Marketing Team Analysis

1-What flights the company's frequent flyers take?

FLIGHT	FREQUENCY
FROM: Madrid TO: Lisbon	14
FROM: Lisbon TO: Madrid	8
FROM: Madrid TO: London	8
FROM: London TO: Madrid	8
FROM: Yola TO: Lisbon	7
FROM: Ifon TO: Madrid	6

FROM CITY TO CITY:

```
 WITH FLIGHTS
        AS (SELECT ('FROM: ' || SRC.CITY || ' TO: ' || DEST.CITY) AS
FLIGHT
              FROM FREQUENTFLYERS FF
                   INNER JOIN AIRPORTDIM SRC
                      ON FF.SRCAIRPORTKEY = SRC.AIRPORTKEY
                   INNER JOIN AIRPORTDIM DEST
                      ON FF.DSTAIRPORTKEY = DEST.AIRPORTKEY
                  INNER JOIN DATEDIM DD ON
                                DD.DATEKEY = FF.RESERVATIONDATE
                                WHERE DD.YEAR > 2020)
  SELECT FLIGHT, COUNT (*) AS FREQUENCY FROM FLIGHTS
GROUP BY FLIGHT ORDER BY FREQUENCY DESC;
```

FROM CITY TO CITY:

```
WITH FLIGHTS
        AS (SELECT ('FROM: ' || SRC.CITY || ' TO: ' || DEST.CITY) AS
FLIGHT              FROM FREQUENTFLYERS FF
                    INNER JOIN AIRPORTDIM SRC
                       ON FF.SRCAIRPORTKEY = SRC.AIRPORTKEY
                    INNER JOIN AIRPORTDIM DEST
                       ON FF.DSTAIRPORTKEY = DEST.AIRPORTKEY
                   INNER JOIN DATEDIM DD ON
                                DD.DATEKEY = FF.RESERVATIONDATE
                                WHERE DD.YEAR > 2020)
  SELECT FLIGHT, COUNT (*) AS FREQUENCY
    FROM FLIGHTS GROUP BY FLIGHT
ORDER BY FREQUENCY DESC;
```

FLIGHT	FREQUENCY
FROM: China TO: China	5899
FROM: Indonesia TO: China	3411
FROM: China TO: Indonesia	3301
FROM: Indonesia TO: Indonesia	1877
FROM: Russia TO: China	1855
FROM: China TO: Russia	1848
FROM: China TO: Philippines	1777

The most frequent flights among our frequent flyers are those between Madrid and Lisbon, Madrid and London, China and Indonesia, China and Russia.

2-What fare basis the company's frequent flyers pay?

```
   SELECT FB.DESCRIPTION, COUNT (*) AS FREQUENCY
     FROM FREQUENTFLYERS FF INNER JOIN FAREBASISDIM FB ON FF.FBKEY =
FB.FBKEY
GROUP BY FB.DESCRIPTION
ORDER BY FREQUENCY DESC;
```

DESCRIPTION	FREQUENCY
Basic Economy	30257
21-Day Advance Saver	30048
Promotional Fare	29972
Flexible Fare	29963
7-Day Advance Purchase	29760

Our Frequent Flyers tend to pay Basic Economy fare basis.

3-How often our frequent flyers upgrade?

```
SELECT DISTINCT CLASS.CLASSCHANGE,
 ROUND(COUNT (*) OVER (PARTITION BY CLASS.CLASSCHANGE )
   / COUNT(*) OVER (), 2) AS Class_Change_Rates
FROM FREQUENTFLYERS FF
 INNER JOIN CLASSDIM CLASS ON FF.CLASSKEY = CLASS.CLASSKEY;
```

CLASSCHANGE	CLASS_CHANGE_RATES
Downgrade	0.42
No Class Change	0.16
Upgrade	0.42

The upgrade rate for our frequent flyers is **42%.**

4-whether they respond to special fare promotions

Let's count the number of flights flown as a response to special fare promotions each year.

```
  SELECT YEAR, COUNT (*) FLIGHTS
    FROM FREQUENTFLYERS FF
         INNER JOIN FAREBASISDIM FB
            ON FF.FBKEY = FB.FBKEY
         INNER JOIN DATEDIM DD
            ON DD.DATEKEY = FF.RESERVATIONDATE
   WHERE FB.DESCRIPTION LIKE '%Promotional%'
GROUP BY DD.YEAR
ORDER BY YEAR;
```

YEAR	FLIGHTS
2015	2856
2016	3144
2017	3036
2018	2940
2019	3068
2020	2880
2021	2932
2022	3083
2023	3058
2024	2975

As we can see, on average, 3000 flights are organized each year as a response to a special fare promotion.

5-How frequent flyers earn and redeem their frequent flyer miles?

- Flyer miles can be earned from or redeemed into any service provided by the company or any partner company.
- The second delivery of the project covers this matter in a more integrated and complete manner, while the first delivery only focuses on flight activity.
- So, what we can do is to show the countries to which frequent flyers tend to redeem and earn flyer miles.

Let's start by seeing how much of the earned miles are earned from a bonus miles promotion.

```
WITH POINTS_EARNED
        AS (SELECT DISTINCT
                   PD.TYPE TYPE,
                   SUM (POINTSEARNED) OVER () AS TOTAL_MILES_EARNED,
                   SUM (POINTSEARNED) OVER (PARTITION BY PD.TYPE)
                      AS PROMOTION_MILES_EARNED
              FROM    FREQUENTFLYERS FF
                   INNER JOIN
                      PROMOTIONDIM PD
                   ON PD.PROMOTIONKEY = FF.PROMOTIONKEY)
SELECT TOTAL_MILES_EARNED,
       PROMOTION_MILES_EARNED,
       ROUND (PROMOTION_MILES_EARNED / TOTAL_MILES_EARNED, 2) RATIO
  FROM POINTS_EARNED
 WHERE TYPE = 'bonus miles';
```

TOTAL_MILES_EARNED	PROMOTION_MILES_EARNED	RATIO
61006973	10363095	0.17

- **17%** of frequent miles earned are earned from promoted flights.

Let's see the routes from which frequent flyers redeem their frequent miles.

```
  SELECT SRC.COUNTRY FROM_, DEST.COUNTRY TO_, SUM (POINTSEARNED) AS
POINTS
    FROM FREQUENTFLYERS FF
         INNER JOIN AIRPORTDIM SRC
            ON FF.SRCAIRPORTKEY = SRC.AIRPORTKEY
         INNER JOIN AIRPORTDIM DEST
            ON FF.DSTAIRPORTKEY = DEST.AIRPORTKEY
GROUP BY SRC.COUNTRY, DEST.COUNTRY ORDER BY POINTS DESC;
```

Most flyers miles redeemed on flights by company's frequent flyers are redeemed as discount on flights from Portugal to Sweeden, From Indonesia to Mexico, From America to China, and so on.

FROM_	TO_	POINTS
Portugal	Sweden	86509
Indonesia	Mexico	86330
Armenia	China	85232
Brazil	Sweden	84302
Portugal	France	81061

6-How long frequent flyers' overnight stays are?

Let's calculate the average overnight stand duration for each frequent flyer.

- The grain for this fact table is each transit, and we calculate the overnight stand duration in as a derived attribute.
- It would go something like this:

```
SELECT FD.ACTUALDEPARTURETIME,
       FD.ACTUALARRIVALTIME,
       (LAG (ACTUALARRIVALTIME)     -- Get the arrival time for
previos flight
        OVER (PARTITION BY RESERVATIONID_#DD ORDER BY
FD.ACTUALDEPARTURETIME)
         - FD.ACTUALDEPARTURETIME)
         AS OVERNIGHT_HOURS
  FROM    FREQUENTFLYERS FF
       INNER JOIN FLIGHTDIM FD ON FF.FLIGHTKEY = FD.FLIGHTKEY;
```

Get The average overnight stand duration.

```
SELECT AVG (OVERNIGHTSTAND) HOURS
  FROM FREQUENTFLYERS;
```

The average overnight stand between transits is **12 hours.**

HOURS
11.63452

7-What proportion of these frequent flyers have gold, platinum or titanium status.

NAME	RATIO
Gold	0.31
titanium	0.34
platinum	0.34

```
 SELECT DISTINCT
       SD.NAME,
       ROUND (
          COUNT (DISTINCT PASSENGERKEY) OVER (PARTITION BY SD.NAME)
          / COUNT (DISTINCT PASSENGERKEY) OVER (), 2) AS RATIO
  FROM    FREQUENTFLYERS FF
       INNER JOIN STATUSDIM SD
         ON FF.STATUSKEY = SD.STUTUSKEY;
```

31% Of Frequent flyers have **gold** status, **34%** **Titanium** & **Platinum**

Finance Team Analysis

- We provide services rather than products, so calculating profit from reservations (ticketing) is not doable.
- To calculate the profit, we must calculate the cost, and we only have operational cost.
- So, as the first delivery focuses only on flight activities, we will calculate revenue rather than profit and we will focus on profit in the second deliverable.

Let's remind you that we have 2 kinds of revenues earned and unearned revenue, and our fact table only captures earned revenue by loading data using departure date instead of reservation data.

1-What is our yearly revenue over the past 10 years?

```
SELECT DD.YEAR,
        ROUND (SUM (TOTALFARE - DISCOUNT) / 1000000) || ' M$' AS
REVENUE
    FROM RESERVATIONS RF INNER JOIN DATEDIM DD ON RF.DEPARTUREDATE =
DD.DATEKEY
GROUP BY DD.YEAR
ORDER BY YEAR DESC;
```

On average, we achieve 11 M$ yearly from buying tickets.

Y..	REVENUE
2024	11 M$
2023	11 M$
2022	11 M$

Let's look at our monthly revenue this year.

```
  SELECT DD.MONTH,
        ROUND (SUM (TOTALFARE - DISCOUNT) / 1000000) || ' M$' AS
REVENUE
    FROM RESERVATIONS RF INNER JOIN DATEDIM DD ON RF.DEPARTUREDATE =
DD.DATEKEY
WHERE YEAR = 2024
GROUP BY DD.MONTH ORDER BY MONTH;
```

Our average monthly sales this year is 1 M$

MONTH	REVENUE
1	1 M$
2	1 M$
3	1 M$
4	1 M$

2-Revenue per reservation channel.

```
SELECT CD.NAME, ROUND (SUM (TOTALFARE - DISCOUNT) / 1000000) || ' M$'
REVENUE
    FROM    RESERVATIONS RF
         INNER JOIN
            CHANNELDIM CD
         ON RF.CHANNELKEY = CD.CHANNELKEY
GROUP BY CD.NAME
ORDER BY REVENUE DESC;
```

NAME	REVENUE
Others	19 M$
Call Center	19 M$
Agent	19 M$
Mobile App	19 M$
Website	19 M$
site	18 M$

3-What is our yearly revenue in each country?

```
SELECT DD.YEAR,
         AD.COUNTRY,
         ROUND (SUM (TOTALFARE - DISCOUNT) / 1000) || ' K$' AS REVENUE
    FROM RESERVATIONS RF
         INNER JOIN DATEDIM DD
            ON RF.DEPARTUREDATE = DD.DATEKEY
         INNER JOIN AIRPORTDIM AD
            ON AD.AIRPORTKEY = RF.SRCAIRPORTKEY
GROUP BY DD.YEAR, COUNTRY
ORDER BY YEAR DESC, REVENUE DESC;
```

YEAR	COUNTRY	REVENUE
2024	China	2163 K$
2024	Indonesia	1277 K$
2024	Russia	664 K$
2024	Philippines	614 K$
2024	Portugal	518 K$
2024	Brazil	449 K$
2024	Sweden	396 K$
2024	Thailand	282 K$

It looks like out business is vital in Asia, especially China and Indonesia.

4-What is our top performing year?

```
SELECT DD.YEAR,
         ROUND (SUM (TOTALFARE - DISCOUNT) / 1000) || ' K$' AS REVENUE
    FROM RESERVATIONS RF
         INNER JOIN DATEDIM DD
            ON RF.DEPARTUREDATE = DD.DATEKEY
GROUP BY DD.YEAR
ORDER BY REVENUE DESC;
```

YEAR	REVENUE
2018	11361 K$
2023	11342 K$
2022	11301 K$
2015	11283 K$

Numbers are close for each year.

5-What are our top selling months?

```
SELECT DD.MONTH,
       ROUND (SUM (TOTALFARE - DISCOUNT) / 1000) || ' K$' AS REVENUE
  FROM RESERVATIONS RF
       INNER JOIN DATEDIM DD
          ON RF.DEPARTUREDATE = DD.DATEKEY
GROUP BY DD.MONTH
ORDER BY SUM (TOTALFARE - DISCOUNT) DESC;
```

MONTH	REVENUE
2	9496 K$
4	9482 K$
3	9448 K$

Our services are most popular during the first quarter of the year.

6-Which Customer Tier is most valuable?

```
  SELECT PPD.FREQUENTFLYERTIER,
         ROUND (SUM (TOTALFARE - DISCOUNT) / 1000) || ' K$' AS REVENUE
    FROM    RESERVATIONS RF
         INNER JOIN
            PASSENGERPROFILEDIM PPD
         ON PPD.PROFILEKEY = RF.PROFILEKEY
GROUP BY FREQUENTFLYERTIER
ORDER BY REVENUE DESC;
```

FREQUENTFLYERTIER	REVENUE
Mid Tier	22516 K$
Basic	22483 K$
Worrier Tier	22386 K$
High Tier	22327 K$
Legend Tier	22165 K$

7-What is our most profitable booking Channel?

```
  SELECT CD.NAME,
         ROUND (SUM (TOTALFARE - DISCOUNT) / 1000) || ' K$' AS REVENUE
    FROM    RESERVATIONS RF
         INNER JOIN
            CHANNELDIM CD
         USING(CHANNELKEY)
GROUP BY NAME
ORDER BY Revenue DESC;
```

NAME	REVENUE
Mobile App	18712 K$
Call Center	18707 K$
Agent	18672 K$
Website	18649 K$
Others	18642 K$
site	18496 K$

8-What is our most valuable class?

```
  SELECT CD.CLASSFLOWN,
         ROUND (SUM (TOTALFARE - DISCOUNT) / 1000) || ' K$' AS REVENUE
    FROM    RESERVATIONS RF
         INNER JOIN
            CLASSDIM CD
         USING(CLASSKEY)
GROUP BY CLASSFLOWN ORDER BY REVENUE DESC;
```

CLASSFLOWN	REVENUE
Prem Economy	19 M$
Business	19 M$
First	19 M$
basic Economy	19 M$
VIP	19 M$
Economy	18 M$

Customer Support Team Analysis

1-On Average, how many complaints, inquiries, feedback do we get receive each year?

```
 SELECT YEAR, ID.TYPE, COUNT (*) COUNT
    FROM CUSTOMERCARE CCF
         INNER JOIN INTERACTION ID
            ON CCF.INTERACTIONKEY =
ID.INTERACTIONKEY
         INNER JOIN DATEDIM DD
            ON DD.DATEKEY = CCF.SUBMISSIONDATE
GROUP BY TYPE, YEAR
ORDER BY YEAR DESC;
```

YEAR	TYPE	COUNT
2024	Complaint	500
2024	Feedback	500
2024	Inquiry	475
2023	Complaint	503
2023	Feedback	498
2023	Inquiry	507
2022	Complaint	505
2022	Feedback	501
2022	Inquiry	540

2-Do we receive severe complaints frequently?

```
SELECT ID.SEVERITY, COUNT (*) COUNT
    FROM    CUSTOMERCARE CCF
         INNER JOIN
            INTERACTION ID
         ON CCF.INTERACTIONKEY = ID.INTERACTIONKEY
   WHERE TYPE = 'Complaint'
GROUP BY ID.SEVERITY
ORDER BY COUNT DESC;
```

SEVERITY	COUNT
2	1043
0	1022
4	1016
3	1014
1	993

Most of the complaint has a non-critical severity.

3-On average, how long does it take for us to respond to the customer's interaction?

```
SELECT AVG (RESPONDEDELAY) AS MINUTES FROM CUSTOMERCARE;
```

On average, it takes us **35 minutes** to respond to the customer, but are we trying to improve this?

```
  SELECT YEAR, AVG (RESPONDEDELAY) AS MINUTES
    FROM    CUSTOMERCARE CC
         INNER JOIN
            DATEDIM DM
         ON CC.SUBMISSIONDATE = DM.DATEKEY
GROUP BY YEAR ORDER BY YEAR DESC;
```

The waiting time for each customer to get a response is the same over the past 10 years, meaning that we are not trying to improve customer satisfaction.

YEAR	MINUTES
2024	34.153220338983
2023	34.9045092838196
2022	33.7108667529107
2021	33.9941291585127
2020	34.8230668414155
2019	34.4148044692737
2018	34.2622730329522
2017	35.1323924731183

4-On average, how long does it take for us to resolve a customer's complaint?

```
  SELECT YEAR, AVG (RESOLUTIONDELAY) AS MINUTES
    FROM CUSTOMERCARE CC
         INNER JOIN DATEDIM DM
            ON CC.RESOLUTIONDATE= DM.DATEKEY
         INNER JOIN INTERACTION ID
            ON ID.INTERACTIONKEY = CC.INTERACTIONKEY
   WHERE ID.TYPE = 'Complaint'
GROUP BY YEAR
  ORDER BY YEAR DESC;
```

YEAR	MINUTES
2024	27
2023	31
2022	35
2021	39
2020	37
2019	29
2018	38
2017	38
2016	26

On average it takes us 30 – 35 minutes to resolve customers' issues, but what is more important is that the waiting time has decreased for the current year.

5-Which booking channel received the most complaints?

```
  SELECT CD.NAME CHANNEL, COUNT (*) COMPLAINTS
    FROM CUSTOMERCARE CC
         INNER JOIN DATEDIM DM
            ON CC.SUBMISSIONDATE = DM.DATEKEY
         INNER JOIN INTERACTION ID
            ON ID.INTERACTIONKEY = CC.INTERACTIONKEY
         INNER JOIN CHANNELDIM CD
            USING (CHANNELKEY)
   WHERE ID.TYPE = 'Complaint'
GROUP BY CD.NAME
ORDER BY COMPLAINTS DESC;
```

CHANNEL	COMPLAINTS
Website	923
Call Center	868
Others	847
Mobile App	843
Agent	825
site	782

It looks like we have problems on our website, we need to hire an ITI Graduate full stack developer!

Flight Activity Analysis

1-How many flights the company organize each year?

```
 SELECT YEAR, COUNT (*) FLIGHTS
   FROM    FLIGHTACTIVITY FA
        INNER JOIN
           DATEDIM DM
        ON FA.SCHEDULEDDEPDATEKEY = DM.DATEKEY
GROUP BY YEAR
ORDER BY YEAR DESC;
```

YEAR	FLIGHTS
2024	9931
2023	9872
2022	10035
2021	10187
2020	10077
2019	10026

The company organizes an average of 10K flights each year.

2- Monthly flights organized by the company this year.

```
  SELECT MONTH, COUNT (*) FLIGHTS
    FROM    FLIGHTACTIVITY FA
         INNER JOIN
            DATEDIM DM
         ON FA.SCHEDULEDDEPDATEKEY = DM.DATEKEY
    WHERE YEAR = 2024
GROUP BY MONTH
ORDER BY MONTH;
```

Our performance is steady this year with an average of 800 flights each month.

MONTH	FLIGHTS
1	856
2	803
3	841
4	802

3-Our most popular routes.

```
WITH FLIGHTS
        AS (SELECT ('FROM: ' || SRC.CITY || ' TO: ' || DEST.CITY) AS
FLIGHT
              FROM FLIGHTACTIVITY FA
                   INNER JOIN AIRPORTDIM SRC
                      ON FA.SRCAIRPORTKEY = SRC.AIRPORTKEY
                   INNER JOIN AIRPORTDIM DEST
                      ON FA.DSTAIRPORTKEY = DEST.AIRPORTKEY)
  SELECT FLIGHT, COUNT (*) AS FREQUENCY
    FROM FLIGHTS
GROUP BY FLIGHT
ORDER BY FREQUENCY DESC;
```

FLIGHT	FREQUENCY
FROM: China TO: China	3999
FROM: Indonesia TO: China	2243
FROM: China TO: Indonesia	2195
FROM: Indonesia TO: Indonesia	1269
FROM: Russia TO: China	1192
FROM: China TO: Philippines	1158
FROM: China TO: Russia	1156
FROM: Philippines TO: China	1155
FROM: Portugal TO: China	929

FLIGHT	FREQUENCY
FROM: Lisbon TO: Madrid	7
FROM: Madrid TO: Shizuoka-shi	5
FROM: Madrid TO: Malaga	5
FROM: GÃ¶teborg TO: Madrid	5
FROM: Wahai TO: Madrid	5
FROM: Madrid TO: Oljoq	4
FROM: Santa Rosa TO: Madrid	4
FROM: Sasayama TO: Madrid	4

Our most popular routes are flights between China and Indonesia and also between China and Russia.

4-What are the average empty seats count per flight each year?

```
SELECT YEAR, ROUND (AVG (EMPTYSEATS)) AS SEATS
  FROM    FLIGHTACTIVITY FA
        INNER JOIN
           DATEDIM DM
        ON FA.ACTUALARRDATEKEY = DM.DATEKEY
GROUP BY YEAR
  ORDER BY YEAR DESC;
```

YEAR	SEATS
2024	15
2023	15
2022	15

On average we have 15 empty seats available on each flight!

5-What is our average yearly fuel consumption?

```
SELECT YEAR, ROUND (AVG (FUELCONSUMPTION)) AS LITRE
  FROM    FLIGHTACTIVITY FA
        INNER JOIN
           DATEDIM DM
        ON FA.ACTUALARRDATEKEY = DM.DATEKEY
GROUP BY YEAR
  ORDER BY YEAR DESC;
```

YEAR	LITRE
2024	175
2023	175
2022	175
2021	174
2020	175

On average each flight uses 175-liter fuel.

Dashboards

We have decided to build an interactive PowerBI Dashboard on top of the DWH.