

**Instructor:** Alexandra Athanasakou ([Alexandra.Athanasakou@witside.com](mailto:Alexandra.Athanasakou@witside.com))

**Deadline:** 19/06/2023

**Submission Instructions:** The name of your submission should have the following format: **FirstName\_LastName\_StudentID\_PT** (ex. Alexandra\_Athanasakou\_p124567\_PT).

**Type of Assignment:** This is a **group** assignment (2 - 3 people per group). As a team, you are expected to upload a zip with:

- The .QVD file (the actual app)
- 2 or 3 (depending on the group) Word files answering the extra question.

## Apps and data files

- No apps to be uploaded are needed for this case. You create a new app during the business case.
- There is only one data file called **CallCenterDataset.xlsx** which contains three tables.

## About the Dataset

### 1<sup>st</sup> Table:

**Calls** - Contains the list of calls, with all the details related:

Field	Description (type or format)
CallID	Unique call identifier (integer)
CallStarts	Date and time when the call started (DD/MM/YYYY hh:mm:ss)
CallEnds	Date and time when the call ended ( DD/MM/YYYY hh:mm:ss)
CustomerAcc	Customer account identifier (alphanum, ACCXXXX)
CustomerAge	Customer age (number, integer)
CustomerPhone	Customer phone number including prefix (+XX XX-XXX-XXX)
OperatorID	Operator identifier who made the call (alphanum, P00XX) <b>Links with Person table.</b>

<b>LocationID</b>	Location identifier for the call center location (alphanumeric, LOCXXX) <b>Links with Location table.</b>
<b>Sector</b>	Area or industry related to the call: <i>Retail, Healthcare</i> , etc. (string)
<b>CallSatisfaction</b>	Satisfaction score the customer provided after the call. <b>Min score</b> = 0.0 and <b>Max score</b> = 1.0 (decimal)

**2<sup>nd</sup> Table:**

**Location** (list of call center locations): Includes the unique identifier, name, city, and country of the call center.

**3<sup>rd</sup> Table:**

**Person** (list of the operators making the calls): Includes the unique identifier, first name, and surname of the operator.

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Other business definitions provided are:

- **Number of calls** is the count of *CallID* values.
- **Number of customers** is the count of distinct *CustomerAcc* values.
- **Percentage of call satisfaction** is the *CallSatisfaction* with **Number Formatting** always **Custom** and the **Format pattern** is **#,##0.00%**.
- **Call time periods** are the year, quarter, month, or date based on the *CallStarts* timestamps.
- **Call duration** is the time (hh:mm:ss) between the call start and end:  
*Time(CallEnds - CallStarts, 'hh:mm:ss')*. Make sure the **Number Formatting** is always **Duration** and the **Format pattern** is **mm'**.
- **Customer age range** is the *CustomerAge* values split into buckets:

Customer Age	Customer age range
Age < 30	Less than 30
Age between 30-40	30-40
Age between 41-60	41-60
Age > 60	More than 60

### Task description

You are a **business analyst** working for a **call center company**. The company has registered all the calls during the last period and would like you to analyze some KPIs. An **Excel file** has been provided with all the business data: **CallCenterDataset.xlsx**.

### Analysis – Report Design

The KPIs:

- Number of calls,
- Number of customers,
- Average call satisfaction (as a percentage),
- Average call duration (in minutes).

They want to see those indicators based on the **sector**, **customer age group**, **operator**, **call center location** (city and country), and **specific periods** (years, quarters, and year months).

Create a **Call Center Dashboard** using **Qlik Sense** and the data provided to answer the following business questions:

### 1<sup>st</sup> Sheet: Overview (5.5 points)

1. What is the total number of calls (in a single visual)?
2. What is the total number of customers (in a single visual)?

3. What is the total number of Customers only for Europe and despite users' selection?
4. What does the trend over time (by year, month, and day) look like for the number of calls, and the average percentage of call satisfaction?
5. What is the composition of customers based on sector? What is the composition of customers based on the following age ranges: Less than 30, 30-40, 41-60, More than 60?
6. Is it possible to have a detailed report showing the number of calls, the average call satisfaction, and the average call duration per Country and per City?
7. Is there a correlation between the percentage of satisfaction and the call duration per sector?

### 2<sup>nd</sup> sheet – Country and Operator (4 points)

8. What is the average call satisfaction and the average call duration (in a single visual)?
9. Who are the top 10 operators, based on the number of calls? Also show the information of Average Call Duration within the same chart.
10. Can you show the number of calls per Country (with a map) and per Sector (with a chart) in one visual?
11. What is the distribution of calls in Europe vs America?
12. What is the average percentage of satisfaction per Call Center Country & City (hierarchy)?

### Storytelling (0.5 points)

Create a **story** that showcases Call Center Analytics for Europe. Include information from questions:

**1, 2, 3, 4, 6, 7, 8, 9, 11**

Provide the general context of the presentation/story and comment on some of the insights found for the questions above (if any) through a visual appealing way (e.g. highlight important information, provide context about the insight, etc.). Make sure that you include more than one slide.

You are not required to create anything else rather than a presentation through the **Storytelling** section of **Qlik Sense**.

## Process description

1. Review the data provided in the Excel file and list the data transformations you will need to create. Note there might be **data quality** issues.
2. Create a new Qlik Sense app and load the data.
3. Transform the data and associate the tables so the associations in the final dashboard work as expected.
4. Create master measures and master dimensions based on the business needs. Mainly for the KPIs mentioned.
5. Use the most effective visualization in each case based on the business questions.

## Hints

- Use Data manager to transform and associate the data. Use Data Manager and the transformation cards to:
  - Create new calculated fields needed in the dashboard (i.e., Region (related with Europe and America), CallDuration and OperatorName).
  - Fix any data quality issues (i.e., Country fields).
  - Create field buckets (i.e., CustomerAge field).
  - Make sure the date fields and Geoinfo fields are automatically created.
- Create master measures using the following aggregation functions: Count () and Avg().
- Use Set Analysis to override user selection (See notes)
- Use the following visualizations: KPI, Line Chart, Pivot Table, Pie chart, Combo chart, Bar chart, Scatter plot, Treemap and Map. Also, include filter panes with the most relevant filters.
- You can create alternative dimensions or measures and use drill-down. For instance, you can show the trend based on years, then drill down to quarter or month, and finally day.
- When needed, use color to code the values in visualizations by measure or by dimension.

**Extra (Non-graded) question**

Most of the time, as consultants especially, we are getting asked why Business Intelligence (BI) is so important and how it can really help the business to grow or improve their costs and time.

What would you say to convince an organization about the advantages of implementing a BI solution despite the cost?

This is a question that will really help you understand **WHY** you are doing this. This extra question can be an excellent but tricky interview question (just saying... 💡 ).

**Note:** Use ChatGPT if you want but work on the answer so that it shows your understanding of the topic. I want you, by answering this question, to truly understand the **why**.