

POWER BI CASE STUDY

Date: 15/09/2023

Employee ID: 654991

Batch: Shell7-SK-23-B4

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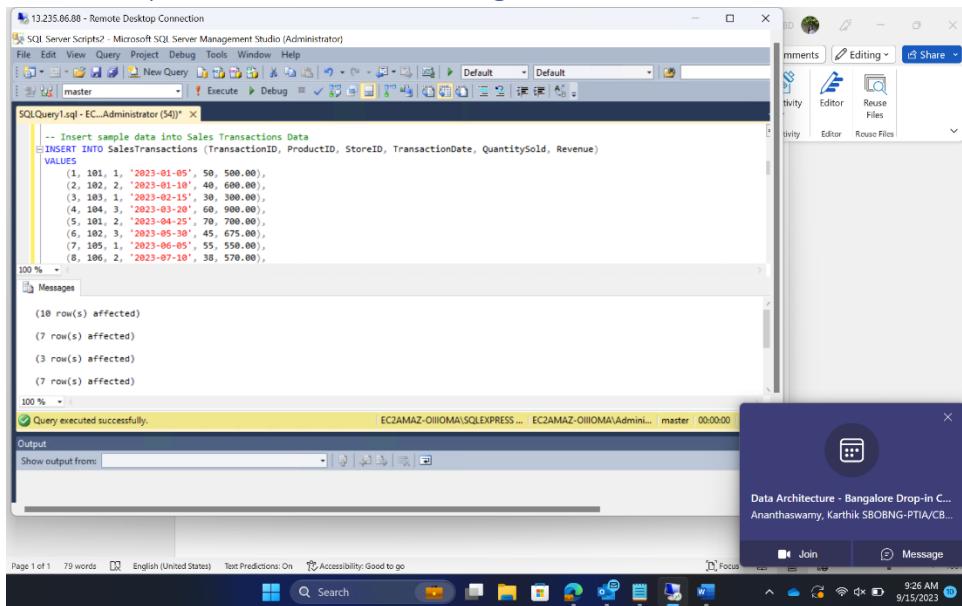
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Position: 54077724 Associate Data Engineer

Scenario: Sales Performance Analysis with Power BI

In this scenario, let's imagine you work for a retail company and you've been tasked with analyzing the sales performance of your products and stores using Power BI. You have multiple data sources and tables to work with, and your goal is to provide actionable insights to improve sales strategies.

1. Requirement 1: Data Loading



-- Insert sample data into Sales Transactions Data
INSERT INTO SalesTransactions (TransactionID, ProductID, StoreID, TransactionDate, QuantitySold, Revenue)
VALUES
(1, 101, 1, '2023-01-05', 50, 500.00),
(2, 102, 2, '2023-01-10', 40, 600.00),
(3, 103, 1, '2023-02-15', 30, 300.00),
(4, 104, 3, '2023-03-20', 60, 900.00),
(5, 101, 2, '2023-04-25', 70, 700.00),
(6, 102, 3, '2023-05-30', 45, 525.00),
(7, 105, 1, '2023-06-05', 55, 550.00),
(8, 106, 2, '2023-07-10', 30, 370.00);

100 %

Messages

(10 row(s) affected)
(7 row(s) affected)
(3 row(s) affected)
(7 row(s) affected)

100 %

Query executed successfully.

Output

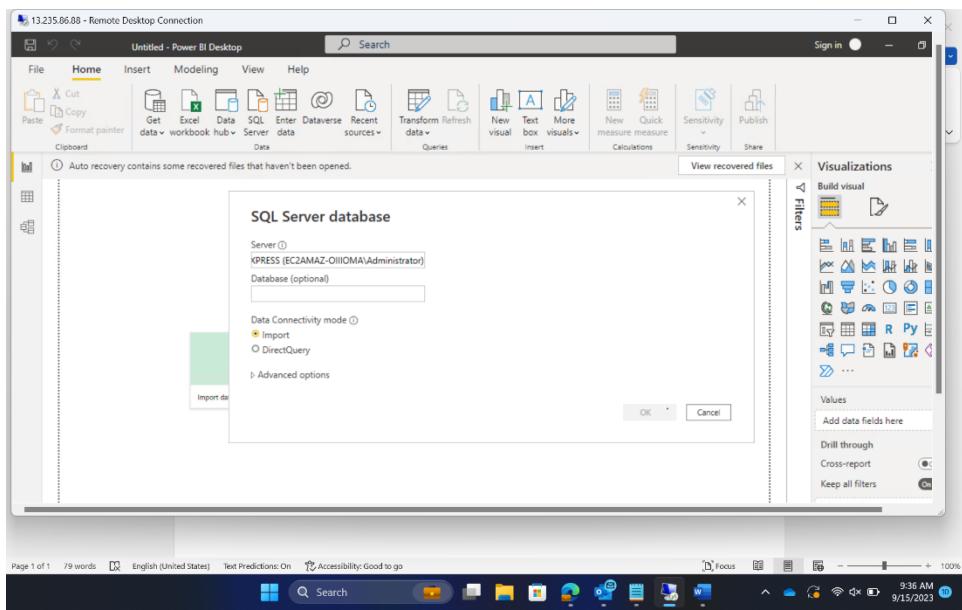
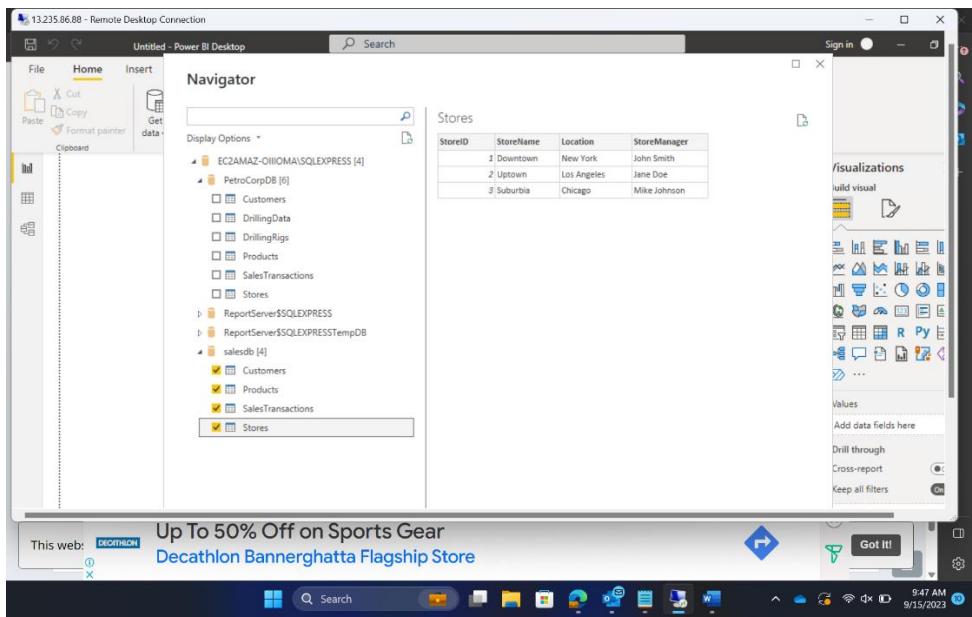
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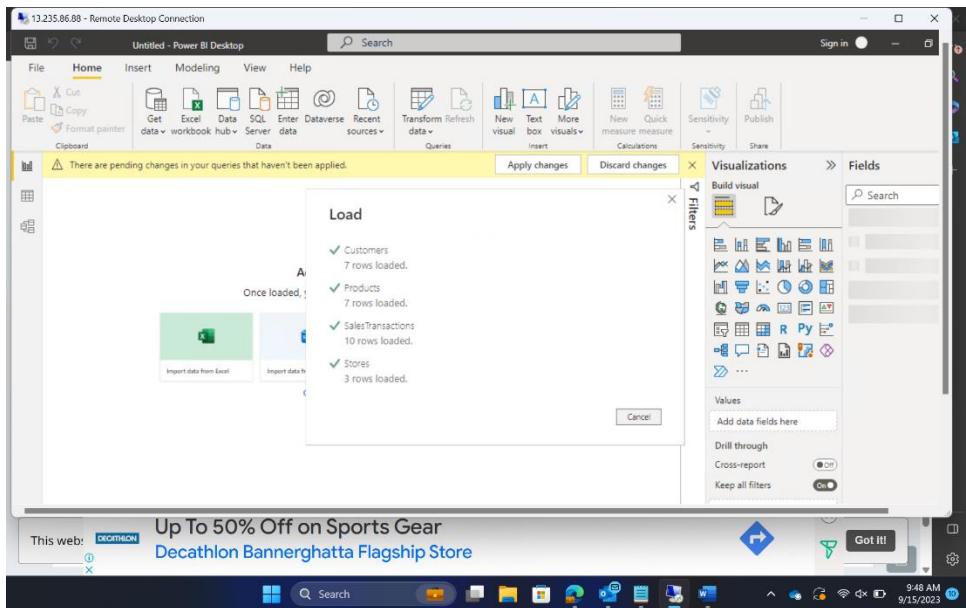
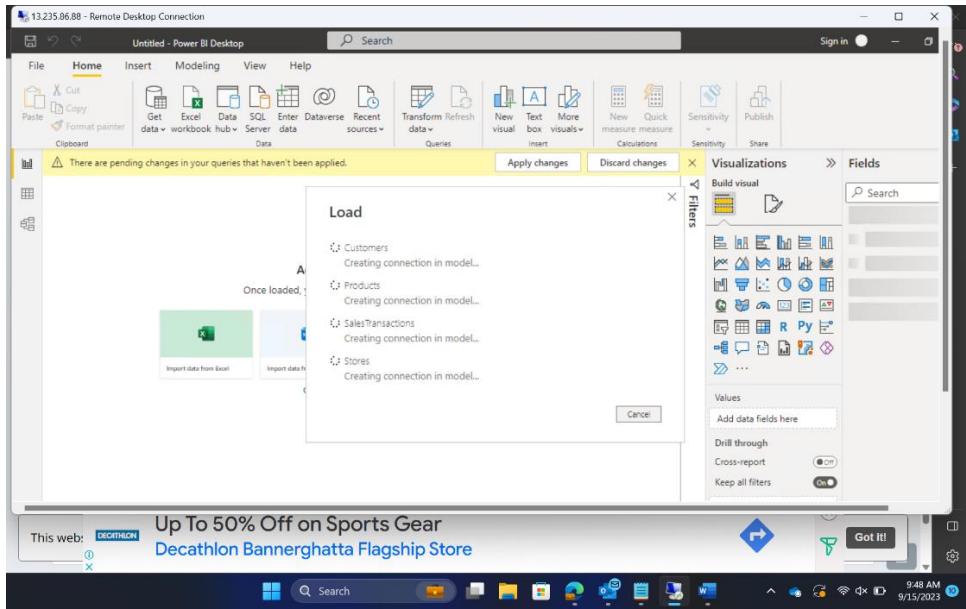
Page 1 of 1 79 words English (United States) Text Predictions: On Accessibility: Good to go Focus

Join Message

Data Architecture - Bangalore Drop-in C... Ananthaswamy, Karthik SBOBNG-PTIA/CB...

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2. Requirement 2: Data Transformation

i. Merging Tables

The screenshot shows the Microsoft Power Query Editor interface. A 'Merge' step is currently active, indicated by the title bar. Two tables are selected for merging: 'Customers' and 'SalesTransactions'. The 'Join Kind' dropdown is set to 'Inner (only matching rows)'. The 'Applied Steps' pane on the right shows the steps taken so far: 'Source' and 'Navigation'. The desktop background is visible at the bottom.

This screenshot is identical to the one above, showing the Power Query Editor with the 'Merge' step active. The 'Customers' and 'SalesTransactions' tables are selected, and the 'Join Kind' is set to 'Inner (only matching rows)'. The 'Applied Steps' pane shows 'Source' and 'Navigation'. The desktop background is visible at the bottom.

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Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Closes & Apply Close New Source Recent Sources Enter Data Data source settings Data Sources

Queries [4]

- Customers
- Products
- SalesTransactions
- Stores

Merge

Select a table and matching columns to create a merged table.

Products

ProductID	ProductName	Category	Price
101	Laptop XYZ	Electronics	800
102	T-Shirt Blue	Clothing	15
103	Smartphone ABC	Electronics	400
104	Sofa Set	Furniture	1200
105	Tablet PQR	Electronics	300

SalesTransactions

TransactionID	ProductID	StoreID	CustomerID	TransactionDate	QuantitySold	Revenue
1	101	1	1001	1/5/2023	50	500
2	102	2	1002	1/10/2023	40	600
3	103	1	1003	2/15/2023	30	300
4	104	3	1004	3/20/2023	60	900
5	101	2	1001	4/25/2023	70	700

Join Kind

Inner (only matching rows)

Use fuzzy matching to perform the merge

[Fuzzy matching options](#)

Properties

Name: Products

All Properties

Applied Steps

Source Navigation

Microsoft Teams (w...)

Search

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Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Closes & Apply Close New Source Recent Sources Enter Data Data source settings Parameters Refresh Preview Advanced Editor Properties Choose Columns Remove Columns Sort Split Column Group By Data Type: Whole Number Use First Row as Headers Transform

Queries [4]

- Customers
- Products
- SalesTransactions
- Stores

Table.NestedJoin(dbo_Products, {"ProductID"}, SalesTransactions, {"ProductID"}, "SalesTransactions")

ProductID	ProductName	Category	Price	SalesTransactions
101	Laptop XYZ	Electronics	800	Table
102	T-Shirt Blue	Clothing	15	Table
103	Smartphone ABC	Electronics	400	Table
104	Sofa Set	Furniture	1200	Table
105	Tablet PQR	Electronics	300	Table
106	Jeans Black	Clothing	40	Table
107	Chair	Furniture	80	Table

Properties

Name: Products

All Properties

Applied Steps

Source Navigation Merged Queries

Microsoft Teams (w...)

Search

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ii. Data Cleaning

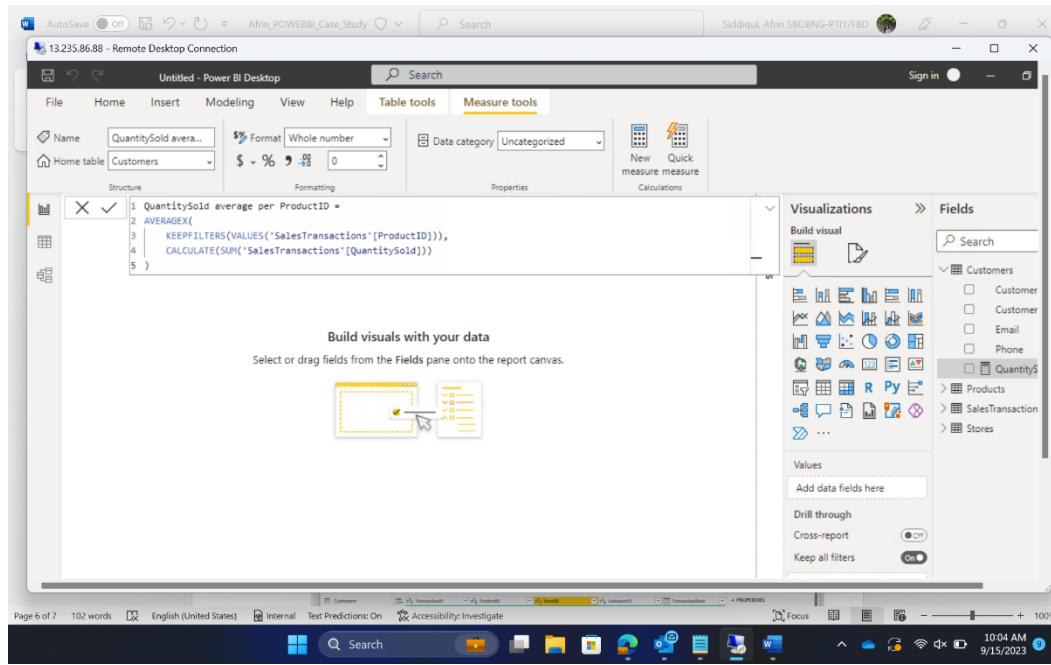
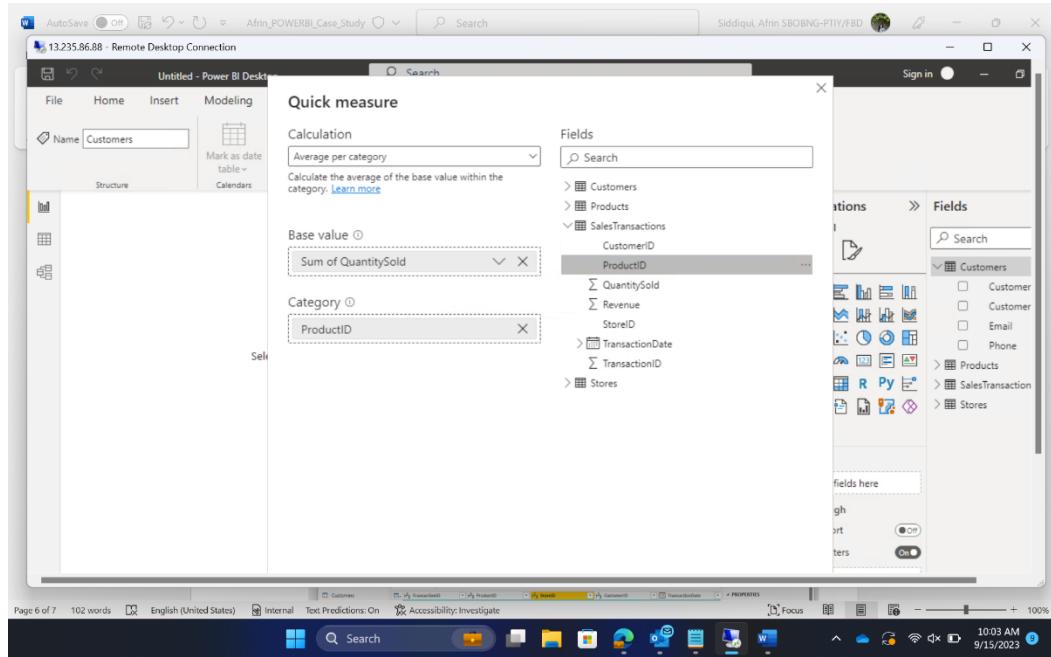
The screenshot shows the Microsoft Power Query Editor interface. The main area displays a table titled 'Customers' with columns: CustomerID, CustomerName, Email, and Phone. The data consists of seven rows, each containing a unique CustomerID and corresponding details. To the right of the table, the 'APPLIED STEPS' pane is visible, showing a list of actions taken on the query, with 'Removed Errors' highlighted.

	CustomerID	CustomerName	Email	Phone
1	1001	Customer A	customerA@email.com	(123) 456-7890
2	1002	Customer B	customerB@email.com	(234) 567-8901
3	1003	Customer C	customerC@email.com	(345) 678-9012
4	1004	Customer D	customerD@email.com	(456) 789-0123
5	1005	Customer E	customerE@email.com	(567) 890-1234
6	1006	Customer F	customerF@email.com	(678) 901-2345
7	1007	Customer G	customerG@email.com	(789) 012-3456

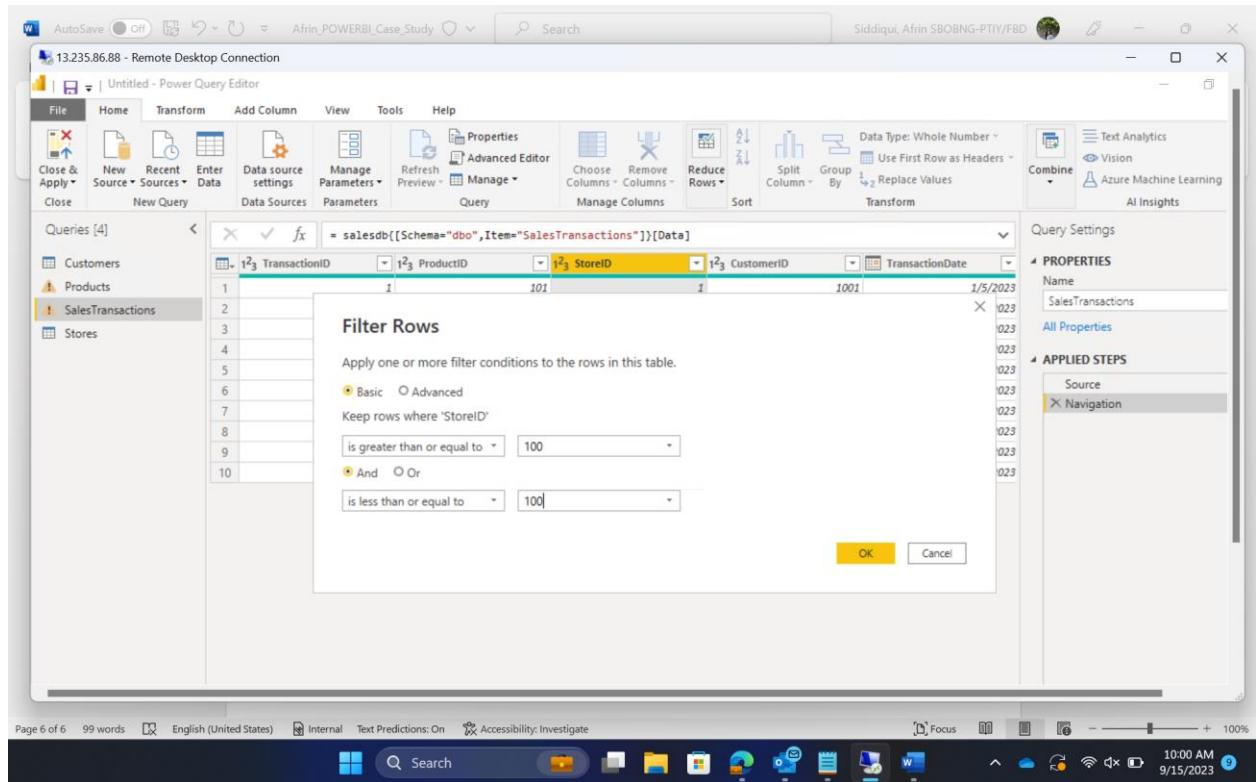
APPLIED STEPS

- Source
- Navigation
- Removed Duplicates
- Removed Blank Rows
- Removed Errors

iii. Create calculated columns

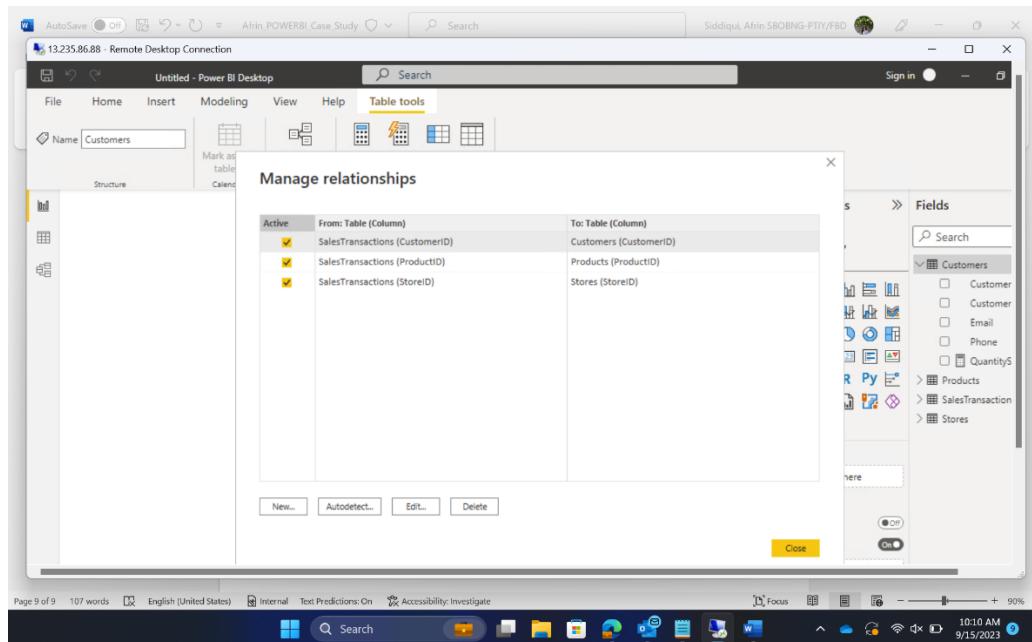
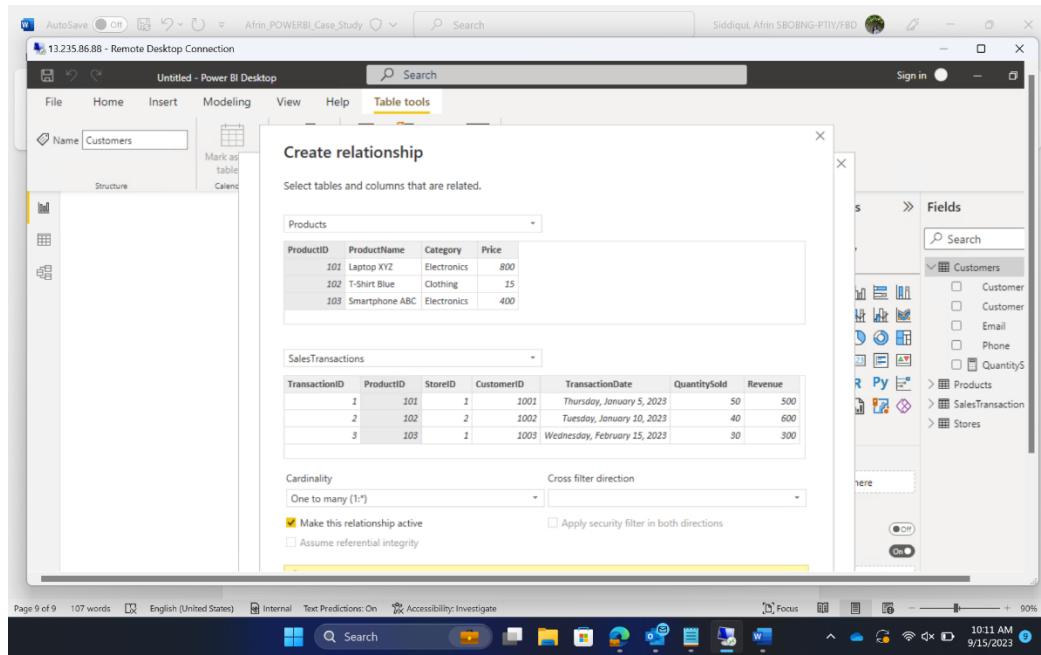


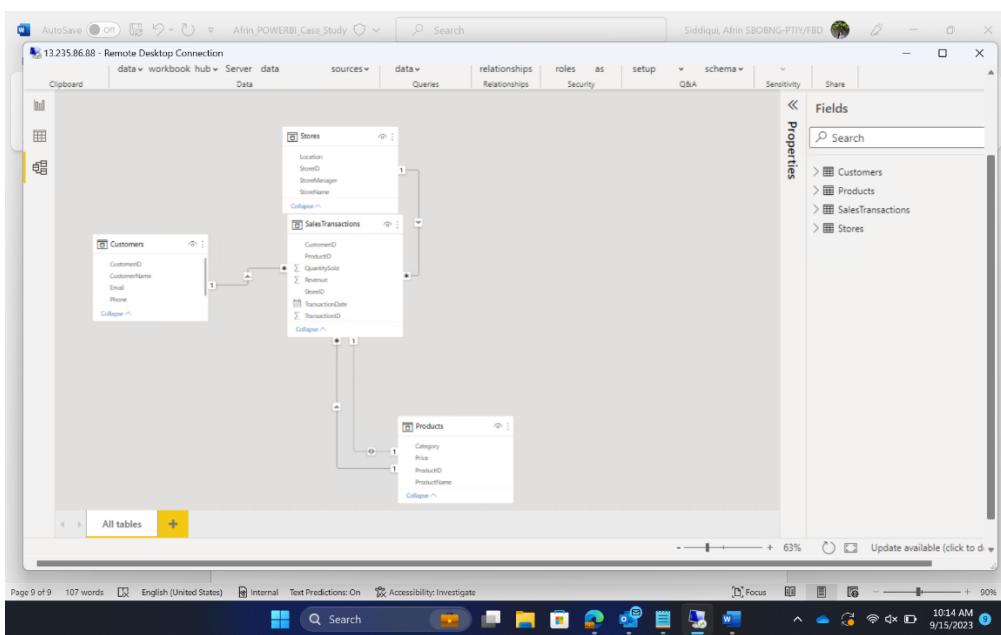
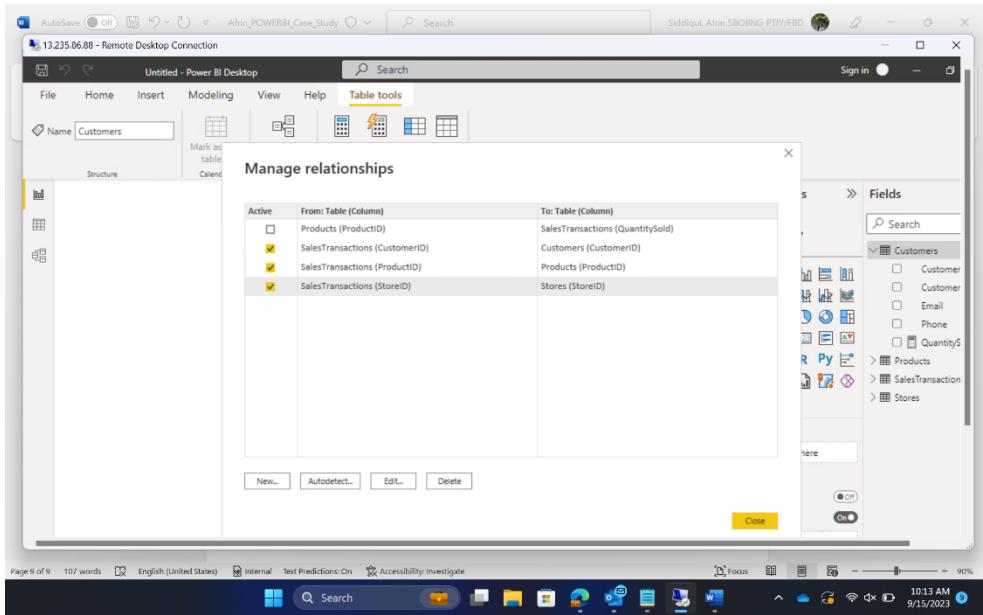
iv. Filter Table



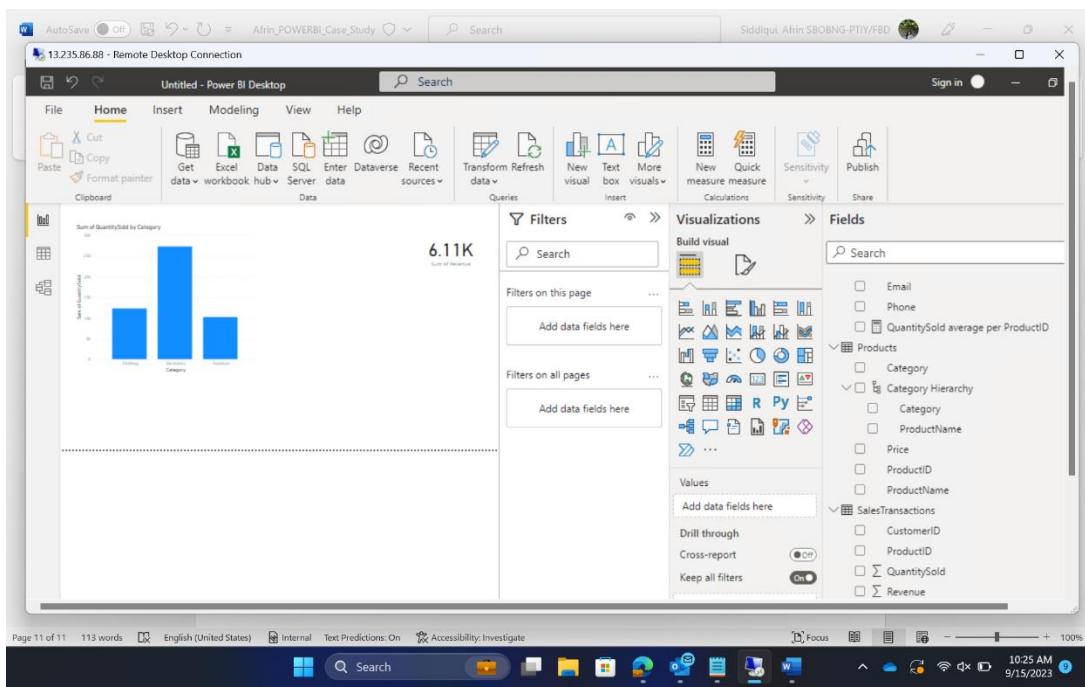
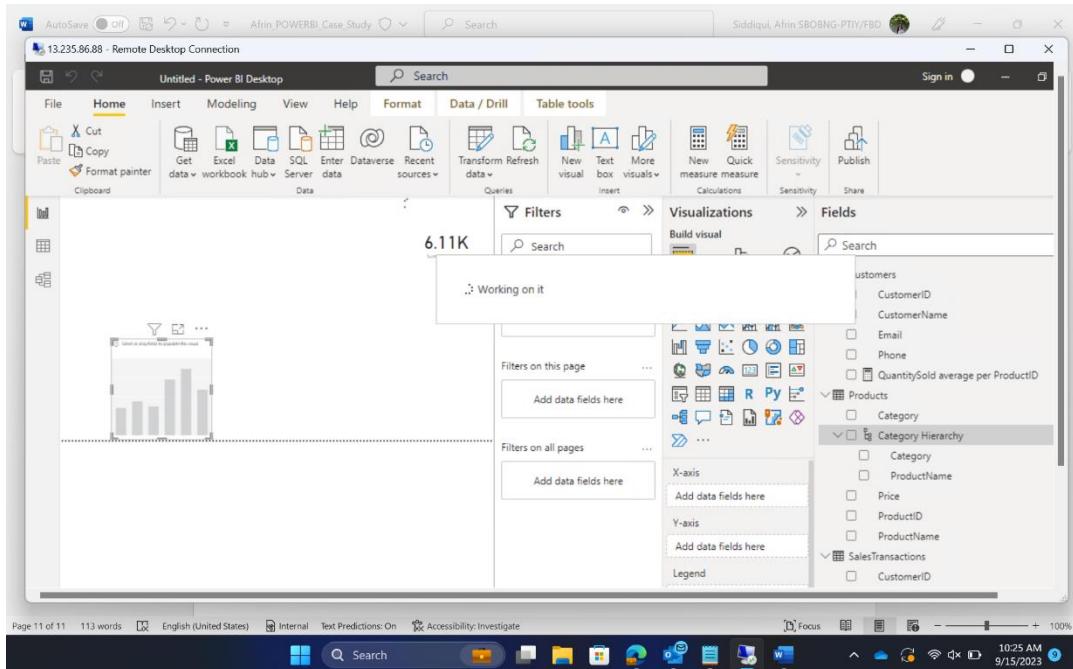
3. Requirement 3: Data Modelling

i. Create Relationships



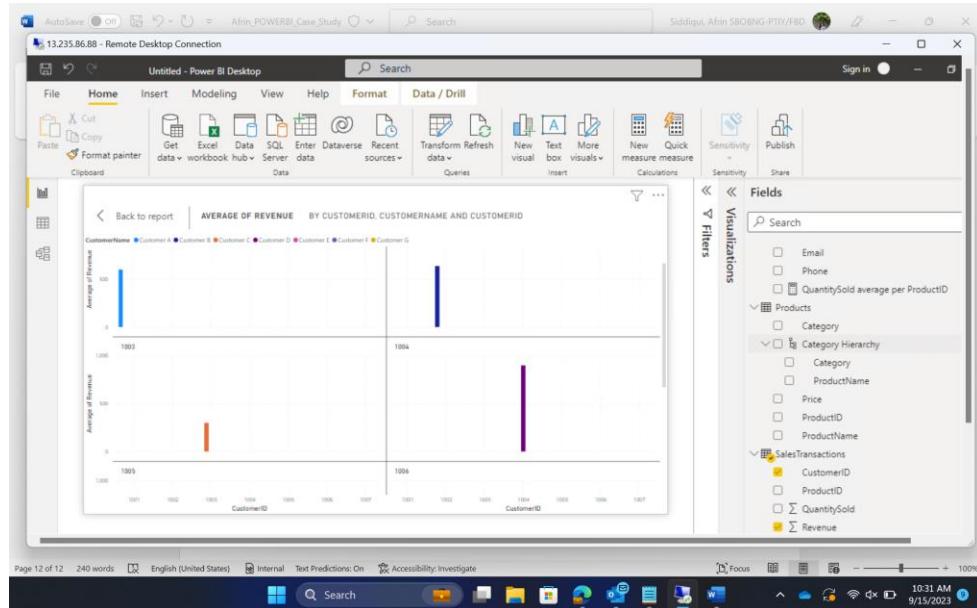


ii. Create Hierarchies

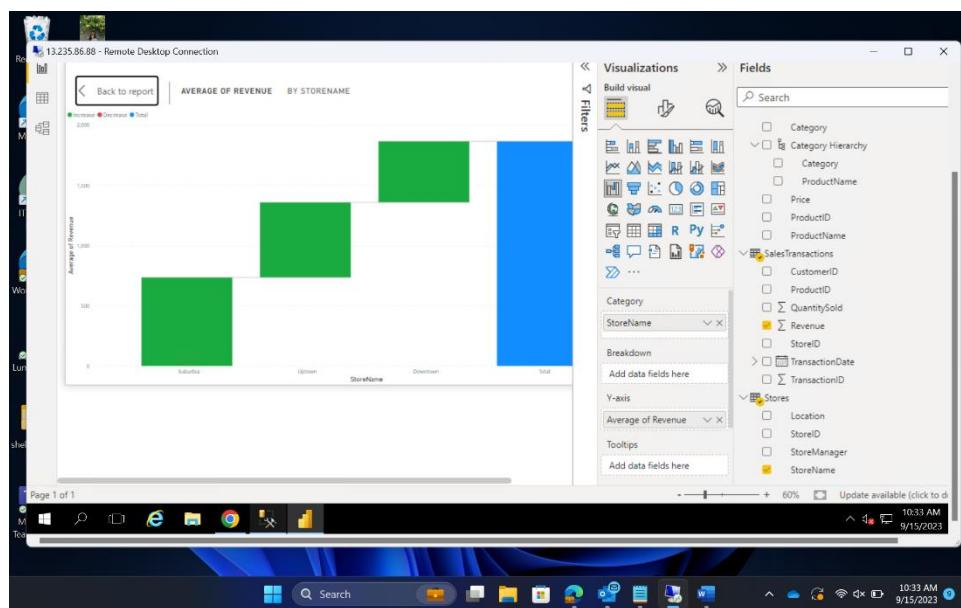


4. Requirement 4: Business Queries and Analysis

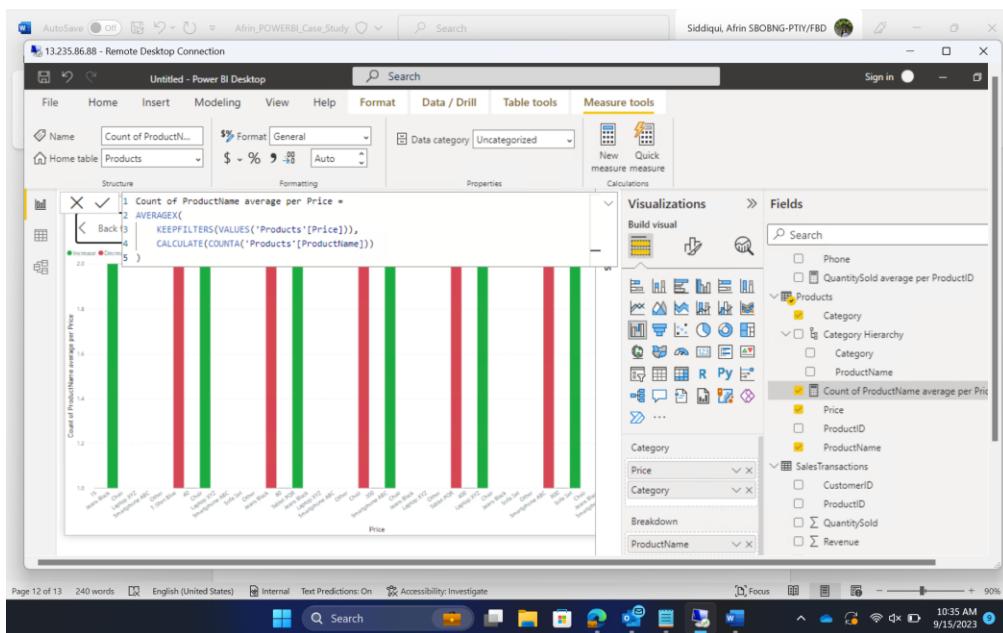
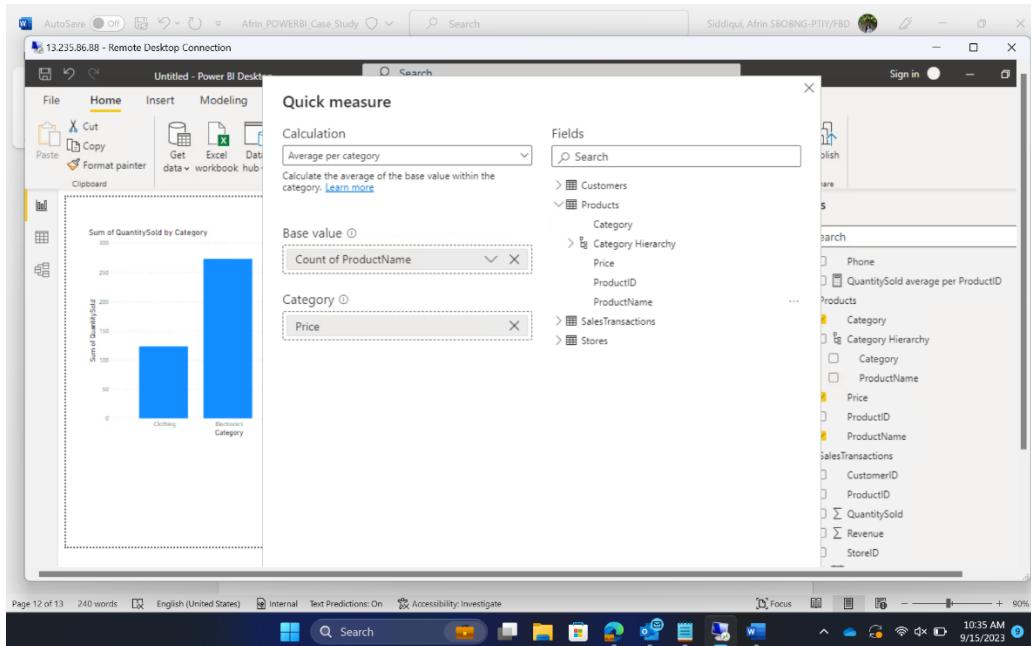
a. Who are the top-spending customers based on their total purchase amount?



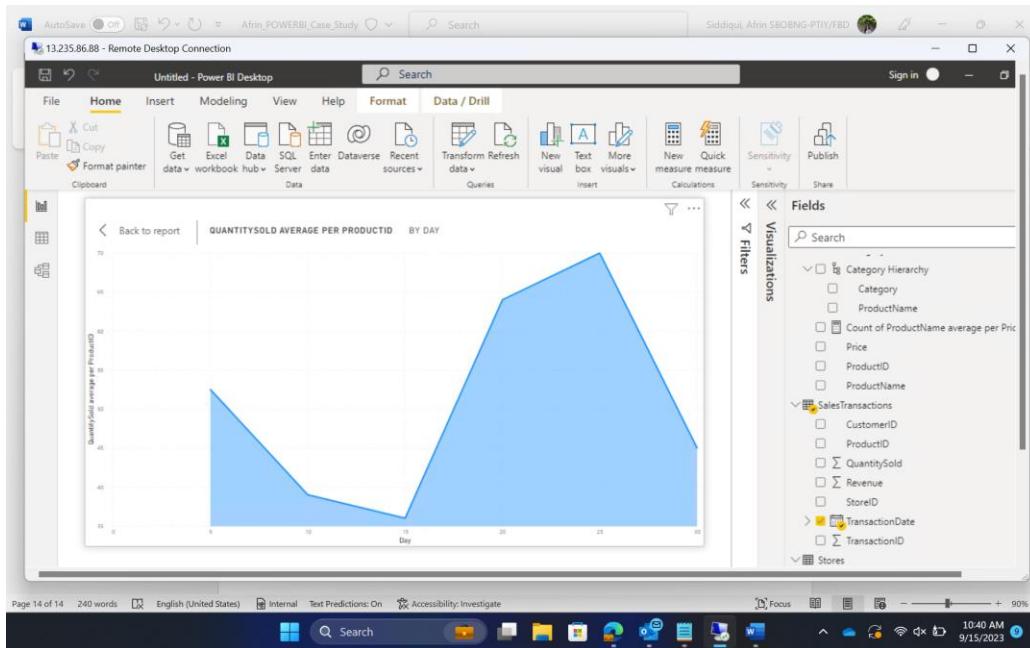
b. How is sales revenue distributed among different store managers?



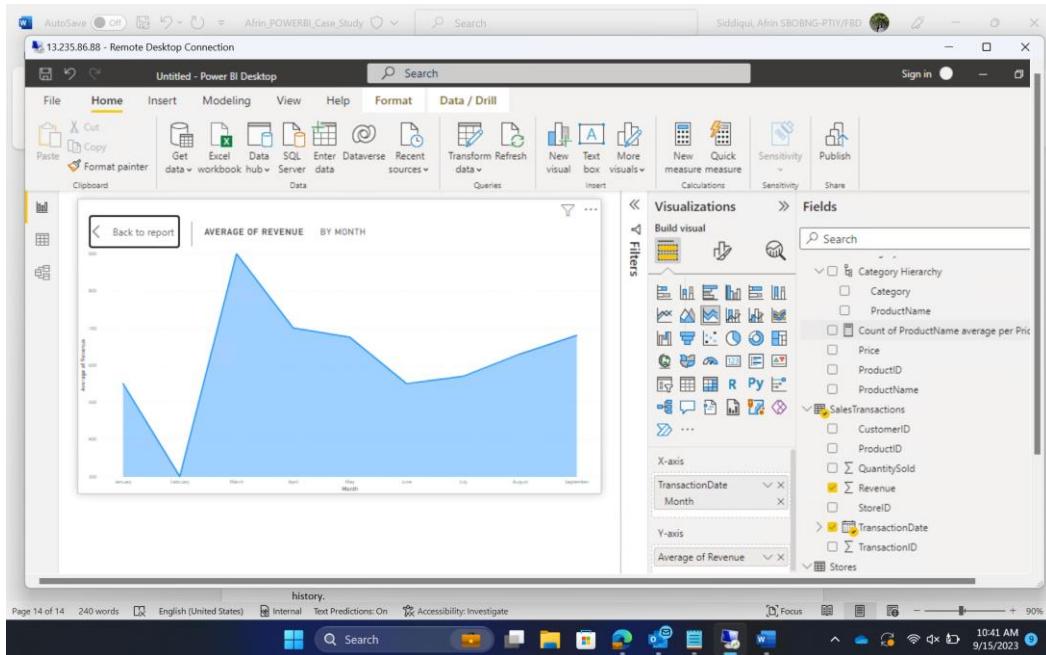
c. What is the average price of products in each category?



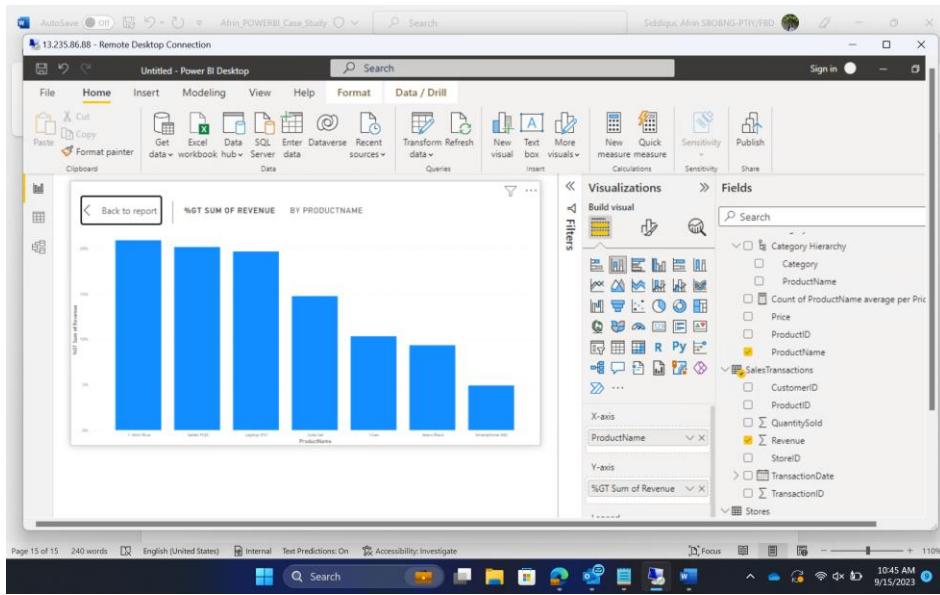
d. Are there specific days of the week when sales are higher?



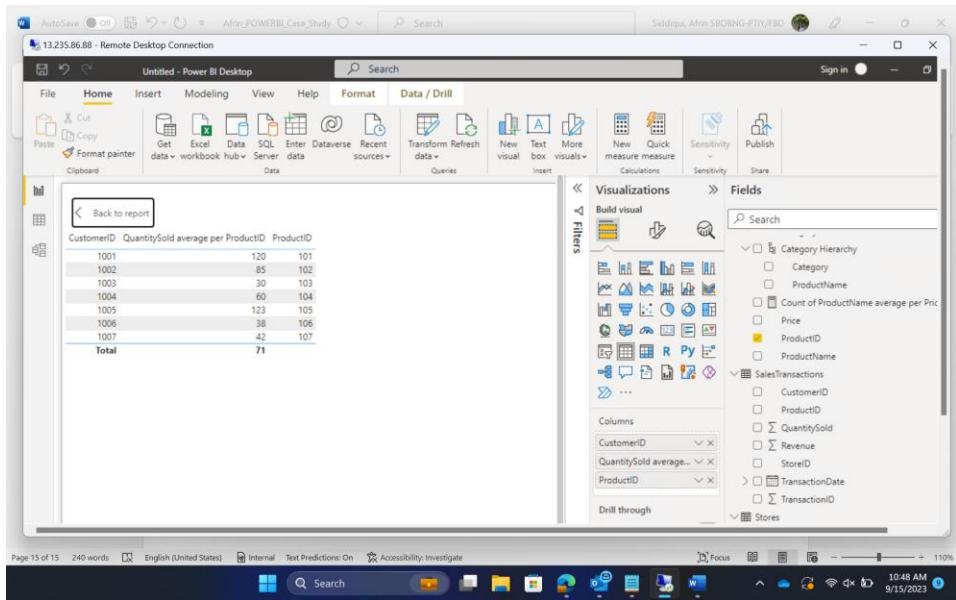
e. How do sales trends vary by product category on a monthly basis?



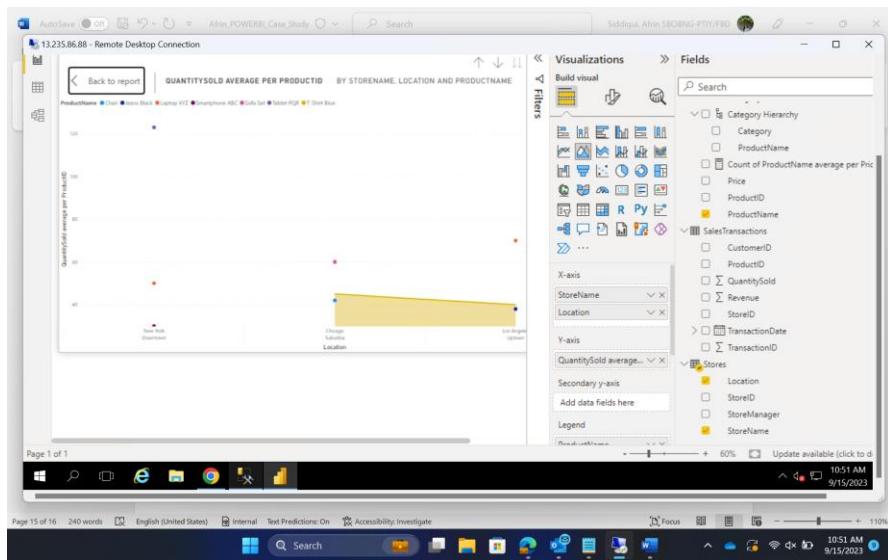
f. What percentage of products account for 80% of total sales revenue?



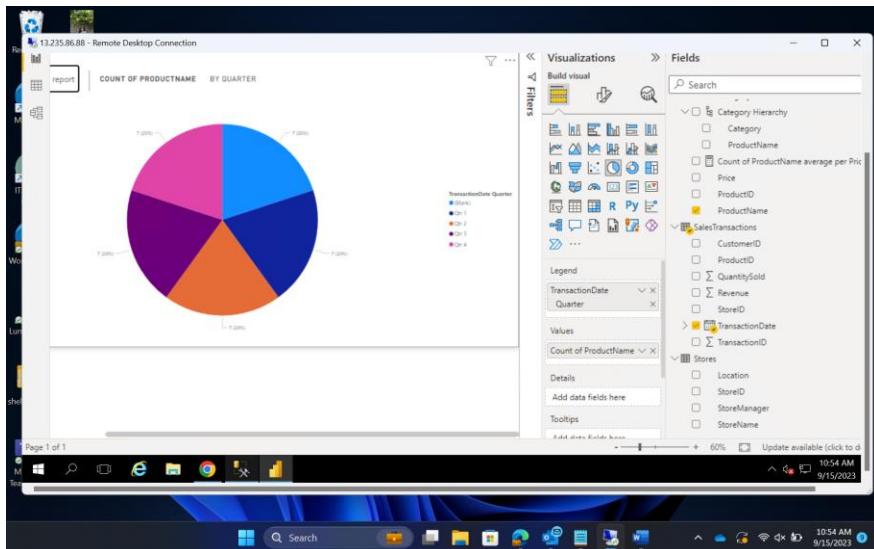
7. Are there any trends in repeat customer purchases?



8. Which product categories perform best at each store location?



9. Are there any seasonal patterns or trends in sales for specific products or categories?



10. Can customers be segmented into high, medium, and low-value segments based on their purchase history.

The screenshot shows the Power BI desktop interface. On the left, there is a table visualization titled "CustomerName Sum of QuantitySold Max of TransactionID". The table data is as follows:

CustomerName	Sum of QuantitySold	Max of TransactionID
Customer A	120	5
Customer B	85	6
Customer C	30	3
Customer D	60	4
Customer E	123	10
Customer F	38	8
Customer G	42	9
Total	498	10

On the right, the "Fields" pane is open, showing the data model structure. The "SalesTransactions" table is expanded, showing fields like CustomerID, ProductID, QuantitySold, Revenue, and TransactionID. The "Stores" table is also expanded, showing Location, StoreID, StoreManager, and StoreName.

This screenshot is nearly identical to the one above, showing the same table visualization and Fields pane. The only difference is the timestamp at the bottom right of the desktop window, which has changed from "10:56 AM 9/15/2023" to "10:57 AM 9/15/2023".

5. Requirement 5: Data Insights and Recommendations

