

Tech Saksham

Case Study Report

Data Analytics with Power BI

“Supply Chain Analysis of Inventories”

“College Name”

GOVERNMENT ARTS AND SCIENCE COLLEGE,
AUNDIPATTI.

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ABSTRACT

In the digital age, data has become an invaluable asset for businesses, particularly in the banking sector. The proposed project, “Real-Time Analysis of Bank Customers,” aims to leverage PowerBI, a leading business intelligence tool, to analyze and visualize real-time customer data. This project will enable banks to gain deep insights into customer behavior, preferences, and trends, thereby facilitating data-driven decision-making and enhancing customer satisfaction. The real-time analysis will allow banks to respond promptly to changes in customer behavior or preferences, identify opportunities for cross-selling and up-selling, and tailor their products and services to meet customer needs. The project will also contribute to the broader goal of digital transformation in the banking sector, promoting efficiency, innovation, and customer-centricity.

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INTRODUCTION

1.1 Problem Statement

In today's competitive banking landscape, understanding customer behavior and preferences is crucial for customer retention and revenue generation. However, banks often face challenges in analyzing customer data due to the sheer volume and velocity of data generated. Traditional data analysis methods are time-consuming and often fail to provide real-time insights. This lack of real-time analysis can lead to missed opportunities for customer engagement, cross-selling, and up-selling, impacting the bank's revenue generation and customer satisfaction. Furthermore, the complexity and diversity of customer data, which includes transaction history, customer feedback, and demographic data, pose additional challenges for data analysis.

1.2 Proposed Solution

The proposed solution is to develop a PowerBI dashboard that can analyze and visualize real-time customer data. The dashboard will integrate data from various sources such as transaction history, customer feedback, and demographic data. It will provide a comprehensive view of customer behavior, preferences, and trends, enabling banks to make informed decisions. The dashboard will be interactive, user-friendly, and customizable, allowing banks to tailor it to their specific needs. The real-time analysis capability of the dashboard will enable banks to respond promptly to changes in customer behavior or preferences, identify opportunities for cross-selling and up-selling, and tailor their products and services to meet customer needs.

1.3 Feature

- **Real-Time Analysis:** The dashboard will provide real-time analysis of customer data.
- **Customer Segmentation:** It will segment customers based on various parameters like age, income, transaction behavior, etc.
- **Trend Analysis:** The dashboard will identify and display trends in customer behavior.
- **Predictive Analysis:** It will use historical data to predict future customer behavior.

1.4 Advantages

- **Data-Driven Decisions:** Banks can make informed decisions based on real-time data analysis.
- **Improved Customer Engagement:** Understanding customer behavior and trends can help banks engage with their customers more effectively.
- **Increased Revenue:** By identifying opportunities for cross-selling and up-selling, banks can increase their revenue.

1.5 Scope

The scope of this project extends to all banking institutions that aim to leverage data for decision-making and customer engagement. The project can be further extended to incorporate more data sources and advanced analytics techniques, such as machine learning and artificial intelligence, to provide more sophisticated insights into customer behavior. The project also has the potential to be adapted for other sectors, such as retail, healthcare, and telecommunications, where understanding customer behavior is crucial. Furthermore, the project contributes to the broader goal of digital transformation in the banking sector, promoting efficiency, innovation, and customer-centricity.

POWER BI

Power BI consists of several elements that all work together, starting with these three basics:

- A Windows desktop application called *Power BI Desktop*.
- An online software as a service (SAAS) service called the *Power BI service*.
- Power BI Mobile apps for Windows, IOS, and Android devices.

These three elements—Power BI Desktop, the service, and the mobile apps—are designed to let you create, share, and consume business insights in the way that serves you and your role most effectively.

Beyond those three, Power BI also features two other elements:

- **Power BI Report Builder**, for creating paginated reports to share in the Power BI service. Read more about [paginated reports](#) later in this article.
- **Power BI Report Server**, an on-premises report server where you can publish your Power BI reports, after creating them in Power BI Desktop. Read more about [Power BI Report Server](#) later in this article.

How Power BI matches your role

How you use Power BI depends on your role in a project or on a team. Other people, in other roles, might use Power BI differently.

For example, you might primarily use the Power BI service to view reports and dashboards. Your number-crunching, business-report-creating co-worker might make extensive use of Power BI Desktop or Power BI Report Builder to create reports, then publish those reports to the Power BI service, where you view them. Another co-worker, in sales, might mainly use the Power BI Mobile app to monitor progress on sales quotas, and to drill into new sales lead details.

If you're a developer, you might use Power BI APIs to push data into semantic models or to embed dashboards and reports into your own custom applications. Have an idea for a new visual? Build it yourself and share it with others.

You also might use each element of Power BI at different times, depending on what you're trying to achieve or your role for a given project.

How you use Power BI can be based on which feature or service of Power BI is the best tool for your situation. For example, you can use Power BI Desktop to create reports for your own team about customer engagement statistics and you can view inventory and manufacturing progress in a real-time dashboard in the Power BI service. You can create a paginated report of mailable invoices, based on a Power BI semantic model. Each part of Power BI is available to you, which is why it's so flexible and compelling.

Explore documents that pertain to your role:

- Power BI for [business users](#)
- Power BI Desktop for [report creators](#)
- Power BI Report Builder for [enterprise report creators](#)
- Power BI for [administrators](#)
- Power BI for [developers](#)
 - [What is Power BI embedded analytics?](#)
 - [Create your own visuals in Power BI](#)
 - [What can developers do with the Power BI API?](#)

The flow of work in Power BI

One common workflow in Power BI begins by connecting to data sources in Power BI Desktop and building a report. You then publish that report from Power BI Desktop to the Power BI service, and share it so business users in the Power BI service and on mobile devices can view and interact with the report.

This workflow is common, and shows how the three main Power BI elements complement one another.

Use the deployment pipeline tool

In the Power BI service, you can use the [deployment pipeline tool](#) to test your content before you release it to your users. The deployment pipeline tool can help you deploy reports, dashboards, semantic models, and paginated reports. Read about how to [get started with deployment pipelines](#) in the Power BI service.

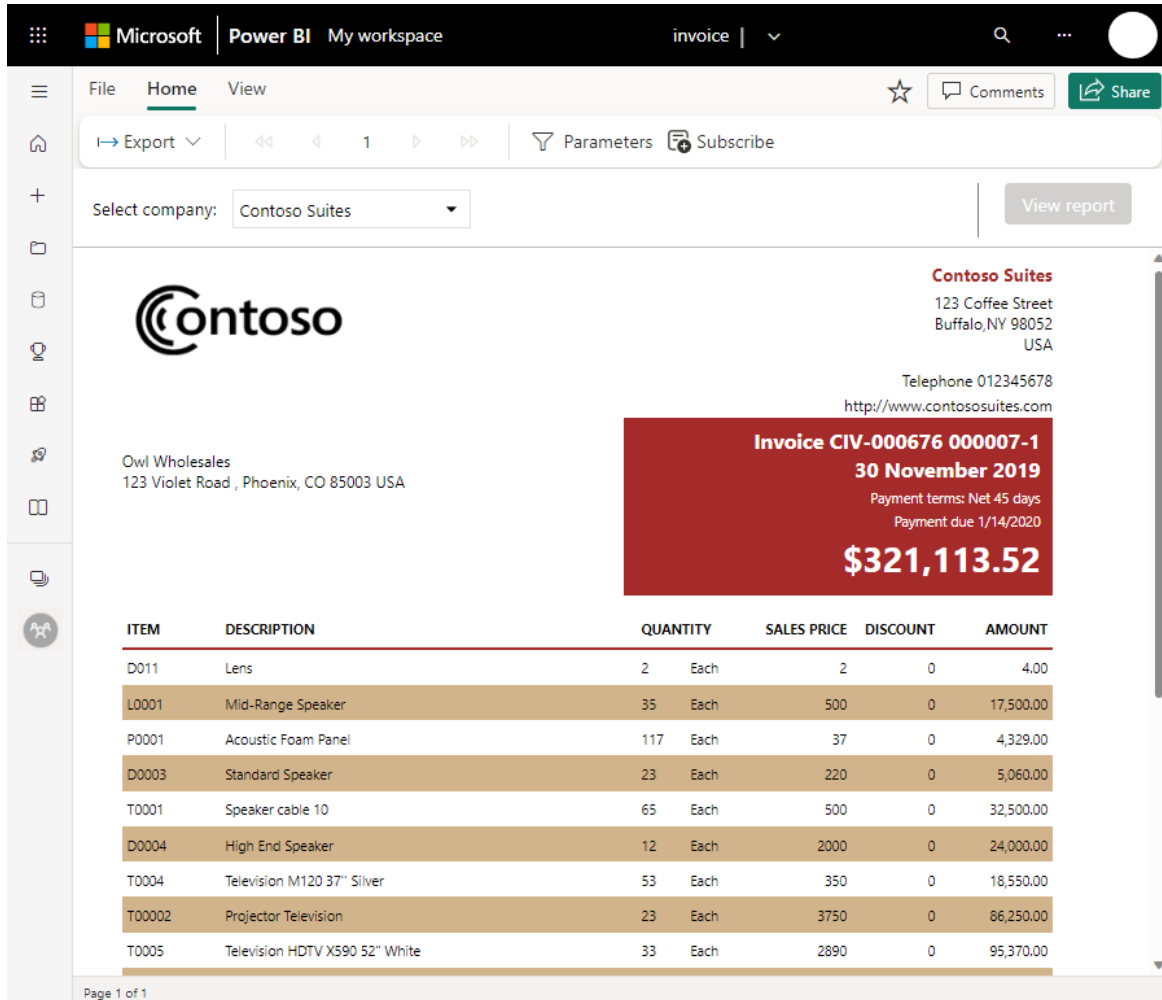
How Microsoft Fabric works with Power BI

[Microsoft Fabric](#) is an offering that combines data + services in a unified environment, making it easier to perform analysis and analytics on various sets of data. **Power BI** is an example of one of the *services* that's integrated with Microsoft Fabric, and your organization's **OneLake** data store is an example of the *data* that can be used, analysed, or visualized. Large organizations find Microsoft Fabric particularly useful, since it can corral and then bring greater value to large stores of data, then using services (like Power BI) to bring such data to business life.

Administration of Power BI is now handled by Microsoft Fabric, but your favourite tools like the **Power BI service** and **Power BI Desktop** still operate like they always have - as a service that can turn your data, whether in OneLake or in Excel, into powerful business intelligence insights.

Paginated reports in the Power BI service

Another workflow involves paginated reports in the Power BI service. Enterprise report creators design paginated reports to be printed or shared. They can also share these reports in the Power BI service. They're called *paginated* because they're formatted to fit well on a page. They're often used for operational reports, or for printing forms such as invoices or transcripts. They display all the data in a table, even if the table spans multiple pages. Power BI Report Builder is the standalone tool for authoring paginated reports.



Microsoft | Power BI | My workspace | invoice |

File Home View | ☆ | Comments | Share

Export | Parameters | Subscribe

Select company: Contoso Suites | View report

Contoso

Owl Wholesales
123 Violet Road, Phoenix, CO 85003 USA

Contoso Suites
123 Coffee Street
Buffalo, NY 98052
USA
Telephone 012345678
http://www.contososuites.com

Invoice CIV-000676 000007-1
30 November 2019
Payment terms: Net 45 days
Payment due 1/14/2020
\$321,113.52

ITEM	DESCRIPTION	QUANTITY	SALES PRICE	DISCOUNT	AMOUNT
D011	Lens	2 Each	2	0	4.00
L0001	Mid-Range Speaker	35 Each	500	0	17,500.00
P0001	Acoustic Foam Panel	117 Each	37	0	4,329.00
D0003	Standard Speaker	23 Each	220	0	5,060.00
T0001	Speaker cable 10	65 Each	500	0	32,500.00
D0004	High End Speaker	12 Each	2000	0	24,000.00
T0004	Television M120 37" Silver	53 Each	350	0	18,550.00
T00002	Projector Television	23 Each	3750	0	86,250.00
T0005	Television HDTV X590 52" White	33 Each	2890	0	95,370.00

Page 1 of 1

Read more about [paginated reports](#) in the Power BI service.

On-premises reporting with Power BI Report Server

What if you need to keep your reports on premises, say, behind a firewall? Read on.

You can create, deploy, and manage Power BI reports in Power BI Desktop, and paginated reports in Report Builder, with the ready-to-use tools and services that Power BI Report Server provides.



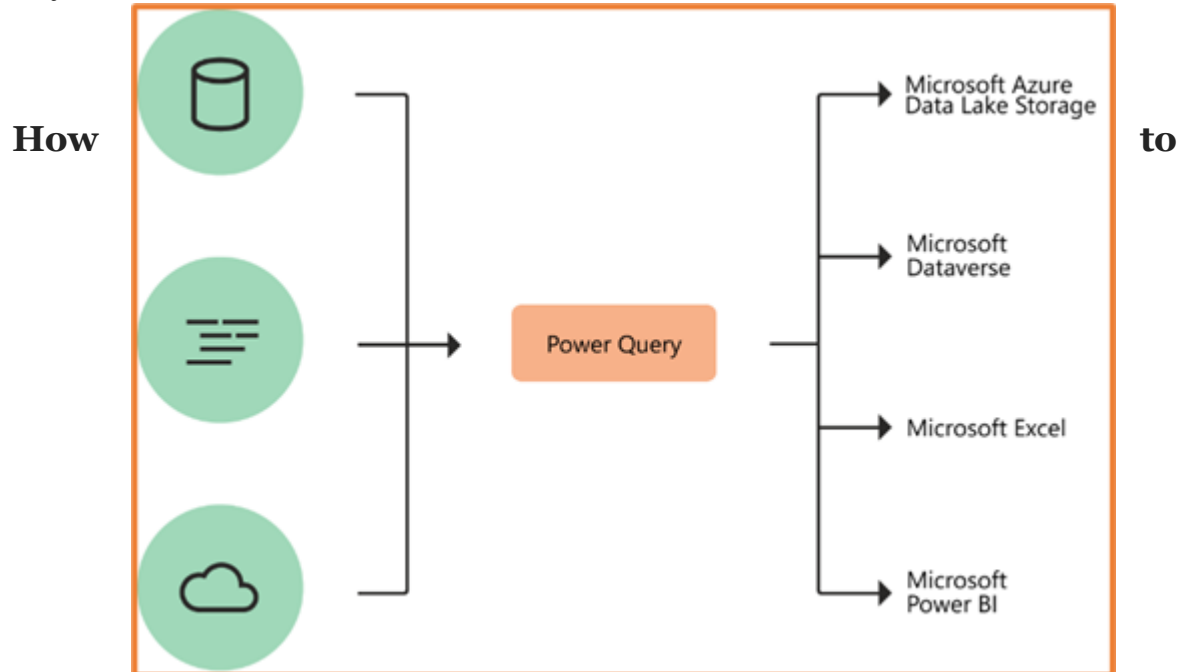
Power BI Report Server is a solution that you deploy behind your firewall and then deliver your reports to the right users in different ways, whether that's viewing them in a web browser, on a mobile device, or as an email. And because Power BI Report Server is compatible with Power BI in the cloud, you can move to the cloud when you're ready.

POWER QUERY EDITOR

Power Query is a data transformation and data preparation engine. , where you can connect to a wide range of data sources and apply hundreds of different data transformations by previewing data and selecting transformations from the UI.

As the name suggests, Power Query is the most powerful data automation tool found in Excel 2010 and later. Power Query allows a user to import data into Excel through external sources, such as Text files, CSV files, Web, or Excel workbooks, cloud, SQL to list a few. The data can then be cleaned and prepared for our requirements. Using Power Query, you can perform the extract, transform, and load (**ETL**) processing of data.

Power Query Editor is a powerful tool that allows you to transform and clean data before importing it into Power BI. It provides a user-friendly interface that makes it easy to create complex data transformations without writing any code.



Access Power Query Editor in Power BI

1. Open Power BI Desktop.
2. In the 'Home' tab, click on Get data (or) Excel work book (or) SQL server data to load the data.
3. Here we get the data from the related source we selected and then it shows to 'Load' and 'Transform data', where we can click on transform data to clean data, merge tables, remove duplicate columns (or) null values and its go on.

The Basics of Power Query Editor in Power BI

The tool offers a wide range of data transformations, including filtering data rows, merging columns, removing duplicates, and pivoting tables. One of the

key features of Power Query Editor is its ability to handle large datasets. The basics of Power Query involve importing, transforming, and combining data from various sources in Excel, allowing users to clean, reshape, and analyze data without complex formulas, the four phases of Power Query are:

1. Connect:

In this phase, users connect to the data source(s) from which they want to extract data. Power Query supports many data sources, including databases, files, web pages, and more.

2. Transform:

Once the data is loaded into Power Query, users can use various data transformation tools to clean, reshape, and transform the data to meet their specific needs. Common data transformation tasks include removing duplicates, filtering data, merging data, splitting columns, and pivoting data.

3. Combine:

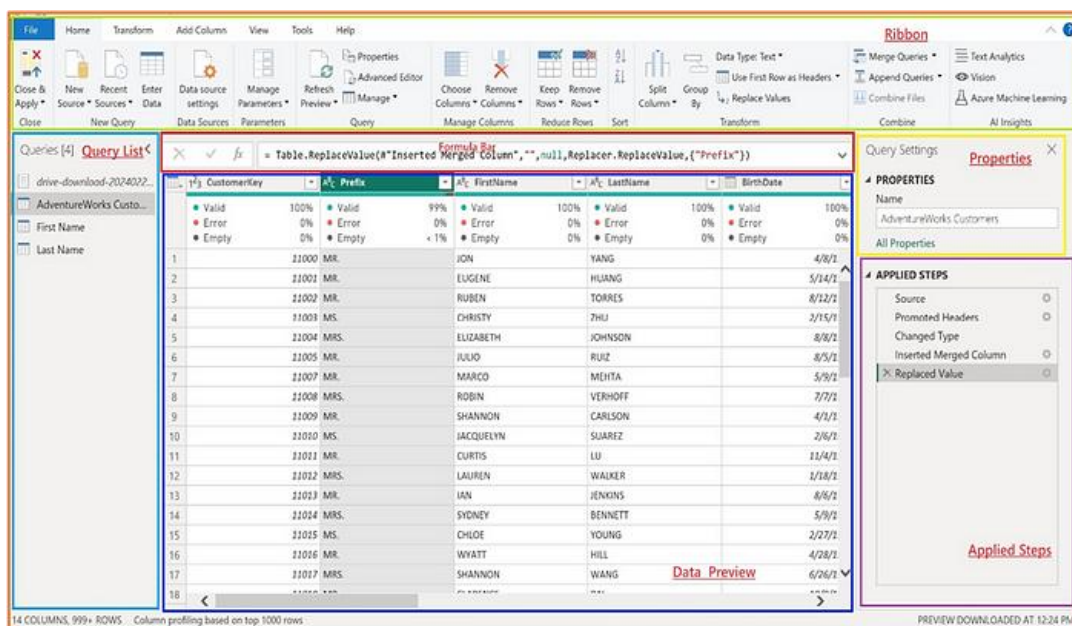
Power Query also allows users to combine data from multiple sources using various techniques. Users can merge tables, append, or join data using a common key.

4. Load:

Finally, in the Load phase, users specify to load the transformed data by clicking on **Close & Apply**. They can load the data into an Excel worksheet or a Power BI report or create a connection to the data source so that the data is automatically refreshed whenever the source data changes.

There are six main sections of the Power Query Editor are as follows:

- **Query Editor Ribbon:** This ribbon is similar to the one on the Excel interface. Various commands are organized in separate tabs.
- **Query List:** This section lets you browse through a list of all queries in your current workbook.
- **Formula Bar:** The current transformation's formula will be specified here in the M language.
- **Data Preview:** You can see the preview of your data based on the current transformation step..
- **Properties:** This section consists of a list of query steps. Here, you will be able to name your query. Naming a query is an important step to identify a query easily.
- **Applied steps:** Each transformation step you take will be recorded here in chronological order. You can add, remove, edit, or reorder the steps if required.



The screenshot displays the Microsoft Power Query Editor interface. The top ribbon includes tabs for File, Home, Transform, Add Column, View, Tools, and Help. The main area shows a data preview with columns: CustomerKey, Prefix, FirstName, LastName, and BirthDate. The Formula Bar at the top contains the M language formula: `= Table.ReplaceValue(*Inserted Merged Column*, "", null, Replacer.ReplaceValue, {"Prefix"})`. The Query List on the left shows a list of queries. The Properties pane on the right shows the query name 'AdventureWorks Customers'. The Applied Steps pane on the right shows a list of applied steps: Source, Promoted Headers, Changed Type, Inserted Merged Column, and Replaced Value.

What Basic Transformations Can You Perform Using Power Query?

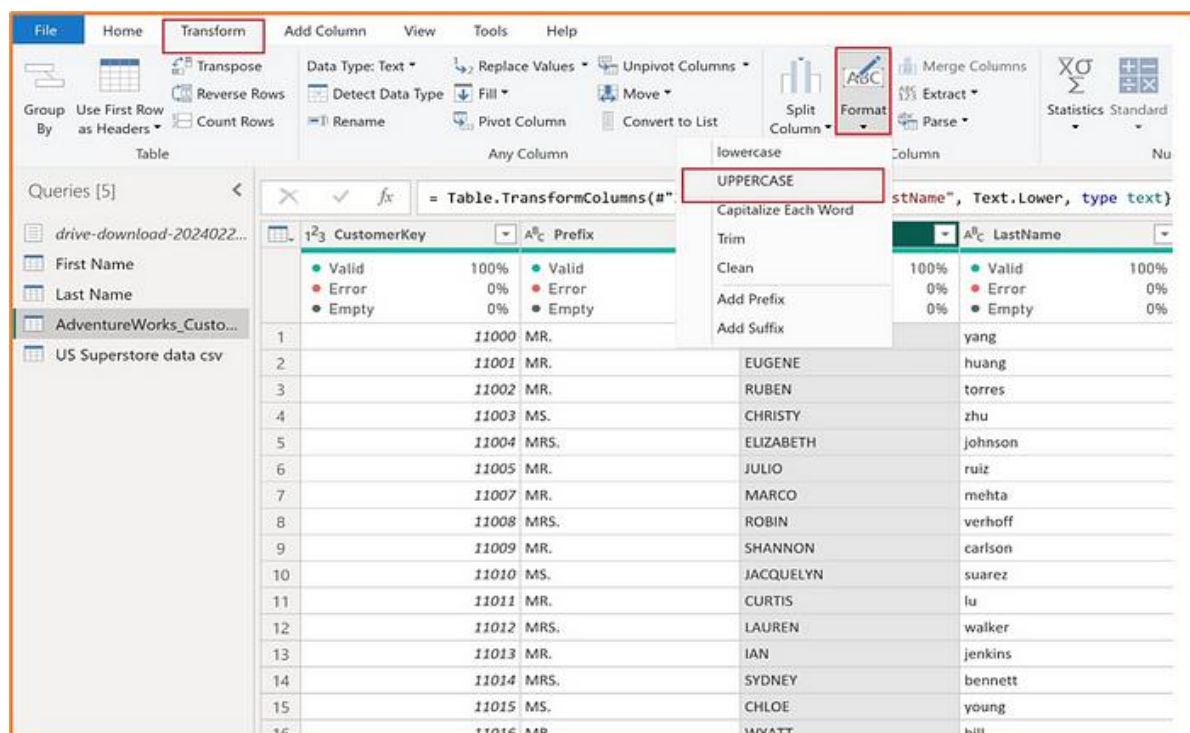
In this section, let's look at various transformation functions that can be performed easily with the help of a few mouse clicks.

1. Text Formatting Functions

In this section, you will learn how to format text in Uppercase, Lowercase, and understand how to use the Trim operation.

UPPERCASE:

Click on the column name and then go to the "Transform" tab, which will display a variety of options. Clicking on the option to Format text will open up a drop-down menu with a text edit option of 'UPPERCASE'. On selecting the UPPERCASE edit option, all the text in the given column will be converted to uppercase.



The screenshot shows the Power Query Editor interface. The 'Transform' tab is active, and the 'Format' dropdown menu is open, showing the 'UPPERCASE' option selected. The data table below shows the results of the transformation.

CustomerKey	Prefix	stName	Text.Lower	type	LastName
1	11000	MR.			yang
2	11001	MR.	EUGENE		huang
3	11002	MR.	RUBEN		torres
4	11003	MS.	CHRISTY		zhu
5	11004	MRS.	ELIZABETH		johnson
6	11005	MR.	JULIO		ruiz
7	11007	MR.	MARCO		mehta
8	11008	MRS.	ROBIN		verhoff
9	11009	MR.	SHANNON		carlson
10	11010	MS.	JACQUELYN		suares
11	11011	MR.	CURTIS		lu
12	11012	MRS.	LAUREN		walker
13	11013	MR.	IAN		jenkins
14	11014	MRS.	SYDNEY		bennett
15	11015	MS.	CHLOE		young
16	11016	MR.	WYATT		hill

LOWERCASE:

Clicking on the option to Format text will open up a drop-down menu with a text edit option of 'LOWERCASE'. As you can see, all the text from the selected column will be converted to lowercase.

TRIM:

To remove all the extra white spaces from the data, click on the column name, and then select the 'Transform' tab, displaying various options. Clicking on the 'Format' option will display a drop-down menu with a text edit option called 'Trim'. On selecting the Trim edit option, all the extra white spaces in the given column will be removed.

2. Merging 2 or more columns:

fx = Table.TransformColumnTypes(Source,{{"sofifa_id", Int64.Type}, {"Name", type text}, {"age", Int64.Type}, {"dob", type text}, {"height_cm", Int64.Type}, {"weight_kg", Int64.Type}})

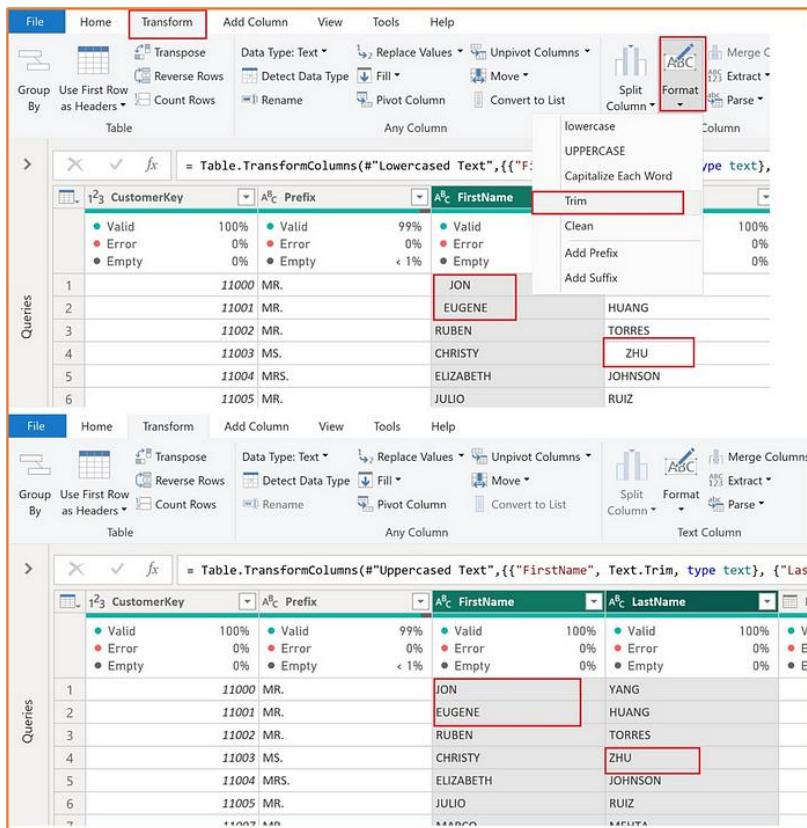
	sofifa_id	Name	age	dob	height_cm	weight_kg
1	20801	Cristiano Ronaldo	33	2/5/1985 12:00:00 AM	187	
2	158023	Lionel Messi	31	6/24/1987 12:00:00 AM	170	
3	190871	Neymar da Silva Santos Junior	26	2/5/1992 12:00:00 AM	175	
4	193080	David De Gea Quintana	27	11/7/1990 12:00:00 AM	193	
5	158023	Lionel Messi	31	6/24/1987 12:00:00 AM	170	
6	192985	Kevin De Bruyne	27	6/28/1991 12:00:00 AM	181	
7	193080	David De Gea Quintana	27	11/7/1990 12:00:00 AM	193	
8	155862	Sergio Ramos	32	3/30/1986 12:00:00 AM	184	
9	193080	David De Gea Quintana	27	11/7/1990 12:00:00 AM	193	
10	176580	Luis Alberto	31	1/24/1987 12:00:00 AM	182	
11	177003	Luka Modrić	32	9/9/1985 12:00:00 AM	172	
12	183277	Eden Hazard	27	1/7/1991 12:00:00 AM	173	
13	200389	Jan Oblak	25	1/7/1993 12:00:00 AM	188	
14	192119	Thibaut Courtois	26	5/11/1992 12:00:00 AM	199	
15						

For merging 2 or more columns first select columns using **SHIFT** and go to **TRANSFORM** menu and click on **MERGE Columns**, then a pop window will where we need to select **Space** in **separator** as it is a naming convention and need to be separated by space and new column name should be defined as per the column is a Full name then click OK.

3. Splitting a Column Using Delimiters:

To split the column with the help of a delimiter from the data, click on the 'Transform' tab followed by the 'Split column' option. This will display a drop-down menu with an option to **split the column By Delimiter**. Now, we can see that the data is split into two columns concerning the delimiter.

4. Removing Duplicates Using Power Query:



After loading the data from different sources, there might be some duplicates which will be updated by mistake, and to remove the duplicates we can click on to **Home tab** — -
 > **Remove Rows** option — -
 > click onto **Remove duplicates**.

5. Using Conditional Column:

With **Power Query**, you can add a **conditional column** to your query. You can define IF-THEN-ELSE conditions in your query. When the conditions are fulfilled.

USER INTERFACE

1. **Intuitive Interface:**Power BI features an intuitive and user-friendly interface that allows users, even those without extensive technical expertise, to navigate and create reports and dashboards effortlessly. The drag-and-drop functionality makes it easy to design visually appealing layouts.
2. **Interactive Visualizations:**Power BI offers a rich set of interactive visualizations, including charts, graphs, maps, and tables. Users can easily explore and interact with data

by clicking on elements within the visualizations, applying filters, and drilling down into specific details.

3. **Customization Options:** Users can customize the appearance of reports and dashboards in Power BI to suit their preferences or align with corporate branding. There are various formatting options, themes, and color schemes available for creating visually appealing and cohesive presentations.
4. **Natural Language Queries:** Power BI allows users to ask questions using natural language queries. The Q&A (Question and Answer) feature enables users to type questions in plain language, and Power BI generates visualizations based on the queried data.
5. **Mobile Responsiveness:** Power BI is designed to be responsive, providing an optimal viewing and interaction experience across different devices, including desktops, tablets, and smartphones. Reports created in Power BI automatically adjust to different screen sizes.
6. **Drill-Through and Hierarchical Navigation:** Users can drill through data hierarchies in Power BI, allowing for a deeper exploration of information. This feature enhances the ability to analyze data at various levels and gain insights into different aspects of the dataset.
7. **User Collaboration:** Power BI facilitates collaboration and communication among users through features such as commenting, sharing, and collaboration on dashboards. The ability to embed reports and dashboards in other applications enhances user engagement.

8. **Power Query Editor:** The Power Query Editor, part of Power BI, provides a user-friendly interface for transforming and cleaning data. Its graphical interface allows users to shape and manipulate data using a step-by-step approach, making it accessible to a wide range of users.
9. **Quick Insights:** Power BI's Quick Insights feature automatically generates insights and trends from the data, helping users uncover hidden patterns without the need for complex queries or analysis.
10. **Integration with Other Microsoft Products:** Power BI seamlessly integrates with other Microsoft products like Excel, Azure, and SharePoint. This integration enhances the overall user experience by providing a cohesive environment for data analysis and reporting.

ABOUT YOUR PROJECT

The importance of data and analytics in supply chains is well-known. In fact, 91% of surveyed decision-makers said they are actively investing in capabilities that can analyse large amounts of data and automate business processes. Data and analytics gives warehouse managers the ability to find areas in warehouse operations that can be improved.

It's all well and good for companies to have access to their data in one convenient place, but what can they do with all that information? How can they effectively use it to improve the warehouse's efficiency? This is where a warehouse KPI dashboard can also help. It can track the movement of goods, schedule workloads, and monitor the performance of machineries and equipment, to name a few — all in a single pane that warehouse managers can view wherever and

whenever they are.

These can be complemented by business intelligence and advanced analytics capabilities, which can help analyse data to, among others:

- Estimate the capacity needed for operations.
- Identify risks, such knowing temperature-sensitive products or separating expiring or obsolete items.
- Plan a better course of action, such as taking alternative routes during high-traffic periods.
- Compare the procurement costs and quality of products from vendors and suppliers.

Using analytics to optimize key areas in warehouse

Here are some use cases for using Power BI to manage the supply chain:

- **Tracking movement in logistics**

Analysing logistics data (e.g., forecasting products needed for specific warehouses, knowing the status of shipped products) can be done by using Power BI's [inactive model relationships](#) in the date and fact tables. This enables data to be filtered by

customer, product, or region, so the movement of specific inventory through time can be seen. It can even help estimate the costs of shipping it.

- **Monitoring sales or orders**

A [Power BI sales dashboard](#) can extract data from a customer relationship management (CRM) system and present it in a more palatable format. Data from invoice and order lines, for instance, can be used to analyse if sales are growing or decreasing.

- **Checking vendor compliance**

For example, an on-time, in-full (OTIF) report can be generated by using the data transformation feature in Power BI to datasets related to time (i.e., requested and actual delivery dates) and quantity (i.e., ordered and delivered quantity) and using some formulas to calculate OTIF.

- **Planning and scheduling production**

A [Gantt chart](#) developed in Power BI adds interactivity to managing projects and optimizing the utilization of resources required for production. A Power BI Gantt chart can also be complemented by add-ins such as dynamic labels that allows complex information to be presented or highlighted without the intricacy of creating DAX measures

DATA SHEET

SUPPLY CHAIN ANALYSIS OF INVENTORIES (DATA SHEETS OF SALES, PRODUCT AND CUSTOMER) IN EXCEL FORMAT

Customer:

Sales		Product		Customer		...	
	A	B	C	D	E	F	G
1	PK_Customer	CustomerCode	CustomerFirstName	CustomerLastName	Country	CountryISOCode	City
2	1	N79H709	Arnaud	Gastelblum	Belgium	BE	Mouscron
3	2	Z92R903	Pauline	Peanut	France	FR	Villefranche sur mer
4	3	H59L252	Antoine	Legrand	Nederland	NL	Rotterdam
5	4	O30R794	Coralie	Brent	Nederland	NL	Maastricht
6	5	B42W912	Julien	Pomodoro	France	FR	Roubaix
7	6	I85S191	Sarah	Croche	France	FR	Paris
8	7	L75A698	Mike	Jeff	Nederland	NL	Amsterdam
9	8	K49A336	Amina	Loo	Belgium	BE	Brussels
10	9	Q44B467	Bjorn	Bio	Belgium	BE	Charleroi
11	10	Z91K849	Lisa	Dagusti	Belgium	BE	Antwerp
12	11	K74L961	Theresa	Limande	France	FR	Strasbourg
13	12	V17E452	Hilde	Vanderelst	Nederland	NL	Amsterdam
14							

Product:

Sales		Product		Customer	
	A	B	C	D	E
1	PK_Product	ProductCode	ProductName	ProductCategory	ProductUnitPrice
2	1	APP	Apple	Fruit	1.13
3	2	APR	Apricot	Fruit	2.2
4	3	BAN	Banana	Fruit	2.04
5	4	CRA	Cranberry	Fruit	11.34
6	5	KIW	Kiwifruit	Fruit	3.24
7	6	LEM	Lemon	Fruit	1.5
8	7	MAN	Mango	Fruit	4.58
9	8	ORA	Orange	Fruit	1.4
10	9	PIN	Pineapple	Fruit	2.55
11	10	STR	Strawberry	Fruit	10.52
12	11	PAP	Papaya	Fruit	1.95
13	12	MEL	Melon	Fruit	4.93
14	13	RAS	Raspberry	Fruit	7.32
15	14	TOM	Tomato	Fruit	1.8
16	15	PEA	Peach	Fruit	3.88
17	16	ASP	Asparagus	Vegetable	12.12
18	17	BRO	Broccoli	Vegetable	3.73
19	18	BRU	Brussels sprout	Vegetable	5.81
20	19	CEL	Celery	Vegetable	1.3
21	20	LET	Lettuce	Vegetable	5.95
22	21	ONI	Onion	Vegetable	0.8
23	22	RHU	Rhubarb	Vegetable	7.46
24	23	RAD	Radish	Vegetable	4.13
25	24	CAR	Carrot	Vegetable	1.79
26	25	KAL	Kale	Vegetable	2.78
27					

Sales:

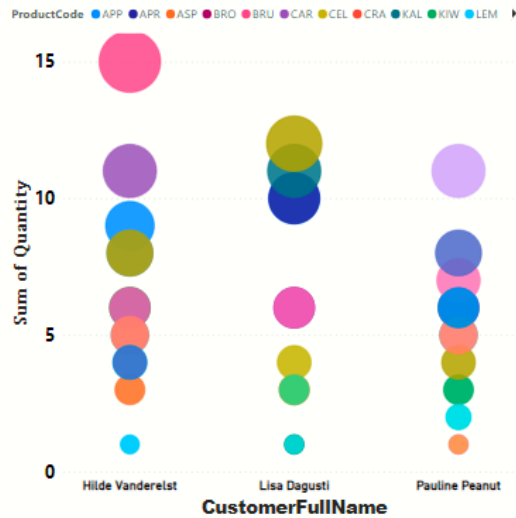
Sales		Product		C	
A	B	C	D	E	F
FK_Customer	FK_Product	Quantity	UnitPrice	Discount	TotalAmount
1	6	2	1.5	0.6	2.4
2	4	4	1.79	2.38	4.78
3	1	6	1.5	0	1.5
4	7	1	4.58	0	4.58
5	5	8	1.4	0	5.6
6	11	5	1.95	2.43	7.32
7	9	2	3.73	0	7.46
8	11	23	4.13	0	24.78
9	2	8	1.4	0	1.4
10	12	18	5.81	0	17.43
11	1	6	1.5	0	4.5
12	8	7	4.58	0	27.48
13	9	14	3	1.8	5.4
14	4	7	4.58	5.49	21.99
15	1	12	4.93	0	19.72
16	5	21	5	0.8	4
17	9	24	6	1.79	10.74
18	9	3	2.04	0	4.08
19	5	14	2	1.8	3.6
20	2	14	1	1.8	1.8
21	11	6	1.95	0	11.7
22	5	22	5	7.46	37.3
23	9	18	4	5.81	23.24
24	4	8	4	1.4	4.48
25	7	13	2	7.32	14.64
26	12	21	1	0.8	0.4
27	10	24	6	1.79	10.74
28	7	16	2	12.12	20.2
29	5	2	2.2	0.88	3.52
30	10	5	1	3.24	1.08
31	9	2	5	2.2	11
32	4	15	6	3.88	23.28
33	1	20	1	5.95	5.95
34	1	8	3	1.4	0.7
35	1	16	1	12.12	2.42
36	4	2	2	2	8.8
37	3	18	5	5.81	29.05
38	12	1	2	1.13	2.26
39	8	16	5	12.12	60.6
40	8	4	3	11.34	6.8
41	9	10	2	10.52	21.04
42	7	20	1	5.95	5.95
43	12	1	5.81	0	17.43
44	5	24	4	1.79	7.16
45	8	9	2	2.55	1.02
46	12	7	3	4.58	13.74
47	12	9	6	2.55	0
48	2	13	2	7.32	14.64
49	6	6	6	1.5	9
50	8	8	5	1.4	7
51	4	14	4	1.8	7.2
52	4	7	6	4.58	27.48
53	4	13	1	7.32	7.32
54	1	21	6	0.8	1.2
55	11	13	4	7.32	29.28
56	6	11	4	1.95	6.5
57	1	13	4	7.32	5.85
58	3	22	2	7.46	2.98
59	2	9	4	2.55	10.2
60	1	24	6	1.79	10.74
61	7	21	4	0.8	0.8
62	3	17	6	3.73	22.38
63	3	15	5	3.88	15.52
64	8	22	5	7.46	37.3
65	7	19	5	1.3	6.5
66	5	20	2	5.95	11.9
67	6	12	1	4.93	4.93
68	12	18	6	5.81	34.86
69	5	22	6	7.46	44.76
70	10	19	4	1.3	3.47
71	10	4	1	11.34	11.34
72	5	2	2	2.2	4.4
73	8	17	1	3.73	1.24
74	4	5	6	3.24	3.24
75	3	22	3	7.46	22.38
76	6	25	5	2.78	6.95
77	1	5	4	3.24	10.37
78	9	24	5	1.79	8.95
79	1	9	2	2.55	5.1
80	8	12	6	4.93	29.58
81	6	4	6	11.34	68.04
82	4	23	2	4.13	8.26
83	4	4	4	11.34	45.36
84	2	11	1	1.95	1.95
85	11	21	2	0.8	1.07
86	6	10	4	10.52	42.08
87					

VISUALIZATION

SCATTER CHART: It represent the Sum of Quantity and Sum of Quantity by Product Code and Customer Full Name

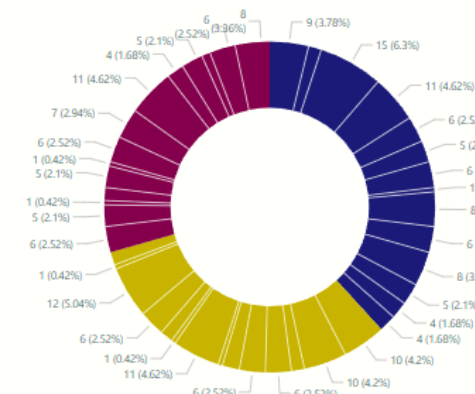
DONUT CHART : It shows the Sum of Quantity by Customer Full Name and Product Code

Sum of Quantity and Sum of Quantity by ProductCode and CustomerFullName



Sum of Quantity by CustomerFullName and ProductCode

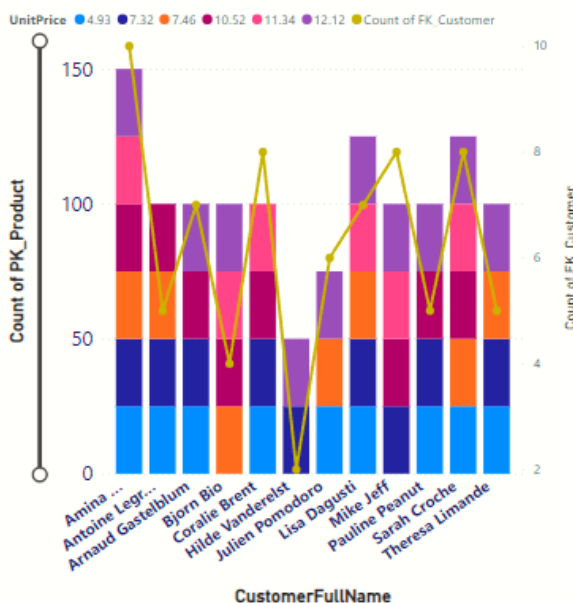
CustomerFullName: Hilde Vanderelst, Lisa Dagusti, Pauline Peanut



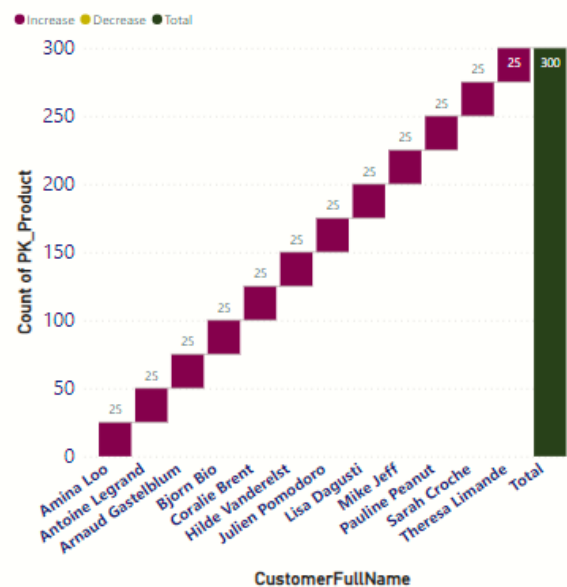
LINE AND STACKED COLUMN CHART: It shows the Column of PK-Product and Count of PK-Customer by Customer Full Name and Unit Price

WATERFALL CHART: Its shows the Count of PK-Product and Count of PK-Customer by Customer Full Name

Count of PK_Product and Count of FK_Customer by CustomerFullName and UnitPrice

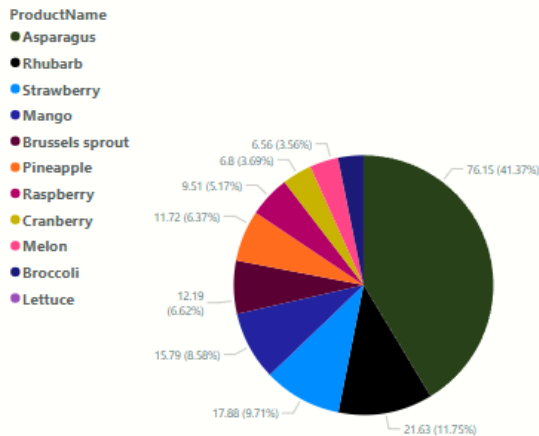


Count of PK_Product and Count of FK_Customer by CustomerFullName

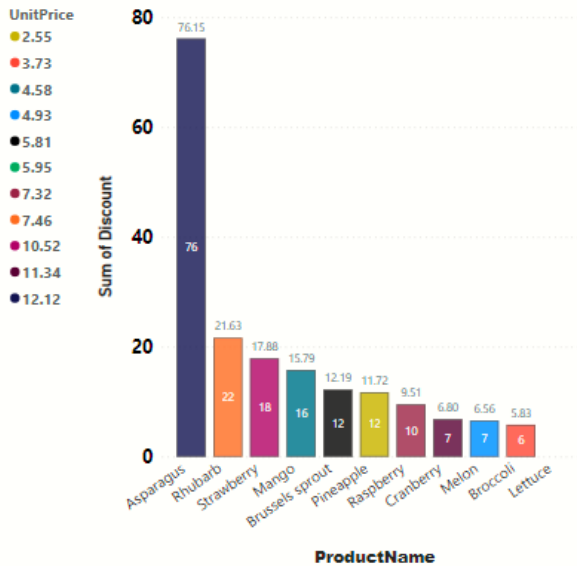


PIE CHART AND STACKED COLUMN CHART: They both represents the Sum of Discount by Product Name and Unit Price

Sum of Discount by ProductName and UnitPrice

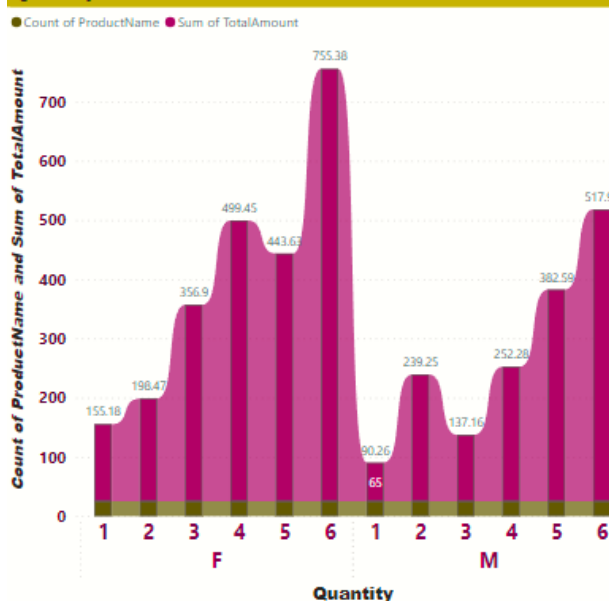


Sum of Discount by ProductName and UnitPrice



RIBBON CHART AND TREE MAP: They both represent the Count of Product Name and Sum of Total Amount by Gender and Quantity

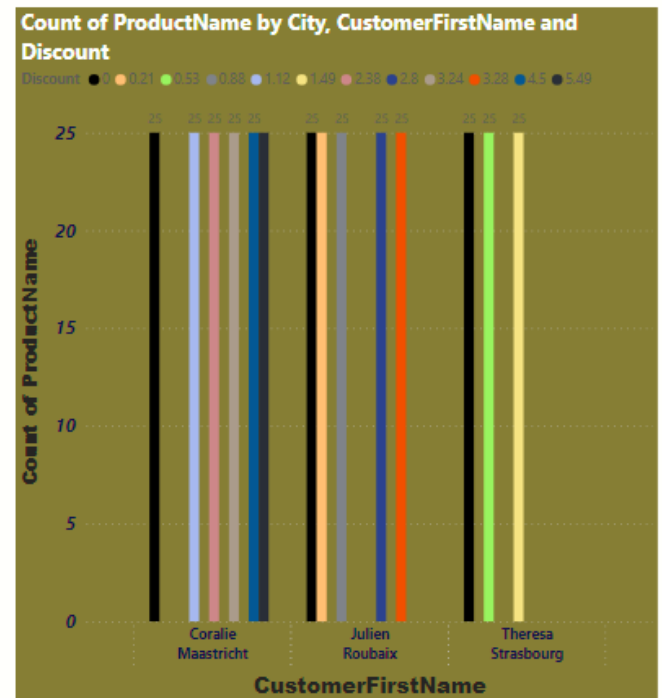
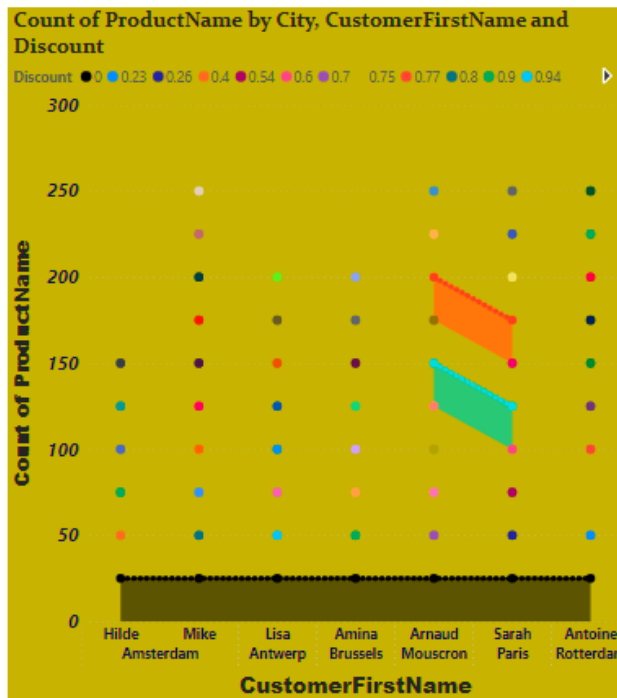
Count of ProductName and Sum of TotalAmount by Gender and Quantity



Count of ProductName and Sum of TotalAmount by Gender and Quantity



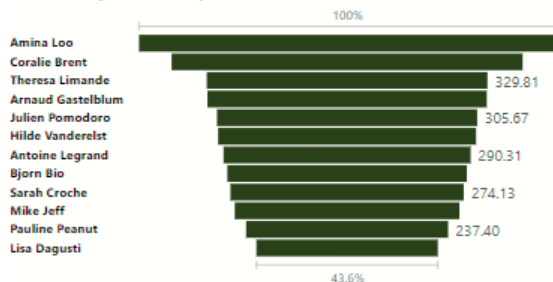
STACKED AREA CHART AND CLUSTERED COLUMN CHART: They both represent Count of Product Name by City, Customer First Name and Discount



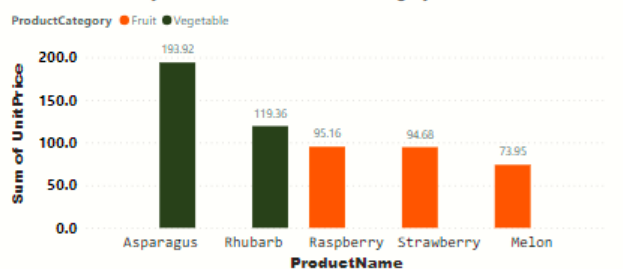
DASHBOARD

Supply Chain Analysis of Inventories

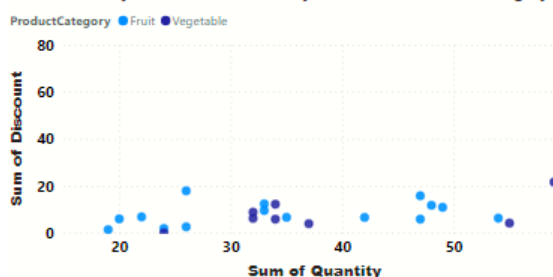
Most Quantity Purchased by the Customer



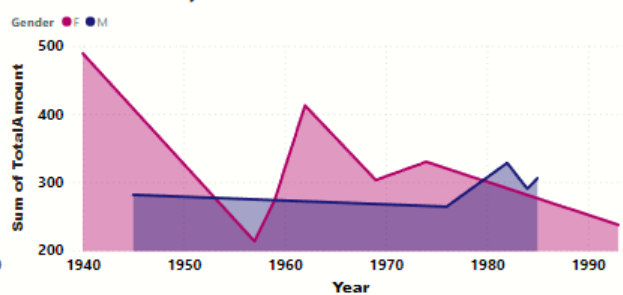
Sum of UnitPrice by ProductName and ProductCategory



Sum of Quantity and Sum of Discount by UnitPrice and ProductCategory



Sum of TotalAmount by Year and Gender



REPORT

Power BI numerous benefits for project tracking.

One of the main advantages is its ability to consolidate data from multiple sources, such as project management tools, financial systems, and spreadsheets. This allows project managers to have a holistic view of the project, making it easier to identify trends, patterns, and abnormalities. Power BI's advanced visualizations enable the creation of intuitive dashboards, making it effortless to track project progress at a glance. Furthermore, Power BI's interactive features allow users to explore and drill into data, gaining deeper insight into the project's performance.

Another Benefit of using Power BI for project tracking is its ability to automata data refreshes. With Power BI project managers can set up scheduled refreshes to ensure that the data is always up to data. That eliminates the need for manual data updates and reduce the risk of using outdated information for decision-making.

In addition, Power BI offer a wide range of collaboration features that enhance team collaboration and communication. Project teams can easily share dashboards and reports with stakeholders, enabling real-time annotations to specific data points, facilitating discussion and improving the overall project tracking process.

CONCLUSION

The project “Real-Time Analysis of Bank Customers” using PowerBI has successfully demonstrated the potential of data analytics in the banking sector. The real-time analysis of customer data has provided valuable insights into customer behavior, preferences, and trends, thereby facilitating informed decision-making. The interactive dashboards and reports have offered a comprehensive view of customer data, enabling the identification of patterns and correlations. This has not only improved the efficiency of data analysis but also enhanced the bank’s ability to provide personalized services to its customers. The project has also highlighted the importance of data visualization in making complex data more understandable and accessible. The use of PowerBI has made it possible to present data in a visually appealing and easy-to-understand format, thereby aiding in better decision-making

FUTURE SCOPE

The future scope of this project is vast. With the advent of advanced analytics and machine learning, PowerBI can be leveraged to predict future trends based on historical data. Integrating these predictive analytics into the project could enable the bank to anticipate customer needs and proactively offer solutions. Furthermore, PowerBI’s capability to integrate with various data sources opens up the possibility of incorporating more diverse datasets for a more holistic view of customers. As data privacy and security become increasingly important, future iterations of this project should focus on implementing robust data governance

strategies. This would ensure the secure handling of sensitive customer data while complying with data protection regulations. Additionally, the project could explore the integration of real-time data streams to provide even more timely and relevant insights. This could potentially transform the way banks interact with their customers, leading to improved customer satisfaction and loyalty.

REFERENCES

LINK