Brazilian E-commerce public dataset by Olist

Assignment 1

IT Number - IT19157306

Submitted by – P.A.N.D. Panditharathna

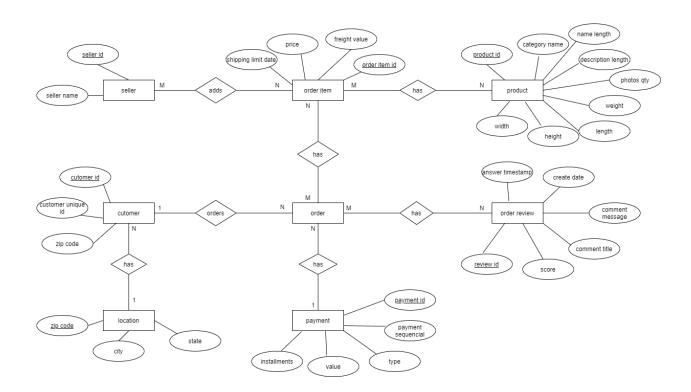
Data set selection

The selected data set source is a collection of transactional data. The link to the source data set mentioned below.

Brazilian E-Commerce Public Dataset by Olist | Kaggle

This data set shows about orders made at online store named Olist. Olist connects small businesses from all over Brazil. Those merchants are able to sell their products through the olist store and ship them directly to the customers location. After a customer purchases the product from olist store, a seller gets notified to fulfill that order. Once the customer receives the product or estimate delivery date is due, the customer gets a satisfaction survey by email where he can give a note for the purchase experience and write down some comments.

ER Diagram



Preparation of Data source

This data set gives all files are CSV files. I decided to change their file type to CSV, Excel, Text format.

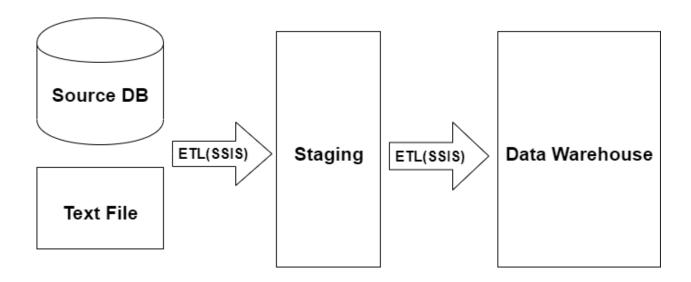
- 1. CSV files
 - olist_customers_dataset
 - olist_geolocation_dataset
 - olist_order_items_dataset
- 2. Excel files
 - olist_order_payments_dataset
 - olist_order_reviews_dataset
 - olist_orders_dataset
- 3. Text files
 - olist_products_dataset
 - olist_sellers_dataset

Description of the data set

| Table Name | Column Name | Data Type | Description |
|------------|-------------------------------|---------------|---------------------|
| product | Product_id | nvarchar(50) | |
| | Product_category_name | nvarchar(50) | Details of products |
| | product_name_lenght | nvarchar(50) | |
| | product_description_lenght | nvarchar(50) | |
| | product_photos_qty | nvarchar(50) | |
| | product_weight_g | nvarchar(50) | |
| | product_length_cm | nvarchar(50) | |
| | product_height_cm | nvarchar(50) | |
| | product_width_cm | nvarchar(50) | |
| orders | order_id | nvarchar(100) | Details of orders |
| | customer_id | nvarchar(255) | |
| | order_status | nvarchar(255) | |
| | order_purchase_timestamp | datetime | |
| | order_approved_at | datetime | |
| | order_delivered_carrier_date | datetime | |
| | order_delivered_customer_date | datetime | |
| | order_estimated_delivery_date | datetime | |
| | order_id | nvarchar(100) | |

| | order_item_id | nvarchar(50) | |
|--------------|--------------------------|---------------|----------------------|
| | product_id | nvarchar(50) | |
| order_items | seller_id | nvarchar(50) | Details of order |
| | shipping_limit_date | datetime | items |
| | price | nvarchar(50) | |
| | freight_value | nvarchar(50) | |
| payment | Payment_id | float | |
| | order_id | int | |
| | payment_sequential | nvarchar(100) | Details of order |
| | payment_type | float | purchases |
| | payment_installments | float | |
| | payment_value | float | |
| | review_id | nvarchar(255) | |
| order_review | order_id | nvarchar(100) | |
| | review_score | nvarchar(255) | Details of customer |
| | review_comment_title | nvarchar(255) | reviews about |
| | review_comment_message | nvarchar(255) | product |
| | review_creation_date | datetime | |
| | review_answer_timestamp | datetime | |
| customer | cutomer_id | nvarchar(50) | |
| | customer_unique_id | nvarchar(50) | |
| | customer_zip_code_prefix | int | Details of customers |
| | customer_city | nvarchar(50) | |
| | customer_state | nvarchar(50) | |
| seller | seller_id | nvarchar(50) | Details of sellers |
| | seller_name | nvarchar(50) | |
| geolocation | zip_code_prefix | int | |
| | city | nvarchar(50) | Location details |
| | state | nvarchar(50) | |

Solution Architecture



Components

Data sources

Data sources can be operational system, disintegrated data, external sources, non-digitalized data, etc. I import Excel files and CSV files into the database. Text files are imported to the database through ETL process.

- Text file
- CSV files
- Excel files

Processing

In processing component, we are doing ETL task.

ETL- Extract, Transform and Load

- Extract- Reading data from the data sources.
- Transform- The process of converting extracted data to the new form, it can be placed into a new database.
- Load- The process of writing data to the target database.
 - Surrogate key assign
 - Indexing
 - ❖ FK constraint check

Data Warehouse

In this have dimensional modelling

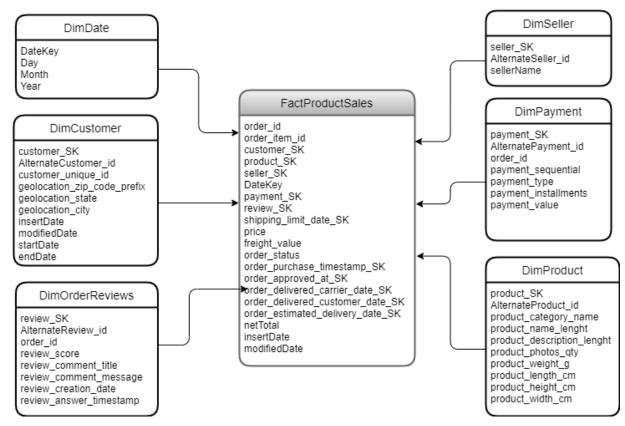
Describe about facts and dimensions.

Have many schemas

- Star
- Snowflake
- Galaxy

Data Warehouse design development

we can select fact tables and dimension tables from the source files. I decided to seller, customer, payment, product, order review files get as dimension tables in addition we need date dimension table to get date details. So, I get that too. In my fact table, there are order details and order item details. In my scenario I decided to get customer dimension as slowly changing dimension. Because customer has location details. I have only one fact table so, this is star schema dimensional model.



Assumptions -

- Customer is slowly changing dimension.
- I get netTotal as function which has sum of price and freight value.

Steps in ETL process

- Step 1- Import excel and CSV files to the Olist_DB in SQL server.
- Step 2 Create new databases Olist_Staging and Olist_DW in SQL server.
- Step 3 Create SSIS solution called SSISOlist.

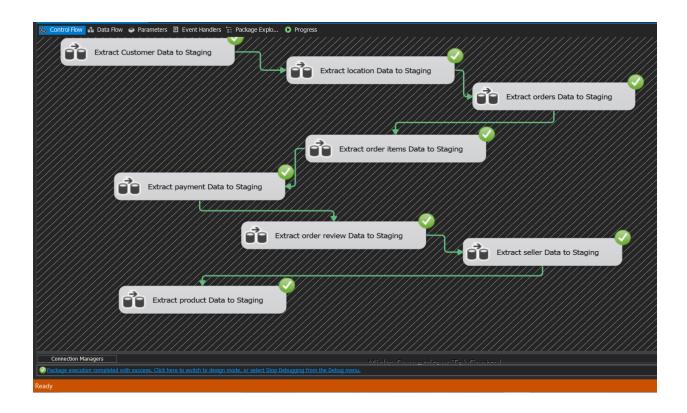
Rename package called package.dtsx to Olist ETL Staging.dtsx.

Extract data from Olist_DB to Olist_Staging.

Extract Flat Files (seller,product) to Olist_Staging.

Used OLE DB Source and OLE DB Destinations to extract data.

Used Flat File Source and OLE DB Destinations to extract data in olist_products_dataset.txt and olist_sellers_dataset .txt



1

```
2
```

```
CREATE TABLE [dbo].[DimDate]
   ( [DateKey] INT primary key,
       [Date] DATETIME,
       [FullDateUK] CHAR(10), -- Date in dd-MM-yyyy format
                                                                                                       [FullDateUSA] CHAR(10), -- Date in MM-dd-yyyy format
                                                                                                      --Specify Start Date and End date here
        [DayOfMonth] VARCHAR(2), -- Field will hold day number of Month
                                                                                                      -- Value of Start Date Must be Less than Your End Date
        [DaySuffix] VARCHAR(4), -- Apply suffix as 1st, 2nd ,3rd etc
                                                                                                      DECLARE AStartDate DATETIME = '01/01/1990' -- Starting value of Date Range
        [DayName] VARCHAR(9), -- Contains name of the day, Sunday, Monday
                                                                                                      DECLARE @EndDate DATETIME = '01/01/2099' -- End Value of Date Range
        [DayOfWeekUSA] CHAR(1), -- First Day Sunday=1 and Saturday=7
        [DayOfWeekUK] CHAR(1), -- First Day Monday=1 and Sunday=7
                                                                                                      -- Temporary Variables To Hold the Values During Processing of Each Date of Year
        [DayOfWeekInMonth] VARCHAR(2), --1st Monday or 2nd Monday in Month
                                                                                                      DECLARE.
        [DayOfWeekInYear] VARCHAR(2),
                                                                                                          (DayOfWeekInMonth INT,
        [DayOfQuarter] VARCHAR(3),
                                                                                                          (DayOfWeekInYear INT,
        [DayOfYear] VARCHAR(3),
                                                                                                          (DayOfQuarter INT.
        [WeekOfMonth] VARCHAR(1), -- Week Number of Month
                                                                                                          @WeekOfMonth INT,
        [WeekOfQuarter] VARCHAR(2), --Week Number of the Quarter
                                                                                                          @CurrentYear INT,
        [WeekOfYear] VARCHAR(2), -- Week Number of the Year
                                                                                                          @CurrentMonth INT,
        [Month] VARCHAR(2), -- Number of the Month 1 to 12
                                                                                                          @CurrentQuarter INT
        [MonthName] VARCHAR(9), -- January, February etc
        [MonthOfQuarter] VARCHAR(2), -- Month Number belongs to Quarter
                                                                                                      /*Table Data type to store the day of week count for the month and year*/
        [Quarter] CHAR(1),
                                                                                                      DECLARE #DayOfweek TABLE (DOW INT, MonthCount INT, QuarterCount INT, YearCount INT)
        [QuarterName] VARCHAR(9), -- First, Second..
        [Year] CHAR(4), -- Year value of Date stored in Row
                                                                                                      INSERT INTO (DayOfWook VALUES (1, 0, 0, 0)
                                                                                                      INSERT INTO #BayOfwook VALUES (2, 0, 0, 0)
        [YearName] CHAR(7), --CY 2012,CY 2013
                                                                                                      INSERT INTO #DayOfleck VALUES (3, 8, 8, 8)
        [MonthYear] CHAR(10), --Jan-2013, Feb-2013
                                                                                                      INSERT INTO @DayOfweek VALUES (4, 8, 8, 8)
        [MMYYYY] CHAR(6),
                                                                                                      INSERT INTO (DayOfWook VALUES (5, 0, 0, 0)
        [FirstDayOfMonth] DATE,
                                                                                                      INSERT INTO @DayOfleck VALUES (6, 0, 0, 0)
        [LastDayOfMonth] DATE,
                                                                                                      INSERT INTO (DayOfwook VALUES (7, 0, 0, 0)
        [FirstDayOfQuarter] DATE,
        [LastDayOfQuarter] DATE,
                                                                                                      --Extract and assign various parts of Values from Current Date to Variable
        [FirstDayOfYear] DATE,
        [LastDayOfYear] DATE,
                                                                                                      DECLARE @CurrentDate AS DATETINE = @StartDate
        [IsHolidaySL] BIT, -- Flag 1=National Holiday, 0-No National Holiday
                                                                                                      SET @CurrentMonth = DATEPART(MM, @CurrentDate)
        [IsWeekday] BIT, -- 0-Week End ,1-Week Day
                                                                                                      SET @CurrentYear = DATEPART(YY, @CurrentDate)
        [HolidaySL] VARCHAR(50), -- Name of Holiday in US
                                                                                                      SET @CurrentQuarter = DATEPART(QQ, @CurrentDate)
        [isCurrentDay] int, -- Current day=1 else = 0
        [isDataAvailable] int, -- data available for the day = 1, no data ava.
        [isLatestDataAvailable] int
```

```
UPDATE @DayOfNeek
  --Proceed only if Start Date(Current date ) is less than End date you specified above
                                                                                                   MonthCount + MonthCount + 1.
→ WHILE @CurrentDate < @EndDate</p>
                                                                                                   QuarterCount = QuarterCount + 1,
 BEGIN
                                                                                                   YearCount = YearCount + 1
                                                                                               WHERE DOW - DATEPART(DW, @CurrentDate)
  /*Begin day of week logic*/
                                                                                               SELECT
          /*Check for Change in Month of the Current date if Month changed then
                                                                                                   @DayOfWeekIrMonth = MonthCount,
          Change variable value*/
                                                                                                   #DayOfQuarter = QuarterCount,
     IF @CurrentMonth != DATEPART(MM, @CurrentDate)
                                                                                                   #DayOfWeekInYear = YearCount
                                                                                               FROM @DayOfWook
         UPDATE (IDayOfNeck
                                                                                               WHERE DOW - DATEPART(DW, @CurrentDate)
         SET MonthCount = 0
        SET @CurrentMonth = DATEPART(MM, @CurrentDate)
                                                                                          /*End day of week logic*/
         /* Check for Change in Quarter of the Current date if Quarter changed then change
                                                                                          /* Populate Your Dimension Table with values*/
          Variable value*/
                                                                                               INSERT INTO [dbo].[DimDate]
     IF @CurrentQuarter != DATEPART(QQ, @CurrentDate)
        UPDATE @DayOfWeek
                                                                                                   COMVERT (char(8),@CurrentDate,112) as DateKey,
        SET QuarterCount = 0
                                                                                                   @CurrentDate AS Date,
         SET @CurrentQuarter = DATEPART(QQ, @CurrentDate)
                                                                                                   CONVERT (char(10), @CurrentDate, 103) as FullDateUK,
                                                                                                   CONVERT (char(10),@CurrentDate, 101) as FullDateUSA,
                                                                                                   DATEPART(DD, @CurrentDate) AS DayOfMonth,
         /* Check for Change in Year of the Current date if Year changed then change
                                                                                                   --Apply Suffix values like 1st, 2nd 3rd etc..
          Variable value*/
                                                                                                       WHEN DATEPART(DD,@CurrentDate) IN (11,12,13)
                                                                                                       THEN CAST(DATEPART(DD,@CurrentDate) AS VARCHAR) + 'th'
     IF @CurrentYear != DATEPART(YY, @CurrentDate)
                                                                                                       WHEN RIGHT(DATEPART(DD,@CurrentDate),1) = 1
                                                                                                       THEN CAST(DATEPART(DD,@CurrentDate) AS VARCHAR) + 'st'
        UPDATE @DayOfNeek
                                                                                                       WHEN RIGHT(DATEPART(DD,@CurrentDate),1) = 2
        SET YearCount = 0
                                                                                                       THEN CAST(DATEPART(DD,@CurrentDate) AS VARCHAR) + 'nd'
         SET @CurrentYear = DATEPART(YY, @CurrentDate)
                                                                                                       WHEN RIGHT(DATEPART(DD,@CurrentDate),1) = 3
                                                                                                       THEN CAST (DATEPART (DD, @CurrentDate) AS VARCHAR) + 'rd'
                                                                                                       ELSE CAST(DATEPART(DD,@CurrentDate) AS VARCHAR) + 'th'
         -- Set values in table data type created above from variables
                                                                                                       END AS DaySuffix,
                                                                                                   DATENAME(DW, @CurrentDate) AS DayName,
```

5

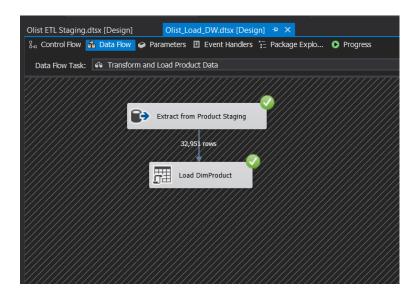
```
CASE DATEPART(DW, @CurrentDate)
   WHEN 1 THEN 7
    WHEN 2 THEN 1
    WHEN 3 THEN 2
    WHEN 4 THEN 3
    WHEN 5 THEN 4
   WHEN 5 THEN 5
   WHEN 7 THEN 6
    AS DayOfliookUK,
@DayOfWeekInMonth AS DayOfWeekInMonth,
@DayOfWookInYear AS DayOfWookInYear,
@DayOfQuarter AS DayOfQuarter,
DATEPART(DV. &CurrentDate) A5 DayOfYear.
DATEPART(Ww., @CurrentDate) + 1 - DATEPART(Ww., CONVERT(VARCHAR,
DATEPART(MM, @CurrentDate)) + '/1/' + CONVERT(VARCHAR,
DATEPART(YY, @CurrentDate))) AS WeekOfMonth,
(DATEDIFF(DD, DATEADD(QQ, DATEDIFF(QQ, 0, @CurrentDate), 0),
@CurrentDate) / 7) + 1 AS WeekOfQuarter,
DATEPART(MM, @CurrentDate) AS WeekOfYear,
DATEPART(MM, @CurrentDate) AS Month,
DATENAME(MM, @CurrentDate) AS MonthName,
CASE
    WHEN DATEPART(NM, @CurrentDate) IN (1, 4, 7, 10) THEN 1
    WHEN DATEPART(MM, @CurrentDate) IN (2, 5, 8, 11) THEN 2
    WHEN DATEPART(MM, @CurrentDate) IN (3, 6, 9, 12) THEN 3
    END AS MonthOfQuarter,
DATEPART(QQ, @CurrentDate) AS Quarter,
CASE DATEPART(QQ, @CurrentDate)
   WHEN 1 THEN 'First'
   WHEN 2 THEN 'Second'
    WHEN 3 THEN 'Thard'
   WHEN 4 THEN 'Fourth'
    END AS QuarterName,
DATEPART(YEAR, @CurrentDate) AS Year,
'CY ' + COMVERT(VARCHAR, DATEPART(YEAR, @CurrentDate)) AS YearName,
LEFT(DATEMANE(MM, @CurrentDate), 3) + "-" + CONVERT(VARCHAR,
DATEPART(YY, @CurrentDate)) AS MonthYear,
RIGHT('0' + CONVERT(VARCHAR, DATEPART(NM, @CurrentDate)),2) +
CONVERT(VARDIAR, DATEPART(YY, @CurrentDate)) AS MMYYYY,
```

```
WHEN 3 THEN 'Third'
          WHEN 4 THEN 'Fourth'
          END AS QuarterName.
       DATEPART(YEAR, @CurrentDate) AS Year,
       'CY ' + CONVERT(VARCHAR, DATEPART(VEAR, @CurrentDate)) AS YearName,
       LEFT(DATENAME(NM, @CurrentDate), 3) + 1-1 + CONVERT(VARCHAR,
       DATEPART(YY, @CurrentDate)) AS MonthYear,
       RIGHT('8' + CONVERT(VARCHAR, DATEPART(MM, @CurrentDate)),2) +
       CONVERT(VARCHAR, DATEPART(YY, (CurrentDate)) AS MMYYYY,
       CONVERT(DATETIME, CONVERT(DATE, DATEADD(DD, - (DATEPART(DD,
       @CurrentDate) - 1), @CurrentDate))) AS FirstDayOfMonth,
       CONVERT(DATETIME, CONVERT(DATE, DATEADD(DD, - (DATEPART(DD,
       (DATEADD(MM, 1, @CurrentDate)))), DATEADD(MM, 1,
       (CurrentDate)))) AS LastDayOfMonth.
       DATEADD(QQ, DATEDIFF(QQ, 0, @CurrentDate), 0) AS FirstDayOfQuarter,
       DATEADD(QQ, DATEDIFF(QQ, -1, @CurrentDate), -1) AS LastDayOfQuarter,
       CONVERT(DATETIME, '01/01/' + CONVERT(VARCHAR, DATEPART(YY,
       @CurrentDate))) AS FirstDayOfYear,
       CONVERT(DATETINE, '12/E1/' + CONVERT(VARCHAR, DATEPART(YY,
       (CurrentDate))) AS LastDayOfYear,
       MULL AS IsHolidaySL,
       CASE DATEPART(DW, (CurrentDate)
          WHEN 1 THEN 8
          WHEN 2 THEN 1
          WHEN 3 THEN 1
          WHEN 4 THEN 1
          WHEN 5 THEN 1
          WHEN 6 THEN 1
          WHEN 7 THEN 0
          BO AS Iskeekday,
       NULL AS HolidaySL, (case when @CurrentDate = convert(date, sysdatetime()) then 1 else 8 end), 8, 8
   SET #CurrentDate = DATEADD(DD, 1, #CurrentDate)
END
j------j
SELECT * FROM [dbo].[DimDate]
```

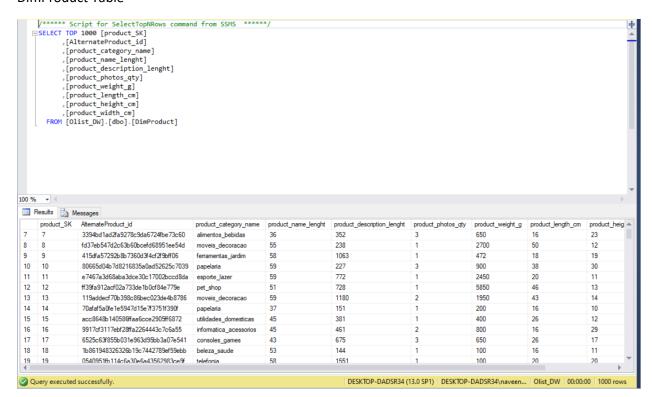
Step 5 - Load the data from Olist_Staging to the dimenstions in Olist_DW using transformations.

(I used transformation task as lookups, derived columns, merge, sort)

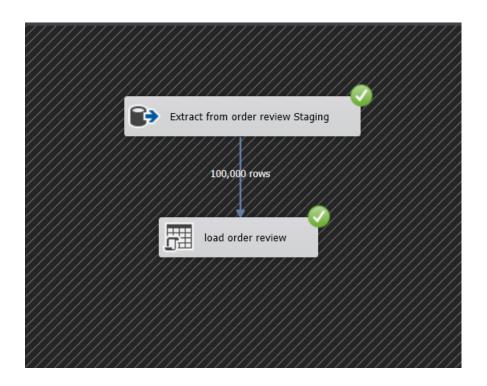
Product transformation



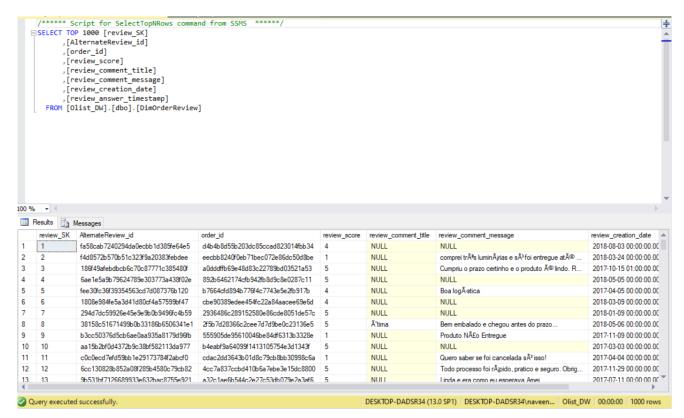
DimProduct Table -



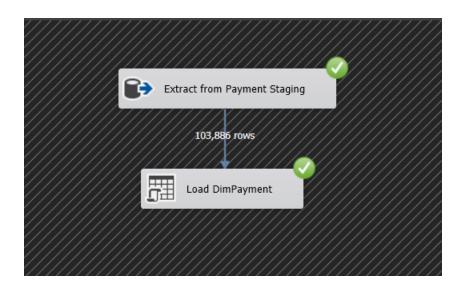
Order review data transformation



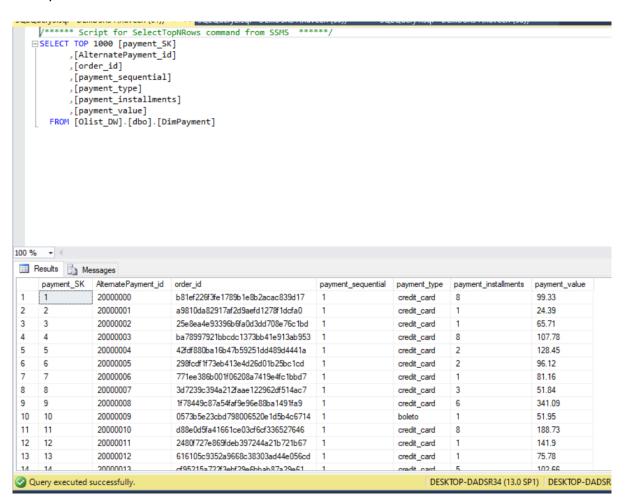
DimOrderReview Table -



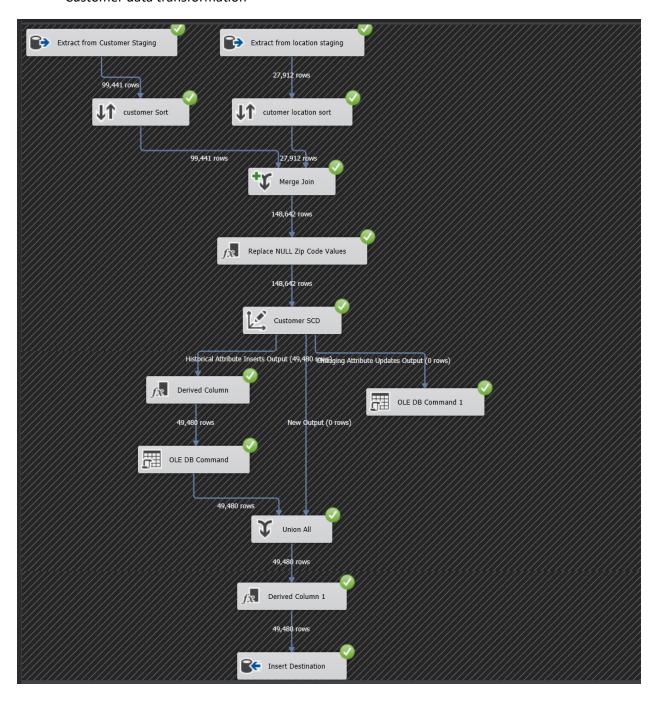
Payment data transformation



DimPayment Table



• Customer data transformation



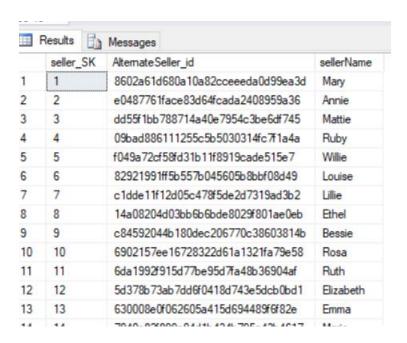
DimCustomer table

```
/***** Script for SelectTopNRows command from SSMS *****/
 SELECT TOP 1000 [customer_SK]
,[AlternateCustomer_id]
          ,[customer_unique_id]
           ,[geolocation_zip_code_prefix]
          ,[geolocation_state]
           ,[geolocation_city]
          ,[insertDate]
           ,[modifiedDate]
          ,[startDate]
           [endDate]
     FROM [Olist_DW].[dbo].[DimCustomer]
)% - (
Results Messages
    customer_SK AlternateCustomer_id
                                                   customer_unique_id
                                                                                     geolocation_zip_code_prefix geolocation_state geolocation_city
                                                                                                                                             insert Date
                 7ae2a9337aa4bc799723511faa1d6830 0c1a20644f0dc126c3eaff8dbc1bd12c
                                                                                     1003
                                                                                                              SP
                                                                                                                                             2021-05-13 19:42
                                                                                                                              sao paulo
                 7ae2a9337aa4bc799723511faa1d6830 0c1a20644f0dc126c3eaff8dbc1bd12c
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                 a09edf8c1e842e94805a206b3d73eed5 968f6d2f674977d88a4b445a5117ccd8
                                                                                                              SP
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    3
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                 a09edf8c1e842e94805a206b3d73eed5 968f6d2f674977d88a4b445a5117ccd8
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                 1004
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                 ee9b73e88afb4904ee2322cfc89cf638
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                 5a8b64ee6ccdae09ea823e6aa00e9517 9c84e5193d6ee59b3870e0e4e3a2dad8
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                 5a8b64ee6ccdae09ea823e6aa00e9517 9c84e5193d6ee59b3870e0e4e3a2dad8 1005
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    9
                 6ec2b4682814cfdac8d92bad42b3ddab 57f0ea1c7f6b9ef8615c0a0b8f06fe57
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                 6ec2b4682814cfdac8d92bad42b3ddab 57f0ea1c7f6b9ef8615c0a0b8f06fe57
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    11
                 f3e31afdae80581be48ce94e7b0f3366 ded4351942c7fc292b88e5b090af2b46
                                                                                     1005
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                 f3e31afdae80581be48ce94e7b0f3366 ded4351942c7fc292b88e5b090af2b46
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3
    13
                 c46061cd5153f35604f9e9a2130df702 84a7776f914ff19505e44effba86455f
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    14
                 c46061cd5153f35604f9e9a2130df702
                                                   84a7776f914ff19505e44effba86455f
                                                                                     1005
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5
    15
                 15d7dbcd027b5b24866db33e2b819021 ddab5650ba76e2fa2d7e25ed3343bd92
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                 15d7dbcd027b5b24866db33e2b819021 ddab5650ba76e2fa2d7e25ed3343bd92
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6
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                 6e4eb34e7f4d526a82726712aa17c02b ded4351942c7fc292b88e5b090af2b46
                                                                                     1005
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                                                                                                                              sao paulo
                                                                                                                                             2021-05-13 19:42
                                                                         DESKTOP-DADSR34 (13.0 SP1) | DESKTOP-DADSR34\naveen... | Olist_DW | 00:00:00 | 1000 rows
 Query executed successfully.
```

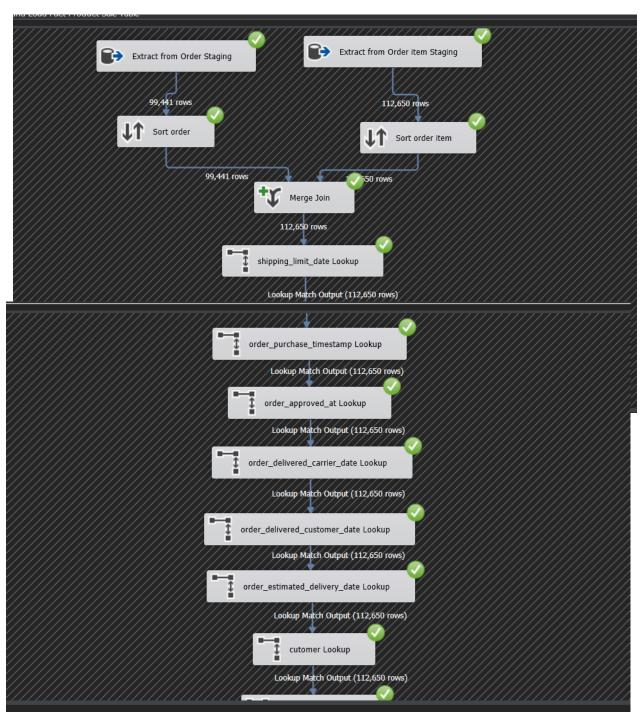
Seller data transformation

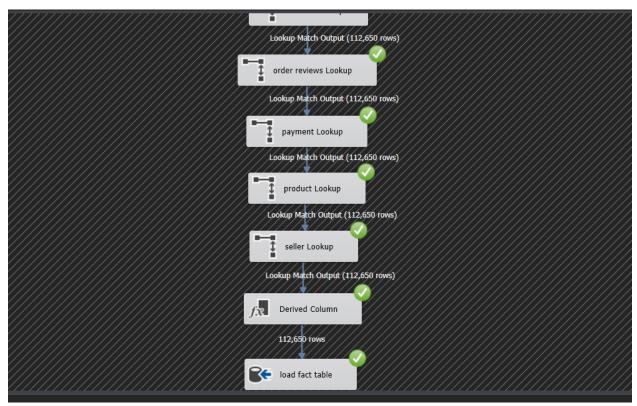


DimSeller table



• FactProductSale transformation





FactProductSale Table -

