Understanding the business question

FORMING ANALYTICAL QUESTIONS

Konstantinos Kattidis
Data Analytics Lead

datacamp

Discover what really matters

A clearly defined problem will have clarity on the following:

1. What the business wants to know
2. What decisions need to be made
3. Who will use the results
4. Any other information that is important to know

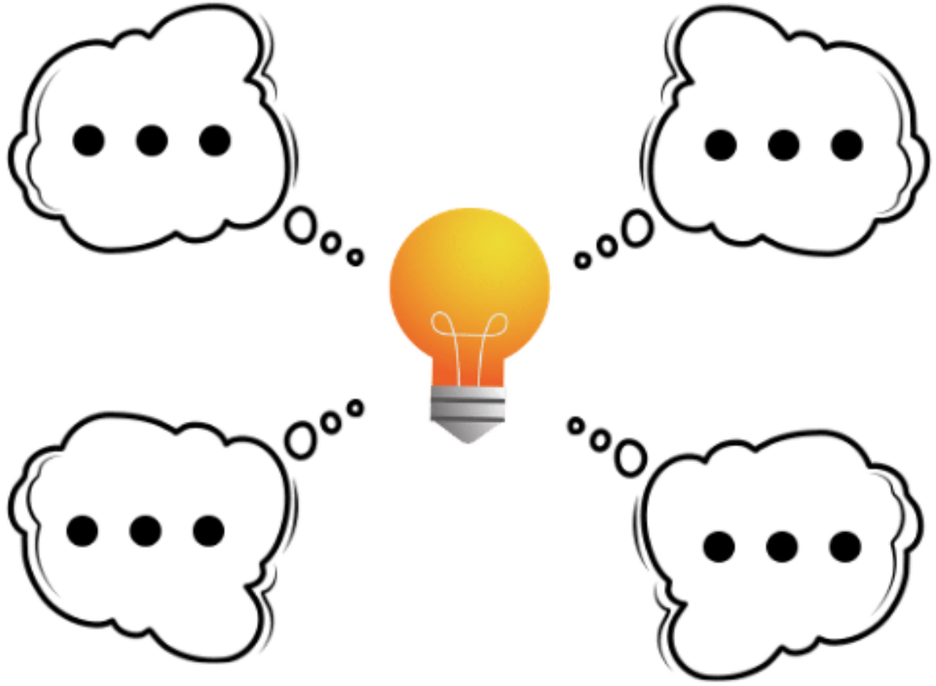
Communication practices

- Encourage input using **open-ended questions.**
- Confirm understanding by **paraphrasing**.
- **Summarize** the discoveries learned from the conversation.

Encourage input using open-ended questions

> "Tell me more about..."

> "What led you to this..."



Use it in order to:

- Uncover new perspectives
- Gain a more comprehensive understanding of the problem

Confirm understanding by paraphrasing

- Restate the problem in your own words
- Confirm with the stakeholders

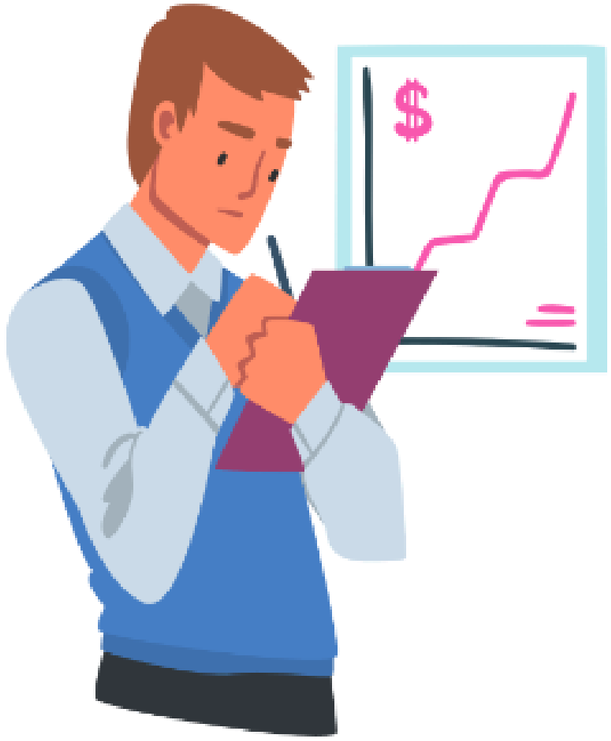
Use it in order to:

- Ensure that they have **accurately interpreted the problem**
- **Build trust and rapport** with the stakeholders

Summarize the discoveries learned

Use it in order to:

- Stay focused on the **critical elements of the problem.**
- Move forward in the **right direction.**



Use of open-ended questions

Example: "CozySpace.com".

> ***Marketing team**: We want to assess the effectiveness of our recent campaign.*

> ***Analytics team**: Can you tell us more details about the campaign?*

> ***Marketing team**: Sure, we reached out to the customer group through social media advertising and we want to know how many customers have made a booking as a result of the campaign.*

Confirm understanding by paraphrasing

Example: "CozySpace.com".

> ***Marketing team**: The customer group consists of frequent travelers who live in the US and have made at least 3 bookings in the past year.*

> ***Analytics team**: Ok, so you want to measure the campaign effectiveness measured by the number of bookings for the group of frequent travelers in the US.*

> ***Marketing team**: Yes, correct!*

Summarize the discoveries

Example: "CozySpace.com".

> ***Analytics team**: To summarize, you want to measure the campaign effectiveness measured by the number of bookings for the group of frequent travelers in US. The analysis will be used to decide if the same campaign is effective and can be applied for future sales events. This needs to be presented to senior management at the end of the month.*

Let's practice!

FORMING ANALYTICAL QUESTIONS

Forming the analytical questions

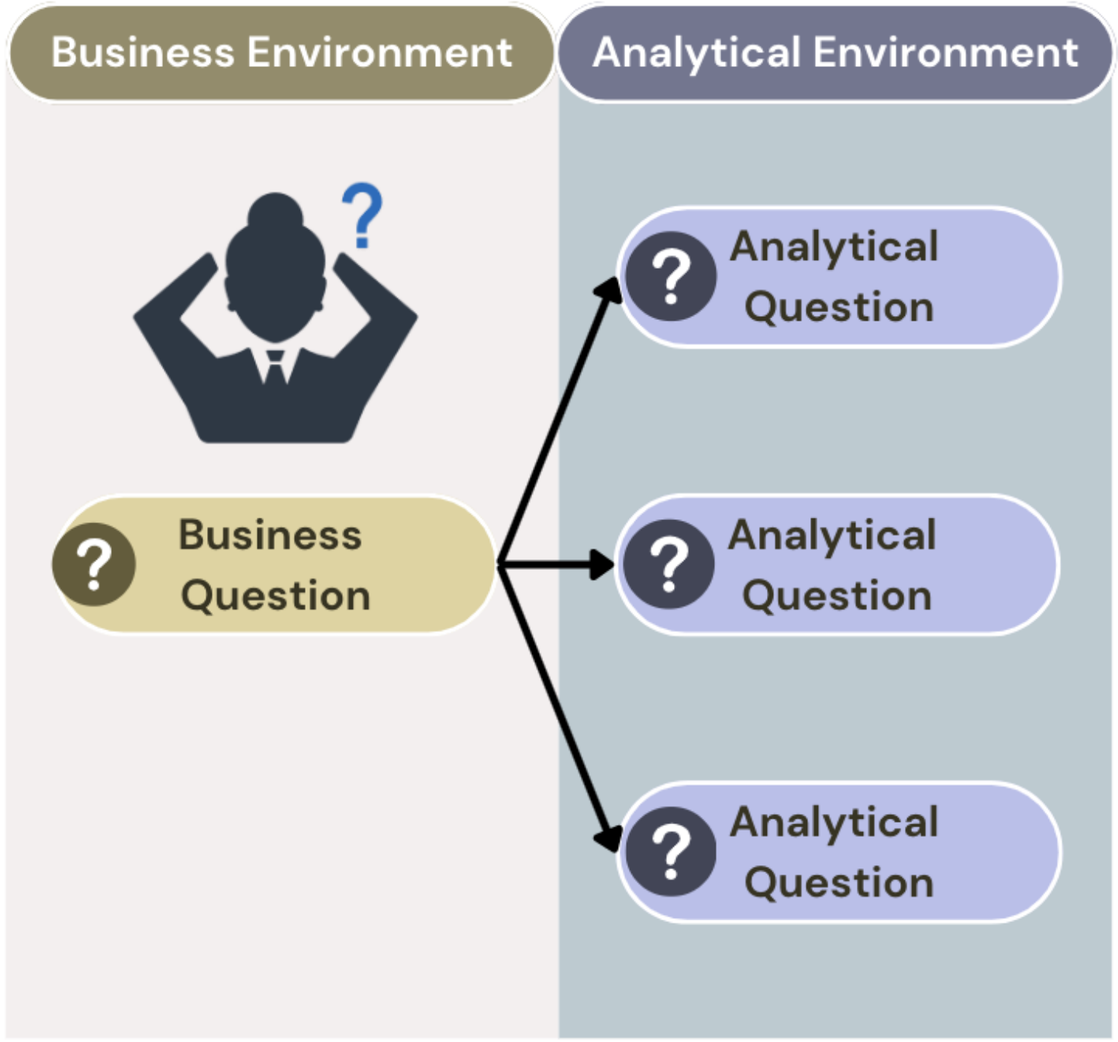
FORMING ANALYTICAL QUESTIONS

Konstantinos Kattidis
Data Analytics Lead

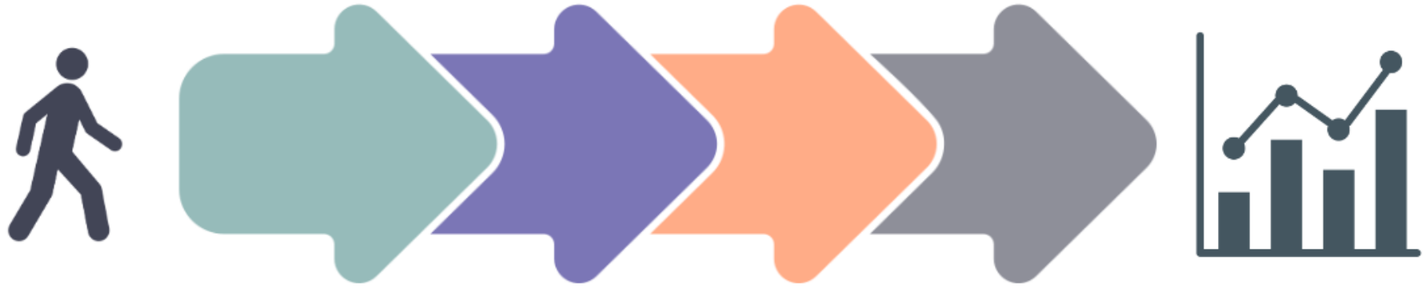
datacamp

Transitioning to the analytical world

- In the translation process we are moving from the **business** to the **analytical** environment.
- The aim is to form one or more analytical questions.
- Using the SMART methodology:
  - **S**pecific
  - **M**easurable
  - **A**ctionable
  - **R**elevant
  - **T**ime-bound



Steps to forming the analytical questions



- **Extract** the key information from the business question
- **Break down** the business question
- **Refine** the analytical question/s
- **Review** relevance

Consider the following scenario

Online marketplace for short-term rentals

COZYSPACE.COM

Business question:

> How effective was our campaign in December measured by the booking rate for the group of frequent travelers in the US?

Extract the key information

> How effective was our campaign in December measured by the booking rate for the group of frequent travelers in the US?

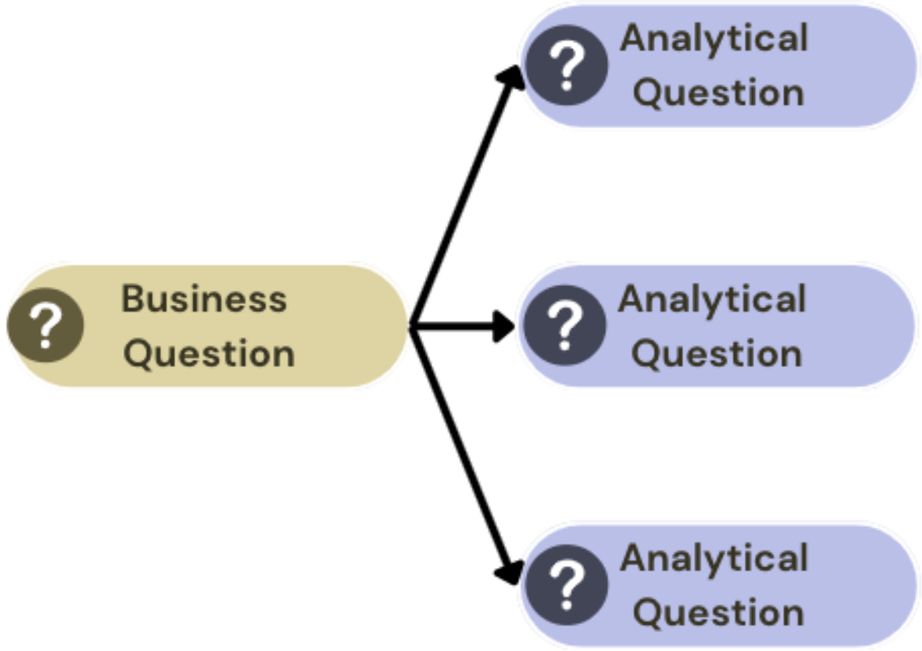
- **Goal**: Measure the effectiveness of the campaign.
- **Metric**: `Booking rate`
- **Focus**: `US market` and the group of `frequent travelers`
- **Timeframe**: `December`

Break down the business question

- Ask: What do we need to know from the data to answer the business question?
- Multiple analytical questions might be needed.

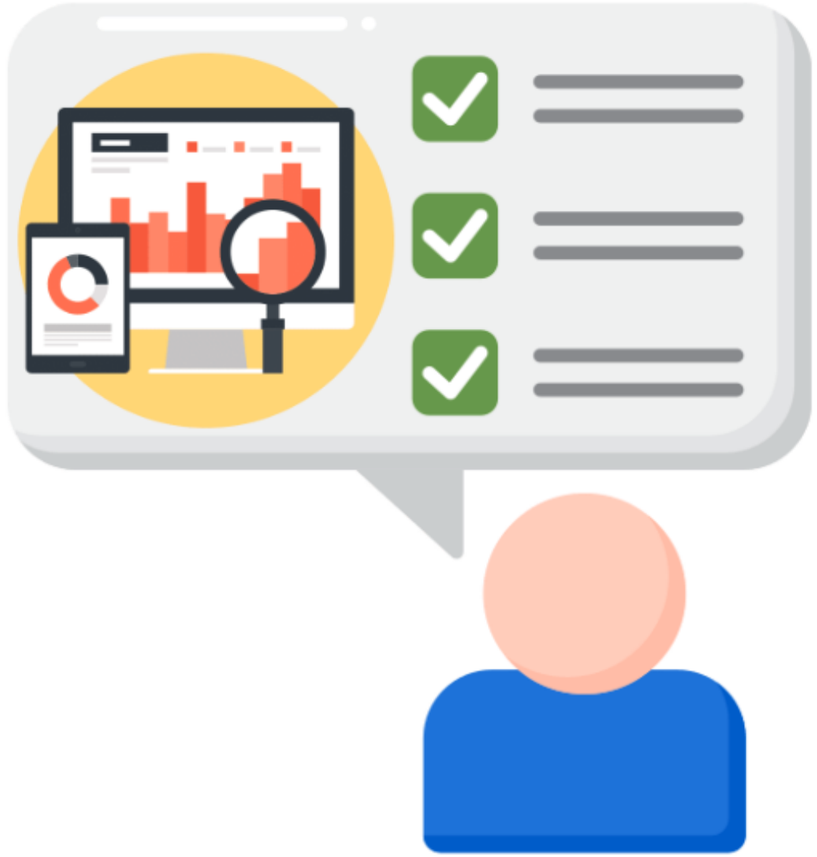
> What was the booking rate one month before the campaign?

> Is there a difference in booking rate during the campaign compared to our baseline?



Refine the analytical questions

- Make the question as specific and focused as possible.
- Consider what data is required to answer them.



> Is there a statistically significant increase in the booking rate during the campaign compared to our baseline based on the bookings data?

Confirm relevance with business question

- Confirm that the analytical question/s formed can address the business question.
- This helps make sure that we are on the right path to solve the business problem.

Let's practice!

FORMING ANALYTICAL QUESTIONS

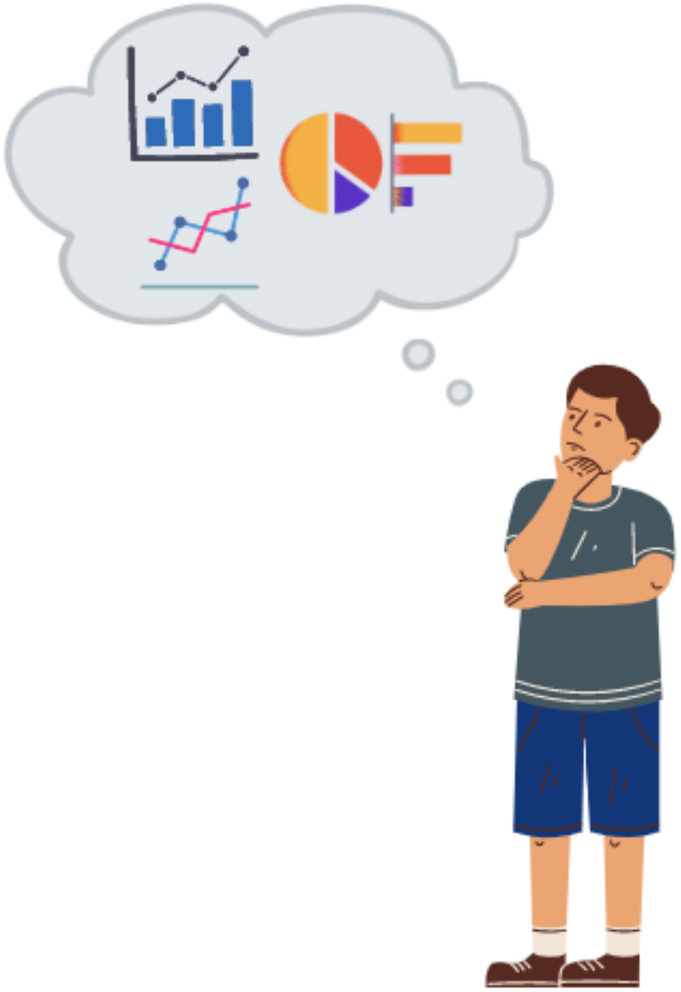
Types of analytical solutions

FORMING ANALYTICAL QUESTIONS

Konstantinos Kattidis
Data Analytics Lead

datacamp

What analytical solutions we can use?



- In the world of data and analytics there exists a plethora of solutions.
- We need to be aware of:
  - The main solutions available.
  - Which solution is applicable to each type of question.

Analytics solution types

Questions	Type of Analytics Solution	Main Techniques
 What happened? What is the current situation?	**Descriptive Analytics**	• Data aggregation • Data visualization • Cluster analysis
 Why did it happen?	**Diagnostic Analytics**	• Regression analysis • Hypothesis testing • Root cause analysis
 What might happen in the future?	**Predictive Analytics**	• Time series forecasting • Machine learning • Predictive text analytics
 What should we do next?	**Prescriptive Analytics**	• Recommendation engines • Optimization • Decision trees

Descriptive analytics solutions

Questions	Type of Analytics Solution	Main Techniques
What happened? What is the current situation?	**Descriptive Analytics**	• Data aggregation • Data visualization • Cluster analysis

1. **Data aggregation**: Mean, median, and percentiles.
2. **Data visualization**: Line charts, bar charts, and histograms.

3. **Cluster analysis**: K-means clustering and hierarchical clustering.

Diagnostic analytics solutions

Questions	Type of Analytics Solution	Main Techniques
 Why did it happen?	**Diagnostic Analytics**	• Regression analysis • Hypothesis testing • Root cause analysis

1. **Regression analysis:** identifying the relationship between one or more independent variables.
2. **Hypothesis testing:** testing a hypothesis to determine whether a particular variable has a statistically significant impact on an outcome.
3. **Root cause analysis:** Identifying the underlying causes of a particular problem.

Predictive analytics solutions

Questions	Type of Analytics Solution	Main Techniques
 What might happen in the future?	**Predictive Analytics**	• Time series forecasting • Machine learning • Predictive text analytics

1. **Time series forecasting**: Analyzing patterns in historical data over time to make predictions about future trends.
2. **Machine learning**: training models to make predictions based on input variables.
3. **Predictive text analytics**: Predicting the next word, phrase, or sentence in a given text.

Certain analytical techniques can be used in **more than one** analytics types. For example, regression.

Prescriptive analytics solutions

Questions	Type of Analytics Solution	Main Techniques
 What should we do next?	**Prescriptive Analytics**	• Recommendation engines • Optimization • Decision trees

1. **Recommendation engines**: Analyzing behaviors and preferences to provide personalized recommendations to users.
2. **Optimization**: Finding the best solution to a problem, subject to certain constraints or limitation.
3. **Decision trees**: Maps out different possible decisions and outcomes, based on certain criteria or parameters.

Let's practice!

FORMING ANALYTICAL QUESTIONS

Choosing the best analytical solution

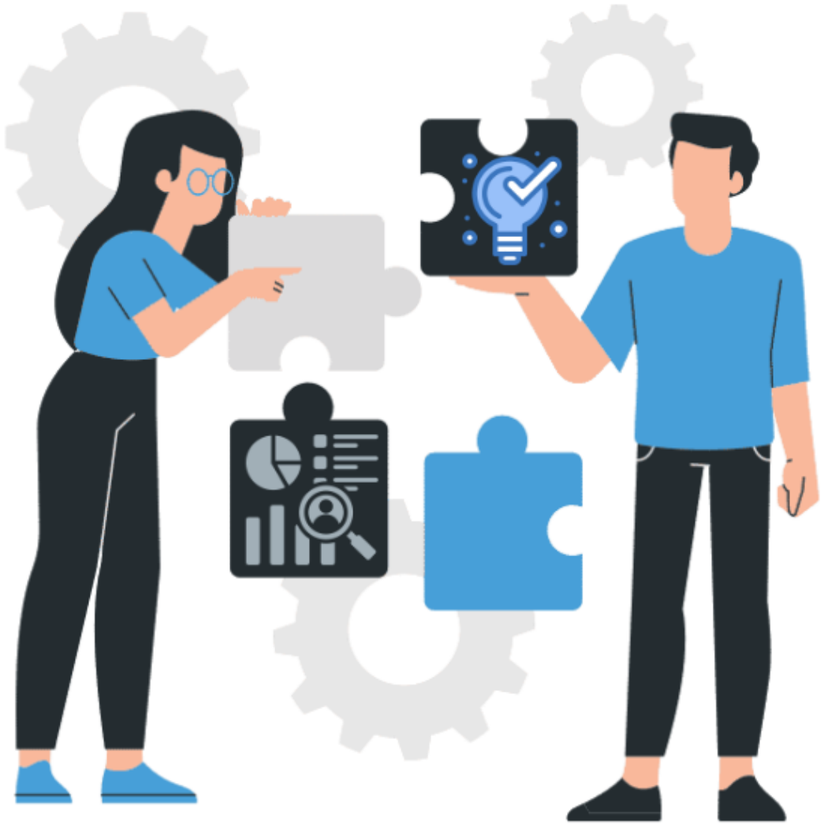
FORMING ANALYTICAL QUESTIONS

Konstantinos Kattidis
Data Analytics Lead

datacamp

Steps to identify the best analytical technique

1. **Categorize** the analytical question into the relevant type of analytical solution.
2. **Brainstorm** relevant techniques.
3. **Select** the most appropriate technique



Find the relevant type of analytics

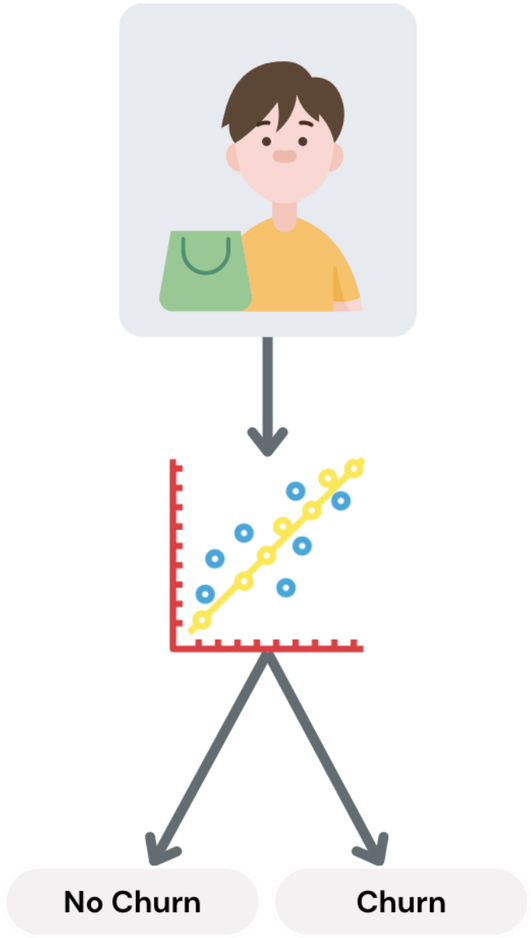
Questions	Type of Analytics Solution	Main Techniques
 What happened? What is the current situation?	**Descriptive Analytics**	• Data aggregation • Data visualization • Cluster analysis
 Why did it happen?	**Diagnostic Analytics**	• Regression analysis • Hypothesis testing • Root cause analysis
 What might happen in the future?	**Predictive Analytics**	• Time series forecasting • Machine learning • Predictive text analytics
 What should we do next?	**Prescriptive Analytics**	• Recommendation engines • Optimization • Decision trees

Consider the output of the analysis

> Think of what the expected output should be.

Example:

- Predicting which customer segments are most likely to churn.
  - **Output**: Binary prediction. Churn, or no churn.
- Summarize the sales trends over time.
  - **Output**: Data visualization



Consider the data type and size

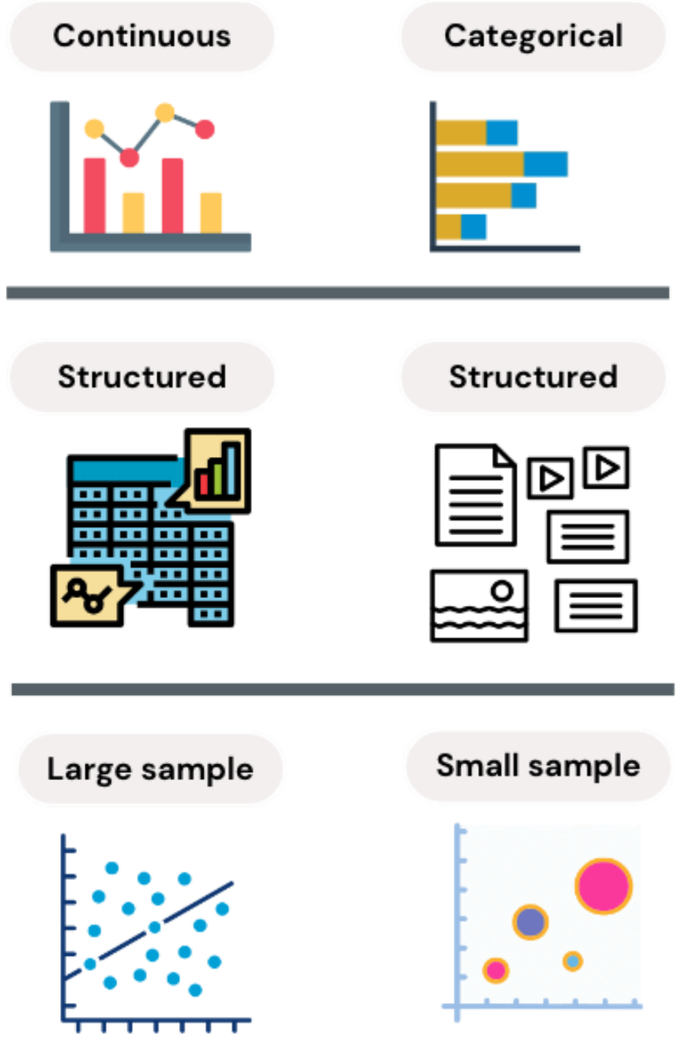
The selection of the analytical technique depends on the:

Data type:

- Continuous or categorical
- Structured or unstructured

Data sample size:

- Large or small sample



Consider time and skill set

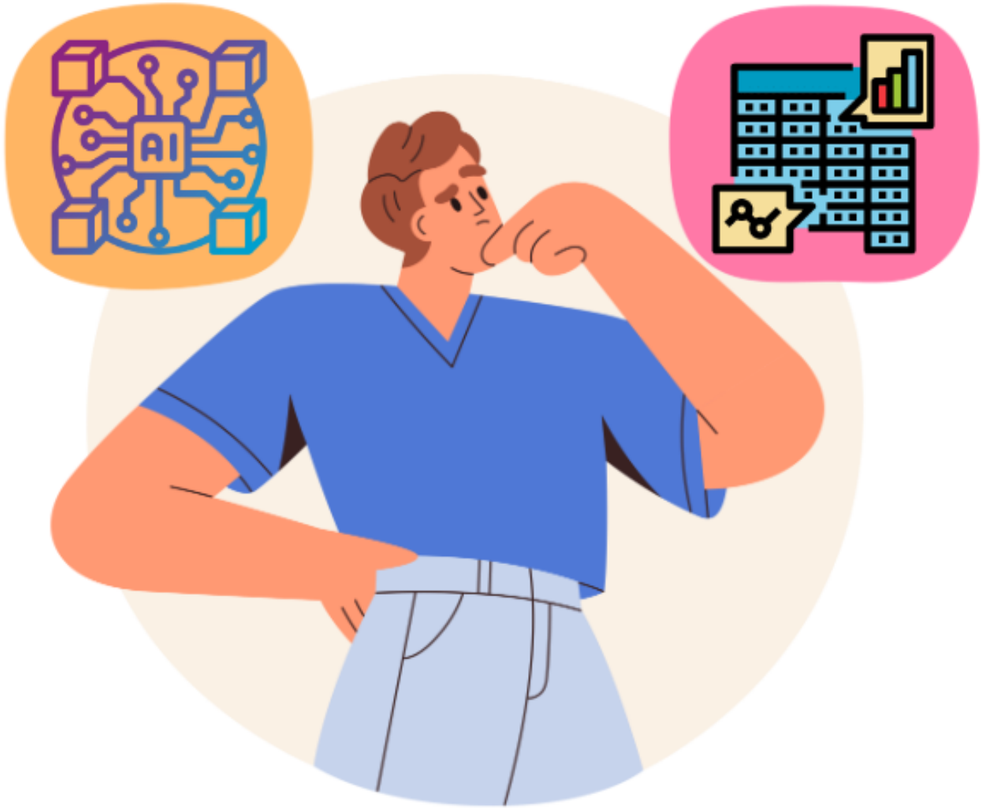
- Consider the **time and resources** of the analytics team.
- Simpler techniques may provide the insights needed and save time.

- Consider the **skill set** of the analytics team.
- Complex techniques may require advanced analytics expertise.

Aim for the simplest solution

Disadvantages of complex solutions:

- Challenging to implement
- Increased cost and time required
- Challenging to interpret and communicate to non-technical stakeholders



> The best analytical solution is one that can provide **actionable insights** that can drive **decision-making**.

Let's practice!

FORMING ANALYTICAL QUESTIONS