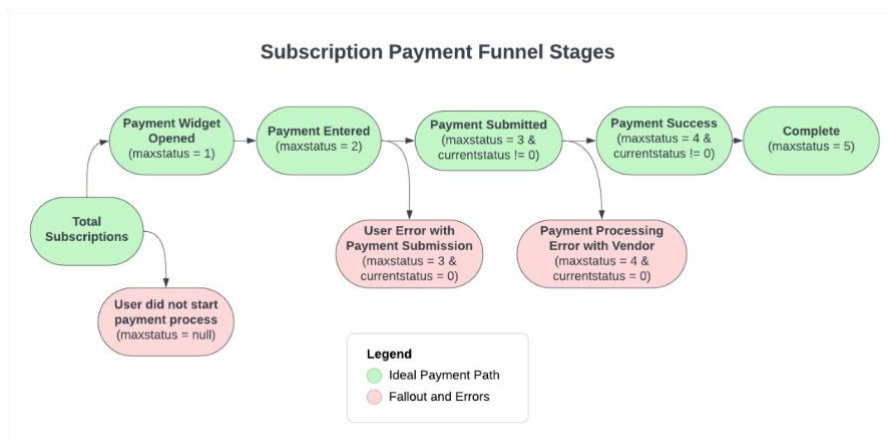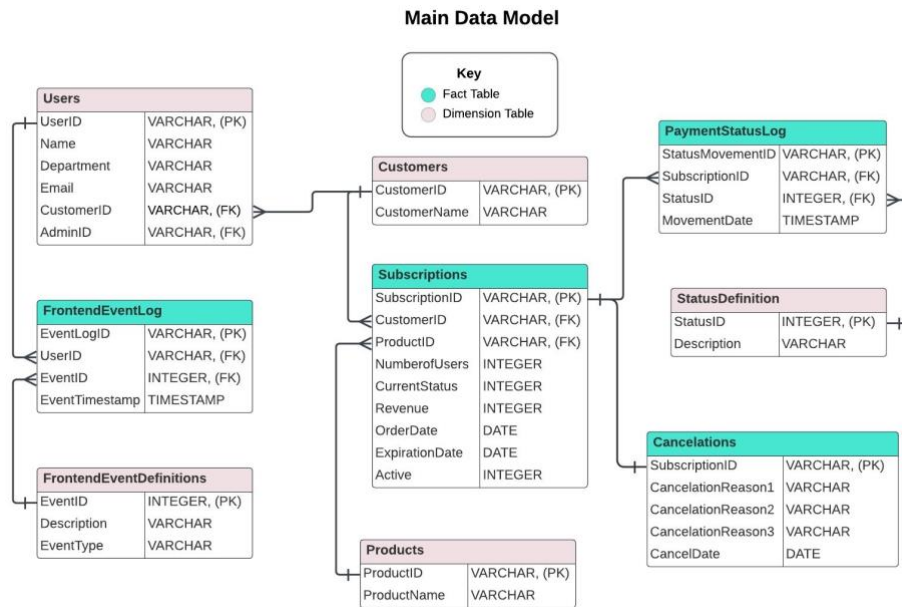# Payment Funnel Analysis

Business Problem: The product manager has requested a payment funnel analysis from the analytics team; she wants to understand what the furthest point in the payment process users are getting to and where users are falling out of the process. She wants to have full visibility into each possible stage of the payment process from the user's point of view.

Here's the payment process a user goes through when signing up for a subscription.

1. The user opens the widget to initiate payment process.
2. The user types in credit card information.
3. The user clicks the submit button to complete their part of the payment process.
4. The product sends the data to the third-party payment processing company.
5. The payment company completes the transaction and reports back with "Complete."

This process is converted into status ids in the status definition table.

Subscription Payment Funnel Stages

Payment Widget Opened (maxstatus = 1) → Payment Entered (maxstatus = 2) → Payment Submitted (maxstatus = 3 & currentstatus != 0) → Payment Success (maxstatus = 4 & currentstatus != 0) → Complete (maxstatus = 5)

Total Subscriptions

User did not start payment process (maxstatus = null)

User Error with Payment Submission (maxstatus = 3 & currentstatus = 0)

Payment Processing Error with Vendor (maxstatus = 4 & currentstatus = 0)

Legend
- Ideal Payment Path
- Fallout and Errors

Main Data Model

Key
- Fact Table
- Dimension Table

Users

UserID	VARCHAR, (PK)
Name	VARCHAR
Department	VARCHAR
Email	VARCHAR
CustomerID	VARCHAR, (FK)
AdminID	VARCHAR, (FK)

FrontendEventLog

EventLogID	VARCHAR, (PK)
UserID	VARCHAR, (FK)
EventID	INTEGER, (FK)
EventTimestamp	TIMESTAMP

FrontendEventDefinitions

EventID	INTEGER, (PK)
Description	VARCHAR
EventType	VARCHAR

Customers

CustomerID	VARCHAR, (PK)
CustomerName	VARCHAR

Subscriptions

SubscriptionID	VARCHAR, (PK)
CustomerID	VARCHAR, (FK)
ProductID	VARCHAR, (FK)
NumberofUsers	INTEGER
CurrentStatus	INTEGER
Revenue	INTEGER
OrderDate	DATE
ExpirationDate	DATE
Active	INTEGER

Products

ProductID	VARCHAR, (PK)
ProductName	VARCHAR

PaymentStatusLog

StatusMovementID	VARCHAR, (PK)
SubscriptionID	VARCHAR, (FK)
StatusID	INTEGER, (FK)
MovementDate	TIMESTAMP

StatusDefinition

StatusID	INTEGER, (PK)
Description	VARCHAR

Cancelations

SubscriptionID	VARCHAR, (PK)
CancelationReason1	VARCHAR
CancelationReason2	VARCHAR
CancelationReason3	VARCHAR
CancelDate	DATE

Approach: In order to see the furthest point as well as where users are falling off in the payment process, I will find the number of subscriptions in each payment funnel stage by incorporating the max status reached and status per subscription.

```
 with max_status_reached as(
Select subscriptionid,
max(statusid) as Maxstatus from
paymentstatuslog group by
subscriptionid
),
paymentfunnelstages AS (
  SELECT
    s.subscriptionid,
    CASE
      WHEN maxstatus = 1 THEN 'PaymentWidgetOpened'
      WHEN maxstatus = 2 THEN 'PaymentEntered'
      WHEN maxstatus = 3 AND currentstatus = 0 THEN 'User Error with
Payment Submission'
```

```sql
            WHEN maxstatus = 3 AND currentstatus != 0 THEN 'Payment
Submitted'
        WHEN maxstatus = 4 AND currentstatus = 0 THEN 'Payment Processing Error with Vendor'
        WHEN maxstatus = 4 AND currentstatus != 0 THEN 'Payment Success'
    WHEN maxstatus = 5 THEN 'Complete'
        WHEN maxstatus IS NULL THEN 'User did not start the payment process'
    END AS paymentfunnelstage    FROM
subscriptions s    LEFT JOIN        max_status_reached m
    ON s.subscriptionid = m.subscriptionid
)
 SELECT
paymentfunnelstage,
   COUNT(subscriptionid) AS subscriptions  FROM
paymentfunnelstages              GROUP         BY
paymentfunnelstage;
```

Result:

```
----------------------------------------------------------------
| PAYMENTFUNNELSTAGE                          | SUBSCRIPTIONS  |
----------------------------------------------------------------
| Complete                                    | 12             |
| Payment Processing Error with Vendor        | 1              |
| Payment Submitted                           | 1              |
| Payment Success                             | 1              |
| PaymentEntered                              | 2              |
| PaymentWidgetOpened                         | 7              |
| User Error with Payment Submission          | 1              |
| User did not start payment process          | 3              |
----------------------------------------------------------------
```

Insights: I am now able to track the number of subscriptions that are in each stage of the payment process, which gives a good understanding of how users are interacting with the payment process. For instance, 12 users have completed the payment process, while 7 have opened the payment widget, and 3 users did not start the payment process. By having a clear understanding of what users are doing, which will overall lead to an improvement in the success rate.