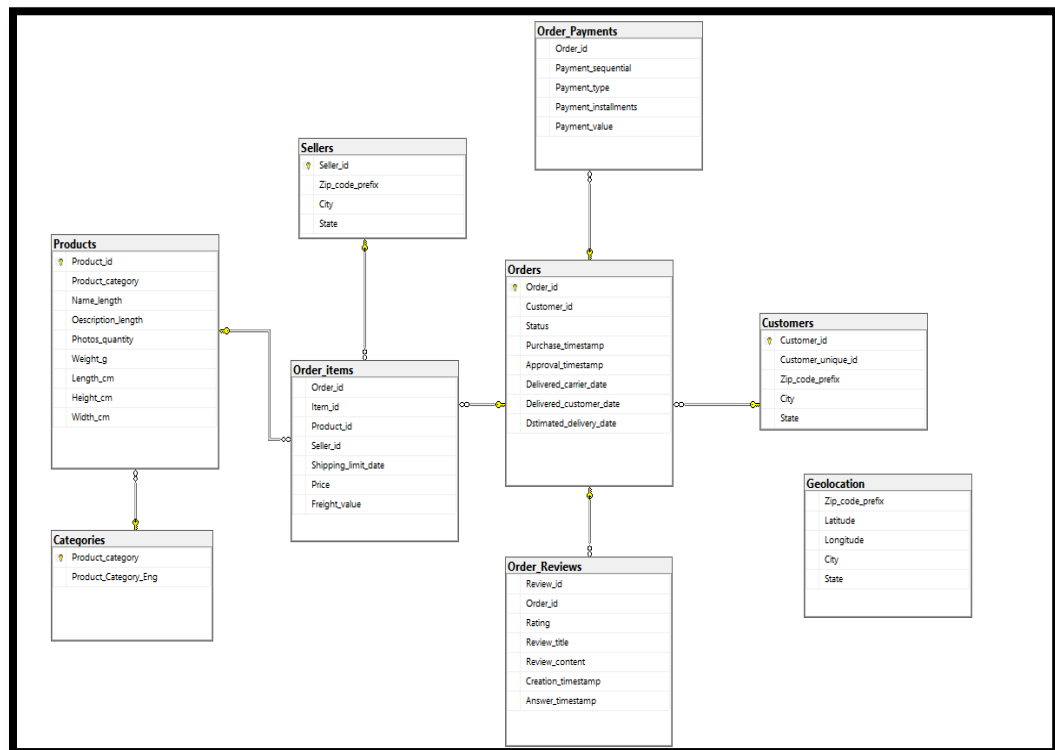


Business Analyst Task

- This project establishes a data schema containing all the data in the set following the given structure of the publisher. The original data stored in separate csv files have been imported to separate tables in a schema with proper data type assigned to all variables. The project achieves the following points:
 - ✓ Creating a schema to store data tables replicating the data structure given by the publisher
 - ✓ Creating tables following a logical order so that all the connections among the tables are properly preserved
 - ✓ Importing the data simultaneously with the table creations and adjusting the data when necessary
 - ✓ Assigning suitable data types to the given data.
 - ✓ Checking the result by using the schema information table
 - ✓ Constructing the entity relationship diagram for comparing the structure of the imported and the original databased




- The data is now ready to be extracted and manipulated using SQL queries. The next steps are exploratory analysis and data visualization so that more insight.

1. Data Analysis Exercise:

You are provided with a dataset containing. Analyze the data and provide insights on:





- Monthly sales trends.
- Identify any seasonality patterns.
- Top-selling products and categories.



E - Commerce Store

Insights

NAVIGATE



- Ecommerce makes more money not by selling a few products a lot, but by selling a lot of different products.
- Overall revenue had a consistent rise throughout the years but peaked in 2018(especially during second quarter, week 18).
- Also peaked in 2017(especially during the Black Friday period, last 2 weeks in November).

✓ Based on the number of orders made

- Bed Bath Table is the most popular product category based on the number of orders made.

TOP 5

1. bed bath	2. health beauty	3. sports	4. computers	5. watch gifts
-------------	------------------	-----------	--------------	----------------


✓ Based on total sales

TOP 5

1. health	2. watches	3. bed	4. sports	5. computers
-----------	------------	--------	-----------	--------------

✓ While the bed_bath_table category had the highest no of products purchased, it didn't translate into a better revenue. This means customers purchased more bed_bath_table items but spent more money on average on expensive items like health beauty.

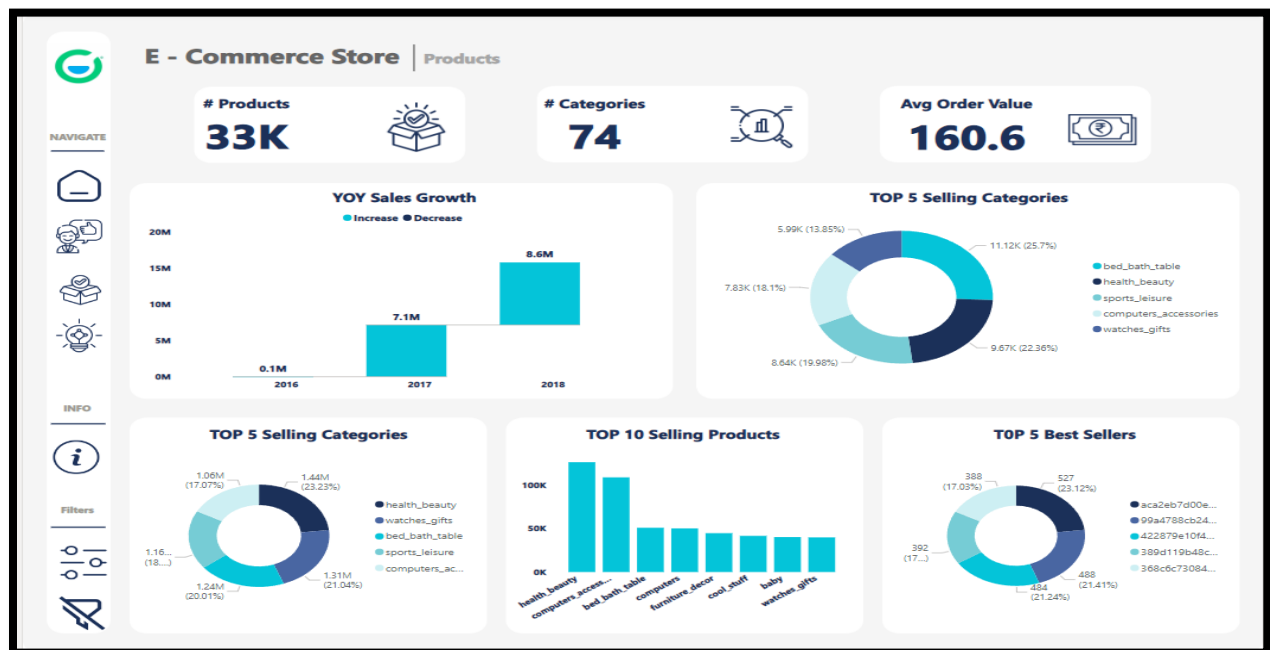
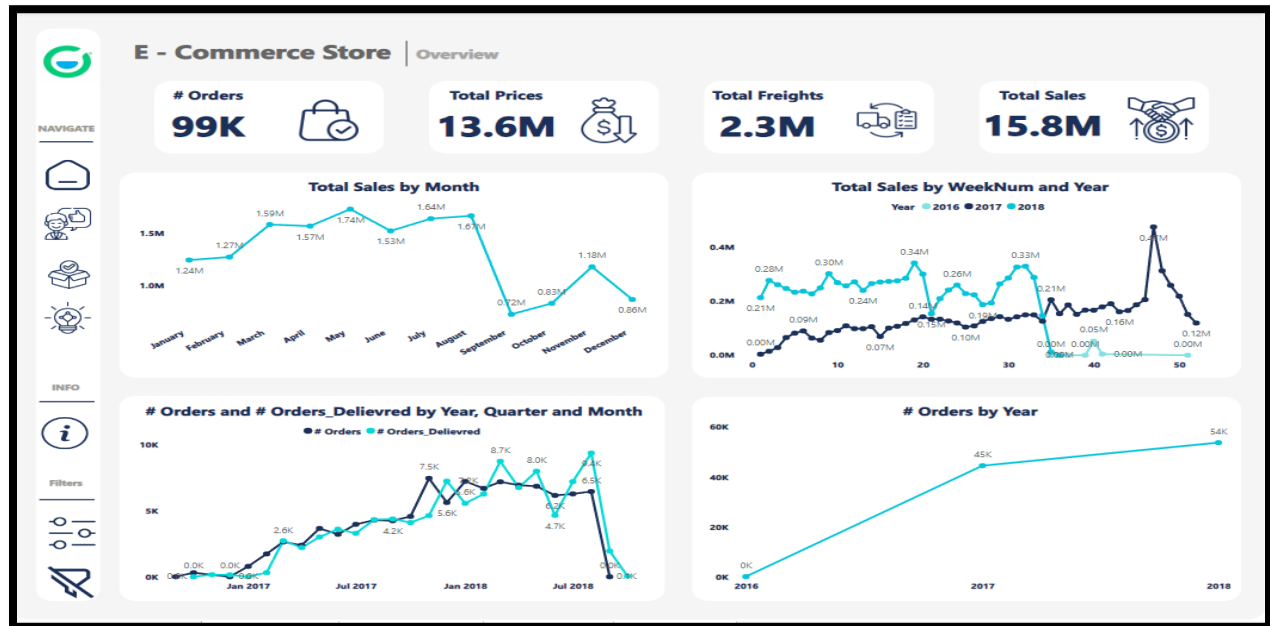
INFO



2. Dashboard Creation:

Using the provided dataset, create a comprehensive dashboard using Microsoft Power BI Or any other tool you prefer The dashboard should include visualizations for:

- Monthly and weekly sales trends.
- Customer retention metrics.
- Inventory status and restocking needs.



3. SQL Proficiency Test:

You are given a database. Write SQL queries to:

- Retrieve the total sales for each product category.

```
4
5 --1 total sales for each category
6 SELECT isnull(C.Product_category,'Total Sales') as [Product_category] ,
7 SUM(PRICE) + sum([Freight_value]) AS [TOTAL SALES]
8 FROM Order_items O INNER JOIN Products P
9 ON P.Product_id = O.Product_id
10 INNER JOIN Categories C ON C.Product_category = P.Product_category
11 group by rollup (C.Product_category)
12
13 -----
```

21 %

Results Messages

	Product_category	TOTAL SALES
1	agro_industria_e_comercio	78374.07
2	alimentos	36664.44
3	alimentos_bebidas	19687.47
4	artes	28247.81
5	artes_e_artesanato	2184.14
6	artigos_de_festas	5313.15
7	artigos_de_natal	12030.12
8	audio	56398.94
9	automotivo	685384.3200000001
10	bebes	480118.0000000001
11	bebidas	28169.95
12	beleza_saude	1441248.069999999
13	brinquedos	561372.5500000001
14	cama_mesa_banho	1241681.719999999
15	casa_conforto	67073.27
16	casa_conforto_2	1170.58
17	casa_construcao	96920.36
18	cds_dvds_musicais	954.99
19	cine_foto	8189.66
20	climatizacao	61774.19
21	consoles_games	177293.24
22	construcao_ferramentas_...	165328

- Identify customers who made purchases in the last month.

```
15 SELECT
16     c.customer_id,
17     c.[City],c.Zip_code_prefix,
18     c.[State],
19     o.[Purchase_timestamp] AS Purchase_timestamp
20 FROM
21     Customers c
22 INNER JOIN
23     Orders o ON c.customer_id = o.customer_id
24 WHERE
25     DATEPART(YEAR, [Purchase_timestamp]) = DATEPART(YEAR, DATEADD(MONTH, -1, '2018-03-19'))
26     AND DATEPART(MONTH, [Purchase_timestamp]) = DATEPART(MONTH, DATEADD(MONTH, -1, '2018-03-19'))
27 order by [Purchase_timestamp]
28
29 -- you can replace mentioned date with getdate() but date is between 2016-2018
```

91 %

Results Messages

	customer_id	City	Zip_code_prefix	State	Purchase_timestamp
1	8bbab60533a9749783e4c768cd5a12a7	rio de janeiro	22230	RJ	2018-02-01 00:24:00.000
2	fbf5039b1d330e0055aa9f3969d3434	itaguaquecetuba	8588	SP	2018-02-01 00:33:00.000
3	4d8923819294bfca3edc507da304801	uberaba	38051	MG	2018-02-01 00:35:00.000
4	18b3ccdb39831edbfefc432e649d2585	maringa	87020	PR	2018-02-01 01:04:00.000
5	08b9cbfb948ebc2dc43212aa3b5a2a2	presidente prudente	19042	SP	2018-02-01 05:41:00.000
6	b730b5bb73f94addc7bb956258e7b422	osasco	6182	SP	2018-02-01 05:53:00.000
7	fbfd7fe2c8685586b7e44a2970d0727	sao paulo	3266	SP	2018-02-01 06:55:00.000
8	f3ab9ca7b6a450eaa47bdc67175ee74	sao paulo	8090	SP	2018-02-01 07:44:00.000
9	ed532487db04478dfba09d1126496c13	niteroi	24350	RJ	2018-02-01 07:47:00.000
10	ec37a7901c9065e7e37c21cc3b983195	itapira	13977	SP	2018-02-01 07:47:00.000
11	a930e8971b7eed8b6fd594e8bc933058	santa luzia	33125	MG	2018-02-01 07:49:00.000
12	599ca149954743a9c925dfa8d343e51b	barbacena	36201	MG	2018-02-01 08:06:00.000
13	c081e55602bc273db90a62b6170d30a	brasilgia	71881	DF	2018-02-01 08:10:00.000
14	aea480663063ea96167592d2ca91dae6	poa	8561	SP	2018-02-01 08:26:00.000
15	cbfe773accbd474bcd87443dcd49416	sao paulo	3015	SP	2018-02-01 08:35:00.000
16	d07229dae278c8f7e6be74a2c960b5	juiz de fora	36036	MG	2018-02-01 08:36:00.000
17	f034501fcfc9f7e97ab7c807c6fd99	sorocaba	18071	SP	2018-02-01 08:37:00.000
18	a48b14b744daa3f589086dd33afe553	mogi das cruzeis	8880	SP	2018-02-01 08:52:00.000
19	aaa3dc5798a9cb3a1234aaee3723740	turmalina	39660	MG	2018-02-01 09:03:00.000
20	37fc16e6f7454489690917f99c907505	pocos de caldas	37704	MG	2018-02-01 09:05:00.000
21	33b8305b0348956ebb99c8d45cee	santa adelia	15950	SP	2018-02-01 09:11:00.000
22	4d115b2184ee4dd491a5234665158c4e	uba	36506	MG	2018-02-01 09:11:00.000

Query executed successfully.

LAPTOP-P47PGR3P (16.0 RTM) | LAPTOP-P47PGR3P\ayed ... | Ecommerce | 00:00:00 | 6,728 rows

- Calculate the average order value.

```

33 --3--avg order value
34 SELECT
35     AVG(order_value) AS [Average order value]
36 FROM
37     (SELECT
38         o.order_id,
39         SUM(oi.price)+sum([Freight_value]) AS order_value
40     FROM
41         Orders o
42     INNER JOIN
43         Order_Items oi ON o.order_id = oi.order_id
44     GROUP BY
45         o.order_id) AS order_values;
46
47

```

91 %

Results Messages

Average order value	
1	160.57763809215

4. Problem-Solving Case Study:

✓ Identifying Factors Causing Fluctuations in Inventory Levels

- Seasonal Demand: Adjust inventory for anticipated seasonal changes.
- Market Trends: Monitor industry trends to predict demand shifts.

(Quarter 2 – Black Friday)

- Supplier Reliability: Track supplier performance to anticipate delays.

(Helping in Customer Satisfaction)

✓ Data-Driven Strategies for Optimizing Restocking Processes

- Demand Forecasting: Use historical sales data to predict future needs.

(Heavy demand in (Quarter 2 – Black Friday)

- Automated Reordering: Implement systems for auto-triggered restocking based on set thresholds.
- Vendor-Managed Inventory: Collaborate with suppliers for direct restocking based on real-time data.

(to avoid delays)

✓ Methods to Reduce Aging and Overstocked Products

- Discounting: Implement strategic discounting to move aging stock.
- Product Bundling: Combine slow-moving items with popular ones.
- Inventory Audits: Regularly review stock to identify overstocked items.
- Reverse Logistics: Establish a process for returns and unsold goods.

(Lookup at Sold items for Each Product & Category)

✓ **Analyzing the Impact on Sales and Customer Satisfaction**

- Sales Metrics: Track changes in sales volume post-implementation.
- Customer Feedback: Gather customer opinions on product availability and variety.

Implementing these strategies should lead to a more efficient inventory system, improved sales, and enhanced customer satisfaction.