SPRINT 5

INICIACIÓ AL ANÀLISI DE DADES AMB POWER BI I INDICADORS

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In this sprint, I started applying my practical knowledge in Power BI using the previously used database, which contains information about a company engaged in selling products online. During the exercises, I needed to devote efforts to improve the readability of the visualizations, making sure to select the most appropriate visual representations to present the information in a clear and simple way.

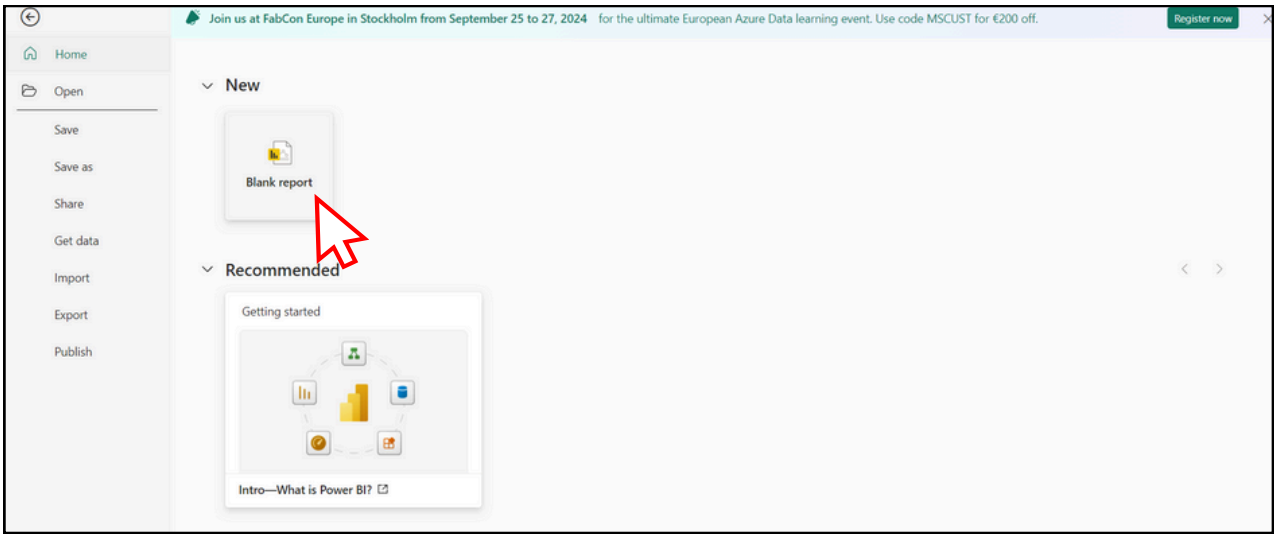
LEVEL 1

EXERCISE 1

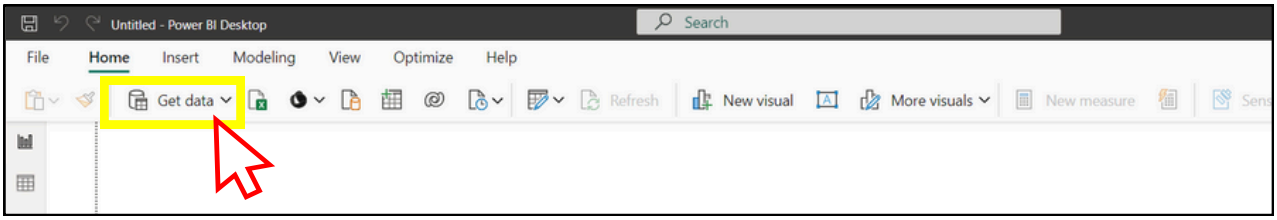
Imports the data from the previously used database. After loading the data, displays the database model in Power BI.

STEPS in importing MYSQL database to Power BI:

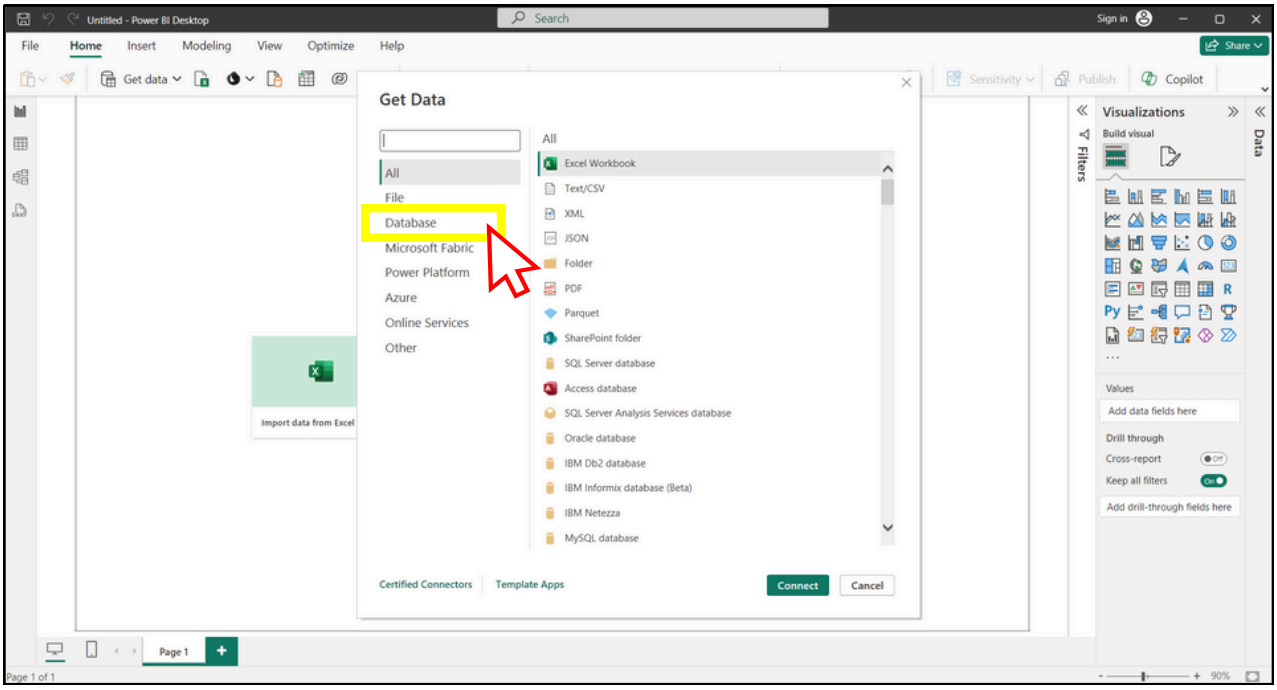
STEP 1: Open Power BI and click BLANK REPORT.



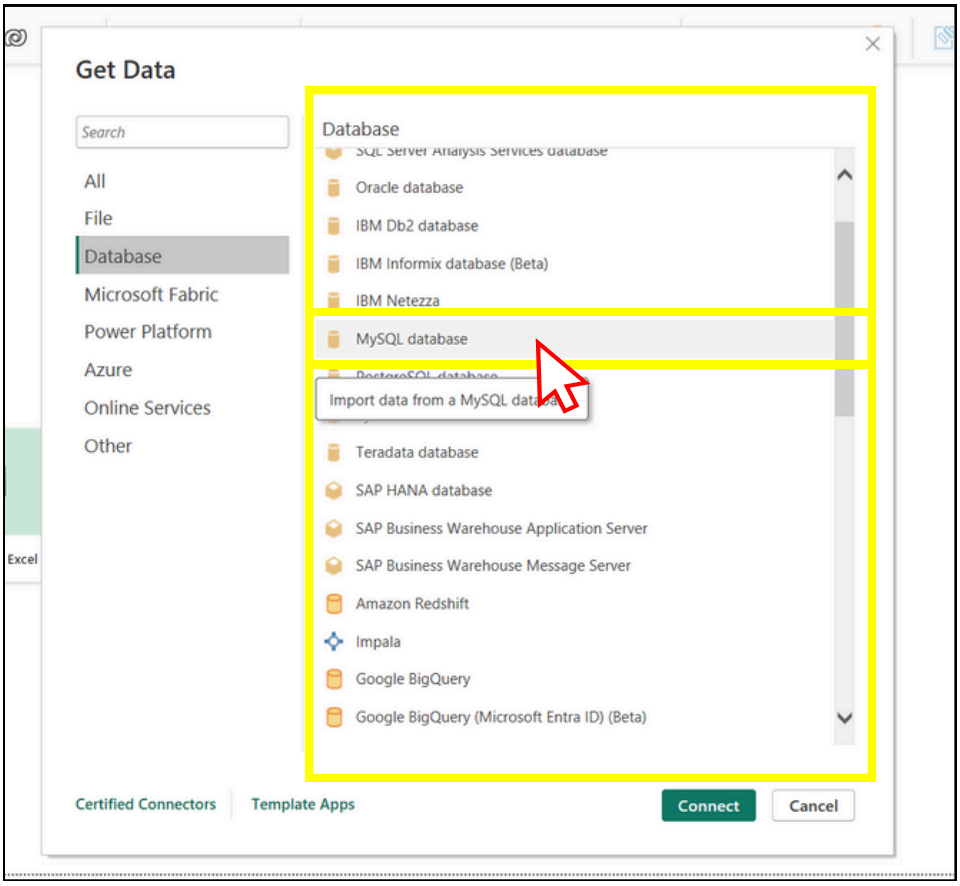
STEP 2: Hover the mouse to the RIBBON section of POWER BI and click GET THE DATA.



STEP 3: A dialogue box will appear and click database.

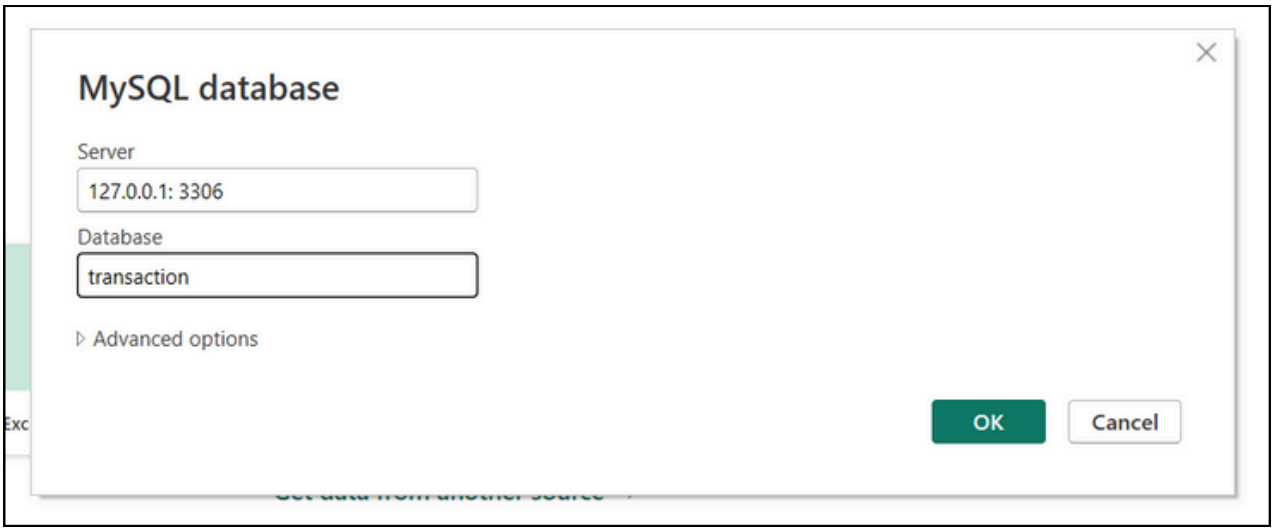


STEP 4: After clicking the database, all the database source will appear on the right part of the dialogue box, then click MySQL database.

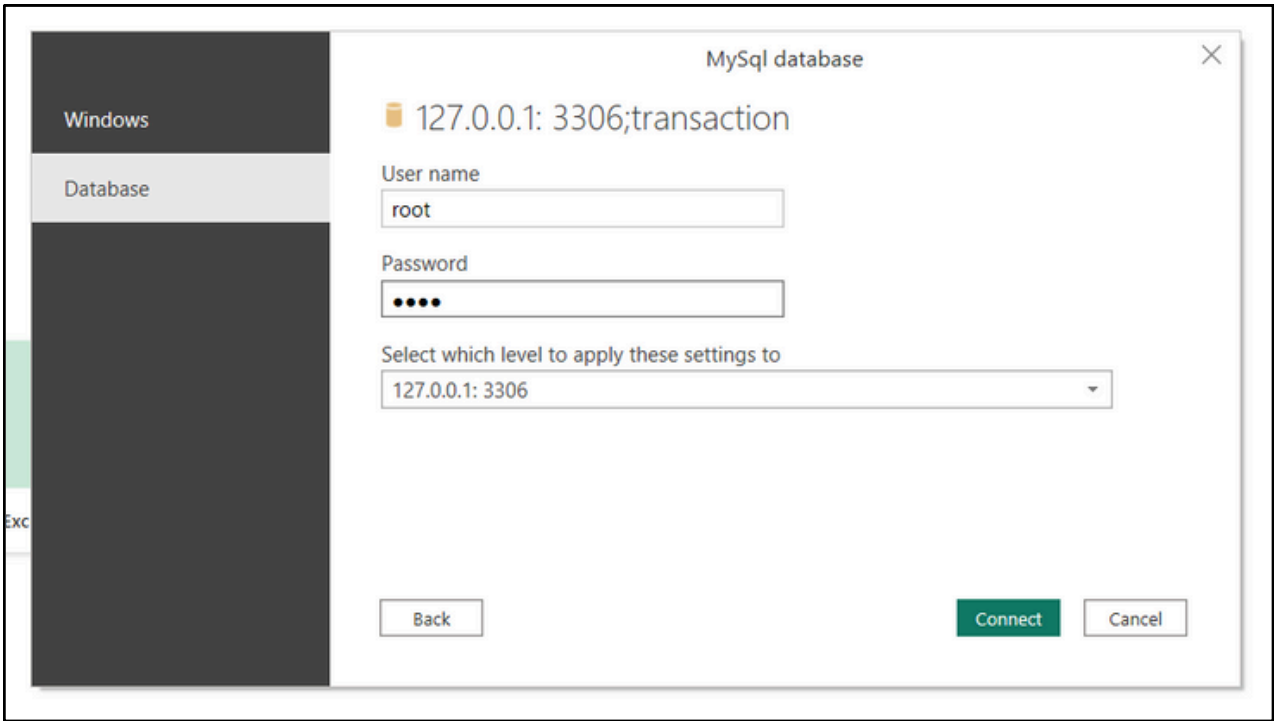


STEP 5: A dialogue box and you need to download a MySQL connector and install.

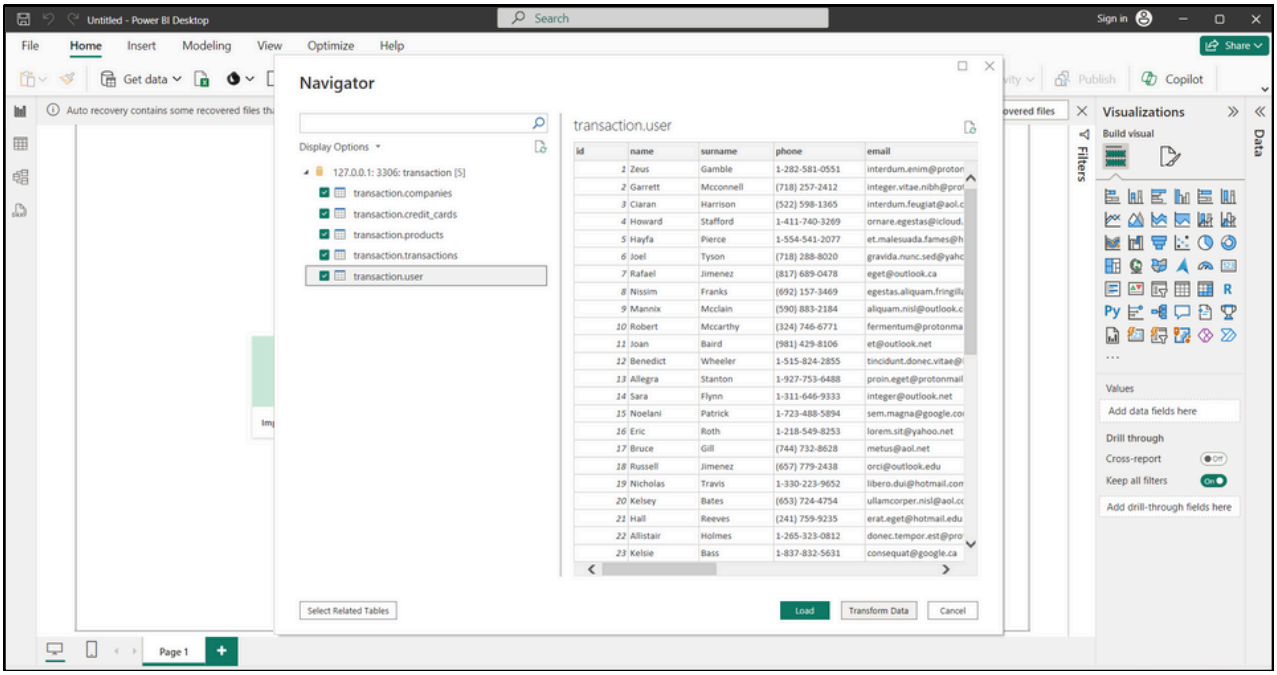
STEP 6: After downloading, go back to Power Bi and a MySQL database will appear. Enter the default MySQL server 127.0.01:3306 and write the name of the database you wish to connect. Then click OK.



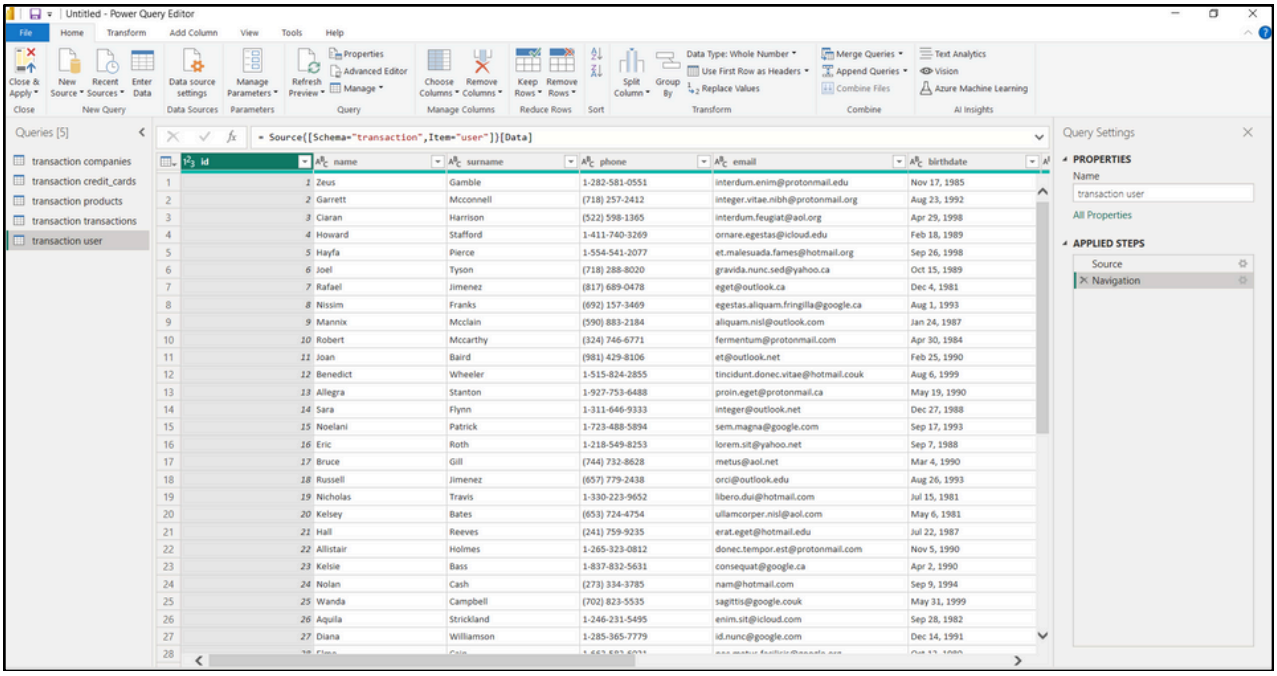
STEP 7: Another dialogue box will appear, click DATABASE. Then fill in the necessary information, the MySQL database's username and password. and click connect.



STEP 8: Now a Navigator dialogue box with the tables of the database will appear. Click the tables you would like to import. And click TRANSFORM DATA.



IMPORTED DATA FROM MYSQL WORKBENCH



	id	name	surname	phone	email	birthdate
1	1	Zeus	Gamble	1-282-581-0551	interdum.enim@protonmail.edu	Nov 17, 1985
2	2	Garrett	Mcconnell	(718) 257-2412	integer.vitae.nibh@protonmail.org	Aug 23, 1992
3	3	Ciaran	Harrison	(522) 598-1365	interdum.feugiat@aol.org	Apr 29, 1998
4	4	Howard	Stafford	1-411-740-3269	ornare.egestas@icloud.edu	Feb 18, 1989
5	5	Hayfa	Pierce	1-554-541-2077	et.malesuada.fames@hotmail.org	Sep 26, 1998
6	6	Joel	Tyson	(718) 288-8020	gravida.nunc.sed@yahoo.ca	Oct 15, 1989
7	7	Rafael	Jimenez	(817) 689-0478	eget@outlook.ca	Dec 4, 1981
8	8	Nissim	Franks	(692) 157-3469	egestas.aliquam.fringilla@google.ca	Aug 1, 1993
9	9	Mannix	Mcclain	(590) 883-2184	aliquam.nisl@outlook.com	Jan 24, 1987
10	10	Robert	Mccarthy	(324) 746-6771	fermentum@protonmail.com	Apr 30, 1984
11	11	Joan	Baird	(981) 429-8106	et@outlook.net	Feb 25, 1990
12	12	Benedict	Wheeler	1-515-824-2855	tincidunt.donec.vitae@hotmail.couk	Aug 6, 1999
13	13	Allegra	Stanton	1-927-753-6488	proin.eget@protonmail.ca	May 19, 1990
14	14	Sara	Flynn	1-311-646-9333	integer@outlook.net	Dec 27, 1988
15	15	Noelani	Patrick	1-723-488-5894	sem.magna@google.com	Sep 17, 1993
16	16	Eric	Roth	1-218-549-8253	lorem.sit@yahoo.net	Sep 7, 1988
17	17	Bruce	Gill	(744) 732-8628	metus@aol.net	Mar 4, 1990
18	18	Russell	Jimenez	(657) 779-2438	orci@outlook.edu	Aug 26, 1993
19	19	Nicholas	Travis	1-330-223-9652	libero.dui@hotmail.com	Jul 15, 1981
20	20	Kelsey	Bates	(653) 724-4754	ullamcorper.nisl@aol.com	May 6, 1981
21	21	Hall	Reeves	(241) 759-9235	erat.eget@hotmail.edu	Jul 22, 1987
22	22	Allistair	Holmes	1-265-323-0812	donec.tempor.est@protonmail.com	Nov 5, 1990
23	23	Kelsie	Bass	1-837-832-5631	consequat@google.ca	Apr 2, 1990
24	24	Nolan	Cash	(273) 334-3785	nam@hotmail.com	Sep 9, 1994
25	25	Wanda	Campbell	(702) 823-5535	sagittis@google.couk	May 31, 1999
26	26	Aquila	Strickland	1-246-231-5495	enim.sit@icloud.com	Sep 28, 1982
27	27	Diana	Williamson	1-285-365-7779	id.nunc@google.com	Dec 14, 1991
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LEVEL 1

EXERCISE 1

Imports the data from the previously used database. After loading the data, displays the database model in Power BI.

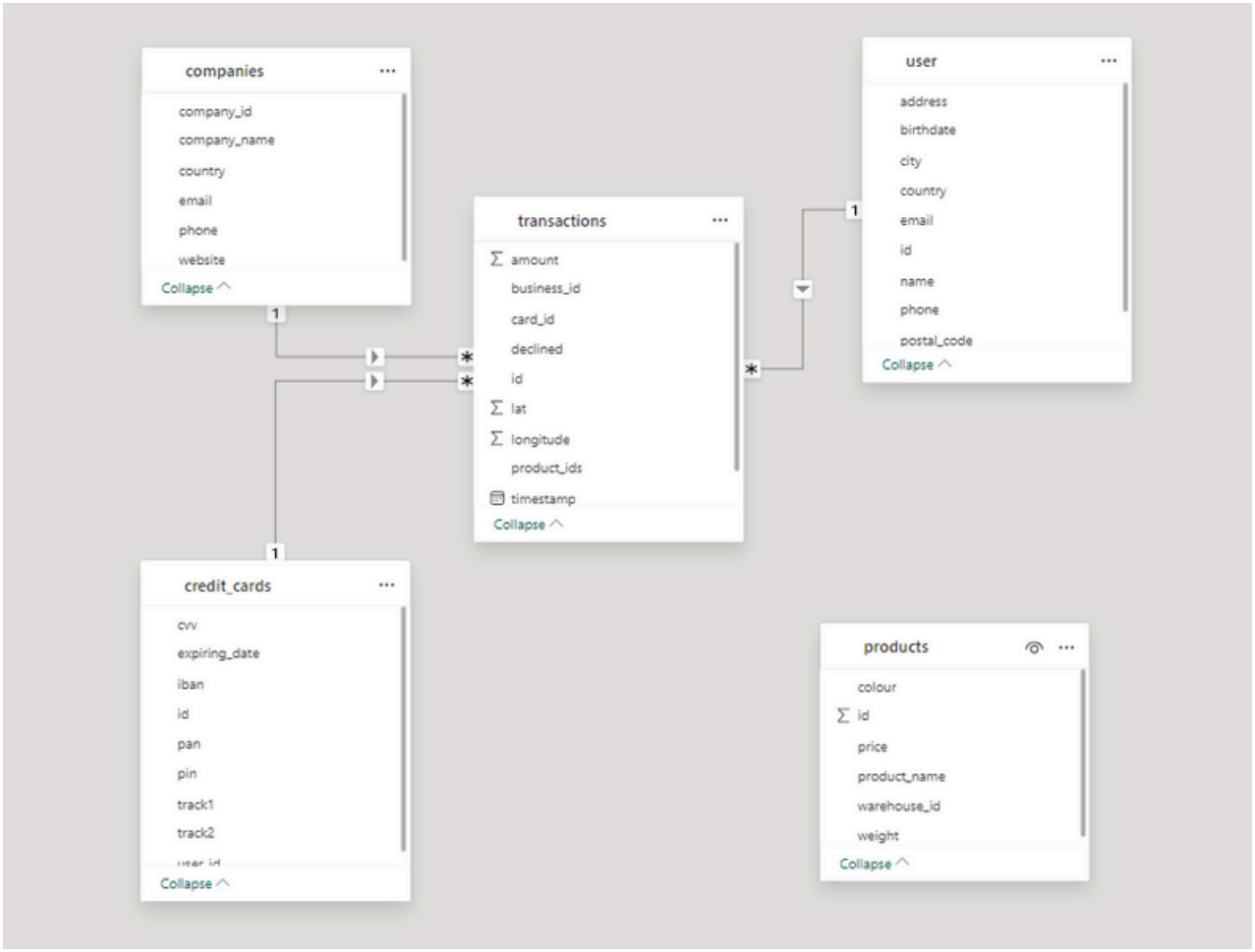


Figure 1.1.1 Model View

EXPLANATION:

This star schema diagram displays the fact table, Transactions, in the center, surrounded by the dimension tables: Companies, Users, and Credit_Cards. The Products table is shown as a floating table because it does not have a well-established relationship with the Transactions table.

As noted in SPRINT 4, the lack of a clear relationship between the Products and Transactions tables is due to the product_ids column, which contains multiple IDs from the Products table. To address this, a new bridge table should be created to establish a proper relationship between these tables.

LEVEL 1

EXERCISE 2

Your company is interested in evaluating the sum total of the amount of transactions carried out over the years. For this purpose, you have requested the creation of a key performance indicator (KPI). The KPI should provide a clear visualization of the business objective of achieving a total sum of €25,000 for each year.

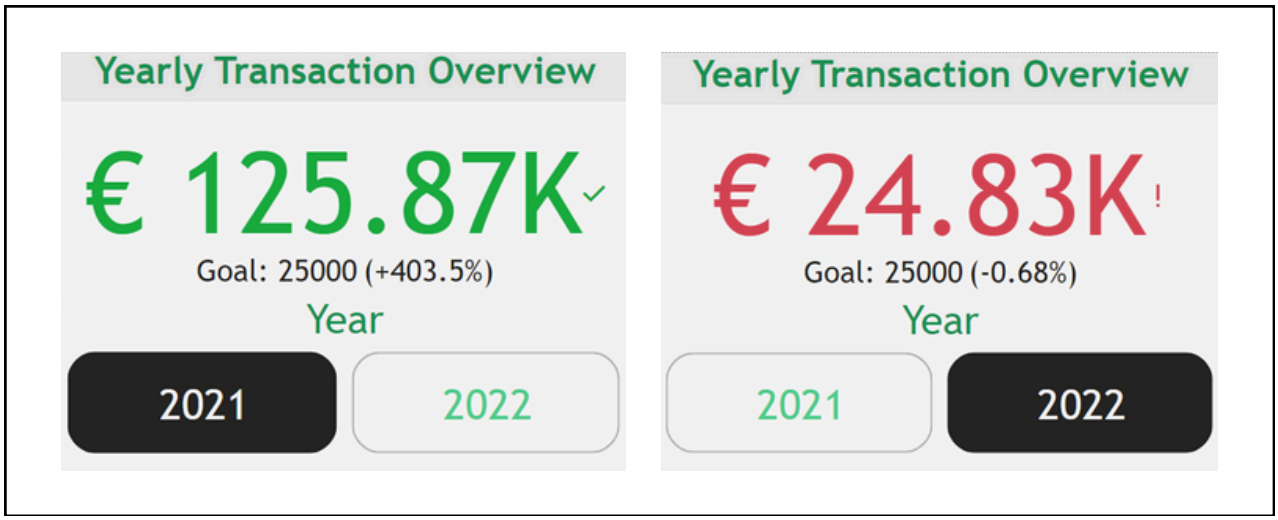


Figure 1.2.1 Yearly Transaction Overview + KPI and Slicer

EXPLANATION: ASUMING THE COMPANY REPORT FOR 2022 IS NOT COMPLETE YET

This is the Yearly Transaction Overview of the company. This explains the total amount reached in each year and if the company achieved the business objective for that year.

In 2021, the company exceeded the business objective. The total amount for that year is 403.5% more than the target goal. This implies that company performed well this year.

On the contrary, in 2022, based on the gauge meter, the company have failed to achieve its goal and have lacked 0.68% to reach 25.000 but this is just the first 2 months of the said year. If this continues, the company will exceeds the total amount achieved last year. This performance implies that the marketing strategy of the company is working even so, the marketing team should still check the months and countries in 2021 with lesser transactions to anticipate the trajectory of the transactions.

LEVEL 1

EXERCISE 3

From marketing they ask you to create a new DAX measure that calculates the average sum of the transactions made during the year 2021. Visualize this average in a meter that reflects the sales made, remember that the company has a target of 250.

```
AverageTransaction2021 = CALCULATE(AVERAGE(transactions[amount]), YEAR
(transactions[timestamp]) = 2021)
```

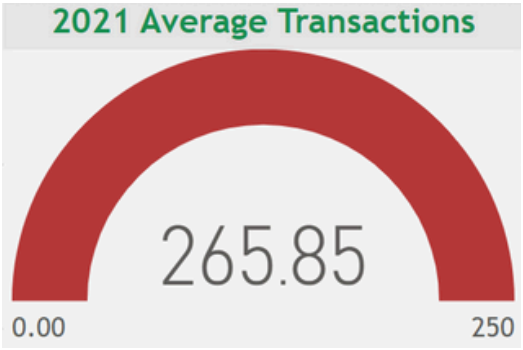


Figure 1.3.1 Average Transactions 2021 + DAX measure and Gauge

EXPLANATION:

DAX MEASURE

This measure calculates the average sum of the values in the 'Amount' column found in the 'Transaction' table. It retrieves only the data from the year 2021. To achieve this, I informed Power BI to consider only the year in the 'Timestamp' column from the 'Transaction' table. This new measure is named AverageTransaction2021.

Visualization:

A gauge is used to show the minimum and maximum values, which in this case represent the number of transactions. Additionally, an exact value is displayed at the bottom center of the gauge to further illustrate the data.

Report

According to the gauge, in 2021, the company surpassed its target of 250 transactions, achieving 262.79. This 5% increase over the target highlights our strong performance and suggests that our recent marketing campaigns have been effective.

LEVEL 1

EXERCISE 4

Perform the same procedure as in exercise 3 for the year 2022.

```
AverageTransaction2022 = CALCULATE(AVERAGE(transactions[amount]), YEAR
(transactions[timestamp]) = 2022)
```

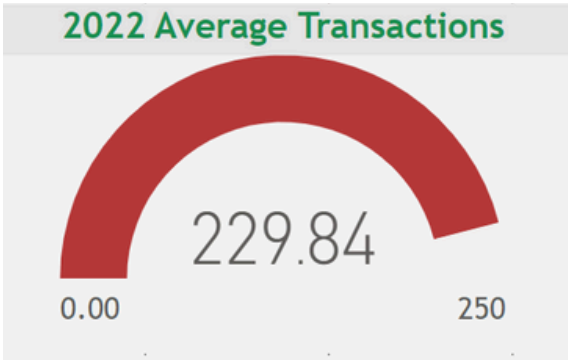


Figure 1.4.1 Average Transactions 2022 with DAX measure and Gauge

EXPLANATION:

DAX MEASURE

This measure calculates the average sum of the values in the 'Amount' column found in the 'Transaction' table. It retrieves only the data from the year 2022. To achieve this, I informed Power BI to consider only the year in the 'Timestamp' column from the 'Transaction' table. This new measure is named AverageTransaction2022.

Visualization:

A gauge is used to show the minimum and maximum values, which in this case represent the number of transactions. Additionally, an exact value is displayed at the bottom center of the gauge to further illustrate the data.

Report

According to the gauge, during the first three months of 2022, the company achieved 229.90 out of 250. This indicates that the company is performing well, reaching approximately 92% of the target.

This performance implies that the marketing strategy of the company is working, even so, the marketing team should still check the months and countries in 2021 with lesser transactions to anticipate the trajectory of the transactions.

LEVEL 1

EXERCISE 5

The objective of this exercise is to create a KPI that visualizes the number of companies per country participating in transactions. The business goal is to ensure that there are at least 3 participating companies per country. To do this, it will be necessary to use DAX to calculate and represent this information in a clear and concise manner.

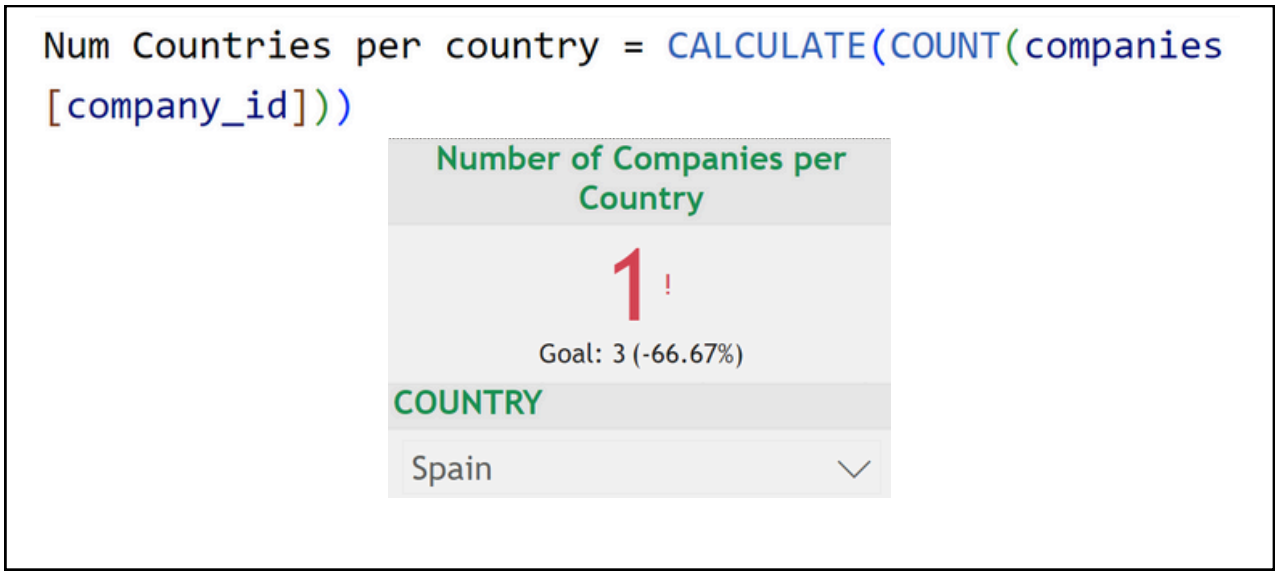


Figure 1.5.1 Countries per Country + DAX measure, KPI and slicer

Explanation:

DAX Measure:

This measure calculates the number of companies per country by counting the unique company_id values in the Companies table, categorized by country.

Visualization:

A KPI (Key Performance Indicator) is used to display the value, which can be manipulated by a slicer. By selecting a country, the KPI displays the number of companies in the chosen country.

Report:

The data reveals that in both 2021 and 2022, Spain had the fewest company transactions, with only one transaction compared to other countries. This insight will assist the marketing department in revisiting their strategies in Spain to understand why the company has fewer clients there.

LEVEL 1

EXERCISE 6

Create a new KPI to visualize the number of declined transactions over time. The company set a goal of having less than 10 declined transactions per month.

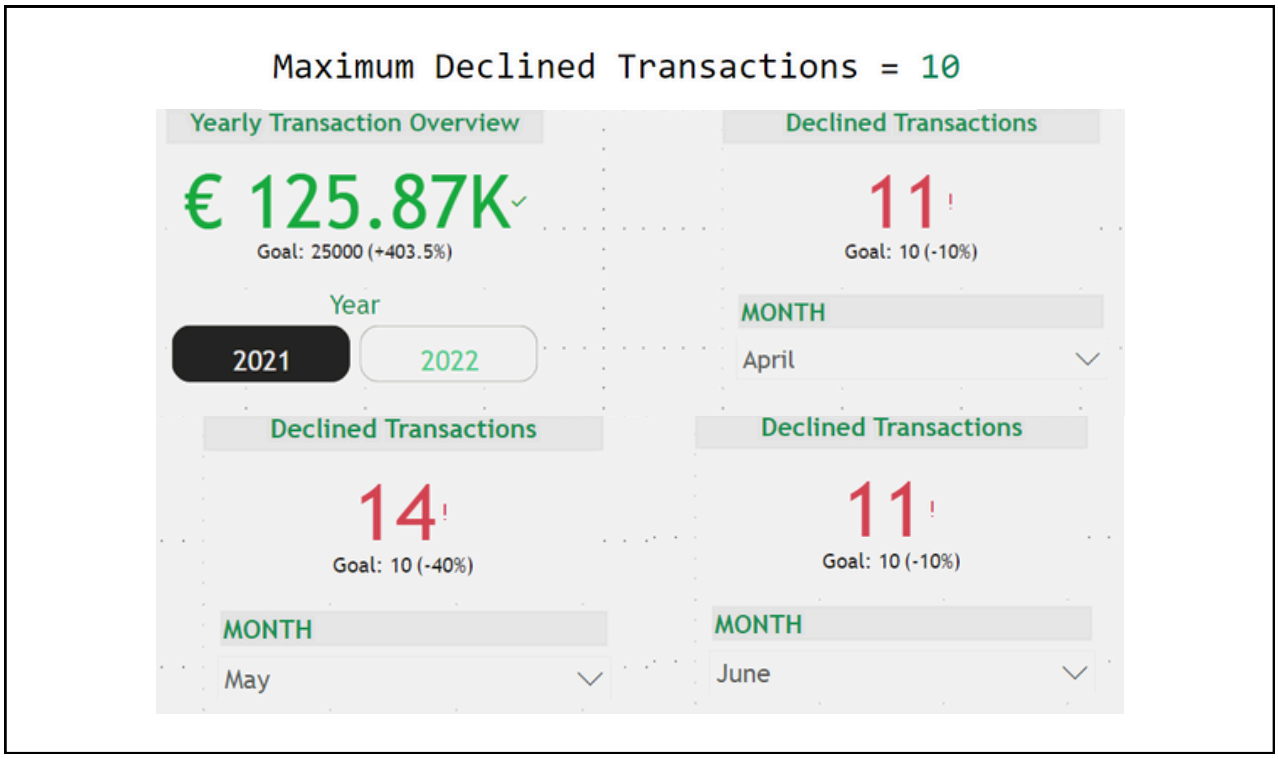


Figure 1.6.1 Declined Transactions (KPI and Slicer)

EXPLANATION:

Visualization: This KPI and slicer display the number of declined transactions per month, with a target of fewer than 10 unsuccessful transactions.

Report:

The data indicates that in 2021, the months of April, May, and June exceeded the company's target for declined transactions. Despite surpassing the annual transaction target, these months had higher-than-expected declined transactions. This issue should be monitored closely to prevent a recurrence in 2022.

LEVEL 1

EXERCISE 7

Create a grouped column chart reflecting the sum of sales per month. The company's goal is to have at least 10,000 transactions per month.

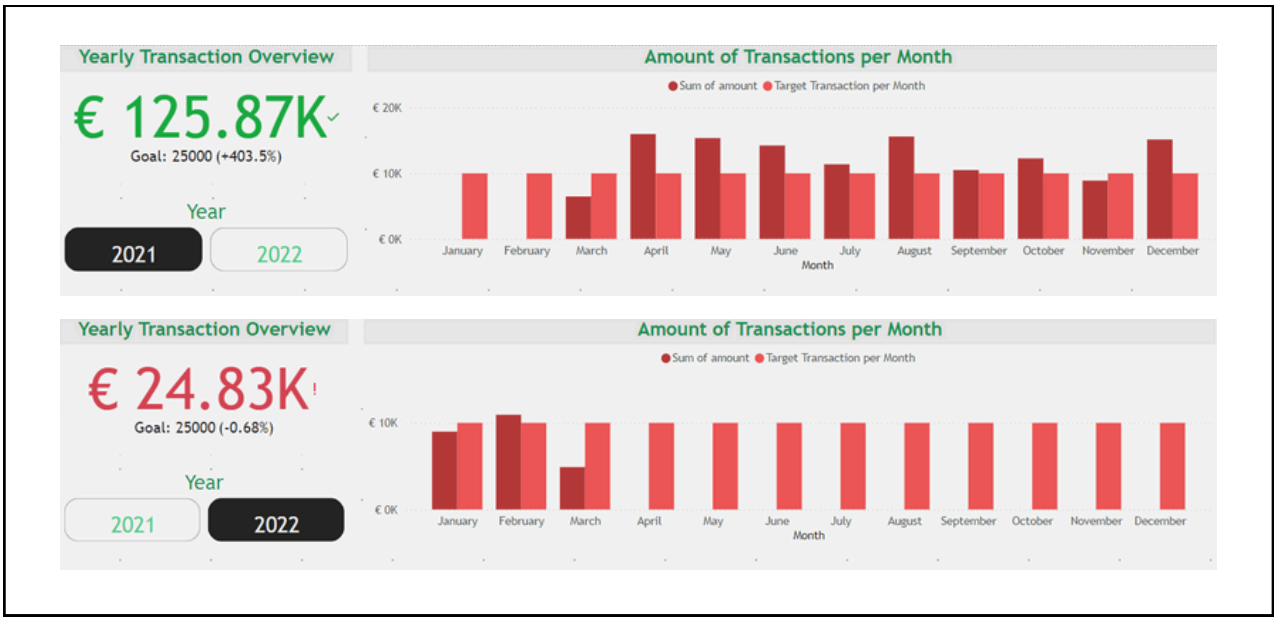


Figure 1.7.1 Creating a Database

Explanation:

Visualization:

This column chart displays the transactions made per month alongside the target transactions, providing a clear visualization of whether the company is meeting its targets.

Report:

The company achieved its monthly targets for most of 2021, allowing it to surpass its annual target. However, the company fell short of its goals in March and November, particularly in March, where transactions were just slightly above half of the target. This underperformance in March was likely due to the company's operations just starting, which also explains the absence of data for January and February.

In 2022, the column chart indicates that the company did not meet its targets consistently. This performance warrants further investigation to understand the underlying factors.

LEVEL 1

EXERCISE 8

In this exercise, you want to go deeper into the transactions made by each user and present the information in a clear and understandable way. In a table, present the following information:

First and last name of the users (you will have to create a new column combining this information).

Age of the users.

Average number of transactions in euros.

Average of transactions in dollars (conversion: 1 euro equals 1.08 dollars).

The necessary changes should be made to identify users who had an average of 300 or more euros and 320 or more dollars in their transactions.

```
CompleteName = 'user'[name] &" "& 'user'[surname]
```

```
Age = DATEDIFF('user'[birthdate], TODAY(), YEAR)
```

```
Average Amount per User = CALCULATE(AVERAGE
(Transactions[Amount]),ALLEXCEPT(Transactions,
transactions[user_id] ))
```

```
Average Amount in Dollars = transactions[Average
Amount per User] * 1.08
```

```
Above €300/$320 = IF(transactions[Average Amount per
User]>=300 && [Average Amount in Dollars] >=320,"Yes",
"No")
```

CompleteName	Age	Average Amount per User	Average Amount in Dollars	Above €300/$320
Sacha Compton	43	€ 494.82	$534.41	Yes
Gary Robbins	29	€ 485.31	$524.13	Yes
Zelenia Good	36	€ 481.75	$520.29	Yes
Brody Goodwin	42	€ 478.54	$516.82	Yes
Guinevere Kemp	37	€ 476.75	$514.89	Yes
Genevieve Nolan	34	€ 474.76	$512.74	Yes
Astra Baldwin	25	€ 472.18	$509.95	Yes
Clark Hewitt	27	€ 471.78	$509.52	Yes
Irma Whitehead	36	€ 471.47	$509.19	Yes

Figure 1.8.1 Creating a Database

Explanation:
DAX Measures:
Complete Name: To create a full name, you need to identify the columns to merge and their source table. In this case, you will merge the Name and Surname columns from the User table. By using the ampersand (&) in Power Query, you combine these columns, with a space between the values indicated by quotation marks (" "). Without the space, the columns will be merged without any separation.

Age: To calculate age, you need to determine the time interval between the date of birth and the current date. The DATEDIFF function is used for this purpose, with the YEAR from the birthday column and the current year. This allows Power Query to compute the number of years between the two dates.

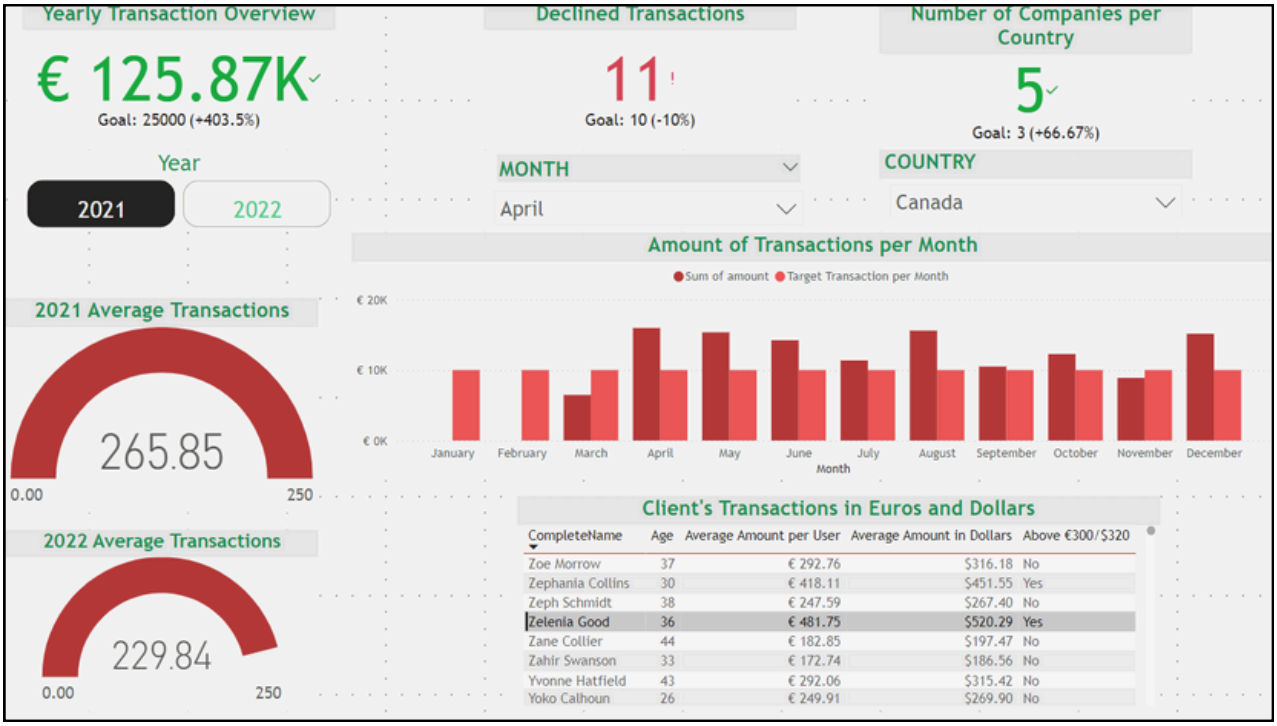
Visualization: This KPI and slicer display the number of declined transactions per month, with a target of having fewer than 10 unsuccessful transactions.

Report:
The data shows that in 2021, the months of April, May, and June exceeded the company's target for declined transactions. Although the company surpassed its annual target for transactions, this high number of declined transactions in these months should be addressed to prevent similar issues in 2022.

LEVEL 1

EXERCISE 9

Write a short paragraph, maximum 50 words, explaining the meaning of the figures presented in the Power BI visualizations. You can interpret the data in general or focus on a specific country. Accompany your interpretations with a screenshot of the visualizations you are going to analyze.



REPORT:

Introduction:

This dashboard provides a comprehensive overview of the company's key performance metrics. It is designed to track and visualize yearly average transactions, declined transactions, the number of companies per country, the amount of transactions per month, and client transactions in euros and dollars. These insights support strategic decision-making and performance evaluation.

The dashboard is organized into several key sections:

- Header: Contains the title and the year range for the data.
- Main Visualization Area: Features primary visualizations including KPI metrics, gauges, a bar chart, and a table.
- Filter Panel: Allows users to filter data by month, year, and country.

Key Visualizations and Metrics:

KPI METRICS

- **Yearly Transactions Overview:** Displays the total yearly transactions of the company and indicates whether it meets the company's annual target.

- **Declined Transactions:** Shows the number of declined transactions for each month and highlights any months where the count exceeds the maximum allowed for declined transactions.

- **Number of Companies per Country:** Provides information on the number of companies per country, with a focus on countries having fewer than three companies.

GAUGE

- **2021 and 2022 Average Transactions:** This visually shows is the average transactions of the mentioned year met or not met the target average transactions of the company.

BAR CHART

- **Amount of Transaction per Month:** Provides information on the total amount of transaction and the target amount of transaction per month.

TABLE

- **Client's Transaction in Euros and Dollars:** This displays the client's complete name and age, the client's average transaction in euros and dollars and if the client's transaction is above or below €300 or 320$.

INTERACTIVITY

The dashboard includes several interactive elements:

- **Slicer:** Users can filter data by year, month and country to customize the view.

IINSIGHT AND ANALYSIS

The dashboard provides valuable insights into the company's progress. Based on the available data, it appears that the company began operations in March 2021 and wrapped up the first quarter of 2022.

In 2021, the company surpassed its yearly target and average transactions per year, suggesting a strong start and effective marketing strategies. However, there are areas that need improvement to boost performance in 2022.

Here are some key points:

- **Reduce Declined Transactions in April, May, and June**

While these months exceeded the target for transactions per month, the number of declined transactions is concerning. Addressing this issue could lead to increased revenue for the company. It's important to investigate and take steps to minimize these declines.

- **Fewer Than Three Clients in China and Spain**

To maintain the company's global image, it's crucial to have clients from various regions. The marketing team should explore why transactions in China and Spain are significantly lower compared to other countries and develop strategies to grow these markets.

- **Transactions Under €300 and $350 Per Client**

There are fewer transactions exceeding €300, which calls for deeper analysis by the sales team. Identifying why transaction values fall below this level can help tailor personalized recommendations for clients, potentially increasing transaction amounts.

In the first quarter of 2022, the dashboard shows that the company nearly reached its average annual transaction volume. This suggests a strong likelihood of surpassing 2021's yearly performance. However, it's essential to closely monitor April, May, and June to prevent a repeat of the high number of declined transactions seen in 2021.