

# Case Study #3 - Foodie-Fi

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## Introduction

Subscription based businesses are super popular and Danny realized that there was a large gap in the market - he wanted to create a new

streaming service that only had food related content - something like Netflix but with only cooking shows!

Danny finds a few smart friends to launch his new startup Foodie-Fi in 2020 and starts selling monthly and annual subscriptions, giving their customers unlimited on-demand access to exclusive food videos from around the world!

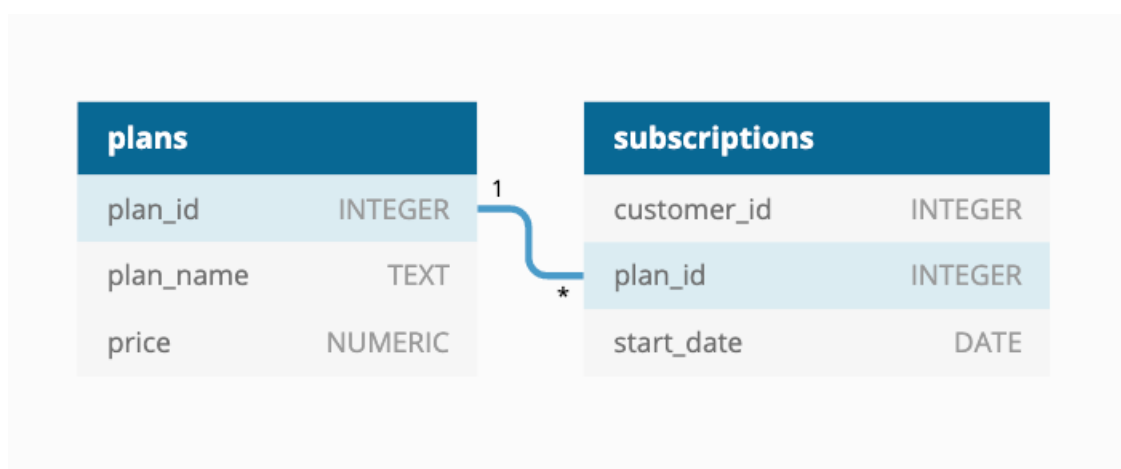
Danny created Foodie-Fi with a data driven mindset and wanted to ensure all future investment decisions and new features were decided using data. This case study focuses on using subscription style digital data to answer important business questions.

## Available Data

Danny has shared the data design for Foodie-Fi and also short descriptions on each of the database tables - our case study focuses on only 2 tables but there will be a challenge to create a new table for the Foodie-Fi team.

All datasets exist within the `foodie-fi` database schema - be sure to include this reference within your SQL scripts as you start exploring the data and answering the case study questions.

## Entity Relationship Diagram



## Case Study Questions

This case study is split into an initial data understanding question before diving straight into data analysis questions before finishing with 1 single extension challenge.

### A. Customer Journey

Based on the 8 sample customers provided in the sample from the `subscriptions` table, write a brief description about each customer's onboarding journey.

Try to keep it as short as possible - you may also want to run some sort of join to make your explanations a bit easier!

#### 1. Finding Each customer onboarding journey.

```
WITH CTE AS (

SELECT  customer_id, S.plan_id, P.plan_name, start_date ,
ROW_NUMBER() OVER(PARTITION BY customer_id ORDER BY
start_date) AS RN

FROM Subscriptions S

LEFT JOIN Plans P ON

S.plan_id = P.plan_id

WHERE customer_id < 9

)

SELECT customer_id, STRING_AGG(plan_name, ', ') AS
[Onboarding Journey]

FROM CTE

GROUP BY customer_id

Customer 1,3,5 has started his free trial and started using
basic monthly subscription.

Customer 2 has started his free trial and started using a
pro annual monthly subscription.
```

Customer 4,6 has started his free trial and started using basic monthly subscription and Canceled the plan after 3 months.

Customer 7,8 has started his free trial and started using basic monthly subscription and upgraded to pro monthly plan

	customer_id	Onboarding Journey
1	1	trial, basic monthly
2	2	trial, pro annual
3	3	trial, basic monthly
4	4	trial, basic monthly, chum
5	5	trial, basic monthly
6	6	trial, basic monthly, chum
7	7	trial, basic monthly, pro monthly
8	8	trial, basic monthly, pro monthly

## 2. Every Customer started with Free Trial:

	customer_id	plan_id	plan_name	start_date	RN
1	1	0	trial	2020-08-01	1
2	2	0	trial	2020-09-20	1
3	3	0	trial	2020-01-13	1
4	4	0	trial	2020-01-17	1
5	5	0	trial	2020-08-03	1
6	6	0	trial	2020-12-23	1
7	7	0	trial	2020-02-05	1
8	8	0	trial	2020-06-11	1

## B. Data Analysis Questions

### 1. How many customers has Foodie-Fi ever had?

```
SELECT COUNT(DISTINCT customer_id) AS [No of customers]
FROM Subscriptions S
LEFT JOIN Plans P ON
S.plan_id = P.plan_id
```

	No of customers
1	1000

2. What is the monthly distribution of **trial** plan **start\_date** values for our dataset - use the start of the month as the group by value

```
SELECT YEAR(start_date) AS Year, MONTH(start_date) AS Month,  
COUNT(*) AS [No Of free trials in one month]
```

```
FROM Subscriptions S
```

```
LEFT JOIN Plans P ON
```

```
S.plan_id = P.plan_id
```

```
WHERE plan_name = 'trial'
```

```
GROUP BY YEAR(start_date), MONTH(start_date)
```

	Year	Month	No Of free trials in one month
1	2020	1	88
2	2020	2	68
3	2020	3	94
4	2020	4	81
5	2020	5	88
6	2020	6	79
7	2020	7	89
8	2020	8	88
9	2020	9	87
10	2020	10	79
11	2020	11	75
12	2020	12	84

3. What plan **start\_date** values occur after the year 2020 for our dataset? Show the breakdown by count of events for each **plan\_name**

```
SELECT plan_name, COUNT(*) AS [Count of events]
```

```
FROM Subscriptions S
```

```
LEFT JOIN Plans P ON
```

```
S.plan_id = P.plan_id
```

```
WHERE YEAR(start_date) = 2021
```

```
GROUP BY plan_name
```

	plan_name	Count of events
1	basic monthly	8
2	churn	71
3	pro annual	63
4	pro monthly	60

4. What is the customer count and percentage of customers who have churned rounded to 1 decimal place?

```
SELECT COUNT(DISTINCT customer_id) AS Customers,SUM(CASE
WHEN plan_name = 'churn' THEN 1 END) AS Churn,

ROUND((COUNT(DISTINCT customer_id) / CAST(SUM(CASE WHEN
plan_name = 'churn' THEN 1.0 END)AS FLOAT) *100.0),2) AS
[Churned Customers]

FROM Subscriptions S

LEFT JOIN Plans P ON

S.plan_id = P.plan_id
```

	Customers	Churn	Churned Customers
1	1000	307	325.73

5. How many customers have churned straight after their initial free trial - what percentage is this rounded to the nearest whole number?

```
WITH CTE AS (

SELECT customer_id,S.plan_id, P.plan_name, start_date ,
ROW_NUMBER() OVER(PARTITION BY customer_id ORDER BY
start_date) AS RN

FROM Subscriptions S

LEFT JOIN Plans P ON

S.plan_id = P.plan_id

)

SELECT ROUND(((SELECT CAST(COUNT(customer_id) AS FLOAT) FROM
CTE WHERE (RN = 2 AND plan_name = 'churn')) / COUNT(DISTINCT
customer_id * 1.0)) * 100,0) AS [Churn Percentage]

FROM CTE
```

	Chum Percentage
1	9

6. What is the number and percentage of customer plans after their initial free trial?

```
WITH CTE AS (

SELECT customer_id,S.plan_id, P.plan_name, start_date ,
ROW_NUMBER() OVER(PARTITION BY customer_id ORDER BY
start_date) AS RN

FROM Subscriptions S

LEFT JOIN Plans P ON

S.plan_id = P.plan_id

)

SELECT plan_name,COUNT(*) AS [Number after initial trial],
(CAST(COUNT(*) AS FLOAT) /1000) * 100.0 AS [Percentage after
initial trial]

FROM CTE

WHERE RN = 2

GROUP BY plan_name

ORDER BY [Number after initial trial] DESC
```

	plan_name	Number after initial trial	Percentage after initial trial
1	basic monthly	546	54.6
2	pro monthly	325	32.5
3	chum	92	9.2
4	pro annual	37	3.7

7. What is the customer count and percentage breakdown of all 5 `plan_name` values at 2020-12-31?

```
SELECT plan_name, COUNT(*) AS [No Of customers],
(CAST(COUNT(*) AS FLOAT) / 1000) * 100 AS Percentage

FROM Subscriptions S
```

```

LEFT JOIN Plans P ON

S.plan_id = P.plan_id

WHERE start_date <= '2020-12-31'

GROUP BY plan_name

```

	plan_name	No Of customers	Percentage
1	pro annual	195	19.5
2	pro monthly	479	47.9
3	chum	236	23.6
4	basic monthly	538	53.8
5	trial	1000	100

8. How many customers have upgraded to an annual plan in 2020?

```

SELECT COUNT(*) AS [Upgraded to annual plan]

FROM Subscriptions S

LEFT JOIN Plans P ON

S.plan_id = P.plan_id

WHERE plan_name = 'pro annual' AND YEAR(start_date) = 2020

```

	Upgraded to annual plan
1	195

9. How many days on average does it take for a customer to an annual plan from the day they join Foodie-Fi?

```

WITH CTE AS (

SELECT  customer_id,S.plan_id, P.plan_name, start_date

FROM Subscriptions S

LEFT JOIN Plans P ON

S.plan_id = P.plan_id

),

CTE2 AS (

SELECT *

```



```

FROM CTE

WHERE plan_name = 'trial'

)

, CTE3 AS(

SELECT * FROM CTE

WHERE plan_name = 'pro annual'

)

, CTE4 AS(

SELECT C1.customer_id, DATEDIFF(DAY, C1.start_date,
C2.start_date) AS Days

FROM CTE2 C1

INNER JOIN CTE3 C2 ON

C1.customer_id = C2.customer_id)

SELECT AVG(Days) AS Days

FROM CTE4

```

	Days
1	104

10. How many customers downgraded from a pro monthly to a basic monthly plan in 2020?

```

WITH CTE AS(

SELECT customer_id, S.plan_id, P.plan_name, start_date ,
ROW_NUMBER() OVER(PARTITION BY customer_id ORDER BY
start_date) AS RN

FROM Subscriptions S

LEFT JOIN Plans P ON

S.plan_id = P.plan_id)

, CTE2 AS(

SELECT *

FROM CTE

```

```

WHERE plan_name = 'pro monthly' OR plan_name = 'basic
monthly')

, CTE3 AS(

SELECT customer_id

FROM CTE2

GROUP BY customer_id

HAVING COUNT(plan_id) = 2

)

SELECT COUNT(*) AS [Count]

FROM CTE3

```

	Count
1	214

## C. Outside The Box Questions

The following are open ended questions which might be asked during a technical interview for this case study - there are no right or wrong answers, but answers that make sense from both a technical and a business perspective make an amazing impression!

### 1. How would you calculate the rate of growth for Foodie-Fi?

The number of customers who are taking subscriptions each month and having less churn.

### 2. What key metrics would you recommend Foodie-Fi management to track over time to assess performance of their overall business?

Customers preference for upgrading or starting to buy plans

### 3. What are some key customer journeys or experiences that you would analyze further to improve customer retention?

Offering lesser price once the customer is canceling their plans

4. If the Foodie-Fi team were to create an exit survey shown to customers who wish to cancel their subscription, what questions would you include in the survey?

What was the reason to leave?

How can we support you in continuing the plan?

5. What business levers could the Foodie-Fi team use to reduce the customer churn rate? How would you validate the effectiveness of your ideas?

By understanding exit questions we can improve customer churn rate.

## D. Challenge Payment Question

The Foodie-Fi team wants you to create a new `payments` table for the year 2020 that includes amounts paid by each customer in the `subscriptions` table with the following requirements:

- monthly payments always occur on the same day of month as the original `start_date` of any monthly paid plan
- upgrades from basic to monthly or pro plans are reduced by the current paid amount in that month and start immediately
- upgrades from pro monthly to pro annual are paid at the end of the current billing period and also starts at the end of the month period
- once a customer churns they will no longer make payments

## Conclusion

This case study should reflect realistic questions we usually focus on for all product related analytics requests in a wide variety of industries, especially in the digital space!