

# Call Center X Data Data Analysis

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# 1. Data Dictionary

<u>Column Name</u>	<u>Description</u>
<b>Date</b>	Date of each call or transaction.
<b>Agent ID</b>	Unique identifier for each agent handling calls
<b>Call Duration (seconds)</b>	Duration of each call
<b>Customer ID</b>	Unique identifier for each customer
<b>Revenue Generated</b>	Revenue earned from each call or transaction
<b>Call Type</b>	Type of call (e.g., Sales, Support, Complaint) and the Company + product (e.g., Television, Headphones, Speaker)
<b>Resolution Time (minutes)</b>	Time taken to resolve each call
<b>Region</b>	Geographic region of the caller
<b>Feedback Score</b>	Customer satisfaction score (1-5)
<b>Cost per Call</b>	Internal cost for each call made

<u>Derived Columns</u>	<u>Description</u>
<b>Date</b>	Date of each call or transaction
<b>Time</b>	Time of the each call or transaction
<b>Call Type</b>	Type of call
<b>Client</b>	The name of the client
<b>Profit</b>	Total Revenue - Total Cost
<b>Profit Margin</b>	Profit / Revenue

## 2. Data Consistency Check

### Duplicates Check:

- Deleted 4 rows that are duplicated within the table

### Missing Values Check:

#### Step1: Highlighting the missing values

- Missing values in the Revenue Generated and Cost per Call Type columns can help for further analysis.
- Discussing it with the stakeholders, it may be imputed with average values etc.

#### Step2: Imputing missing values

- When calculating average of Revenue Generated and Cost, missing values considered as 0
- When calculating profit margin, missing values imputed with "NA"

Revenue Generated	Call Type	Client	Resolution Time (minutes)	Region	Feedback Score	Cost per Call
80,77	Complaint	Sony	49	EAST	5	36,48
28,12	Complaint	LG	29	EAST	2	NA
NA	Complaint	Samsung	38	NORTH	4	7,57

### 3. Data Cleaning

**Step1:** Duplicate the original sheet

- Keep the original data in one sheet and clean data in other sheet for future references

**Step2:** Autofit Rows and Columns

- Increase readability

**Step3:** Find & Replace

- Get rid of parentheses in Call Type column
- Capitalize Lg

**Step4:** Lower & Upper

- For readability, uppercase Region column

**Step5:** Split Text into Columns (Part 1): Date

- Separating date from time will make it easier to analyze cost & revenue calculation for different year intervals.

**Step6:** Split Text into Columns (Part 2): Call Type

- Separating company names from the call type column will make it easier to analyze costs and revenues for each call type

**Step7:** Proper the data by fixing the mixed use of cases in Call Type and Client columns

- For readability, capitalize the first letter of call type and client columns and lower case other letters

**Step 8:** Adjust header row

- To increase readability, applied: fixed header row with bold and colored text.

## 4. Data Analysis & Visualizations

### 4.1. Profit & Profit Margin Analysis

#### Profit Analysis

- It is calculated by subtracting Cost per Call from Revenue Generated
- Formula used for this calculation (one cell example)

=IFERROR(G2-M2; "NA")
-----------------------

- Negative profit values are marked with red

#### Profit Margin Analysis

- Missing values imputed with "NA"
- Formula used for this calculation (one cell example)

=IFERROR(G2-M2; "NA")
-----------------------

- Top 10% profit margin values are marked with red

N	O
Profit	Profit Margin
78,84	85%
34,92	60%
-23,4	-97%
49,78	69%
70,77	87%
9,86	26%
77,22	89%
77,42	85%
-15	-43%

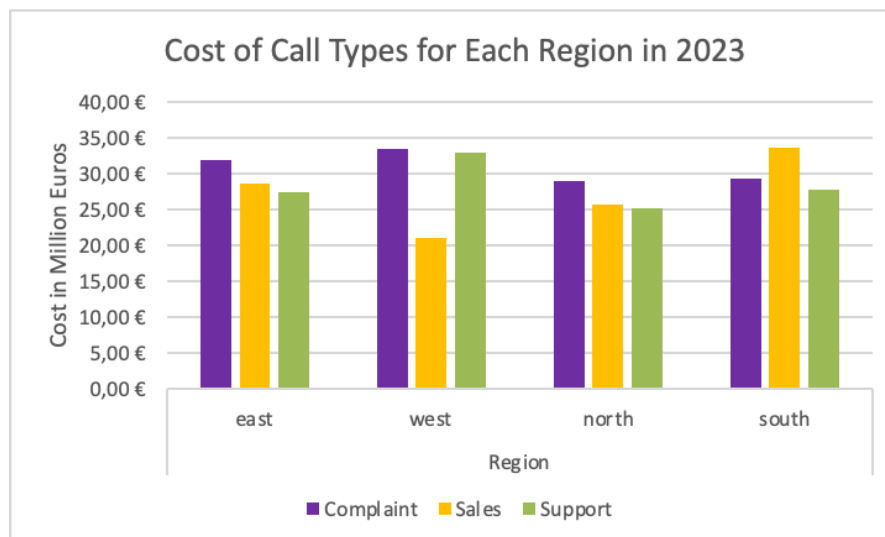
## 4.2. Revenue & Cost Analysis

- Missing values calculated as 0
- Formula used for this calculation (one cell example)

```
=AVERAGEIFS(clean_data!$M:$M;clean_data!$A:$A; ">=" &
DATE(2023;1;1);clean_data!$H:$H;revenue_cost_23!12;clean_data!$K:$K;revenue_cost_23!$J$11)
```

### Cost Per Call ( 2023)

Call Type	Region			
	east	west	north	south
Complaint	31,94	33,38	28,90	29,26
Sales	28,64	21,13	25,73	33,70
Support	27,38	32,91	25,12	27,76



High Complaint Costs in West:

- Complaint calls are most costly in the West region.

Balanced Costs in North:

- North shows similar costs across all call types.

Sales Costs Peak in South:

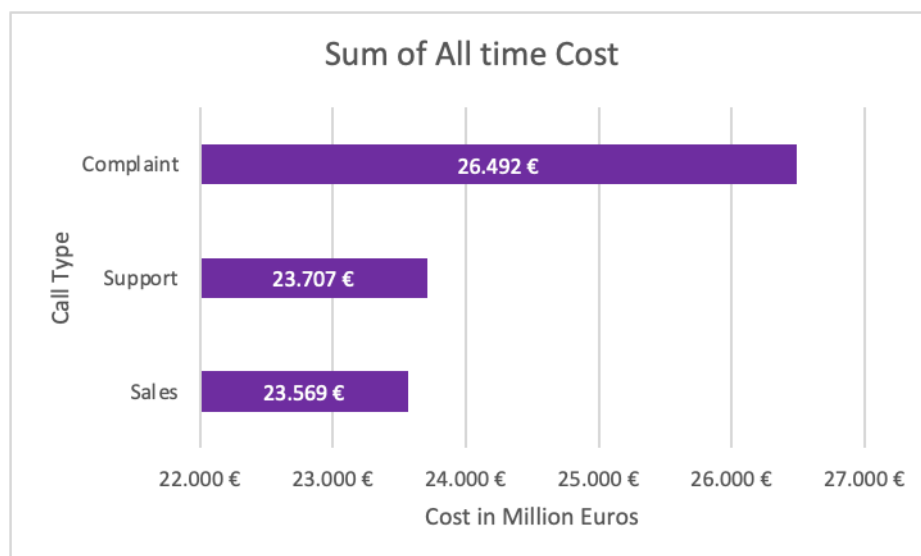
- The South region has the highest costs for sales calls.

**Note:** Other tables and graphics can be found on the excel file.

## 4.3. Comprehensive Cost Analysis by Call Type

- Calculations made using Pivot Table.

Row Labels	Sum of Cost per Call
Sales	23568,94
Support	23706,79
Complaint	26491,84
<b>Grand Total</b>	<b>73767,57</b>



Complaint Calls Have Highest Cost:

- €26,492, requires cost-cutting and efficiency improvements.

Sales and Support Costs Similar:

- €23,569 vs €23,707, balanced yet optimized further.

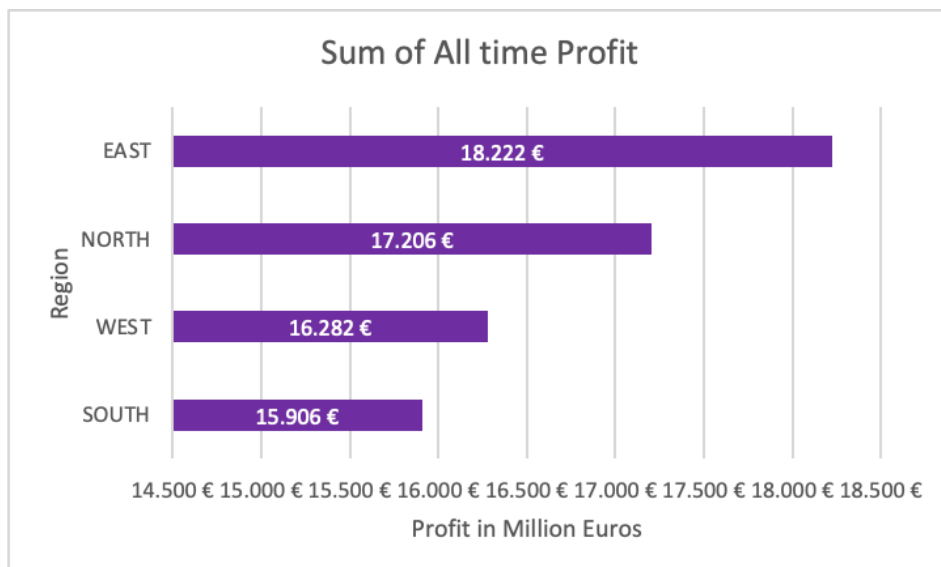
Total Cost Significant:

- €73,767, monitor and seek cost-saving measures continuously.

## 4.4. Comprehensive Profit Analysis by Region

- Calculations made using Pivot Table.

Row Labels	Sum of Profit
SOUTH	15905,95
WEST	16281,54
NORTH	17206,45
EAST	18222,1
<b>Grand Total</b>	<b>67616,04</b>



East Region Leads in Profit:

- €18,222, shows the strongest profitability among all regions.

North Region Close Behind:

- €17,206, indicating solid financial performance.

Total Profit Substantial:

- €67,616, underscores need for sustained growth strategies.