	8.1	Data Model Design	
	8.2	Custom Column Created	
	8.3	Dax Measure Implementation	
	8.4	Purpose of Dax	
	8.5	Contribution of Dashboard Insights	
9		Dashboard and Insights:	23-38
	9.1	Retail Sale Performance Overview	
	9.2	Customer Behaviour and Segmentation	
	9.3	Product and Inventory Insights	
	9.4	Sales Forecasting and Demand Planning	
10		Business Recommendation	39
11		Conclusion	40
12		Future Scope of the Project	40

Executive Summary

This project delivers a complete Retail Business Intelligence solution using Excel, SQL Server, Power BI, and DAX. The objective was to help a retail business understand sales performance, customer behaviour, product profitability, and future demand. The raw dataset was transformed into a structured Fact-Dimension model and validated through SQL queries before being visualized in Power BI. The dashboards revealed strong revenue performance with peak sales during November, high dependency on female customers, profitable product categories such as Girls Wear and Infant Wear, and demand fluctuations across months and regions.

Predictive analytics using forecasting identified upcoming growth periods and slow-moving seasons, enabling better planning for inventory and staffing. Insights from the project support data-driven business decisions, including targeted marketing, regional assortment planning, margin improvement strategies, and inventory optimization. The project demonstrates the application of analytics techniques to convert raw retail data into actionable business intelligence with high commercial value.

1. Introduction:

The retail industry is highly competitive and continuously influenced by changing customer preferences, seasonal patterns, and product demand. To remain profitable and make informed business decisions, retailers must move beyond manual reporting and adopt data-driven insights. Business Intelligence (BI) enables organizations to monitor sales performance, understand customer behaviour, optimize inventory, and plan future demand using analytics and visualization tools.

This project applies an end-to-end BI approach to analyse a retail sales dataset and uncover business insights. The workflow begins with data cleaning and restructuring in Excel, followed by importing and validating the dataset in SQL Server to build a relational data model. Power BI is then used to design interactive dashboards supported by DAX measures to evaluate performance across sales, customer segments, product categories, store locations, and future forecasts.

Through this project, retail data is transformed into meaningful insights that support strategic decision-making, helping businesses improve profitability, customer retention, stock availability, and demand planning. The aim is not only to visualize the data but also to generate actionable recommendations that contribute to business growth.

2. Project Objectives:

- 1. To analyse overall retail sales performance** by tracking revenue, profit, orders and seasonal business patterns.
- 2. To study customer behaviour and segmentation** based on gender, age group and repeat purchasing trends.
- 3. To identify best-selling and underperforming product categories** for informed pricing, promotion and inventory decisions.
- 4. To evaluate store performance across locations** and determine top-performing and low-performing branches.
- 5. To forecast future sales trends** using predictive analytics to support demand planning and operational preparedness.
- 6. To deliver data-driven recommendations** that help improve business growth, customer retention, and product profitability.

3. Problem Statement:

Retail businesses generate large volumes of transactional, customer, and product data, but this information often remains underutilized due to the absence of structured reporting and analytical insights. Without clear visibility into sales performance, customer behaviour, product profitability, and future demand, decision-making becomes reactive rather than strategic. As a result, retailers struggle to identify growth opportunities, optimize inventory levels, retain customers, and prepare for seasonal demand fluctuations.

This project aims to solve these challenges by transforming raw retail data into actionable Business Intelligence (BI) insights. Through Excel-based data cleaning, SQL Server-based validation and modelling, and Power BI-based dashboards, the objective is to provide a comprehensive analytical solution that supports data-driven decision-making across multiple business areas, including sales performance, customer segmentation, product inventory insights, and sales forecasting.

4. Tools and Technologies Used:

This project was developed using multiple tools and technologies that played specific roles across data preparation, storage, analysis and visualization.

4.1 Microsoft Excel

Used in the initial stage for:

- Cleaning and formatting the raw dataset
- Splitting the single flat file into **Fact and Dimension tables**
- Adding calculated columns such as **Sales, Profit and Region**
- Preparing the cleaned data and exporting it into **CSV format** for SQL import

4.2 SQL Server

Used as the **central database layer** for:

- Importing CSV files using *Flat File Import Wizard*
- Validating data types and data integrity after import
- Establishing relationships between tables (Fact & Dimensions)
- Executing SQL business queries for performance checks and verification

4.3 Power BI

Used as the **visualization and analytics interface** for:

- Designing interactive dashboards with drill-downs and slicers
- Creating pages for **Retail Sales Performance Overview, Customer Behaviour and Segmentation, Product & Inventory Insights, Sales Forecasting and Demand Planning**
- Converting business questions into visuals and KPIs

4.4 DAX (Data Analysis Expressions)

Used inside Power BI to create:

- KPI calculations such as **Total Sales, Total Profit, Total Orders, AOV**
- **Time-intelligence metrics** including **MoM Growth and MoM Trend**
- **Customer loyalty metrics** like **Retention Rate and Repeat Rate**
- **Inventory metrics** such as **Stock Turnover and Stock Gap**

4.5 Power Query (within Power BI)

Used for:

- Minor format adjustments before modelling
- Ensuring data types remain consistent when refreshing from SQL

4.6 Data Modelling & Business Intelligence Concepts

Essential concepts applied during the project include:

- **Star Schema design** (Fact + Dimension structure)
- **ETL Workflow:** Extract → Transform → Load → Visualize
- **Business Intelligence mindset** for converting raw data into actionable insights

Summary:

The combination of Excel, SQL Server, Power BI and DAX enabled smooth end-to-end development from raw data to a complete interactive BI solution used for **sales monitoring, customer analysis, inventory planning and forecasting.**

5. Scope of the Project:

The scope of this project covers the complete end-to-end Business Intelligence lifecycle using retail sales data. The project begins with data extraction from a flat source file and includes cleaning, validation, modelling, visualization, and insight generation. The solution focuses on analysing multiple business dimensions to support strategic and operational decisions in the retail sector.

Specifically, the project scope includes:

- Cleaning and restructuring raw retail transaction data to improve data quality and analytical usability.
- Designing a relational Fact–Dimension model using SQL Server to ensure efficient querying and data consistency.
- Developing Power BI dashboards and KPIs that provide insights into sales, customer behaviour, product performance, store performance, and market regions.
- Implementing DAX calculations to measure business metrics such as profitability, average order value, customer retention, repeat rate, and month-over-month growth.
- Applying forecasting techniques to predict future sales trends and support demand planning.
- Enabling interactive drill-down analysis for stores, states, cities, and regions.

Summary:

The project focuses on transforming raw retail data into actionable insights through Excel, SQL Server, Power BI, and DAX, enabling organizations to make informed decisions related to sales performance, customer retention, product demand, inventory planning, and future sales forecasting.

6. Dataset Description:

The dataset used for this project was sourced from **Kaggle** and represents **retail clothing sales from multiple stores across India**. The raw file was provided in a **single flat Excel sheet** that contained **transaction-level information** combining customer, product, store, and sales details.

Key Characteristics of the Dataset

Aspect	Description
Dataset Source	Kaggle
Data Format	Excel file (.xlsx)
Number of Columns	29
Number of Records	~10,000 sales transactions
Number of Product	300
Number of Customers	2,500 unique customers
Number of Stores	80 store locations
Time Duration	1 year
Data Category	Sales, Customers, Products, Stores

Major Columns in the Dataset

- **Order Details:** Order_ID, Order_Date, Quantity, Price, Unit_Price
- **Product Details:** Product_ID, Product_Category, Clothing_Type
- **Customer Details:** Customer_ID, Customer_Name, Gender, Age, Contact
- **Store Details:** Store_ID, Store_Name, City, State, Postal_Code

Dataset Business Value

The dataset contained high-value retail information related to:

- Customer buying behaviour
- Product category performance
- Store-wise revenue contribution
- Seasonal sales trends

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1	OrderID	OrderDate	ProductID	Quantity	UnitPrice	PaymentMethod	ProductName	ProductCategory	ProductType	OperatingStart	OperatingEnd	StaffCount	StoreOpenDate	ParkingAvailability	SecurityFeatures	
2	ORD05074	26-10-2024	P91	1	566	Net Banking	Printed Cap	Accessories	Caps	0.458333333	0.833333333	7	07-Jan-23	Available	CCTV, Alarm	✓
3	ORD05689	02-05-2024	P67	20	933	UPI	Printed Flip Flops	Footwear	Women Footwear	0.458333333	0.833333333	7	07-Jan-23	Available	CCTV, Alarm	✓
4	ORD08927	16-05-2024	P258	6	923	Net Banking	Chinos	Men	Trousers	0.458333333	0.833333333	7	07-Jan-23	Available	CCTV, Alarm	✓
5	ORD09373	19-10-2024	P294	7	432	UPI	Sports Shorts	Men	Shorts	0.458333333	0.833333333	7	07-Jan-23	Available	CCTV, Alarm	✓
6	ORD00243	14-11-2024	P32	19	557	UPI	Kurta Set	Women	Ethnic Wear	0.416666667	0.875	6	25-Apr-22	Available	CCTV	✓
7	ORD02286	13-11-2024	P20	5	580	Cash	Kids Sandals	Footwear	Kids Footwear	0.416666667	0.875	6	25-Apr-22	Available	CCTV	✓
8	ORD03337	08-08-2024	P30	17	530	Wallet	Boys Shorts	Kids	Boys Wear	0.416666667	0.875	6	25-Apr-22	Available	CCTV	✓
9	ORD03648	03-01-2024	P125	5	943	Cash	Flip Flops	Footwear	Men Footwear	0.416666667	0.875	6	25-Apr-22	Available	CCTV	✓
10	ORD05366	26-04-2024	P133	12	758	Cash	Kurta Set	Women	Ethnic Wear	0.416666667	0.875	6	25-Apr-22	Available	CCTV	✓
11	ORD09041	26-11-2024	P267	16	917	Wallet	Baby Set	Kids	Infant Wear	0.416666667	0.875	6	25-Apr-22	Available	CCTV	✓
12	ORD02703	07-01-2024	P201	19	977	Cash	Boys T-shirt	Kids	Boys Wear	0.416666667	0.875	4	30-Jul-21	Available	Alarm	✓
13	ORD07205	23-02-2024	P277	5	457	Net Banking	Baby Set	Kids	Infant Wear	0.416666667	0.875	4	30-Jul-21	Available	Alarm	✓
14	ORD07827	10-11-2024	P07	20	403	Wallet	Hoodie	Men	Winter Wear	0.416666667	0.875	4	30-Jul-21	Available	Alarm	✓
15	ORD09942	07-08-2024	P82	3	477	Wallet	Ankle Legging	Women	Leggings	0.416666667	0.875	4	30-Jul-21	Available	Alarm	✓
16	ORD02039	26-06-2024	P282	1	488	Net Banking	Kids Sneakers	Footwear	Kids Footwear	0.416666667	0.875	3	12-Apr-21	Available	Alarm	✓
17	ORD03190	14-11-2024	P198	4	394	Debit Card	Women Straight Jeans	Women	Denim	0.416666667	0.875	3	12-Apr-21	Available	Alarm	✓
18	ORD04998	02-12-2024	P298	3	800	Wallet	Anarkali Dress	Women	Ethnic Wear	0.416666667	0.875	3	12-Apr-21	Available	Alarm	✓
19	ORD00384	15-09-2024	P229	9	797	Credit Card	Baby Romper	Kids	Infant Wear	0.458333333	0.833333333	20	23-Jul-20	Not Available	Alarm	✗
20	ORD03755	03-10-2024	P195	9	698	Credit Card	Girls Top	Kids	Girls Wear	0.458333333	0.833333333	20	23-Jul-20	Not Available	Alarm	✗
21	ORD04798	28-10-2024	P148	10	773	UPI	Boys T-shirt	Kids	Boys Wear	0.458333333	0.833333333	20	23-Jul-20	Not Available	Alarm	✗
22	ORD06507	01-03-2024	P75	3	785	Wallet	Leather Wallet	Accessories	Wallets	0.458333333	0.833333333	20	23-Jul-20	Not Available	Alarm	✗
23	ORD00684	12-07-2024	P96	17	295	UPI	Formal Belt	Accessories	Belts	0.375	0.833333333	3	26-Oct-23	Available	CCTV	✓
24	ORD01483	23-09-2024	P258	8	923	UPI	Chinos	Men	Trousers	0.375	0.833333333	3	26-Oct-23	Available	CCTV	✓
25	ORD01830	01-05-2024	P84	7	857	Cash	Sweatshirt	Men	Winter Wear	0.375	0.833333333	3	26-Oct-23	Available	CCTV	✓
26	ORD06036	07-12-2024	P291	18	605	Wallet	Chinos	Men	Trousers	0.375	0.833333333	3	26-Oct-23	Available	CCTV	✓

(Raw Data Downloaded)

However, the dataset needed **cleaning, restructuring, data type correction, and validation** before it could be used for advanced analytics.

7. Data Preparation:

The data preparation stage was performed using Excel and SQL Server before importing into Power BI for dashboard creation. This ensured high data accuracy and a reliable analytical model.

7.1 Excel-Based Cleaning & Structuring

1. Downloaded the raw data from Kaggle and analysed the data structure.
2. Found that the entire dataset was in a single sheet, so planned to convert it into Fact and Dimension tables.
3. Checked Order ID, Customer ID, Product ID and Store ID for missing values or duplicates.
4. Used UNIQUE function to extract unique Customer, Product, and Store IDs into separate worksheets.
5. Used VLOOKUP to fetch the corresponding details for each dimension table.
6. Created four tables in Excel:

- **FactSales**

	A	B	C	D	E	F	G	H	I	J
1	Order_ID	Order_Date	Store_ID	Customer_ID	Product_ID	Quantity	Unit_Price	Amount	Profit	Payment_Method
2	ORD00515	01-01-2024	STORE064	C2484	P26	14	885	12390	3430	Cash
3	ORD00665	01-01-2024	STORE043	C2383	P276	15	605	9075	3480	Debit Card
4	ORD01275	01-01-2024	STORE055	C715	P276	14	605	8470	3248	UPI
5	ORD01305	01-01-2024	STORE065	C965	P218	14	376	5264	1778	Wallet
6	ORD01750	01-01-2024	STORE006	C426	P107	17	609	10353	5100	Wallet
7	ORD01861	01-01-2024	STORE057	C2397	P78	8	817	6536	1912	Credit Card
8	ORD02215	01-01-2024	STORE038	C1898	P49	9	587	5283	792	Wallet
9	ORD02239	01-01-2024	STORE028	C1648	P17	4	692	2768	964	Cash
10	ORD02761	01-01-2024	STORE008	C828	P40	7	711	4977	609	Net Banking
11	ORD03123	01-01-2024	STORE074	C494	P225	13	812	10556	2093	Credit Card
12	ORD03245	01-01-2024	STORE054	C154	P149	16	871	13936	2752	UPI
13	ORD03382	01-01-2024	STORE068	C1928	P194	1	856	856	169	UPI
14	ORD04059	01-01-2024	STORE035	C2535	P202	8	645	5160	1848	Credit Card
15	ORD05310	01-01-2024	STORE080	C2260	P261	18	923	16614	4590	Cash
16	ORD05618	01-01-2024	STORE004	C584	P31	10	427	4270	2480	UPI
17	ORD06096	01-01-2024	STORE066	C486	P184	7	701	4907	595	Cash
18	ORD06900	01-01-2024	STORE025	C1885	P110	1	360	360	140	UPI
19	ORD07400	01-01-2024	STORE049	C1509	P217	5	492	2460	545	Wallet
20	ORD07475	01-01-2024	STORE061	C2561	P151	6	533	3198	564	Cash
21	ORD07824	01-01-2024	STORE027	C847	P277	12	457	5484	1848	UPI
22	ORD07891	01-01-2024	STORE027	C767	P270	13	691	8983	3536	Wallet
23	ORD08107	01-01-2024	STORE006	C1306	P07	5	403	2015	925	Cash
24	ORD08972	01-01-2024	STORE031	C2371	P210	7	606	4242	1190	UPI
25	ORD09477	01-01-2024	STORE072	C1772	P124	13	349	4537	2236	Debit Card
26	ORD09533	01-01-2024	STORE016	C436	P04	13	576	7488	1794	Wallet

FactSales type of data contains: Order_ID, Order_Date, Store_ID, Product_ID, Customer_ID, Quantity, Unit_Price, Amount/Sales, Profit, Payment_MethodColumns.

Purpose: FactSales provides **transaction-level numerical data** used to analyse

- Total sales, Total Profit and Total Orders trends
- Store-wise and region-wise performance
- Product demand and profitability
- Customer purchase behaviour
- Time-based performance (daily / monthly / seasonal)

Relationship Summary:

Primary Key – Order_ID

Foreign Key Customer_ID – DimCustomer Primary Key

Foreign Key Product_ID – DimProduct Primary Key

Foreign Key Store_ID – DimStore Primary Key

FactSales table contains detailed transactional sales data. It stores numeric/measurable values like quantity, sales and profit uses foreign keys to connect with Customer, Product and Store information.

○ DimCustomer

	A	B	C	D	E	F
1	Customer_ID ▾	Customer_Name ▾	Customer_Age ▾	Customer_Gender ▾	Customer_Contact ▾	
2	C101	Kabir Barman	55	Female	9721538494	
3	C102	Amani Devan	43	Other	9771566091	
4	C103	Nakul Kalita	59	Male	9812096422	
5	C104	Nitara Desai	54	Other	9401901085	
6	C105	Oorja Kannan	47	Other	9281292929	
7	C106	Baiju Raval	28	Female	9455689748	
8	C107	Tara Taneja	35	Other	9961237819	
9	C108	Siya Divan	47	Male	9329896829	
10	C109	Hiran Sampath	26	Male	9438307716	
11	C110	Hrishita Master	42	Female	9548168944	
12	C111	Tejas Doshi	33	Other	9476928123	
13	C112	Piya Raj	39	Male	9519521808	
14	C113	Dhanush Balan	54	Other	9448796452	
15	C114	Gokul Zacharia	21	Male	9267993840	
16	C115	Prerak Chakraborty	25	Other	9956287792	
17	C116	Pihu Grover	24	Female	9812709435	
18	C117	Ela Maune	27	Male	9347306905	
19	C118	Neysa Gola	49	Male	9695235851	
20	C119	Himmat Sane	25	Male	9620048994	
21	C120	Tanya Vigate	25	Female	9639514004	
22	C121	Parinaaz Kari	27	Male	9097147351	
23	C122	Vaibhav Hans	23	Male	9760852285	
24	C123	Saira Chanda	38	Male	9163941556	
25	C124	Kavya Ram	24	Other	9412594060	
26	C125	Aavish Dara	34	Male	9580141552	
	< >	DimCustomer	+			

DimCustomer type of data contains: Customer_ID, Customer_Name, Customer_Age, Customer_Gender, Customer_Contact Columns.

Purpose: DimCustomer provides column level attributes that allow analysis of

- Customer Segmentation
- Demographic
- Shopping Behaviour
- Regional purchasing patterns

Relationship Summary:

Primary Key DimCustomer.Customer_ID – Foreign Key

FactSales.Customer_ID

DimCustomer table contains stores personal and demographic details of customer and connects to the FactSales table through Customer_ID. It enables customer-based analytics and insights.

○ DimProduct

	A	B	C	D	E	F	G
1	Product_ID	Product_Name	Product_Category	Product_Type	Unit_Cost	Unit_Price	
2	P01	Mini Backpack	Accessories	Bags	434	608	
3	P02	Fabric Wallet	Accessories	Wallets	461	718	
4	P03	Baseball Cap	Accessories	Caps	392	574	
5	P04	Women Straight Jeans	Women	Denim	438	576	
6	P05	Printed Tee	Men	T-Shirts	491	698	
7	P06	Formal Shirt	Men	Shirts	529	703	
8	P07	Hoodie	Men	Winter Wear	218	403	
9	P08	Straight Fit Jeans	Men	Jeans	616	789	
10	P09	Girls Dress	Kids	Girls Wear	411	658	
11	P10	Crew Socks	Accessories	Socks	408	613	
12	P11	Graphic Tee	Men	T-Shirts	213	503	
13	P12	Cotton Kurti	Women	Kurtis	273	479	
14	P13	Girls Top	Kids	Girls Wear	238	432	
15	P14	Cotton Kurti	Women	Kurtis	236	478	
16	P15	Casual Belt	Accessories	Belts	554	715	
17	P16	Boys Shorts	Kids	Boys Wear	251	499	
18	P17	Formal Shirt	Men	Shirts	451	692	
19	P18	Baby Set	Kids	Infant Wear	225	326	
20	P19	Flip Flops	Footwear	Men Footwear	159	360	
21	P20	Kids Sandals	Footwear	Kids Footwear	350	580	
22	P21	Hoodie	Men	Winter Wear	382	523	
23	P22	Girls Dress	Kids	Girls Wear	457	653	
24	P23	Formal Trousers	Men	Trousers	226	338	
25	P24	Crew Socks	Accessories	Socks	695	925	
26	P25	Baby Set	Kids	Infant Wear	310	432	

DimProduct type of data contains; Product_ID, Product_Name, Product_Category, Product Type, Unit_Cost, Unit_Price Columns

Purpose: DimProduct provides product-level attributes that support analysis of

- Top Selling Categories
- Best Performing Product Type
- Profitability by Product
- Inventory planning and Demand Forecasting

Relationship Summary:

Primary Key DimProduct.Product_ID - Foreign Key FactSales.Product_ID

DimProduct is a dimension table that stores product specifications and classification details, enabling product-based analytics when joined with the FactSales table through Product_ID.

○ DimStore

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	Store_ID	Regl	State	City	Postal_Cd	Store_Address	Selling_Area_Size	Store_Ty	Operating_St	Operating_E	Store_Open_Dt	Parking_Avail	Security_Feat	Staff_Co	Manager	Manager_Name	
1	STORE001	North	Delhi	New Delhi	110015	Store No. 490, Ground Floor, Pearl Tower, Opp. Bus Stand, New Delhi, Delhi - 110015	1300	Rented	10:00:00	19:00:00	18-09-2020	Available	Alarm	8	MGR0030	Aditya Ghosh	
2	STORE002	North	Delhi	New Delhi	110036	Retail Unit 341, Krishna Heights, Opp. Behind Police Station, New Delhi, Delhi - 110036	950	Rented	10:00:00	21:00:00	26-01-2023	Available	None	10	MGR0032	Sanya Aditya Trivedi	
3	STORE003	North	Delhi	New Delhi	110093	Shop 308, Building 66, Lake View Road, Behind Police Station, New Delhi, Delhi - 110095	1400	Rented	10:00:00	21:00:00	05-09-2022	Not Available	CCTV	14	MGR0038	Sai Isha Mehta	
4	STORE004	North	Delhi	New Delhi	110051	Shop 185, Building 71, Ring Road, Near IT Park, New Delhi, Delhi - 110051	1200	Owned	11:00:00	20:00:00	16-11-2022	Available	CCTV	20	MGR0040	Lokesh Malhotra	
5	STORE005	North	Delhi	New Delhi	110025	Green Park Market, Unit 280, 2nd Floor, Ring Road, New Delhi, Delhi - 110025	1100	Owned	10:00:00	19:00:00	15-02-2023	Available	None	13	MGR0044	Nikhil Kapil Kumar	
6	STORE006	North	Delhi	New Delhi	110045	Store No. 121, 3rd Floor, Prime Square, Near IT Park, New Delhi, Delhi - 110042	1300	Rented	09:00:00	20:00:00	01-05-2020	Not Available	Alarm	10	MGR0063	Madhuri R. Sen	
7	STORE007	North	Delhi	New Delhi	110049	Shop No. 132, Sunrise Plaza, Near Near Main Market, New Delhi, Delhi - 110049	1400	Rented	11:00:00	20:00:00	23-07-2020	Not Available	Alarm	20	MGR0071	Priya Bhardwaj	
8	STORE008	North	Delhi	New Delhi	110073	Shop 7, Building 144, MG Road, Opp. Airport Road, New Delhi, Delhi - 110073	1000	Owned	10:00:00	21:00:00	01-02-2023	Not Available	Alarm	9	MGR0134	Rohan Sharma	
9	STORE009	North	Delhi	New Delhi	110079	Shop No. 172, Green Park Market, Near Near Railway Station, New Delhi, Delhi - 110079	1300	Owned	10:00:00	19:00:00	17-08-2021	Not Available	Alarm	17	MGR0165	Gaurav Prasad	
10	STORE010	North	Delhi	New Delhi	110004	Store No. 419, Ground Floor, Sunrise Plaza, Opp. Airport Road, New Delhi, Delhi - 110004	1100	Rented	10:00:00	21:00:00	25-01-2022	Available	Alarm	3	MGR0177	Aniket P. Nair	
11	STORE011	North	Delhi	New Delhi	110097	Shop No. 340, Royal Trade Center, Near Opp. Central Hospital, New Delhi, Delhi - 110097	1300	Rented	11:00:00	20:00:00	09-02-2019	Available	None	3	MGR0181	Sai Kohli	
12	STORE012	West	Gujarat	Ahmedabad	380907	Shop 341, Building 31, Lake View Road, Near Main Market, Ahmedabad, Gujarat - 380907	1300	Rented	10:00:00	21:00:00	27-12-2022	Available	None	9	MGR0011	Pooja R. Bhat	
13	STORE013	West	Gujarat	Ahmedabad	380182	Store 113, Block A, Central Avenue, Ahmedabad, Gujarat - 380182	1300	Rented	10:00:00	21:00:00	18-11-2021	Not Available	Alarm	15	MGR0021	Pranav V. Khan	
14	STORE014	West	Gujarat	Ahmedabad	380287	City Square Mall, Unit 6, Ground Floor, Main Bazaar Road, Ahmedabad, Gujarat - 380287	1200	Owned	10:00:00	21:00:00	30-07-2021	Available	Alarm	4	MGR0035	Rohan Prasad	
15	STORE015	West	Gujarat	Ahmedabad	380677	Store 228, Block D, MG Road, Ahmedabad, Gujarat - 380677	1200	Owned	11:00:00	20:00:00	18-08-2020	Not Available	None	12	MGR0176	Mohit Saxena	
16	STORE016	West	Gujarat	Ahmedabad	380250	Store No. 170, Ground Floor, Riverview Commercial Hub, Near IT Park, Ahmedabad, Gujarat - 3802	1300	Rented	11:00:00	20:00:00	31-10-2022	Not Available	CCTV, Alarm	20	MGR0191	Lokesh Dutta	
17	STORE017	West	Gujarat	Surat	395395	Shop 295, Building 133, Industrial Area Road, Near Metro Station, Surat, Gujarat - 395395	800	Rented	10:00:00	19:00:00	19-06-2020	Available	CCTV	4	MGR0028	Manish Mehta	
18	STORE018	West	Gujarat	Surat	395208	Store No. 447, 2nd Floor, Green Park Market, Near Main Market, Surat, Gujarat - 395208	800	Rented	11:00:00	20:00:00	04-11-2020	Available	CCTV, Alarm	17	MGR0064	Meera S. Joshi	
19	STORE019	West	Gujarat	Surat	395846	Shop 282, Building 51, Industrial Area Road, Near Main Market, Surat, Gujarat - 395846	800	Rented	10:00:00	19:00:00	27-07-2021	Not Available	CCTV	4	MGR0106	Gaurav Saxena	
20	STORE020	West	Gujarat	Surat	395803	Shop 247, Building 26, Ring Road, Opp. Bus Stand, Surat, Gujarat - 395803	1400	Rented	10:00:00	21:00:00	04-09-2020	Available	CCTV	14	MGR0193	Manish Gupta	
21	STORE021	West	Gujarat	Surat	395124	Store 323, Block A, Station Road, Surat, Gujarat - 395124	1100	Rented	11:00:00	20:00:00	13-11-2020	Available	Alarm	14	MGR0194	Sanjay Malhotra	
22	STORE022	West	Gujarat	Vadodra	390561	Retail Unit 178, Galaxy Mall, Opp. Behind City Mall, Vadodra, Gujarat - 390561	1200	Rented	11:00:00	20:00:00	11-06-2020	Not Available	Alarm	3	MGR0013	Dev K. Kumar	
23	STORE023	West	Gujarat	Vadodra	390971	Retail Unit 411, Pearl Tower, Opp. Near Railway Station, Vadodra, Gujarat - 390971	1200	Rented	10:00:00	21:00:00	10-09-2020	Available	CCTV	5	MGR0025	Sameer Naik	
24	STORE024	West	Gujarat	Vadodra	390674	Store 127, Block B, Ring Road, Vadodra, Gujarat - 390674	800	Rented	11:00:00	20:00:00	30-09-2020	Available	Alarm	10	MGR0031	Vikas Shah	
25	STORE025	West	Gujarat	Vadodra	390188	Riverview Commercial Hub, Unit 255, 1st Floor, Central Avenue, Vadodra, Gujarat - 390188	1000	Rented	10:00:00	19:00:00	06-05-2020	Available	CCTV	9	MGR0036	Kritika Thomas	
26	STORE026	West	Gujarat	Vadodra	390977	Retail Unit 330, Green Park Market, Opp. Opp. Central Hospital, Vadodra, Gujarat - 390977	1400	Rented	11:00:00	20:00:00	04-09-2022	Not Available	CCTV	20	MGR0172	Vikram Bose	
27	STORE027	West	Gujarat	Vadodra	390240	Shop 237, Building 61, Main Bazaar Road, Behind Police Station, Vadodra, Gujarat - 390240	1100	Rented	09:00:00	20:00:00	26-05-2023	Not Available	CCTV	5	MGR0189	Kabir Joshi	
28	STORE028	West	Gujarat	Vadodra	390617	Omkar Plaza, Unit 398, 1st Floor, MG Road, Vadodra, Gujarat - 390617	1400	Owned	10:00:00	21:00:00	12-04-2021	Available	Alarm	3	MGR0197	Meera Mehta	
29	STORE029	South	Karnataka	Bengaluru	560995	Sunrise Plaza, Unit 486, 2nd Floor, Station Road, Bengaluru, Karnataka - 560995	1400	Rented	11:00:00	20:00:00	02-09-2021	Available	None	8	MGR0010	Ishaan Rang	
30	STORE030	South	Karnataka	Bengaluru	560195	Shop No. 8, Blue Diamond Complex, Near Near Railway Station, Bengaluru, Karnataka - 560195	1000	Rented	11:00:00	20:00:00	13-10-2020	Available	CCTV	4	MGR0016	Anjali Khanolkar	
31	STORE031	South	Karnataka	Bengaluru	560819	Store No. 313, 1st Floor, Galaxy Mall, Near Railway Station, Bengaluru, Karnataka - 560819	1200	Rented	10:00:00	21:00:00	18-12-2020	Not Available	CCTV, Alarm	11	MGR0122	Neha Ghosh	
32	STORE032	South	Karnataka	Bengaluru	560996	Store 254, Block A, Main Bazaar Road, Bengaluru, Karnataka - 560996	1300	Owned	10:00:00	21:00:00	05-06-2023	Not Available	None	6	MGR0124	Gayatri Yadav	
33	STORE033	South	Karnataka	Bengaluru	560338	Store 460, Block B, Central Avenue, Bengaluru, Karnataka - 560338	1300	Rented	11:00:00	20:00:00	06-04-2023	Available	CCTV, Alarm	17	MGR0160	Sanjay Shreya Malhotra	
34	STORE034	South	Karnataka	Mysuru	570794	Omkar Plaza, Unit 498, 2nd Floor, MG Road, Mysuru, Karnataka - 570794	1400	Owned	10:00:00	19:00:00	29-05-2022	Not Available	CCTV, Alarm	19	MGR0005	Ishaan Sen	
35	STORE035	South	Karnataka	Mysuru	570774	Shop 263, Building 89, Central Avenue, Near Metro Station, Mysuru, Karnataka - 570774	1100	Rented	10:00:00	21:00:00	19-10-2020	Not Available	Alarm	5	MGR0019	Dinesh Khanolkar	
36	STORE036	South	Karnataka	Mysuru	570773	Store 336, Rivin P, Main Bazaar Road, Mysuru, Karnataka - 570773	1300	Owned	11:00:00	20:00:00	03-06-2023	Not Available	CCTV, Alarm	9	MGR0111	Kamini P. Rana	

DimStore type of data contains: Store_ID, Region, State, City, Postal_Code, Store_Address, Selling_Area_Size_sqft, Store_Type, Operating_Starts, Operating_Ends, Store_Open_Date, Parking_Availability, Security_Features, Staff_Count, Manager_ID, Manager_Name columns.

Relationship Summary:

Primary Key DimStore.StoreID – Foreign Key FactSales.Store_ID

Purpose: DimStore provides **store-level attributes** that support analysis of

- Regional sales performance
- Store efficiency
- Demand differences across locations
- Inventory allocation & replenishment planning

DimStore is a dimension table that stores location and classification details of retail stores and connects to the FactSales table through Store_ID to enable store-wise analytics and insights.

7. Added calculated fields such as Profit = Sales – Cost (Quantity × Price).
8. Added Region column manually based on State/City for geographical analysis.
9. Standardized formats: date, contact number, postal code, operating hours.
10. Verified that cleaned records matched raw totals to ensure no data loss.
11. Exported the four cleaned sheets as CSV files for SQL import.

7.2 SQL Server Data Modelling & Validation

1. Imported all four CSV files into SQL Server using the Flat File Import Wizard.
2. Reviewed and set column datatypes during import (Date, Decimal, Varchar, Bigint etc.)

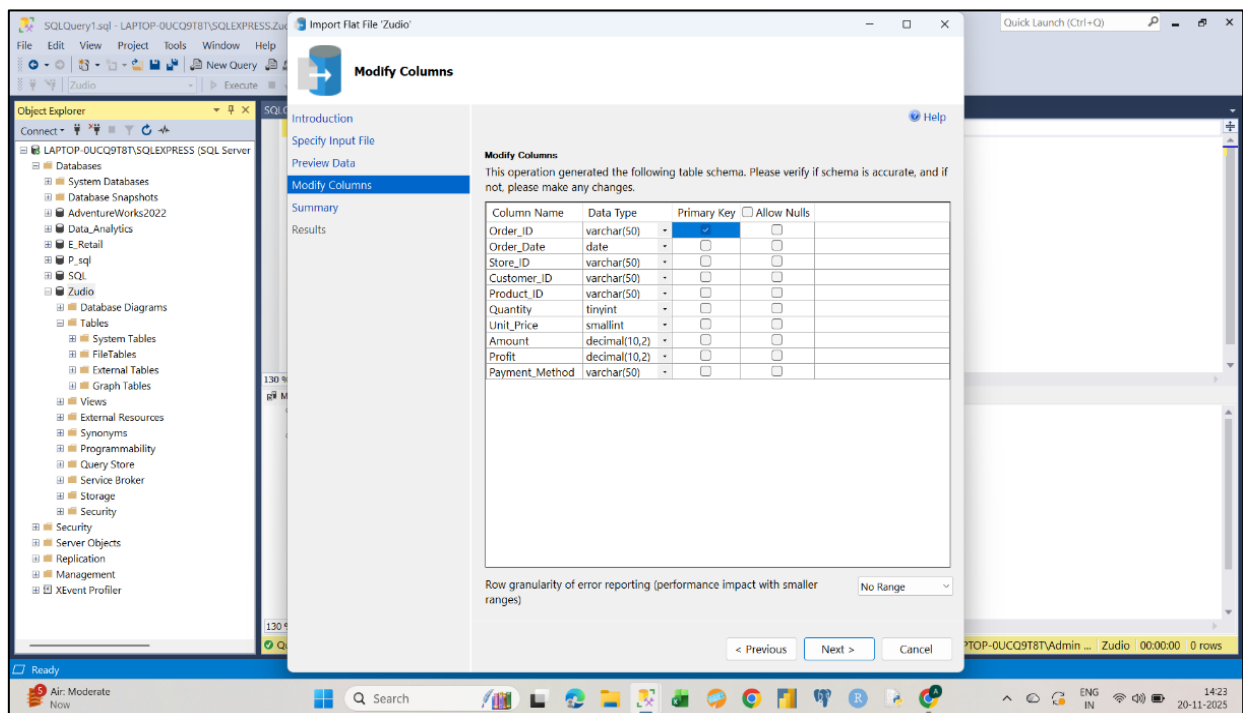
There is total 4 tables imported:

1st– FactSales

2nd– DimCustomer

3rd– DimProduct

4th– DimStore



Flat File Import Wizard Using Database Zudio. (FactSales)

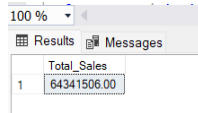
3. Verified tables imported successfully into SQL Server.
4. Checked that inserted row counts matched the original dataset.
5. Validated distinct counts of primary key columns.
6. Ensured no null values were created during imported.
7. Assigned Primary Keys to dimension tables and Foreign Keys in FactSales.

8. Executed data validation queries to confirm accuracy:

Validation Queries of SQL Server

-- Total Sales

Select SUM(Sales) As Total_Sales from Sales;

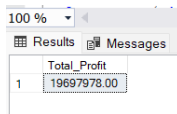


A screenshot of the SQL Server query results window. The window has a title bar with '100 %' and a dropdown arrow. Below the title bar are two tabs: 'Results' and 'Messages'. The 'Results' tab is active, showing a table with one column 'Total_Sales' and one row with the value '64341506.00'.

	Total_Sales
1	64341506.00

-- Total Profit

Select Sum(Profit) As Total_Profit from Sales;

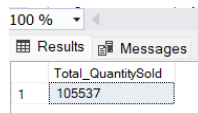


A screenshot of the SQL Server query results window. The window has a title bar with '100 %' and a dropdown arrow. Below the title bar are two tabs: 'Results' and 'Messages'. The 'Results' tab is active, showing a table with one column 'Total_Profit' and one row with the value '19697978.00'.

	Total_Profit
1	19697978.00

-- Total Quantity sold

Select Sum(Quantity) As Total_QuantitySold from Sales;

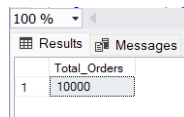


A screenshot of the SQL Server query results window. The window has a title bar with '100 %' and a dropdown arrow. Below the title bar are two tabs: 'Results' and 'Messages'. The 'Results' tab is active, showing a table with one column 'Total_QuantitySold' and one row with the value '105537'.

	Total_QuantitySold
1	105537

-- Total Orders

Select Count(Order_ID) As Total_Orders from Sales;

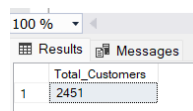


A screenshot of the SQL Server query results window. The window has a title bar with '100 %' and a dropdown arrow. Below the title bar are two tabs: 'Results' and 'Messages'. The 'Results' tab is active, showing a table with one column 'Total_Orders' and one row with the value '10000'.

	Total_Orders
1	10000

-- Total Customers who purchased in this year

Select Count(Distinct Customer_ID) As Total_Customers from Sales;



A screenshot of the SQL Server query results window. The window has a title bar with '100 %' and a dropdown arrow. Below the title bar are two tabs: 'Results' and 'Messages'. The 'Results' tab is active, showing a table with one column 'Total_Customers' and one row with the value '2451'.

	Total_Customers
1	2451

9. Executed SQL queries aligned with business problems to derive key metrics and ensure that the results matched the BI dashboard outputs, maintaining data accuracy and reliability there is some of those queries:

1. Monthly Profit:

```
SELECT  
YEAR(Order_Date) AS Year, MONTH(Order_Date) AS Month,  
SUM(Profit) AS Monthly_Profit  
FROM Sales  
GROUP BY  
YEAR(Order_Date), MONTH(Order_Date)  
ORDER BY  
YEAR(Order_Date), MONTH(Order_Date);
```

2. City and State wise highest revenue

-- State revenue

```
SELECT s.State, SUM(f.Sales) AS State_Sales  
FROM Sales f JOIN Store s ON f.Store_ID = s.Store_ID  
GROUP BY s.State  
ORDER BY State_Sales DESC;
```

-- City revenue

```
SELECT s.State, s.City, SUM(f.Sales) AS City_Sales  
FROM Sales f JOIN Store s ON f.Store_ID = s.Store_ID  
GROUP BY s.State, s.City  
ORDER BY City_Sales DESC;
```

3. Quarterly Sales and No of Orders

```
SELECT  
YEAR(Order_Date) AS Sales_Year, DATEPART(QUARTER,  
Order_Date) AS Quarter_Number,  
SUM(Sales) AS Total_Sales, COUNT(DISTINCT Order_ID) AS  
Total_Orders  
FROM Sales  
GROUP BY  
YEAR(Order_Date), DATEPART(QUARTER, Order_Date)  
ORDER BY  
YEAR(Order_Date), DATEPART(QUARTER, Order_Date);
```

4. One Time and Repeated Customer

```
SELECT  
CASE WHEN Orders = 1 THEN 'One-time' ELSE 'Repeat' END AS  
Buyer_Type,  
COUNT(*) AS Customer_Count  
FROM (  
SELECT Customer_ID, COUNT(DISTINCT Order_ID) AS Orders  
FROM Sales  
GROUP BY Customer_ID  
) t  
GROUP BY CASE WHEN Orders = 1 THEN 'One-time' ELSE 'Repeat'  
END;
```

Summary:

The dataset was transformed from a raw flat file into a clean and structured Fact–Dimension model using Excel and SQL Server. This ensured accurate KPIs, strong data integrity, and optimal performance for Power BI dashboards.

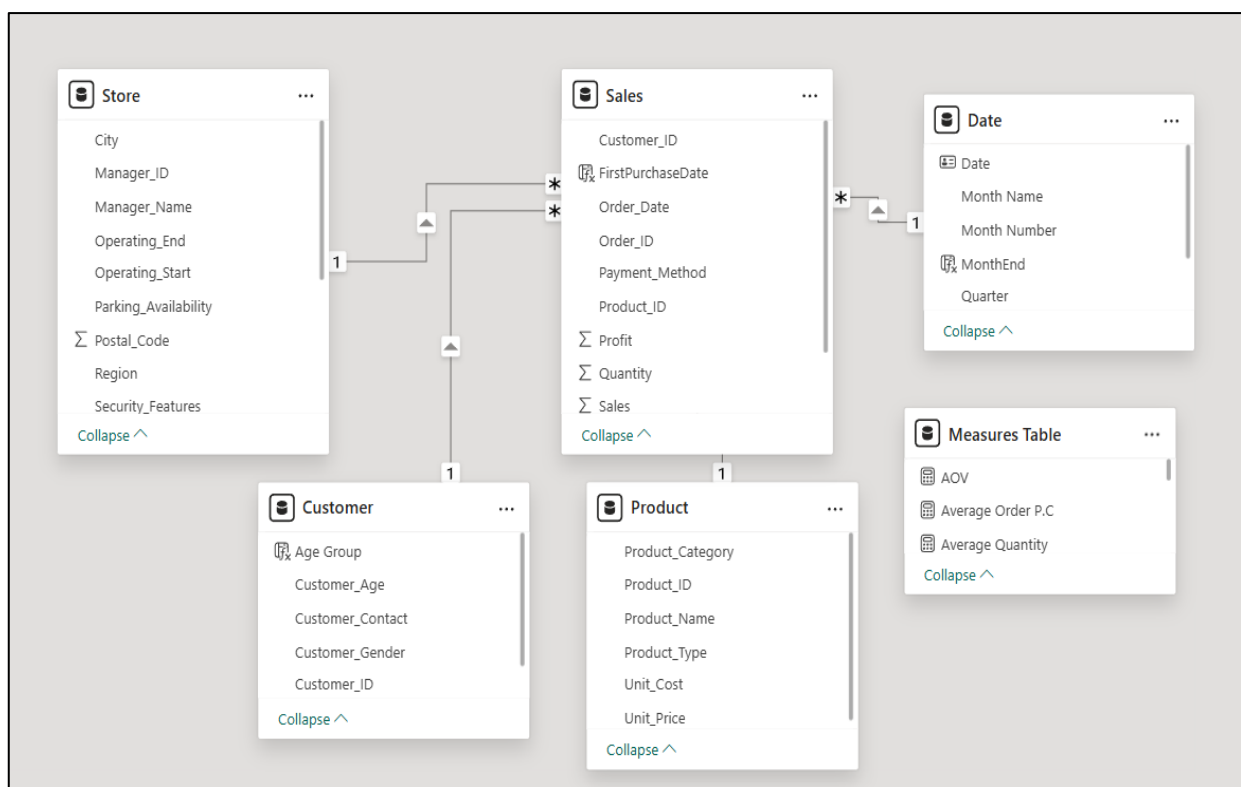
8. Power BI – Data Modelling & DAX Implementation:

In Power BI, a structured and performance-focused data model was designed using a **Star Schema** approach. This enabled fast calculations, easier relationship management, and optimized dashboard performance. The model consisted of one central **Fact table** supported by multiple **Dimension tables**, allowing clear separation between transactional and descriptive data.

8.1 Data Model Design

The final schema included:

- **FactSales** – contains all transactional sales records such as Order ID, Sales, Quantity, Customer ID, Product ID and Store ID.
- **DimCustomer** – contains demographic and profile details of each customer.
- **DimProduct** – includes product names, types, categories and pricing information.
- **DimStore** – stores location-related information such as Store ID, City, State and Address.
- **DimDate** – a custom Date table created to support time-intelligence analysis.
- **Measures** – Contains all the calculated measures



8.2 Custom Columns Created

To enable deeper customer behaviour analytics and time-based calculations, the following custom columns were created:

- **Age Group** – used to categorize customers into age brackets for demographic insights.
- **First Purchase Date** – identifies a customer's initial transaction, helping calculate loyalty measures such as retention and repeat purchases.
- **Date Table Enhancements (Month Name, Month Number, Month End, Quarter, Year, Year-Month)** – used to support monthly comparison, seasonality analysis and forecasting.

8.3 DAX Measures Implemented

A total of 24 DAX measures and calculated columns were developed to support KPI cards as well as dynamic visuals such as trend charts, customer segmentation charts, inventory charts and forecasting visuals. These included:

- **Sales & Profit KPIs:** Total Sales, Total Profit, Total Orders, Total Quantity.
- **Customer Behaviour Metrics:** Total Customer, Average Sale per Customer, Average Order per Customer, One-Time Customer, Repeat Customer, Repeat Rate %, Retention Rate %, Returning Customer
- **Time-Series Measures:** Previous Month Sales, Month-over-Month (MoM) Growth %, MoM Trend
- **Inventory Metrics:** Average Quantity per Store, 3-Month Avg Qty per Store, Stock Gap, Stock Turnover, Top Replenishment Store
- **General KPI:** Average Order Value (AOV)

8.4 Purpose of DAX

DAX was essential for:

- Calculating advanced KPIs that did not exist in the dataset
- Building time-intelligence logic for MoM comparison, seasonality checks and forecasting
- Measuring customer loyalty and purchasing behaviour
- Identifying store-level inventory pressure and replenishment requirements

8.5 Contribution to Dashboard Insights

These measures directly powered the four dashboards:

- **Sales Performance Dashboard** – highlighted revenue, monthly trend, profitability, store and region contribution.
- **Customer Behaviour Dashboard** – identified repeat vs one-time customers, retention trends and gender / age-wise buying behaviour.
- **Product & Inventory Dashboard** – identified trending and profitable product categories along with stock turnover and replenishment alerts.
- **Forecast Dashboard** – projected future sales trends to support demand planning.

Summary:

Designing an optimized data model combined with well-structured DAX measures enabled accurate KPI tracking, fast visual performance and actionable business intelligence. This stage of the project transformed cleaned SQL data into **insight-driven dashboards that support real business decision-making.**

9. Dashboard and Insights:

9,1 Retail Sales Performance Dashboard



Why we used KPIs:

KPI cards were used because they instantly highlight the most important business numbers without needing to analyse charts. They allow management to quickly monitor the company's performance at a high level before exploring detailed visuals. KPI cards make it easy to compare performance over time and identify whether the business is improving or declining.

KPIs Used:



- Total Sales

Why this KPI?

To measure the total revenue generated by the business.

What it means?

Shows the overall money earned from all customer purchases during the selected period.

- **Total Profit**

Why this KPI?

To understand how much money the business actually gained after product cost.

What it means?

Indicates business profitability and helps evaluate financial performance.

- **Total Orders**

Why this KPI?

To track how many orders were placed by customers.

What it means?

Reflects customer demand and the total number of successful transactions.

- **Average Order Value (AOV)**

Why this KPI?

To measure the average amount spent by a customer per order.

What it means?

Helps identify customer spending behaviour and whether the business is able to upsell or cross-sell effectively.

- **Month-over-Month (MoM)**

Why this KPI?

To compare the business performance between the current month and previous month.

What it means?

Shows whether the business is **growing or declining** on a monthly basis

- **Growth % and Trend**

Why this KPI?

To provide a quick visual signal about the business momentum without reading numbers.

What it means?

- **Up Arrow** → performance improved compared to last month
- **Down Arrow** → performance decreased / seasonal dip

What information the KPI cards provide

The KPI cards provide a **quick summary of the current business performance**, including:

- Total revenue generated (Total Sales)
- Total profit earned (Total Profit)
- Number of customer orders placed (Total Orders)
- Average customer spending per order (AOV)
- Monthly performance comparison (MoM Growth % and MoM Trend)

Together, these KPIs give an **instant snapshot of business health**, showing whether sales are high, customers are actively purchasing, and whether performance is improving or declining compared to the previous month.

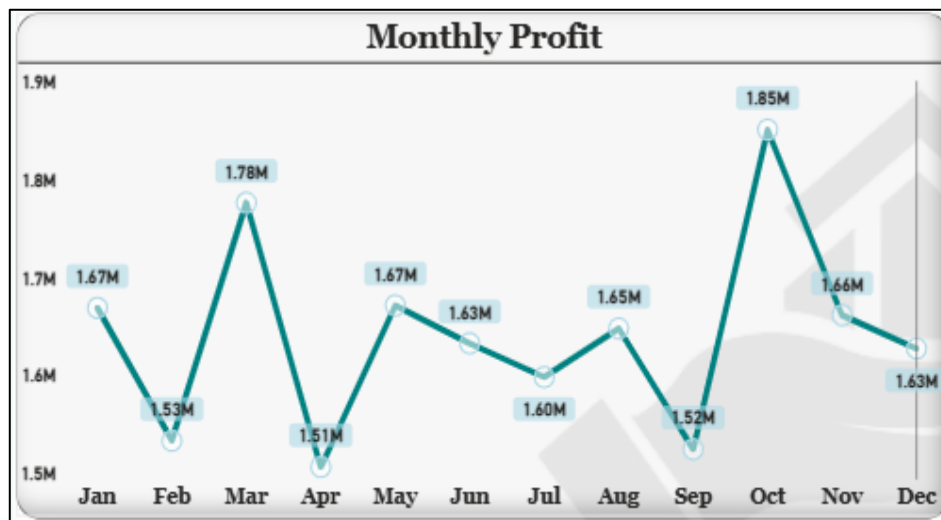
KPI cards give a quick and clear summary of business performance by displaying the most important metrics such as sales, profit, orders, customer spending and monthly growth, enabling fast decision-making without going deep into charts.

Why we used this visual:

A **line chart** was used because it is the best chart to show **profit changes over time**. It allows users to easily compare month-to-month performance, identify seasonal patterns, and detect months with unusually high or low profit. The line trend clearly shows the direction of business performance rather than just comparing numbers.

Visuals Used:

- Monthly Profit Trend (Line Chart)



What information this visual provides

The Monthly Profit chart shows:

- How profit fluctuated across all 12 months
- The **highest profit month (₹1.85M in October)**
- The **lowest profit month (₹1.51M in April)**
- Months where profit increased or dropped sharply
- Seasonal behaviour and demand cycles in the business

This chart helps the management understand **when business performs the best, when it slows down, and how monthly trends impact total annual profitability.**

The Monthly Profit line chart visualizes how profit changed each month, helping identify seasonal peaks, low sales periods and business performance trends over the year.

Why we used this visual:

A **combo chart** was chosen because it lets us compare **two related metrics in one visual** — Total Sales (column) and Total Orders (line). This helps identify whether higher sales are happening due to more orders or due to higher average order value. A dual-axis is ideal to compare magnitude differences between currency values and order counts.

- Quarterly Sales and No of Orders Trend (Line + Column Chart)



What information this visual provides

This chart shows:

- Quarter-wise performance of the business
- Sales and number of orders together**, revealing how they influence each other
- Highest-performing quarter (**Q4 with ₹16.6M sales & 2,537 orders**)
- Lowest-performing quarter (**Q3 with ₹15.7M sales & 2,475 orders**)
- Seasonal demand trends and quarterly growth patterns

This visual helps management quickly understand **which quarter drives the most revenue and orders, and whether the business grows or slows through the year.**

The combo chart compares quarterly sales and orders in one view, helping understand how fluctuations in order volume impact revenue across quarters.

Why we used this visual:

A **horizontal bar chart** was used because it is ideal for displaying **long category names like city names** while maintaining readability. It helps compare and rank sales performance across multiple cities in a clean and easy-to-read format.

- City-wise Sales Chart (Clustered Bar Chart)



What information this visual provides

This chart shows:

- **City-wise sales contribution to total revenue**
- The **top performing city (New Delhi – ₹9.1M)**
- Other high-performing cities such as **Vadodara, Surat, and Ahmedabad**
- Cities with relatively lower sales such as **Pune, Nagpur, Mysuru**
- Geographic demand patterns within states

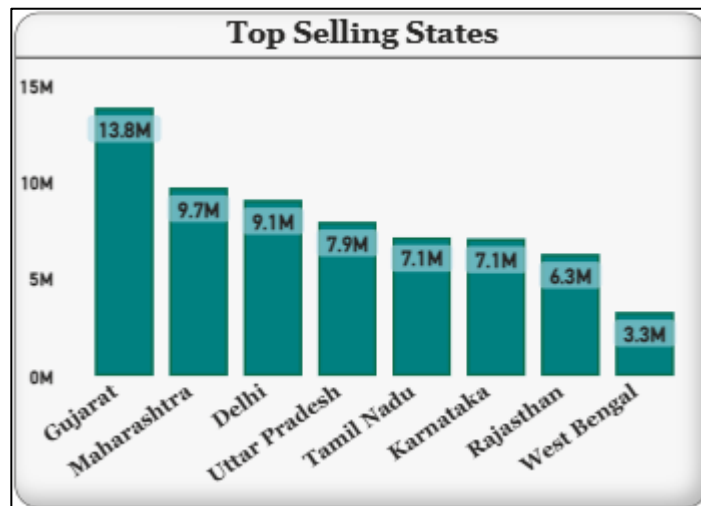
This visualization helps management **identify strong urban markets and understand where expansion, inventory allocation, promotions, or customer targeting strategies can drive improvement.**

The horizontal bar chart ranks cities by revenue, highlighting top-performing locations and cities with potential for growth.

Why we used this visual:

A **bar chart** was used because it is the best visual for **ranking and comparing sales across different states**. Bars make it easy to quickly identify which regions contribute more or less to total revenue, supporting geographical performance analysis.

- State-wise Sales Chart (Clustered Column Chart)



What information this visual provides

This chart shows:

- **State-wise contribution to total revenue**
- The **highest selling state (Gujarat – ₹13.8M)**
- The **lowest selling state (West Bengal – ₹3.3M)**
- Insights into regional demand patterns
- Potential opportunities to expand in low-performing states

This visual helps management understand **where the brand is performing strongly and where additional marketing, supply or expansion strategies may be required**.

The bar chart highlights revenue contribution by each state, helping identify strong markets and regions with growth opportunities.

Why we used these visuals:

Horizontal bar charts were used because they are ideal for **ranking and comparing performance across store locations**. Displaying the **top and bottom performers separately** gives quick clarity on where the business is doing extremely well and where performance is weak, enabling targeted decision-making.

- Store-wise Sales Contribution (Bar Charts)



What information these visuals provide

Together, these charts show:

- The **best performing stores** in terms of sales revenue
→ e.g., STORE006 with ₹1.11M sales – the highest
- The **lowest performing stores**
→ e.g., STORE029 with ₹0.59M – the lowest
- Performance gaps between stores
- Stores that need **growth intervention, stock planning, marketing, or customer acquisition**
- Stores that are performing well and could be used as **benchmark or model stores**

This helps management take **store-level strategic actions** instead of looking only at total sales.

The Top & Bottom 5 store charts rank stores by revenue, helping identify high-performing stores to benchmark and low-performing stores that require attention.

Why we used this visual:

A **quarter slicer** was used to allow users to **filter the entire dashboard by Q1, Q2, Q3, or Q4**. Instead of scrolling or searching, decision-makers can instantly switch between quarters and analyse sales and profit trends for any selected time period.

- Quarterly Slicer (Q1/Q2/Q3/Q4)



What information this slicer provides

The slicer enables:

- Quick comparison of quarterly performance
- Seasonal trend analysis (festive / off-season impact)
- Understanding which quarter contributed most to revenue and orders
- Tracking year-on-year or quarter-wise growth patterns

This slicer improves dashboard usability and supports **time-based insight discovery with just one click**.

The quarter slicer enables quick time-based filtering to compare performance across Q1, Q2, Q3 and Q4.

Why we used this visual:

A **region slicer** was used to allow users to **filter dashboard insights based on geographical regions** — South, West, North, and East. It helps understand performance differences across regions instantly, without manually searching or scrolling.

- Region Slicer (North / South / East / West)



What information this slicer provides

The slicer enables:

- Region-wise analysis of sales, profit, orders and trends
- Comparison of customer demand across different parts of the country
- Identification of **high-performing regions (e.g., West)** and **low-performing regions**
- Support for region-focused strategy such as stock allocation, marketing campaigns, and store expansion

This slicer enhances usability by helping management **analyse business performance region-wise with one click.**

The region slicer enables one-click filtering of the dashboard to compare sales and profit performance across South, West, North and East regions.

Why I used this visual:

The left-side **navigation pane** was added to provide an easy and intuitive way for users to move between multiple dashboard pages within the Power BI report. It improves user experience by allowing quick switching between pages without scrolling or searching. This ensures smooth exploration of all dashboards in a structured and interactive way.



What information or functionality it provides

The navigation panel includes:

- Page Buttons:
 - Home Page
 - Retail Sales Performance
 - Customer Behaviour & Segmentation
 - Product & Inventory Insights
 - Sales Forecasting & Demand Planning
- Month Slicer: Allows filtering dashboards by Jan, Feb or Select All.
- Back Button: Quickly returns to the previous view.

This panel ensures users can quickly navigate, apply filters, and explore all insights in an orderly, consistent, and user-friendly manner.

The navigation pane provides a structured way to move across all dashboard pages and apply month-level filters, enhancing usability and interaction.

Key Insights:

- Total revenue reached ₹64.34M with ₹19.70M profit across 10K orders
- MoM growth = +9%, although recent month shows a slight decline (seasonal demand impact)
- Highest profit month: October (₹1.85M)
- Lowest profit month: April (₹1.51M)
- Best performing stores: STORE006, STORE017, STORE004, STORE030, STORE038
- Least performing stores: STORE029, STORE048, STORE025, STORE013, STORE051
- Top city contribution: New Delhi (₹9.1M), followed by Vadodara & Surat
- Top state contribution: Gujarat (₹13.8M), followed by Maharashtra & Delhi

9.2 Customer Behaviour & Segmentation Dashboard



KPIs Used:

- Total Customers
- Average Sales Per Customer
- Average Order Per Customer
- Repeat Customer %
- Retention Rate %

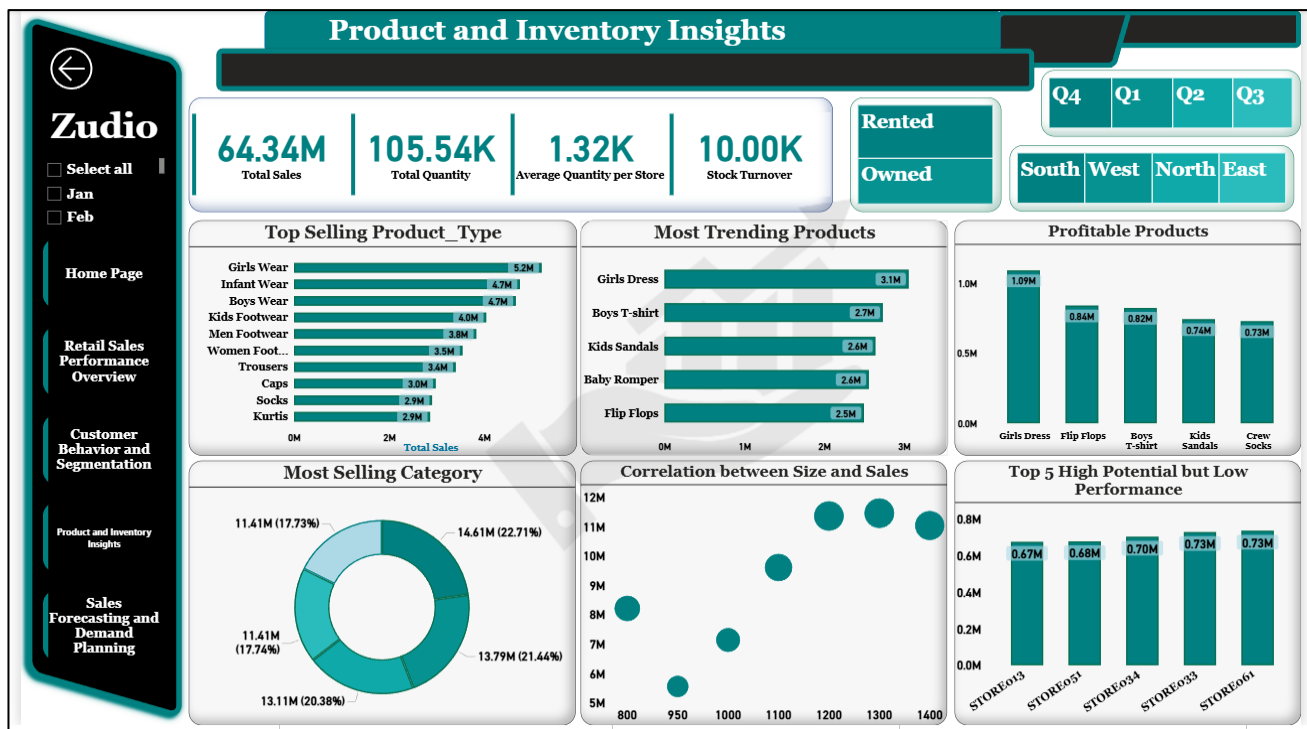
Visuals Used:

- Gender-wise Monthly Sales (Line Chart)
- Gender-wise Age Group Segmentation (Stacked Bar Chart)
- Gender-wise Region Customer Volume (Stacked Column Chart)
- Gender-wise Repeat vs One-time Customers Matrix (Stacked Column Chart)
- Gender-wise Sales by Payment_Method (Stacked Bar Chart)
- Gender-wise High Value Customer (Stacked Bar Chart)
- Payment_Method Slicer (UPI, NET BANKING, WALLET, Debit Card, Credit Card, Cash)
- Gender Slicer (Other, Male, Female)
- Product_Category Slicer (Male, Female, Kids, Accessories, Footwear)

Key Insights:

- Total customers served: **2,451**
- **Repeat customer count increased monthly**, indicating strong loyalty
- **Retention rate fluctuates**, influenced by seasonal purchase behaviour
- **20–40 age group dominates purchases**, showing youth-driven demand
- **Top customer locations:** New Delhi, Surat, Vadodara
- Male–female contribution is nearly equal

9.3 Product & Inventory Insights Dashboard



KPIs Used:

- Total Sales
- Total Quantity
- Average Quantity Per Store
- Stock Turnover

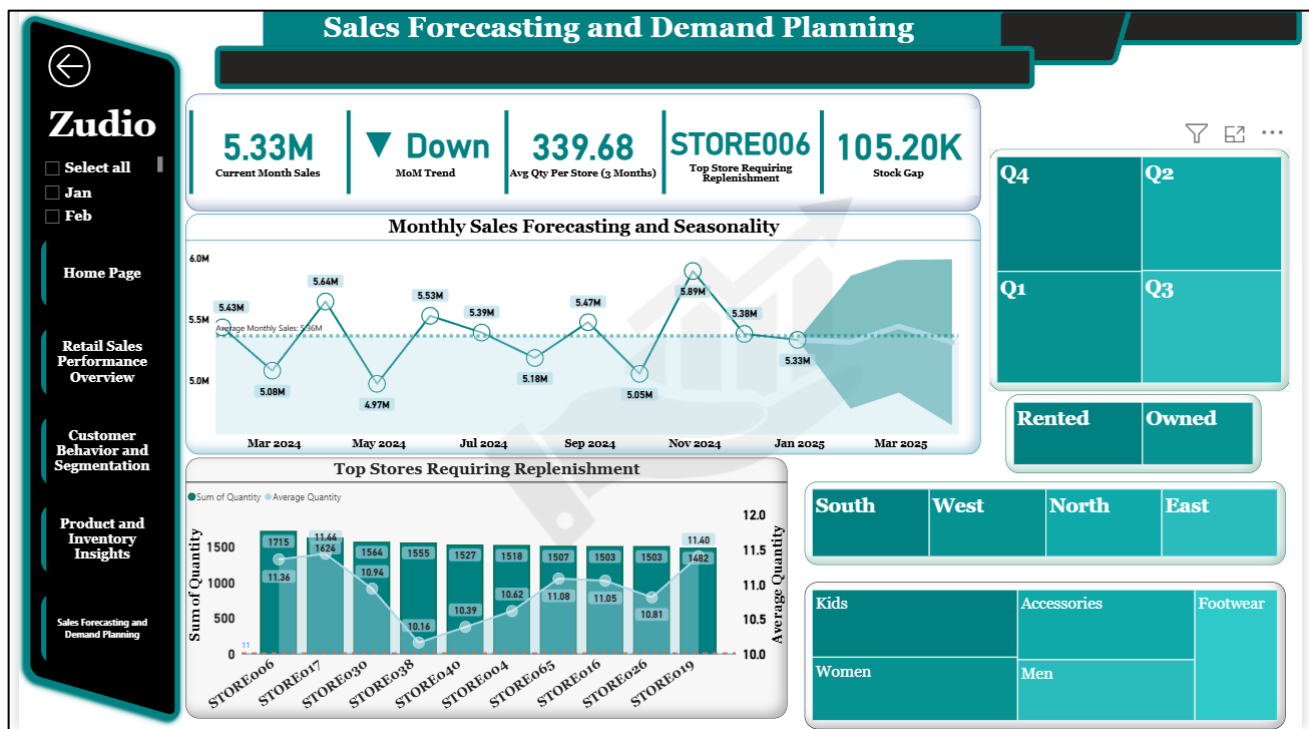
Visuals Used:

- Category-wise Sales (Donus Chart)
- Top Selling Product Type (Clustered Bar Chart)
- Trending Products (Clustered Bar Chart)
- Profitable Product (Clustered Column Chart)
- Correlation Between Size and Sales (Scatter Plot Chart)
- Top 5 High Potential but Low Performance Stores (Clustered Column Chart)

Key Insights:

- **Top Selling Product Type:** Girls Wear, Infant Wear, Boys Wear, Kids Footwear & Men Footwear
- **Top Revenue Category:** Kids Wear (22.71%)
- **Most trending products:** Girls Dress, Boys T-shirt, Kids Sandals, Baby Romper & Flip Flops
- **Most profitable products:** Girls Dress, Flip Flops, Boys T-shirt, Kids Sandals & Crew Socks
- **High-demand but low sales stores:** STORE013, STORE051, STORE034, STORE033 & STORE061 → require stock audit
- **Size availability directly influences sales** (high correlation)
- **Store Type Slicer (Rented/Owned)**
- **Quarter Slicer (Q1/Q2/Q3/Q4)**
- **Region Slicer (East/West/South/North)**

9.4 Sales Forecasting & Demand Planning Dashboard



KPIs Used:

- Current Month Sales
- MoM Trend
- Average Qty Per Store (3 Months)
- Top Store Require Replenishment
- Stock Gap

Visuals Used:

- Monthly Sales and Seasonality Forecasting (Line Chart)
- Top Store Required Replenishment (Line + Column Chart)
- Region-wise Forecast View
- Store_Type-wise Demand Projection
- Category-wise Demand Projection
- Quarterly Demand

Key Insights:

- Forecast projects sales increase in next quarter
- Peak demand expected during October–November and Feb–March
- STORE006 needs immediate replenishment due to high demand
- West & North regions expected to drive upcoming growth
- Kids Wear, Women Wear and Accessories expected to lead revenue

11. Business Recommendations:

Based on the insights obtained from the Sales, Customer, Product and Forecast dashboards, the following actions are recommended to improve business performance and growth:

- Prioritize inventory replenishment for high-demand stores and fast-moving categories such as Girls Wear, Infant Wear, Boys Wear, Kids Footwear and Men Footwear.
- Investigate low-performing stores (STORE029, STORE048, STORE025, STORE013 and STORE051) to identify issues related to stock shortage, product availability, store merchandising and regional demand.
- Strengthen customer retention by launching targeted promotional offers via SMS and email to convert one-time buyers into repeat customers.
- Focus marketing activities on the **20–40 age group**, which has the highest purchasing frequency and revenue contribution.
- Encourage preferred payment modes such as UPI and Wallet by offering cashback rewards to improve customer convenience and satisfaction.
- Plan inventory and manpower ahead of **seasonal peak months (October–November and Feb–March)** to avoid stock-outs and missed sales opportunities.
- Increase availability of trending and highly profitable products in key stores, particularly in all required sizes, to maximize revenue per customer.
- Replace equal stock distribution with **performance-based stock allocation**, where high-demand stores receive higher inventory priority.

Summary:

Adopting smarter inventory planning, focused marketing and structured customer retention efforts will support long-term sales growth and profitability.

12. Conclusion:

This project successfully transformed raw retail sales data into a complete **Business Intelligence solution** using Excel, SQL Server, Power BI and DAX. Through a structured data pipeline and optimized star schema modelling, the solution revealed meaningful insights into revenue performance, customer purchasing behaviour, product demand and future sales trends.

The interactive dashboards enable business users to:

- Monitor sales and profitability in real time
- Identify loyal and at-risk customer segments
- Understand top-performing and low-performing stores and products
- Allocate inventory based on store demand and product velocity
- Plan future sales cycles using forecasting patterns

Overall, the project demonstrates how Power BI and data analytics can significantly improve decision-making in the retail industry by reducing inefficiencies and enabling evidence-driven planning.

13. Future Scope of the Project:

The project can be further enhanced with the following improvements:

- Automate the BI solution by enabling scheduled refresh through **Power BI Gateway** for real-time data monitoring.
- Integrate advanced forecasting algorithms (ARIMA, Prophet or Regression models) for more accurate demand prediction.
- Introduce **Customer Lifetime Value (CLV)** modelling to identify high-value customers and tailor loyalty strategies.
- Analyse the impact of discounts, offers and marketing promotions to calculate the improvement in revenue and customer retention.
- Link store sales with manpower availability to optimize staff productivity during peak seasons.
- Implement **RFM segmentation** (Recency, Frequency, Monetary) for targeted customer marketing.