ASSIGNMENT 2 BI Group 3

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I. Determine, with examples, what business intelligence is and the tools and techniques associated with it (P3).

II. Design a business intelligence tool, application, or interface that can perform a specific task to support problem-solving or decision-making at an advanced level (P4).

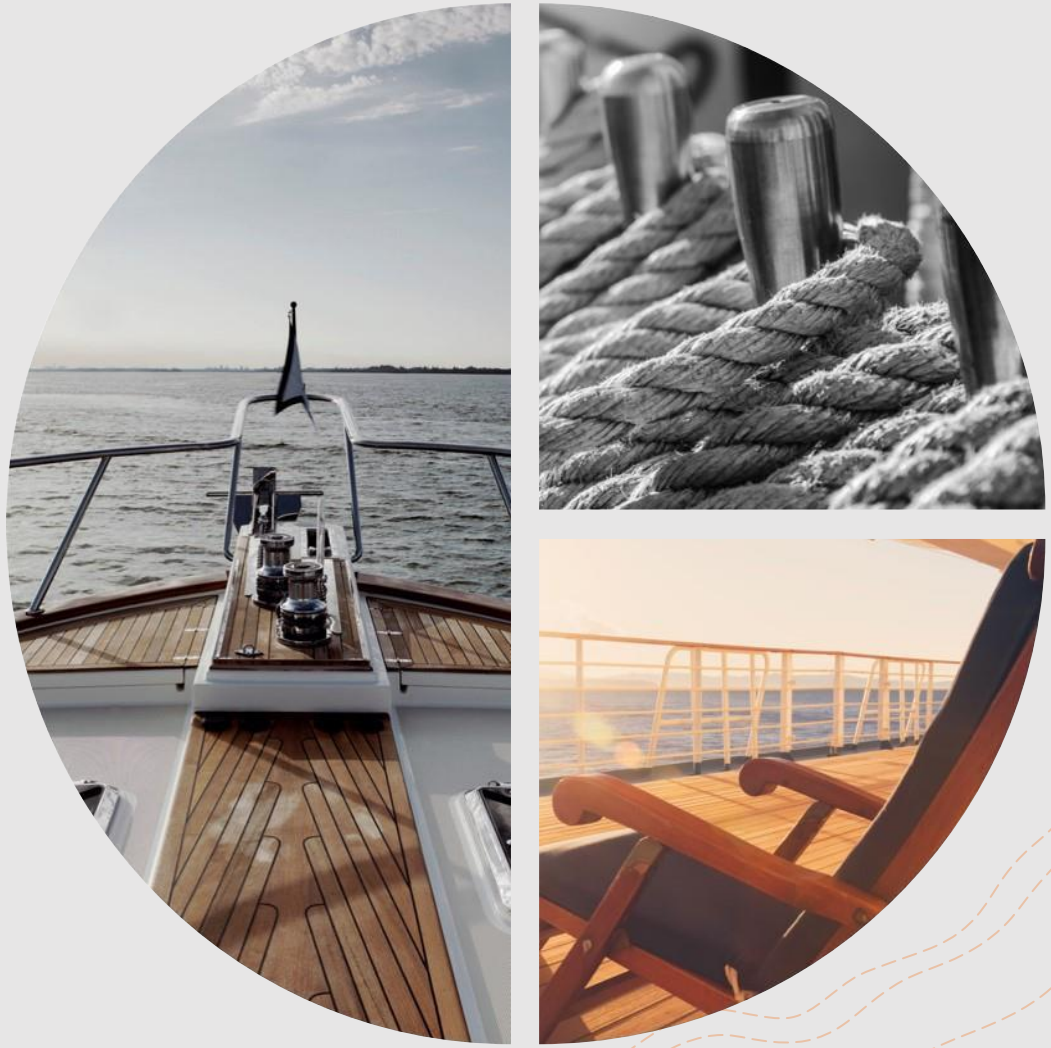
I. DETERMINE, WITH EXAMPLES, WHAT BUSINESS INTELLIGENCE IS AND THE TOOLS AND TECHNIQUES ASSOCIATED WITH IT.

1. General Concept of Business Intelligence – VU BA RE

Business intelligence (BI) combines business analytics, data mining, data visualization, data tools and infrastructure, and best practices to help organizations to make more data-driven decisions. In practice, you know you've got modern business intelligence when you have a comprehensive view of your organization's data and use that data to drive change, eliminate inefficiencies, and quickly adapt to market or supply changes.

Some tools for BI

1. Tableau
2. Python
3. MS



Tableau

Tableau is a Business Intelligence tool specialized in data discovery and data visualization. With the software, you can easily analyze, visualize and share data, without IT having to intervene. Tableau supports multiple data sources such as MS Excel, Oracle, MS SQL, Google Analytics, and SalesForce. Users will gain access to well-designed dashboards that are very easy to use. Additionally Tableau also offers several standalone products including Tableau Desktop (for anyone) and Tableau Server (analytics for organizations), which can be run locally, Tableau Online (hosted analytics for organizations), and many more.

TABLEAU - SOLUTION BUSINESS INTELLIGENCE (BI)

Tableau, the Business Intelligence and Business Analytics solution - a tool to help administrators easily understand and exploit business data to make business decisions .

Some basic features of tableau

+ Compile queries into images, charts
+ Large data import, metadata management
+ Support creating queries with simple operation
+ Data Analytics with Big Data
+ Build Business Dashboards from simple to complex
+ Managing operational data (Data Stories)
+ Simulation and data analysis
+ Analysis over time
+ Share, connect through real-time online applications
- Tableau includes many tools to support data visualization and analysis solutions: Tableau Prep (data extraction and processing ETL tool), Tableau Desktop (data analysis and visualization tool), Tableau Online, Tableau Server (Server analyzes and stores reports).

Use Tableau's tools in data analysis and visualization:

Tableau Prep:

Tableau Prep can be understood as a tool used for data preparation, data extraction and processing (ETL). Tableau Prep brings an important change in the organization of data, compared to the traditional method with many improvements. Specifically, the application helps business users and analysts shape data quickly; allows to perform queries, merge and clean data extremely simple and convenient.

Using Tableau Prep makes data more organized, clear, and manageable.

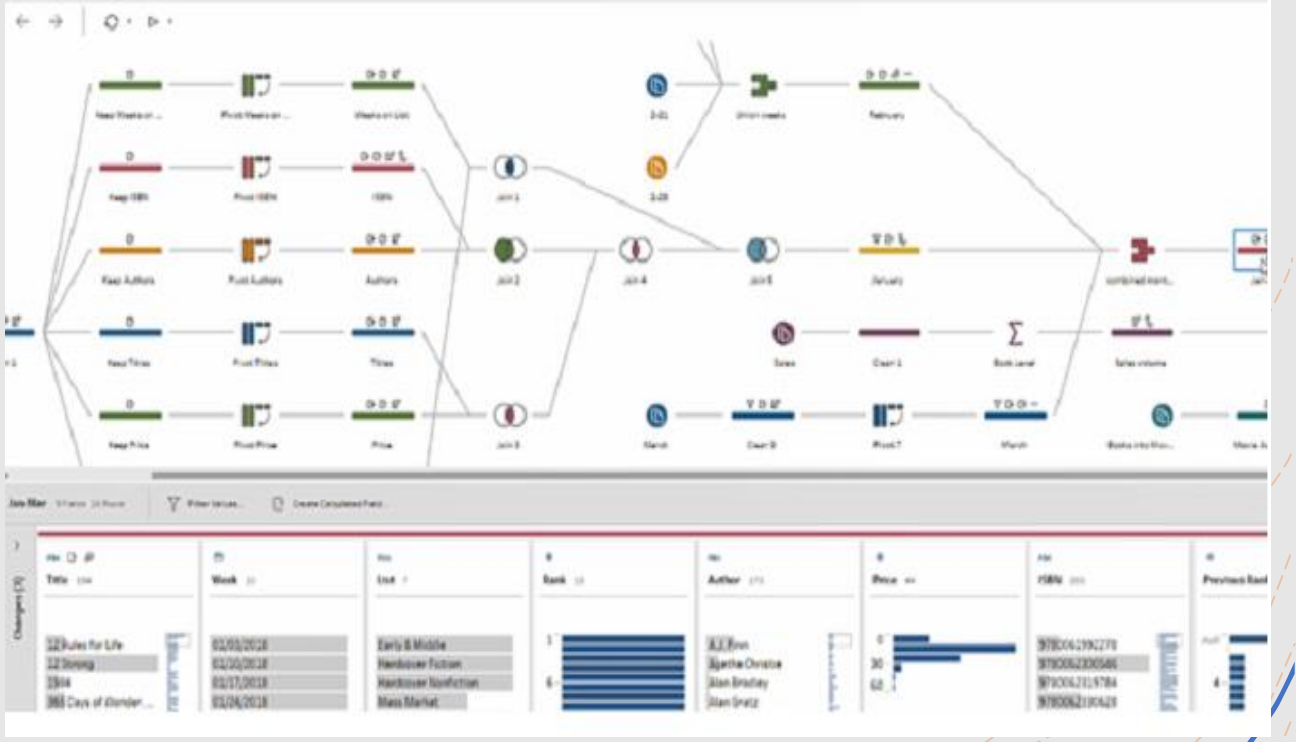


Tableau Desktop

After completing the data preparation step, the next tool that will help you analyze and present the data is Tableau Desktop. This tool provides an intuitive interface and diverse features for data encryption and analysis. The operations are mostly drag and drop and don't require too much technical or programming knowledge. Tableau Desktop has extensive connectivity to many different file formats, to best meet the needs of analysis in many industries and fields.

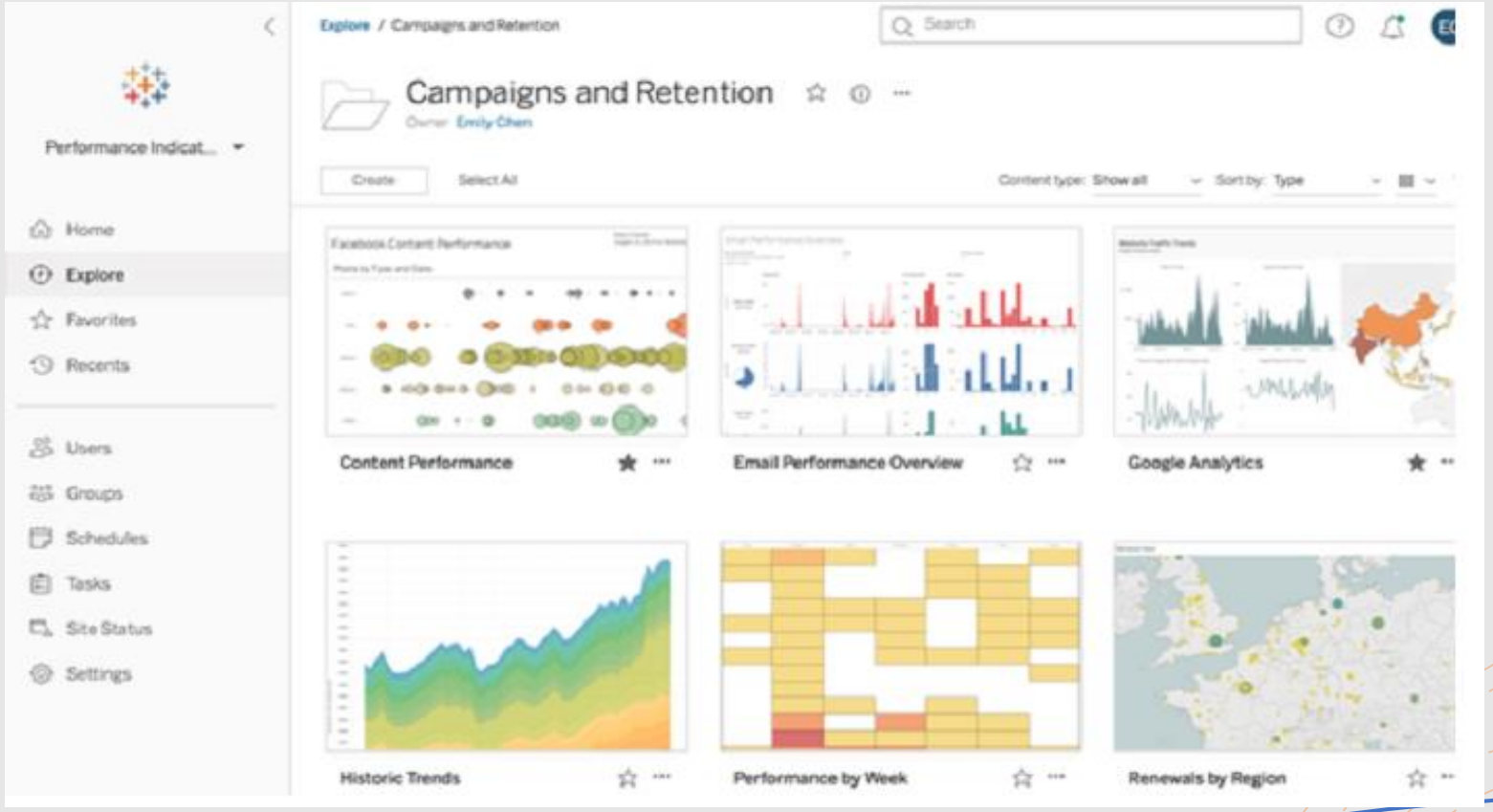
Tableau Online

No need for a server, no storage limit, allowing links to more than 40 different data sources. However, to be able to publish, Tableau Desktop is still needed, which can be thought of as a free server.

One thing to keep in mind is that Tableau Online shares your publications with everyone, don't put important data here. However, Tableau Online still allows you to invite partners and customers to view online reports via browsers and mobile applications.

Tableau Server

A place to share confidential business analytics and grant access; help everyone share and manage data in the cloud.



Python and Power BI

LUU THE CUONG

Definition

- Python is an interpreted, object-oriented, high-level programming language with dynamic semantics.
- Its high-level built in data structures, combined with dynamic typing and dynamic binding
- Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance.
- Python supports modules and packages, which encourages program modularity and code reuse.

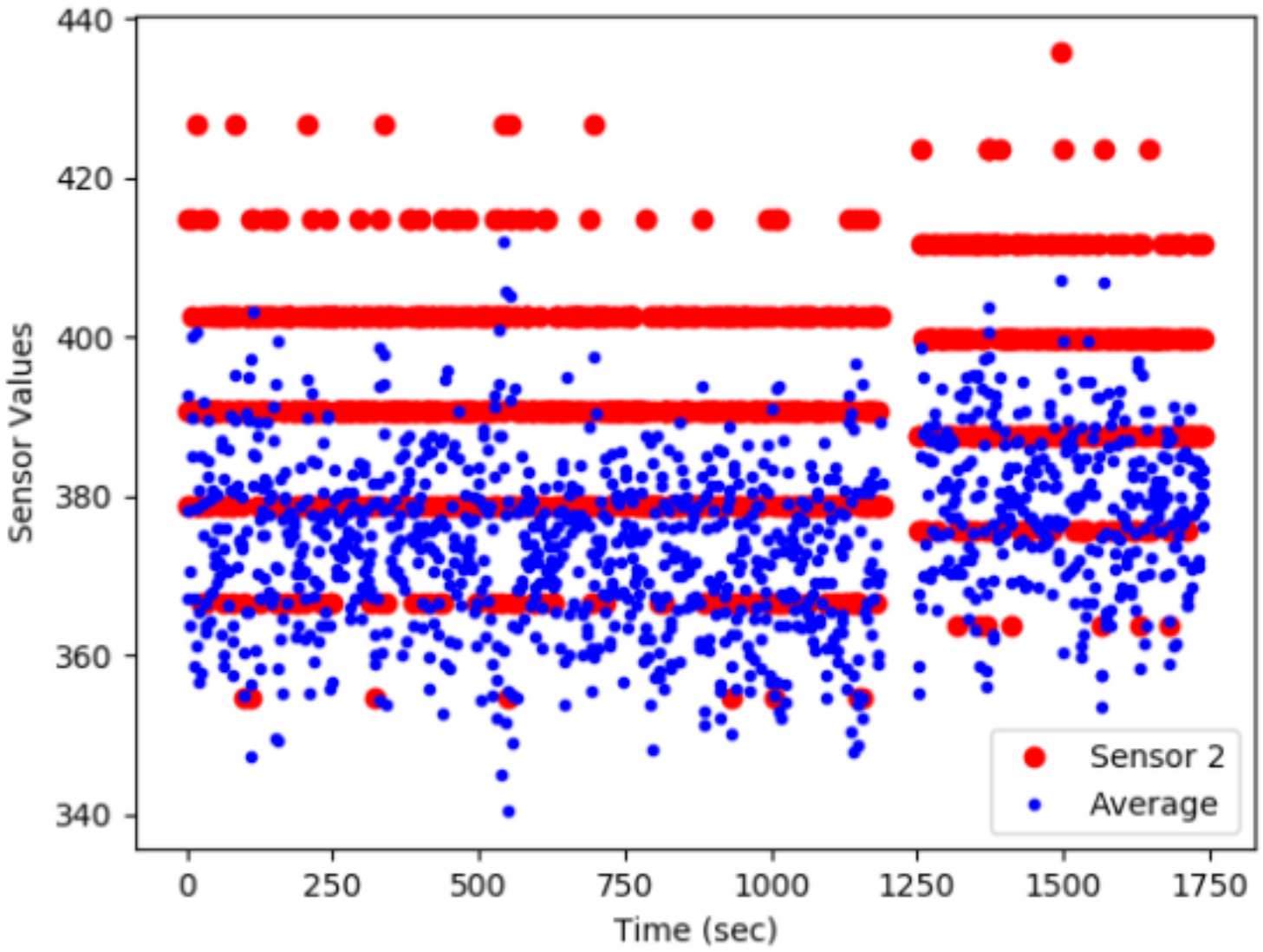
Pros
Python can run it on any platform, adapting the ‘write once, run any where’ feature.
Python allows you to download any source code and modify and further distribute your version of your code in Python.
Python is programming language Easy-to-learn and Easy-to-use
Python is an interpreted language that can execute code directly, lin e after line.

Cons
Python needs to make some trade-offs because the language uses a large amount of memory, which is detrimental to the user
Python has slow processing power and is hardly memory efficient when compared to other programming languages.
Mostly, companies aim to have smooth interaction with complex data, which makes it difficult for them to use Python.

```python
# Numpy (data import, manipulation, export)
import numpy as np
# Matplotlib (create trends)
import matplotlib.pyplot as plt
# load the data file
data_file = np.genfromtxt('data_file.txt', delimiter=',')

# create time vector from imported data (starts from index 0)
time = data_file[:,0]
# parse good sensor data from imported data
sensors = data_file[:,1:5]

print(sensors[0:6])

time = time - time[0]

avg = np.mean(sensors,1) # over the 2nd dimension
my_data = np.vstack((time,sensors.T,avg))
# transpose data
my_data = my_data.T
np.savetxt('export_from_python.txt',my_data,delimiter=',')
plt.figure(1)
plt.plot(time/60.0,sensors[:,1],'ro')
plt.plot(time/60.0,avg,'b.')
# add text labels to the plot
plt.legend(['Sensor 2','Average Sensors 1-4'])
plt.xlabel('Time (min)')
plt.ylabel('Sensor Values')
# save the figure as a PNG file
plt.savefig('my_Python_plot.png')
plt.show()
```

http://apmonitor.com/che263/index.php/Main/PythonDataAnalysis

Result

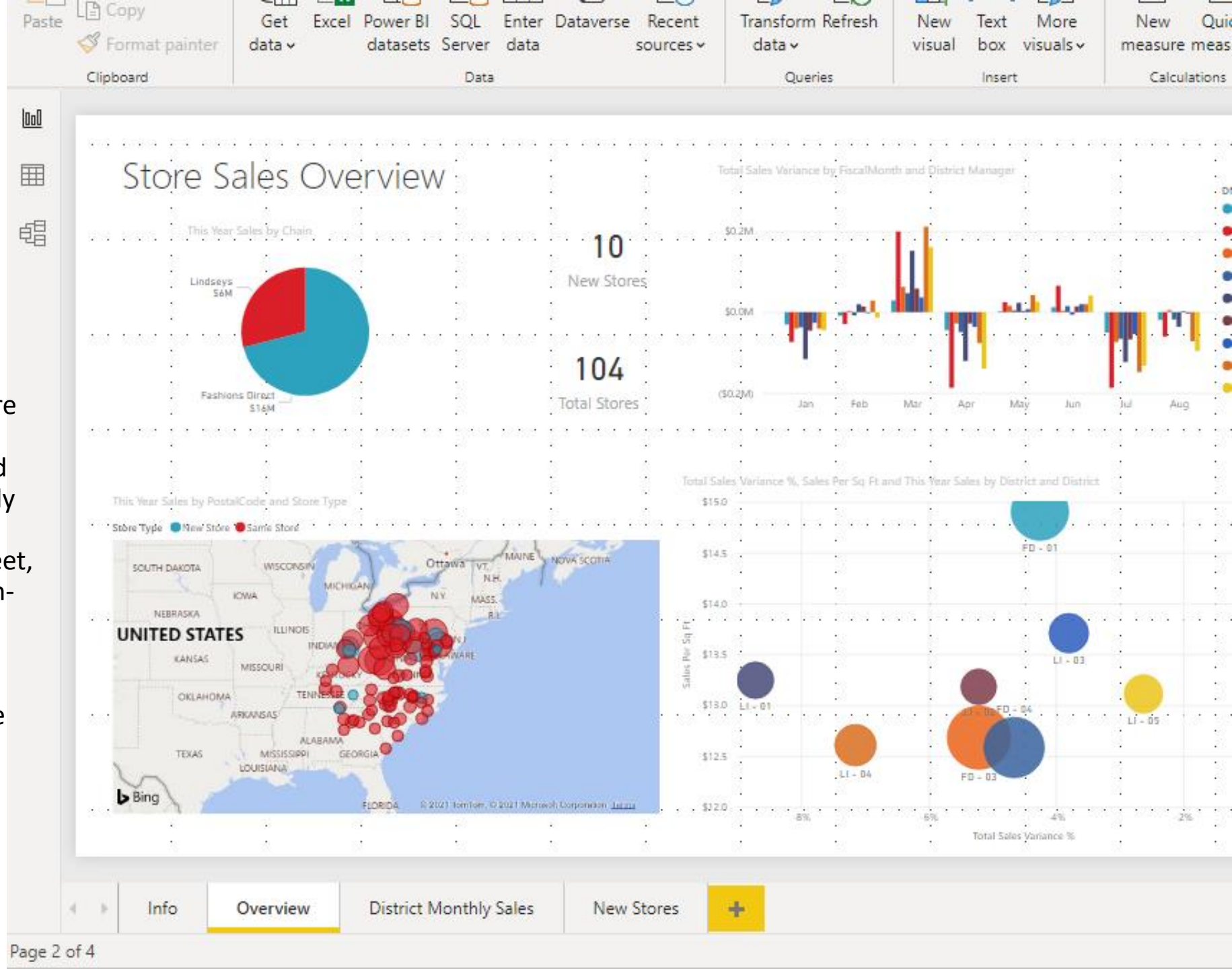

440
420
400
380
360
340
Sensor Values
0
250
500
750
1000
1250
1500
1750
Time (sec)
Sensor 2
Average

Power BI

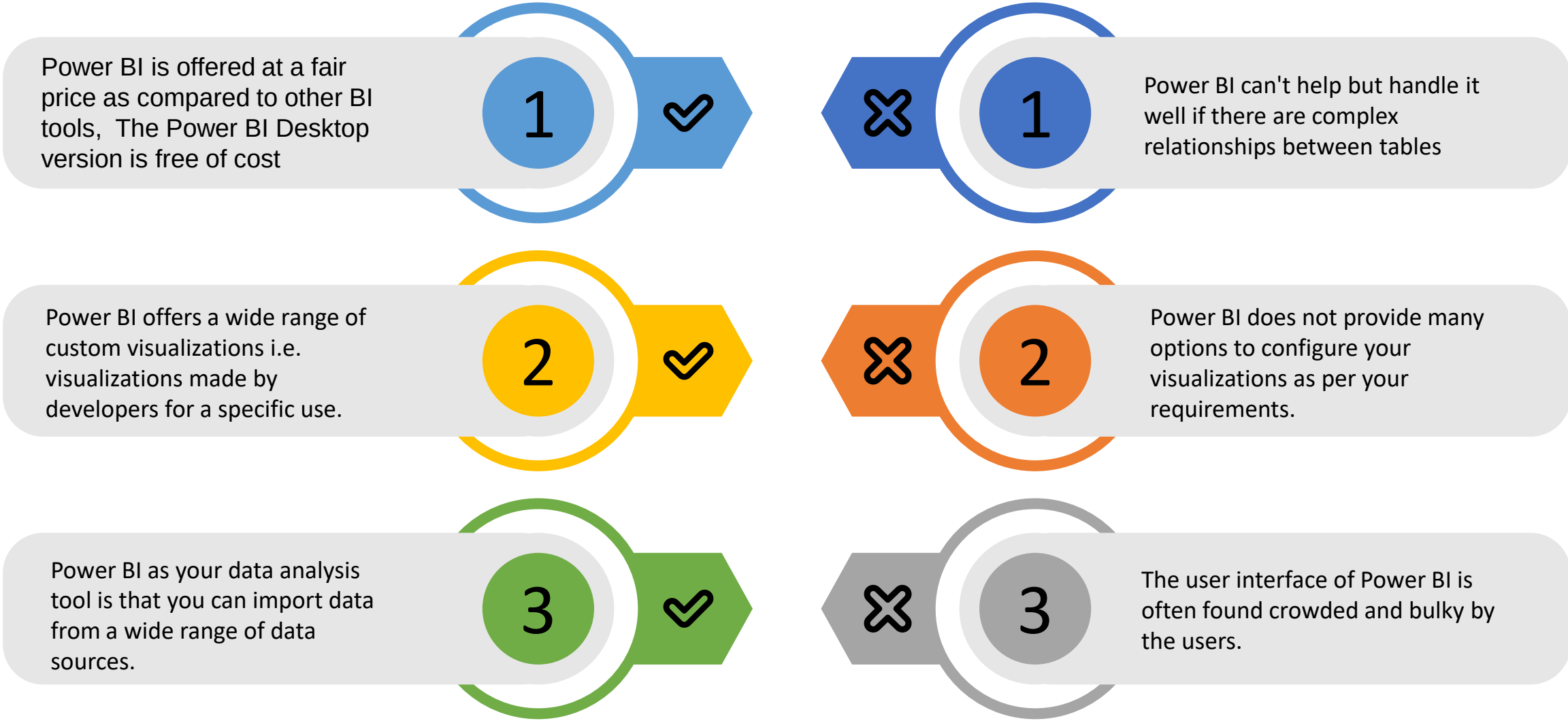

Travel Analysis
Regional Load
Sales
Flights Expense
522
Variance to Budget
($1.39M)
Delayed Flights
Number of Tips
Sales Pipeline
52
$1458M
Pipeline
Sales Manager
Favorites
Opportunities volume
Regional Load
Win/Lost Trend

Definition

- **Power BI** is a collection of software services, apps, and connectors that work together to turn your unrelated sources of data into coherent, visually immersive, and interactive insights. Your data may be an Excel spreadsheet, or a collection of cloud-based and on-premises hybrid data warehouses. Power BI lets you easily connect to your data sources, visualize and discover what's important, and share that with anyone or everyone you want.



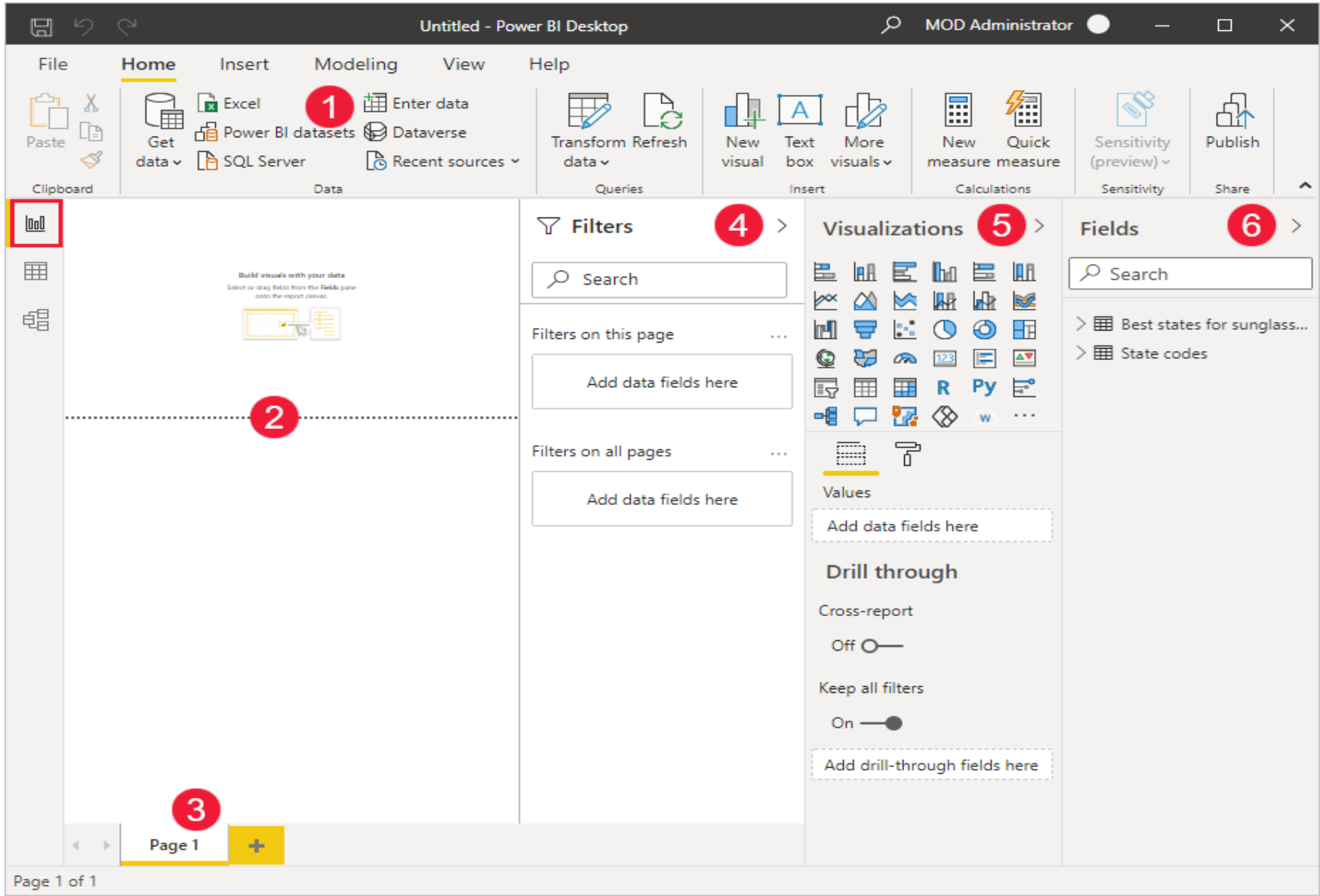
Pros and Cons Infographics



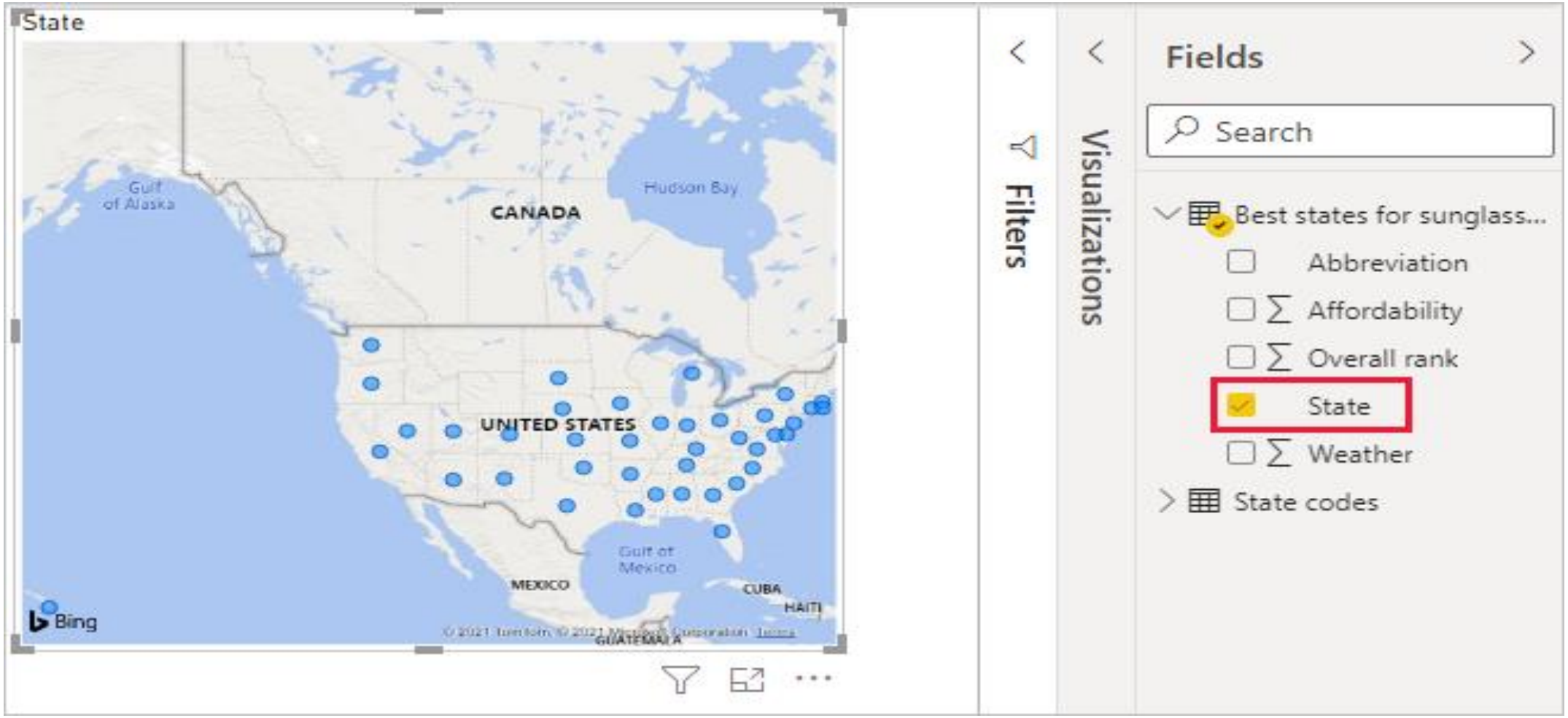
Example of Power BI

Step 1: In Power BI Desktop Report view, you can build visualizations and reports.
The Report view has six main areas:

1.The ribbon at the top, which displays common tasks associated with reports and visualizations.
2.The canvas area in the middle, where visualizations are created and arranged.
3.The pages tab area at the bottom, which lets you select or add report pages.
4.The **Filters** pane, where you can filter data visualizations.
5.The **Visualizations** pane, where you can add, change, or customize visualizations, and apply drill through.
6.The **Fields** pane, which shows the available fields in your queries. You can drag these fields onto the canvas, the **Filters** pane, or the **Visualizations** pane to create or modify visualizations



Step 2: To create a simple visualization, just select any field in the fields list, or drag the field from the Fields list onto the canvas. For example, drag the State field from Best states for sunglass sales onto the canvas, and see what happens.



Power BI Desktop will recognize that the State field contained geolocation data and automatically created a map-based visualization. The visualization shows data points for the 40 states from your data model.

II. DESIGN A BUSINESS INTELLIGENCE TOOL, APPLICATION OR INTERFACE THAT CAN PERFORM A SPECIFIC TASK TO SUPPORT PROBLEM-SOLVING OR DECISION-MAKING AT AN ADVANCED LEVEL (P4).

Contributors:

DINH VAN KHIEM

BUI MANH QUAN

1. Design a business intelligence tool, to clean data and support helping decision making.

DINH VAN KHIEM

Python introduce

One of the most common tasks that you can do with Python is reading and writing files. Whether it’s writing to a simple text file, reading a complicated server log, or even analyzing raw byte data, all of these situations require reading or writing a file

Make a cleaning data with python

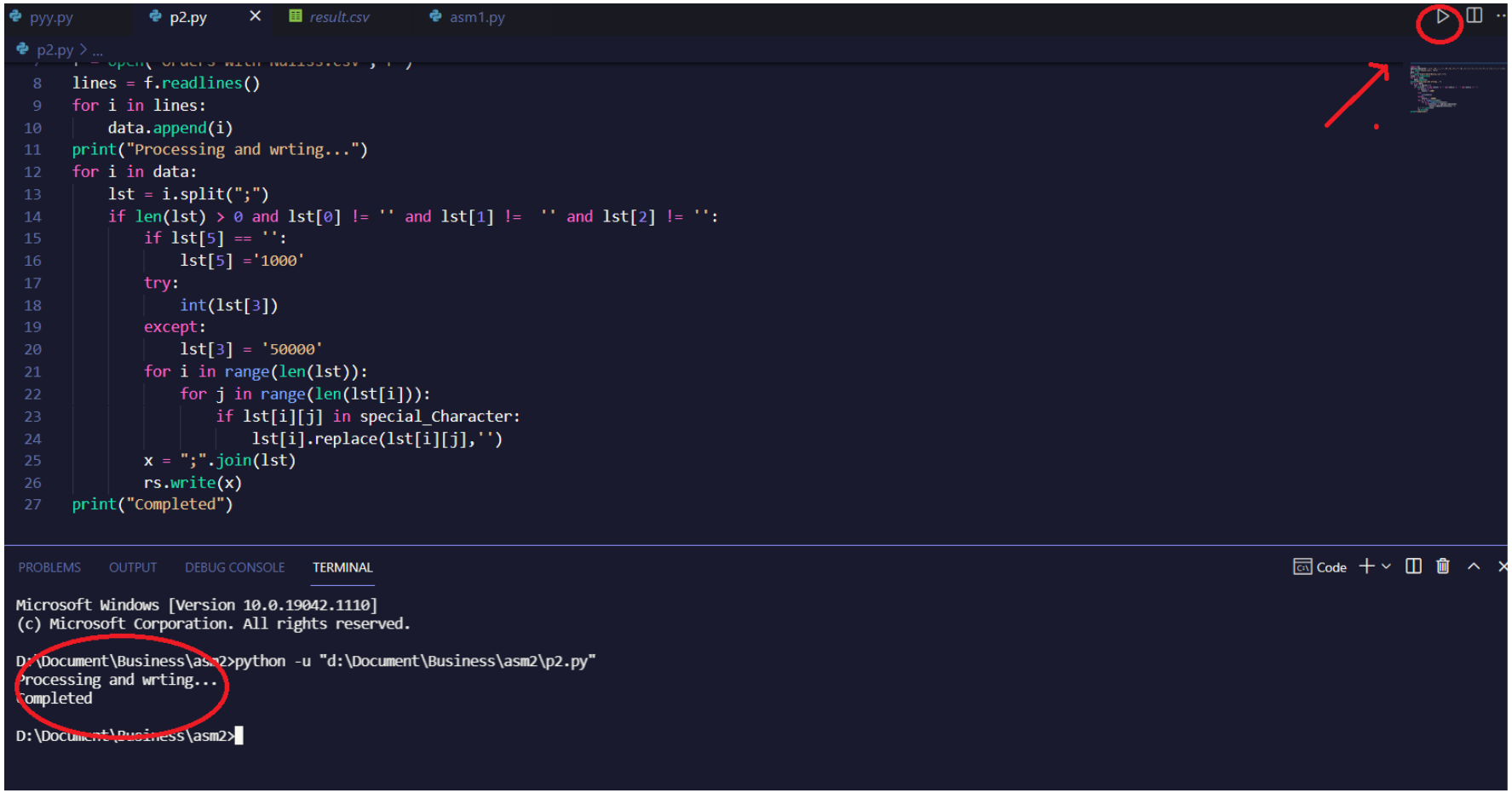
```python
import csv
special_Character = ['[','@','_','!','#','$','%','^','&','*','(',')','<','>','?','/','{','~',':',']']
rs = open("result.csv", "w+")
data = []
f = open("Orders-With-Nullss.csv","r")
lines = f.readlines()
for i in lines:
    data.append(i)
print("Processing and wrting...")
for i in data:
    lst = i.split(";")
    if len(lst) > 0 and lst[0] != '' and lst[1] !=  '' and lst[2] != '':
        if lst[5] == '':
            lst[5] ='1000'
        try:
            int(lst[3])
        except:
            lst[3] = '50000'
        for i in range(len(lst)):
            for j in range(len(lst[i])):
                if lst[i][j] in special_Character:
                    lst[i].replace(lst[i][j],'')
        x = ";".join(lst)
        rs.write(x)
print("Completed")
```

TOOL TESTING

Test steps:

1. *From IDE interface, click run to execute code*
2. *If we see “Complete”, check result file to see the changed*

Execute the code



Result file before processing

	A	B	C	D	E	F	G	H	I	J	K
1	Order ID	Order Date	Order Qua	Sales	Ship Mode	Profit	Unit Price	Customer	Customer	Product Category	
2	3	13/10/2010	6	26154	Regular Ai	-21325	3894	Muhamme	Small Busi	Office Supplies	
3	6	20/02/2012	2	693	Regular Ai	-464	208	Ruben Dai	Corporate	Office Supplies	
4	32	15/07/2011	26	280808	Regular Ai	105482	10753	Liz Pelletie	Corporate	Furniture	
5	32	15/07/2011	24	17614	Delivery Tı	-174856	7089	Liz Pelletie	Corporate	Furniture	
6	32	15/07/2011	23	1602335	Regular Ai	-8513	799	Liz Pelletie	Corporate	Technology	
7	32	15/07/2011	15	14056	Regular Ai	-12838	846	Liz Pelletie	Corporate	Technology	
8	35	22/10/2011	30	28856	Regular Ai	6072	911	Julie Creig	Corporate	Office Supplies	
9	35	22/10/2011	14	1892848	Regular Ai	4899	15599	Julie Creig	Corporate	Technology	
10	36	02/11/2011	46	24847455	Regular Ai	65748	6599	Sample Cc	Home Offic	Technology	
11	65	17/03/2011	32	381273	Regular Ai	147030	11579	Tamara Da	Corporate	Technology	
12	32	15/07/2008	26		Regular Air		10753	Liz Pelletie	Corporate	Furniture	
13	32	15/07/2008	24		Delivery Truck		7089	Liz Pelletie	Corporate	Furniture	
14	32	15/07/2008	23		Regular Air		799	Liz Pelletie	Corporate	Technology	
15	32	15/07/2008	15		Regular Air		846	Liz Pelletie	Corporate	Technology	
16	35	22/10/2008	30		Regular Air		911	Julie Creig	Corporate	Office Supplies	
17	35	22/10/2008	14		Regular Air		15599	Julie Creig	Corporate	Technology	
18	36	22/10/2008	46		Regular Air		6599	Sample Cc	Home Offic	Technology	
19	65	22/10/2008	32		Regular Air		11579	Tamara Da	Corporate	Technology	
20	66	19/01/2009	41	10815	Regular Ai	757	288	Arthur Gai	Consumer	Office Supplies	
21	69	03/06/2009	42	118606	Regular Ai	51169	3093	Jonathan I	Corporate	Furniture	
22	69	03/06/2009	28	5153	Express Ai	35	168	Jonathan I	Corporate	Office Supplies	
23	70	17/12/2010	48	9005	Regular Ai	-10700	186	Helen Was	Home Offic	Office Supplies	
24	70	17/12/2010	46	780453	Regular Ai	205717	20599	Helen Was	Home Offic	Technology	
25	96	16/04/2009	37	41581235	Regular Ai	122889	12599	Keith Dawl	Home Offic	Technology	
26	97	28/01/2010	26	7557	Regular Ai	2824	289	Craig Yedv	Consumer	Office Supplies	
27	129	18/11/2012	4	3272	Regular Ai	-2259	648	Pauline Ch	Corporate	Office Supplies	
28	130	07/05/2012	3	46189	Express Ai	-30982	15098	Roy Collin	Corporate	Technology	
29	130	07/05/2012	29	57511	Regular Ai	7175	1897	Roy Collin	Corporate	Office Supplies	
30	130	07/05/2012	23	23646	Regular Ai	-13431	971	Roy Collin	Corporate	Office Supplies	
31	132	10/06/2010	27	192814	Regular Ai	-8620	799	Emily Phar	Consumer	Technology	
32	132	10/06/2010	30	401165	Delivery Tı	-60380	13098	Emily Phar	Consumer	Furniture	
33	134	30/04/2012	11	11326	Regular Ai	-31021	9599	Michael Dc	Home Offic	Office Supplies	

Result file after processing

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15	32	15/07/2008	15	50000	Regular Ai	1000	846	Liz Pelletie	Corporate	Technology	
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29	130	07/05/2012	29	57511	Regular Ai	7175	1897	Roy Collins	Corporate	Office Supplies	
30	130	07/05/2012	23	23646	Regular Ai	-13431	971	Roy Collins	Corporate	Office Supplies	
31	132	10/06/2010	27	192814	Regular Ai	-8620	799	Emily Phar	Consumer	Technology	
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33	134	30/04/2012	11	11326	Regular Ai	-31021	9599	Michael Dc	Home Offic	Office Supplies	

Design Chart and Dashboard on Tableau Tools

Bui Manh quan

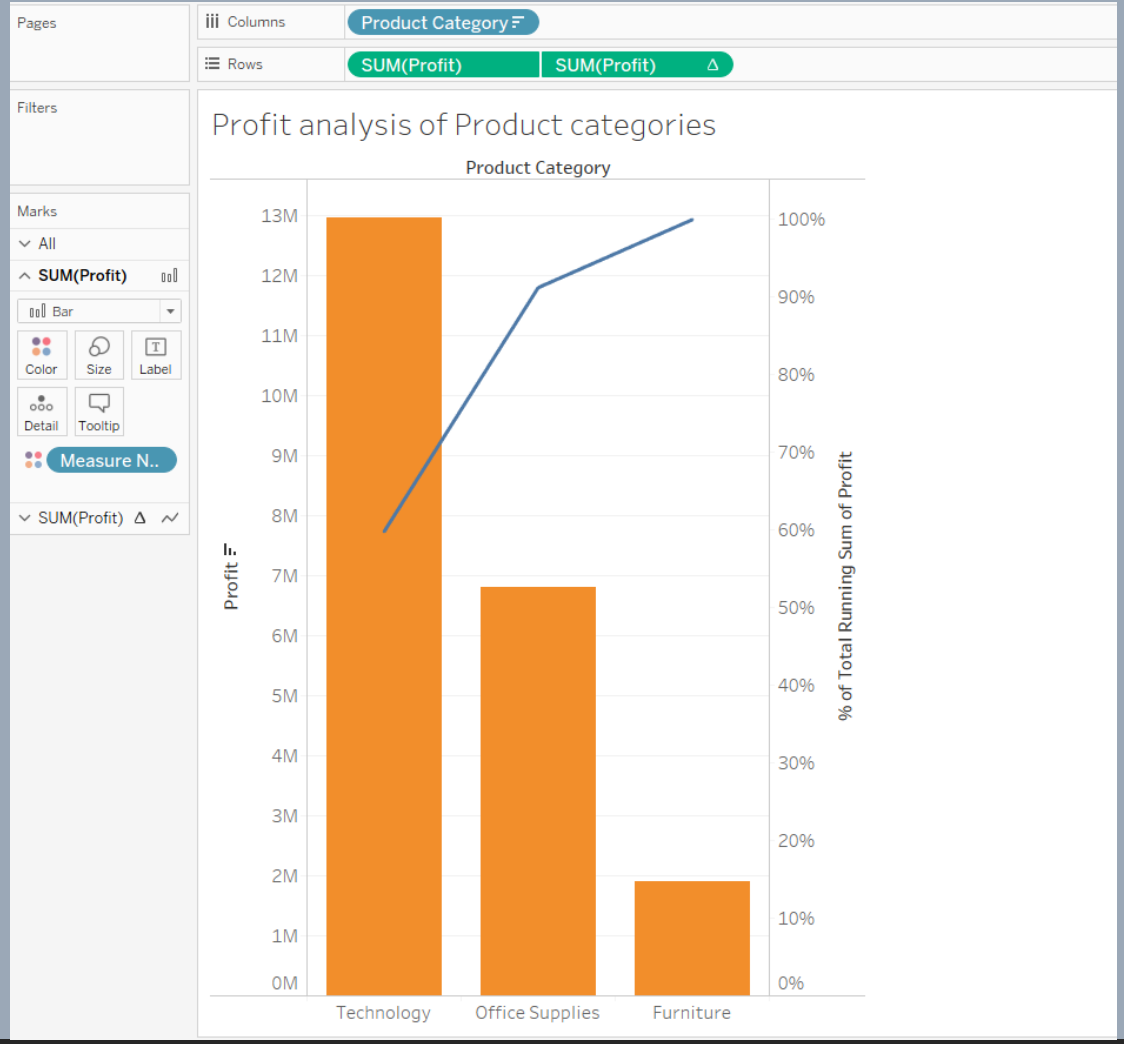


Chart 1:The pareto chart that breaks down the sales of the product categories in this company will show us which categories bring in the most revenue, which ones bring in the lowest profits. From there, the management board can make reasonable decisions to edit sales policy

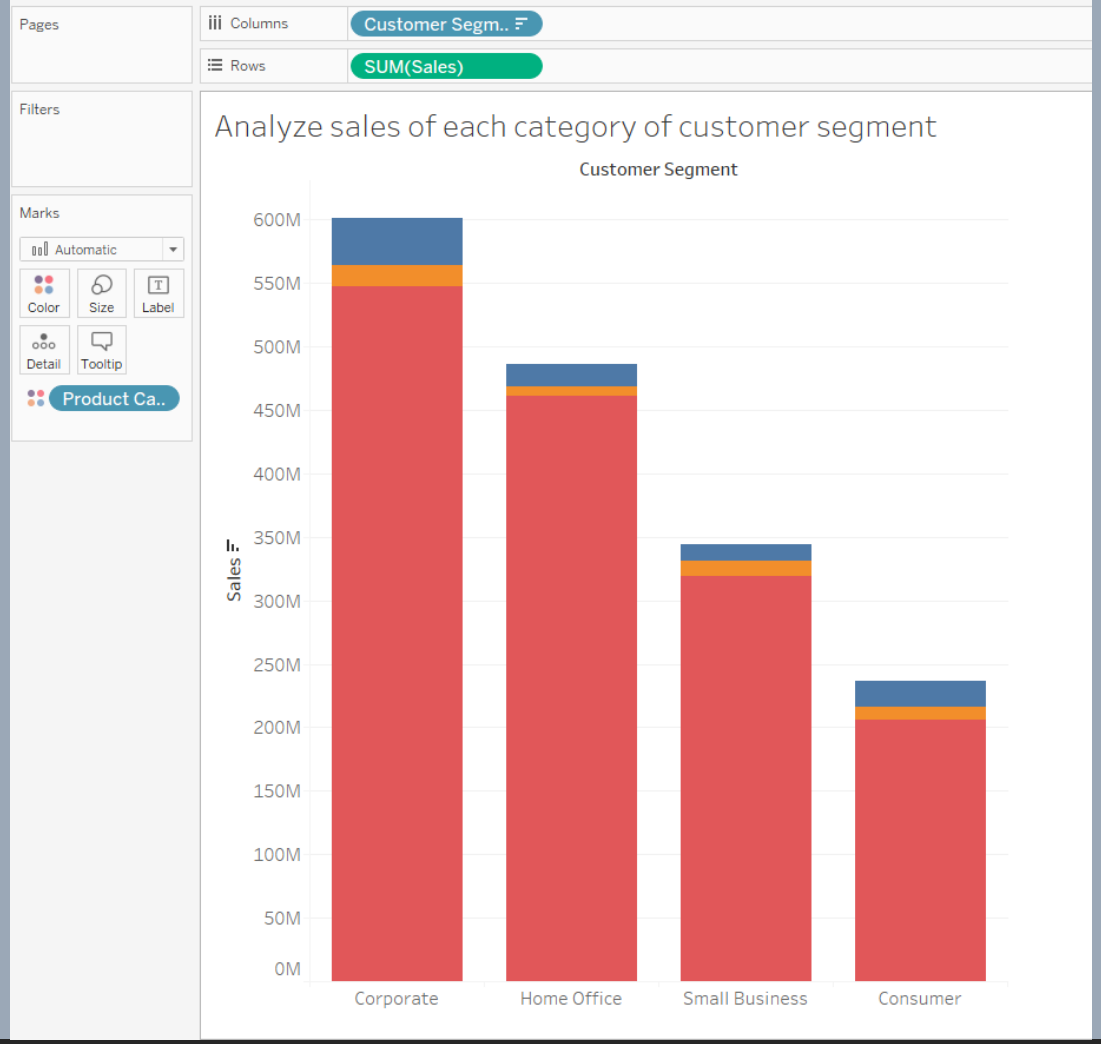


Chart 2:The Sales Analysis chart of each type of customer segment will show the management what kind of customers are using the company's products the most as well as which categories are buying the most from there to make decisions. better advertising

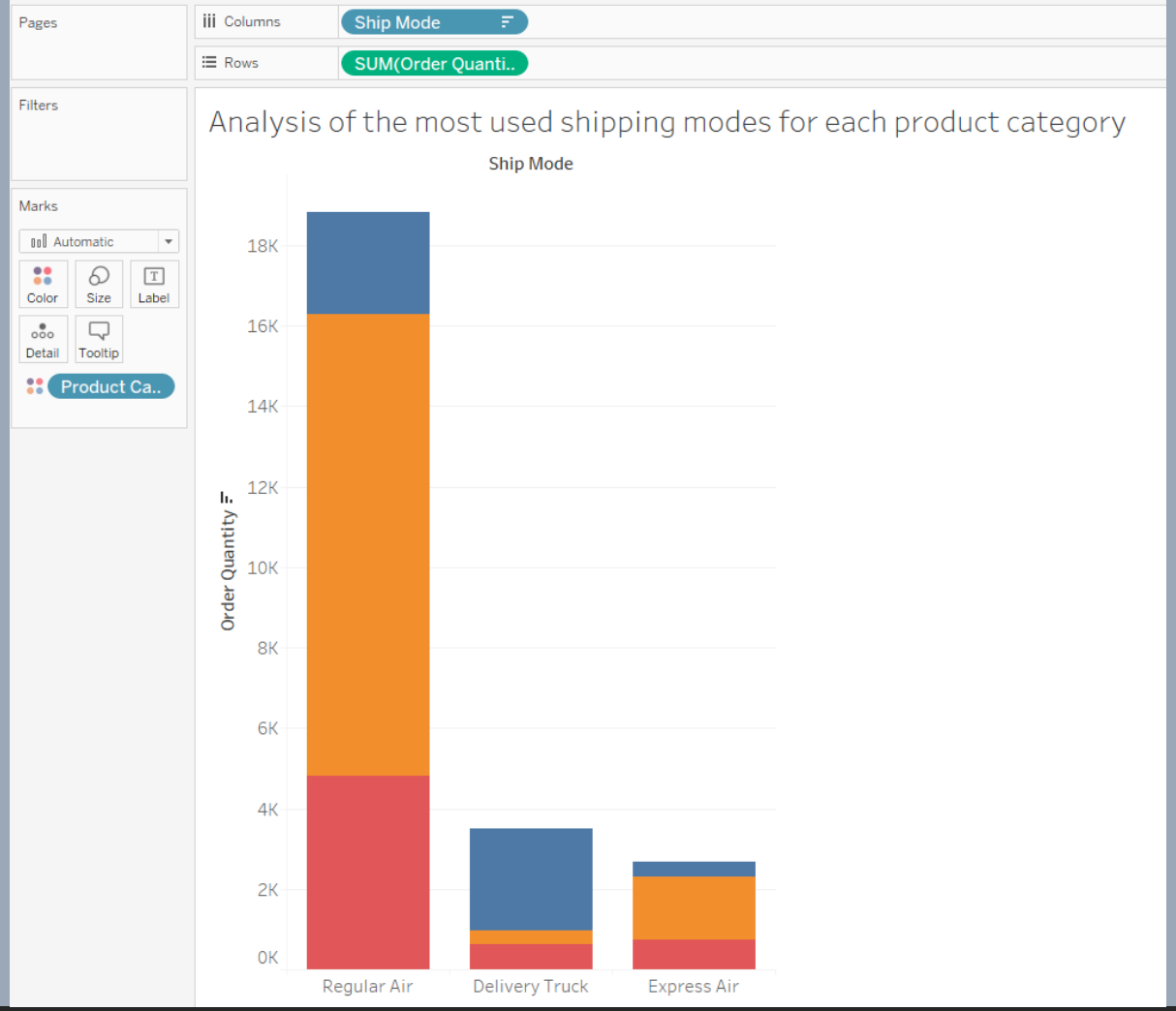


Chart 3:Chart Analysis of the most used shipping methods for each type of product shows which shipping method is most satisfied by customers, which form customers are not satisfied with, from which methods to improve

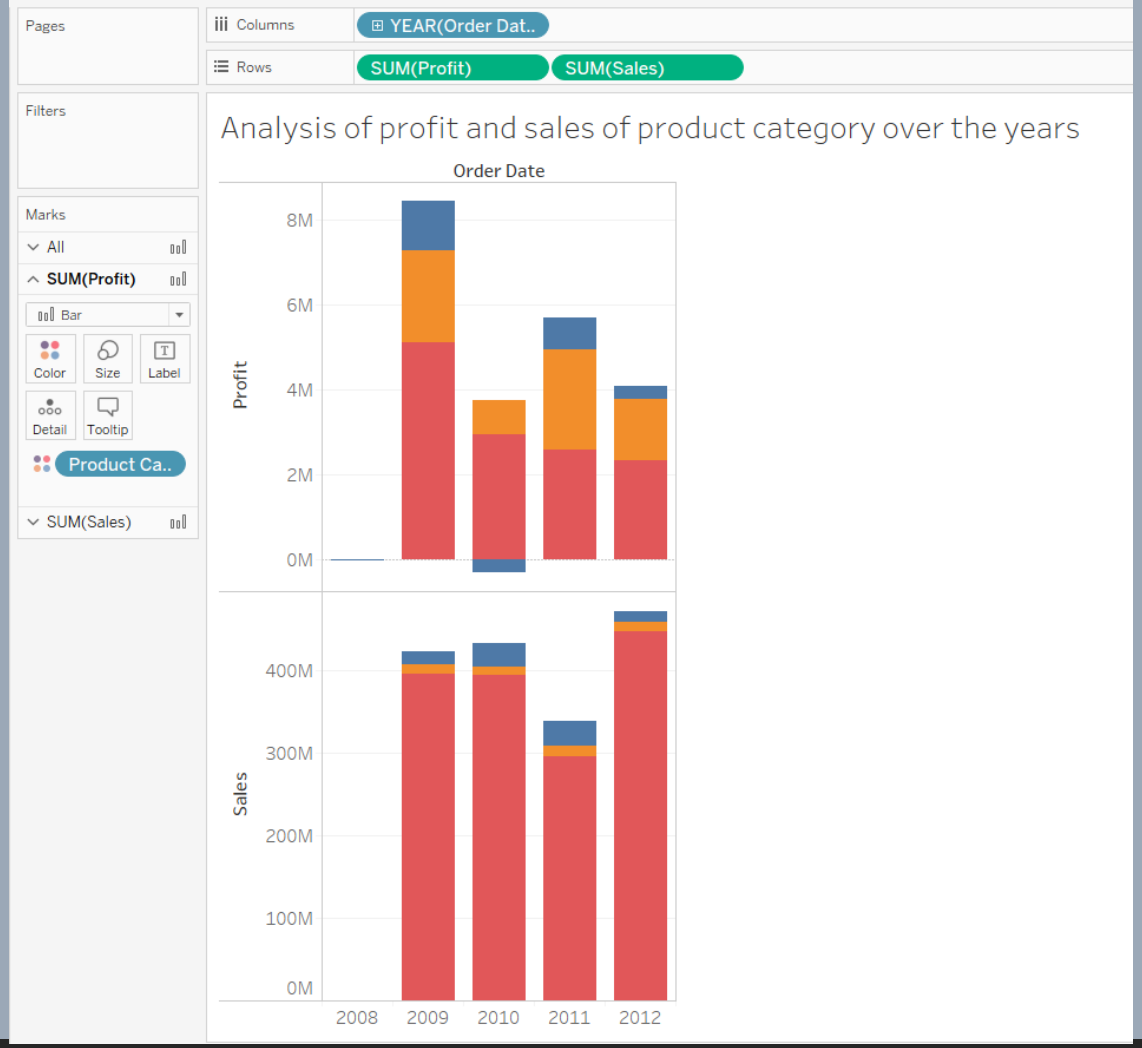


Chart 4:The chart of profit and revenue analysis of the product category over the years shows the company's business situation, the purchasing trend of the company's product categories from year to year, thereby predicting the trend of the years. come to give direction to the company

Review of user feedback

Bui Manh quan

After using BI tools to analyze company data, we created a form using Google Form (https://www.google.com/intl/vi_VN/forms/about/) to get a report on the experience after applying BI to the company. We then sent it to 15 people including members of the company's board of directors and department heads.

Evaluation of the experience of using the BI tool

*Bắt buộc

Have you evaluated the data source that adequately describes the business situation? *
(if you want to add comments, please write in another section)

- Yes
- No
- Mục khác:

Do you think the analysis chart adequately describes the company's business situation? *
(If you want to add comments, please write in another section)

- Yes
- No
- Mục khác:

Are the charts used easy for you to read and understand?
(If you want to add comments, please write in another section)

- Yes
- No
- Mục khác:

Does using BI tools for business analysis make it easier for you to make company improvement decisions? *
(If you want to add comments, please write in another section)

- Yes
- No
- Mục khác:

Have you decided to continue using BI for your company? *
(If you want to add comments, please write in another section)

- Yes
- No
- Mục khác:

Gửi

Survey to evaluate the experience of using the BI tool

Result of survey

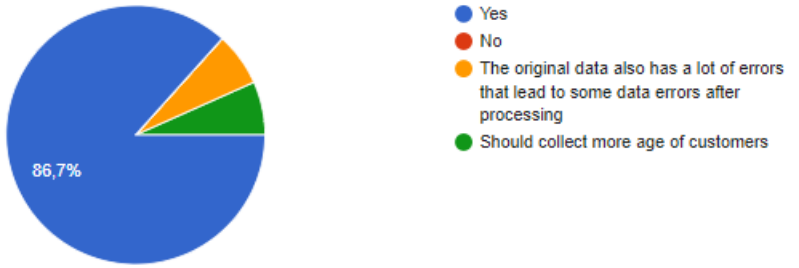
15 câu trả lời

Chấp nhận phản hồi

Bản tóm tắt | Câu hỏi | Cá nhân

Have you evaluated the data source that adequately describes the business situation?

15 câu trả lời

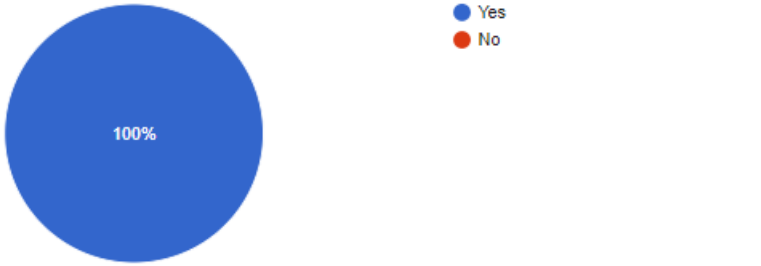


Do you think the analysis chart adequately describes the company's business situation?

15 câu trả lời

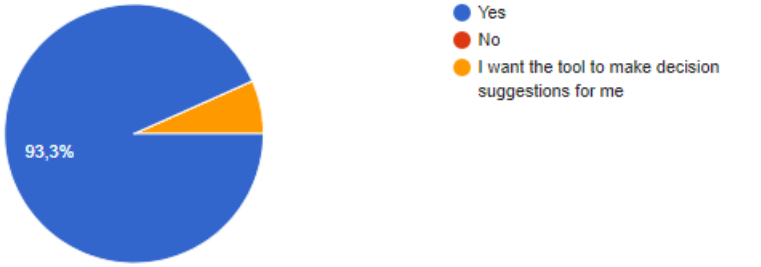
Are the charts used easy for you to read and understand?

15 câu trả lời



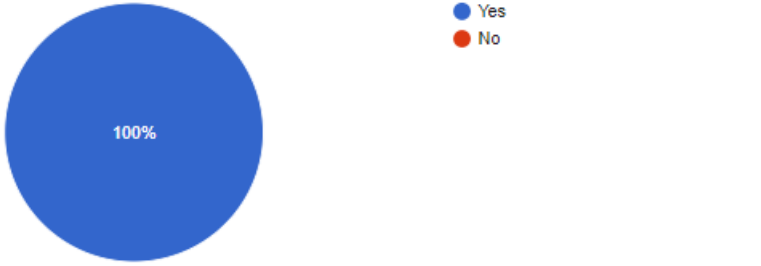
Does using BI tools for business analysis make it easier for you to make company improvement decisions?

15 câu trả lời



Have you decided to continue using BI for your company?

15 câu trả lời



Evaluate

- Based on the results of the survey, everyone is satisfied with the application of BI to the company's data analysis
- Due to the short research and application time, there are still shortcomings that have been reported by users such as data errors, no automatic decision-making feature.
- To sum up, the use of BI brings many benefits to the company and has also been agreed and appreciated by the leadership. Therefore, we will try to improve and improve the use of BI for the company

Customise the design

Bui Manh quan

```python
import numpy as np

import pandas as pd
data = pd.read_csv('data.csv')

while True:
    print("Clean Data")
    print("1.Display data source")
    print("2.Clean Data")
    print("3.Display data has been processed")
    print("4.Exit")
    choice = int(input("Enter your choice:"))
    if choice == 1:
        print(data.head(15))

    elif choice == 2:
        data['Order Date']=data['Order Date'].replace(np.nan,method='ffill')
        data['Customer Name'] = data['Customer Name'].replace(np.nan, method='ffill')
        data['Ship Mode']=data['Ship Mode'].replace(np.nan,method='ffill')
        data['Product Category'] = data['Product Category'].replace(np.nan, method='ffill')
        data['Order Quantity'] = data['Order Quantity'].replace(np.nan, 0)
        data['Sales']=data['Sales'].replace(np.nan,0)
        data['Profit'] = data['Profit'].replace(np.nan, 0)
        data[:] = data[:].replace([',','@','-','!','#','$','%','^','&','*','(',')','<','>','?','/','{','~',':'], 0)
        print(data)
        data.to_csv('result.csv')
    elif choice == 3:
        dataClean = pd.read_csv('result.csv')
        print(dataClean)
    elif choice == 4:
        break
    else:
        print("Wrong Choice")
```

```
C:\Users\manhq\PycharmProjects\pythonProject\venv\Scripts\python.exe C:/Users/manhq/PycharmProjects/pythonProject/Asm2/main.py
Clean Data
1.Display data source
2.Clean Data
3.Display data has been processed
4.Exit
Enter your choice:
```

To make it easier for users to use, I have converted the data handling code into a menu form and the user simply selects the function to perform it.

After the user selects the feature, the code will automatically execute and give the result

```
Enter your choice:1
   Order ID  Order Date  ... Customer Segment  Product Category
0         3  13/10/2010  ...   Small Business   Office Supplies
1         @  20/02/2012  ...        Corporate   Office Supplies
2        32         NaN  ...        Corporate         Furniture
3        32  15/07/2011  ...        Corporate               NaN
4        32  15/07/2011  ...        Corporate        Technology
5        32  15/07/2011  ...        Corporate        Technology
6        35  22/10/2011  ...        Corporate   Office Supplies
7        35  22/10/2011  ...        Corporate        Technology
8        36  02/11/2011  ...      Home Office        Technology
9        65  17/03/2011  ...        Corporate        Technology
10       32  15/07/2008  ...        Corporate         Furniture
11       32  15/07/2008  ...        Corporate         Furniture
12       32  15/07/2008  ...        Corporate        Technology
13       32  15/07/2008  ...        Corporate        Technology
14       35  22/10/2008  ...        Corporate   Office Supplies

[15 rows x 10 columns]
```

```
Enter your choice:2
Clean Data
1.Display data source
2.Clean Data
3.Display data has been processed
4.Exit
Enter your choice:3
      Unnamed: 0  Order ID  ... Customer Segment  Product Category
0              0         3  ...   Small Business   Office Supplies
1              1         0  ...        Corporate   Office Supplies
2              2        32  ...        Corporate         Furniture
3              3        32  ...        Corporate         Furniture
4              4        32  ...        Corporate        Technology
...          ...       ...  ...              ...               ...
1002        1002      7171  ...         Consumer        Technology
1003        1003      7174  ...         Consumer         Furniture
1004        1004      7175  ...        Corporate         Furniture
1005        1005      7203  ...        Corporate   Office Supplies
1006        1006      7239  ...   Small Business   Office Supplies

[1007 rows x 11 columns]
```

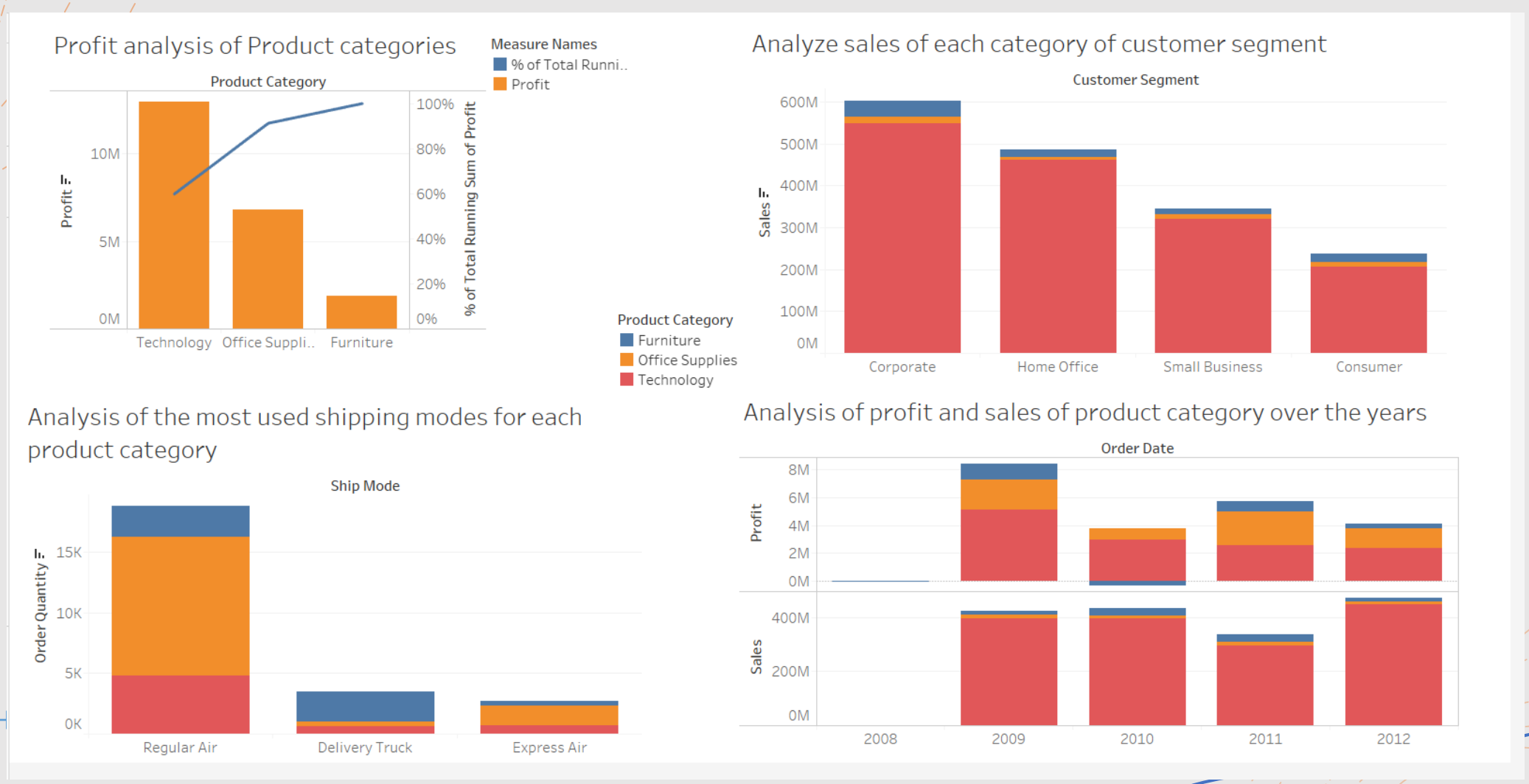
Data when not processed

Order ID	Order Date	Order Qua	Sales	Ship Mode	Profit	Unit Price	Customer Name	Customer	Product Category
3	13/10/2010	-	261.54	Regular Air	-213.25	@	Muhammed MacIntyre	Small Busi	Office Supplies
@	20/02/2012	2	6.93	Regular Air	-4.64	2.08		Corporate	Office Supplies
32		26	2808.08	Regular Air	1054.82	107.53	Liz Pelletier	Corporate	Furniture
32	15/07/2011	24	1761.4	Delivery Tr	-1748.56	70.89	Liz Pelletier	Corporate	
32	15/07/2011		160.2335	Regular Air	-85.13	7.99	Liz Pelletier	Corporate	Technology
32	15/07/2011	15	140.56	Regular Air	-128.38	8.46	Liz Pelletier	Corporate	Technology
35	22/10/2011	30	288.56	Regular Air	60.72	9.11	Julie Creighton	Corporate	Office Supplies
35	22/10/2011	14	1892.848		48.99	155.99	Julie Creighton	Corporate	Technology
36	02/11/2011	46	2484.746	Regular Air	657.48	65.99	Sample Company A	Home Offi	Technology
65	17/03/2011	32	3812.73	Regular Air	1470.3	115.79	Tamara Dahlen	Corporate	Technology
32	15/07/2008	26		Regular Air		107.53	Liz Pelletier	Corporate	Furniture
32	15/07/2008	24		Delivery Tr	uck	70.89	Liz Pelletier	Corporate	Furniture
32	15/07/2008	23		Regular Air		7.99	Liz Pelletier	Corporate	Technology
32	15/07/2008	15		Regular Air		8.46	Liz Pelletier	Corporate	Technology
35	22/10/2008	30		Regular Air		9.11	Julie Creighton	Corporate	Office Supplies
35	22/10/2008	14		Regular Air		155.99	Julie Creighton	Corporate	Technology
36	22/10/2008	46		Regular Air		65.99	Sample Company A	Home Offi	Technology
65	22/10/2008	32		Regular Air		115.79	Tamara Dahlen	Corporate	Technology
66	19/01/2009	41	108.15	Regular Air	7.57	2.88	Arthur Gainer	Consumer	Office Supplies
69	03/06/2009	42	1186.06	Regular Air	511.69	30.93	Jonathan Doherty	Corporate	Furniture
69	03/06/2009	28	51.53	Express Air	0.35	1.68	Jonathan Doherty	Corporate	Office Supplies

Data after being processed

A	B	C	D	E	F	G	H	I	J	K	L
8	36	02/11/2011	46	2484.746	Regular Air	657.48	65.99	Sample Co	Home Offi	Technology	
9	65	17/03/2011	32	3812.73	Regular Air	1470.3	115.79	Tamara Da	Corporate	Technology	
10	32	15/07/2008	26	0	Regular Air	0	107.53	Liz Pelletie	Corporate	Furniture	
11	32	15/07/2008	24	0	Delivery Truck	0	70.89	Liz Pelletie	Corporate	Furniture	
12	32	15/07/2008	23	0	Regular Air	0	7.99	Liz Pelletie	Corporate	Technology	
13	32	15/07/2008	15	0	Regular Air	0	8.46	Liz Pelletie	Corporate	Technology	
14	35	22/10/2008	30	0	Regular Air	0	9.11	Julie Creigl	Corporate	Office Supplies	
15	35	22/10/2008	14	0	Regular Air	0	155.99	Julie Creigl	Corporate	Technology	
16	36	22/10/2008	46	0	Regular Air	0	65.99	Sample Co	Home Offi	Technology	
17	65	22/10/2008	32	0	Regular Air	0	115.79	Tamara Da	Corporate	Technology	
18	66	19/01/2009	41	108.15	Regular Air	7.57	2.88	Arthur Gai	Consumer	Office Supplies	
19	69	03/06/2009	42	1186.06	Regular Air	511.69	30.93	Jonathan D	Corporate	Furniture	
20	69	03/06/2009	28	51.53	Express Air	0.35	1.68	Jonathan D	Corporate	Office Supplies	
21	70	17/12/2010	48	90.05	Regular Air	-107	1.86	Helen Was	Home Offi	Office Supplies	
22	70	17/12/2010	46	7804.53	Regular Air	2057.17	205.99	Helen Was	Home Offi	Technology	
23	96	16/04/2009	37	4158.124	Regular Air	1228.89	125.99	Keith Dawl	Home Offi	Technology	
24	97	28/01/2010	26	75.57	Regular Air	28.24	2.89	Craig Yedw	Consumer	Office Supplies	
25	129	18/11/2012	4	32.72	Regular Air	-22.59	6.48	Pauline Ch	Corporate	Office Supplies	
26	130	07/05/2012	3	461.89	Express Air	-309.82	150.98	Roy Collins	Corporate	Technology	
27	130	07/05/2012	29	575.11	Regular Air	71.75	18.97	Roy Collins	Corporate	Office Supplies	
28	130	07/05/2012	23	236.46	Regular Air	-134.31	9.71	Roy Collins	Corporate	Office Supplies	
29	132	10/06/2010	27	192.814	Regular Air	-86.2	7.99	Emily Phar	Consumer	Technology	
30	132	10/06/2010	30	4011.65	Delivery Truck	-603.8	130.98	Emily Phar	Consumer	Furniture	
31	134	30/04/2012	11	1132.6	Regular Air	-310.21	95.99	Michael D	Home Offi	Office Supplies	
32	135	20/10/2011	25	125.85	Regular Air	-89.25	4.98	Anne Pryo	Consumer	Technology	

To make tableau charts easier for users to analyze, I have also aggregated it into one dashboard, it contains information of many tables combined so it will be easier for comparison analysis.



Link Python Code:
https://github.com/HoaKhiem/asm2-BI

Result of survey:
https://docs.google.com/forms/d/1SqfRPNjOU0IzYUIxiHNdw_ZqtNQbM75LZecHRvcDIbw/edit#responses

Our Survey:
https://forms.gle/QKFJyS5pckEmRsq36

Link Video Presentation, Python Code, Tableau:
https://drive.google.com/drive/folders/1fmECqOGN6KFsHS8lE3k37XT_-UL8bOHT?usp=sharing


Thank
You