

Informe Técnico – SQL & Power BI

Call Center Performance Analysis

1. Fuente de datos

Tabla principal utilizada en la base de datos:

Calls:

Columnas relevantes:

- call_id
- agent
- date
- time
- topic
- answered
- resolved
- speed_answer_sec
- avg_talk_duration
- satisfaction_rating

Procesamiento en SQL

El procesamiento principal de los datos se realizó en SQL mediante consultas exploratorias y vistas, con el objetivo de preparar la información para su consumo directo en Power BI.

Pregunta secundaria 1

¿Cuál es el desempeño operativo por agente?

Consulta exploratoria (SQL)

SELECT

```
agent,  
COUNT(*) AS TotalCalls,  
AVG(speed_answer_sec) AS AvgSpeedOfAnswer,  
AVG(avg_talk_duration) AS AvgTalkDuration  
FROM calls  
WHERE answered = 'Y'  
GROUP BY agent  
ORDER BY TotalCalls DESC;
```

Vista utilizada en Power BI

```
CREATE OR REPLACE VIEW vw_agent_performance AS  
SELECT  
    agent,  
    COUNT(*) AS TotalCalls,  
    AVG(speed_answer_sec) AS AvgSpeedOfAnswer,  
    AVG(avg_talk_duration) AS AvgTalkDuration  
FROM calls  
WHERE answered = 'Y'  
GROUP BY agent;
```

Pregunta secundaria 2

¿Qué porcentaje de llamadas se contestan y se resuelven correctamente?

Consulta exploratoria (SQL)

SELECT

```
COUNT(*) AS TotalCalls,  
  
SUM(CASE WHEN answered = 'Y' THEN 1 ELSE 0 END) AS AnsweredCalls,  
  
SUM(CASE WHEN answered = 'Y' AND resolved = 'Y' THEN 1 ELSE 0 END) AS  
ResolvedCalls,  
  
ROUND(  
  
    SUM(CASE WHEN answered = 'Y' THEN 1 ELSE 0 END) / COUNT(*),  
  
    4  
) AS AnsweredRate,
```

```

ROUND(
    SUM(CASE WHEN answered = 'Y' AND resolved = 'Y' THEN 1 ELSE 0 END) /
    SUM(CASE WHEN answered = 'Y' THEN 1 ELSE 0 END),
    4
) AS ResolutionRate

FROM calls;

```

Vista utilizada en Power BI

```

CREATE OR REPLACE VIEW vw_call_center_kpis AS
SELECT
    COUNT(*) AS TotalCalls,
    SUM(CASE WHEN answered = 'Y' THEN 1 ELSE 0 END) AS AnsweredCalls,
    SUM(CASE WHEN answered = 'Y' AND resolved = 'Y' THEN 1 ELSE 0 END)
AS ResolvedCalls,
    ROUND(
        SUM(CASE WHEN answered = 'Y' THEN 1 ELSE 0 END) / COUNT(*),
        4
    ) AS AnsweredRate,
    ROUND(
        SUM(CASE WHEN answered = 'Y' AND resolved = 'Y' THEN 1 ELSE 0
END) /
        SUM(CASE WHEN answered = 'Y' THEN 1 ELSE 0 END),
        4
    ) AS ResolutionRate
FROM calls;

```

Pregunta secundaria 3

¿Qué agentes pierden más llamadas (no contestadas o no resueltas)?

Consulta exploratoria (SQL)

```

SELECT
    agent,
    COUNT(*) AS TotalCalls,
    SUM(CASE WHEN answered = 'N' THEN 1 ELSE 0 END) AS
NotAnsweredCalls,
    SUM(CASE WHEN answered = 'Y' AND resolved = 'N' THEN 1 ELSE 0 END)
AS NotResolvedCalls
FROM calls
GROUP BY agent
ORDER BY NotAnsweredCalls DESC, NotResolvedCalls DESC;

```

Vista utilizada en Power BI

```

CREATE OR REPLACE VIEW vw_agent_call_issues AS
SELECT
    agent,
    COUNT(*) AS TotalCalls,
    SUM(CASE WHEN answered = 'N' THEN 1 ELSE 0 END) AS
NotAnsweredCalls,
    SUM(CASE WHEN answered = 'Y' AND resolved = 'N' THEN 1 ELSE 0 END)
AS NotResolvedCalls
FROM calls
GROUP BY agent;

```

Medidas DAX en Power BI

Además del procesamiento en SQL, se crearon medidas DAX en Power BI para cálculos dinámicos y visualizaciones avanzadas.

Estas medidas permiten que los cálculos respondan a:

- Filtros
- Segmentadores
- Interacción del usuario

Total de llamadas

```
Total Calls =  
SUM('vw_call_center_kpis'[TotalCalls])
```

Tasa de llamadas contestadas (Answered Rate)

```
Answered Rate =  
DIVIDE(  
    SUM('vw_call_center_kpis'[AnsweredCalls]),  
    SUM('vw_call_center_kpis'[TotalCalls])  
)
```

Formato aplicado: **Porcentaje (%)**

Tasa de resolución (Resolution Rate)

```
Resolution Rate =  
DIVIDE(  
    SUM('vw_call_center_kpis'[ResolvedCalls]),  
    SUM('vw_call_center_kpis'[AnsweredCalls])  
)
```

Formato aplicado: **Porcentaje (%)**

Llamadas contestadas (derivadas)

```
Answered Calls =  
SUM('vw_call_center_kpis'[AnsweredCalls])
```

Llamadas no contestadas

```
Not Answered Calls =  
SUM('vw_agent_call_issues'[NotAnsweredCalls])
```

Llamadas no resueltas

```
Not Resolved Calls =  
SUM('vw_agent_call_issues'[NotResolvedCalls])
```

Agent Effectiveness (medida clave)

Medida creada para la tabla con formato condicional.

```
Agent Effectiveness =  
VAR Total = SUM('vw_agent_call_issues'[TotalCalls])  
VAR LostCalls =  
    SUM('vw_agent_call_issues'[NotAnsweredCalls]) +  
    SUM('vw_agent_call_issues'[NotResolvedCalls])  
RETURN  
DIVIDE(  
    Total - LostCalls,  
    Total  
)
```

Formato aplicado: **Porcentaje (%)**

Uso de las medidas en visualizaciones

- **Tarjetas KPI:**
 - Total Calls
 - Answered Rate
 - Resolution Rate
- **Gráfico de desempeño por agente:**
 - TotalCalls vs AvgSpeedOfAnswer
- **Tabla con formato condicional:**
 - Agent Effectiveness
 - NotAnsweredCalls
 - NotResolvedCalls

Las medidas DAX permiten que todas las visualizaciones se ajusten dinámicamente según los filtros aplicados.

5. Consideraciones técnicas

- SQL se utilizó para:
 - Agregaciones base
 - Preparación de datos
 - Optimización de rendimiento
- DAX se utilizó para:

- Cálculos dinámicos
- Métricas dependientes del contexto
- Formato condicional

Este enfoque separa correctamente la **capa de datos** de la **capa semántica**, siguiendo buenas prácticas de modelado analítico.

6. Cierre técnico

El proyecto demuestra un flujo profesional de análisis de datos:

1. Exploración y modelado en SQL
2. Persistencia mediante vistas reutilizables
3. Cálculo dinámico con DAX
4. Visualización e interpretación en Power BI

Este diseño garantiza escalabilidad, claridad y facilidad de mantenimiento.