WQD 7005 DATA MINING

UNIVERSITY OF MALAYA
KUALA LUMPUR

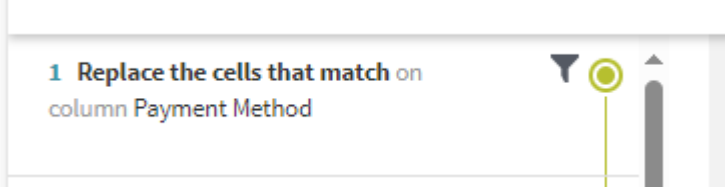
CASE STUDY –

E-COMMERCE CUSTOMER BEHAVIOUR ANALYSIS

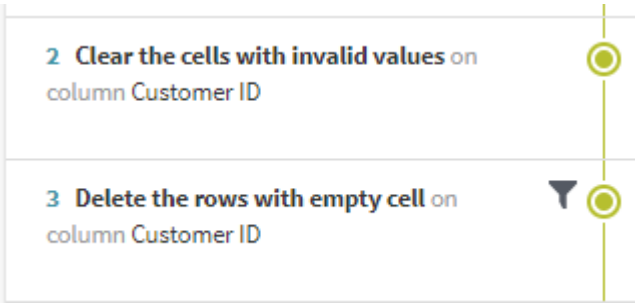
ALTERNATIVE ASSESSMENT I

Talend Data Preparation.

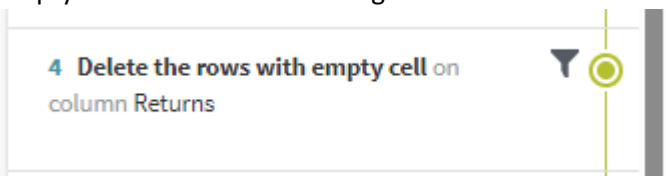
1. The dataset is downloaded from Kaggle
   (🛒 E-commerce Customer Data For Behavior Analysis (kaggle.com)) .
2. The dataset is being uploaded on Data Preparation stage.
3. The data cleaning start with replace the inconsistent data with the respective values CC = Credit Card. This to ensure there gonna be standardize payment method on those column.



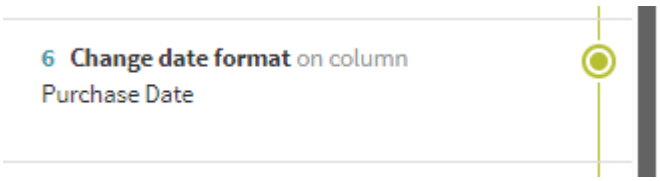
4. Next, invalid values are removed from the Customer ID. Also, from the blank customerID column, the rows are removed.

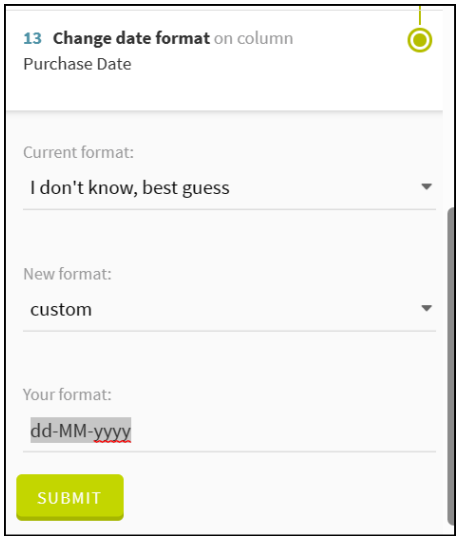


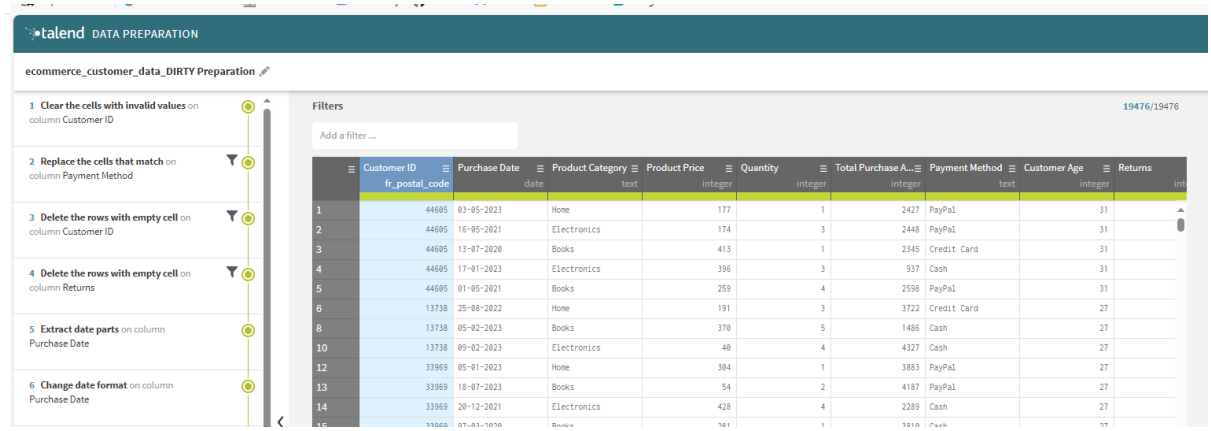
5. Empty cell on Returns also being removed the rows.



6. The Date format changed to dd-MM-yyyy . this helps to avoid the exact data without the clock.

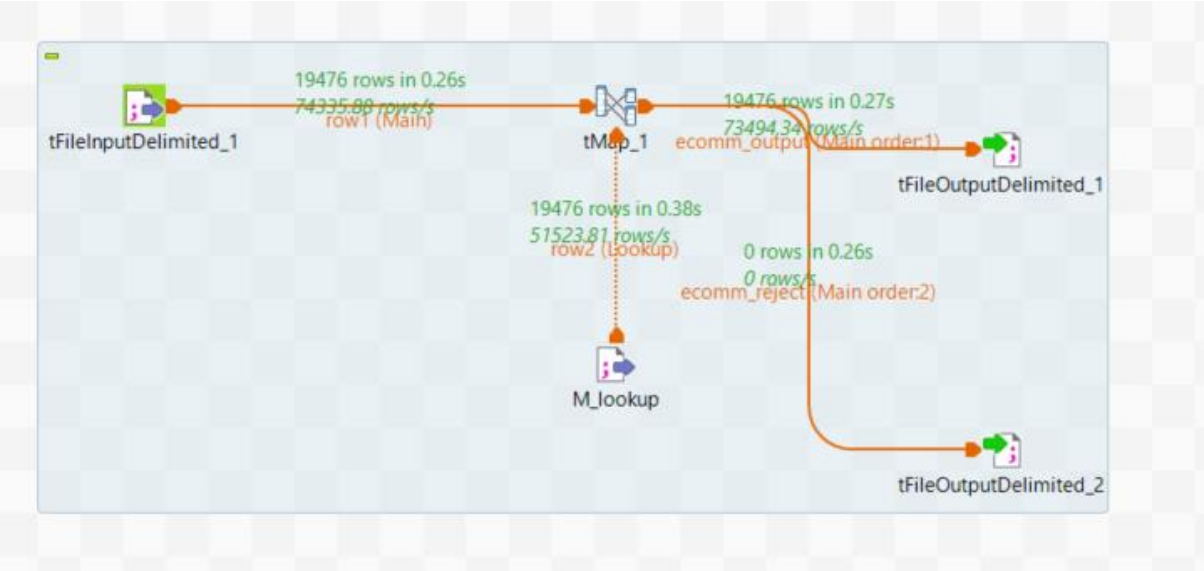




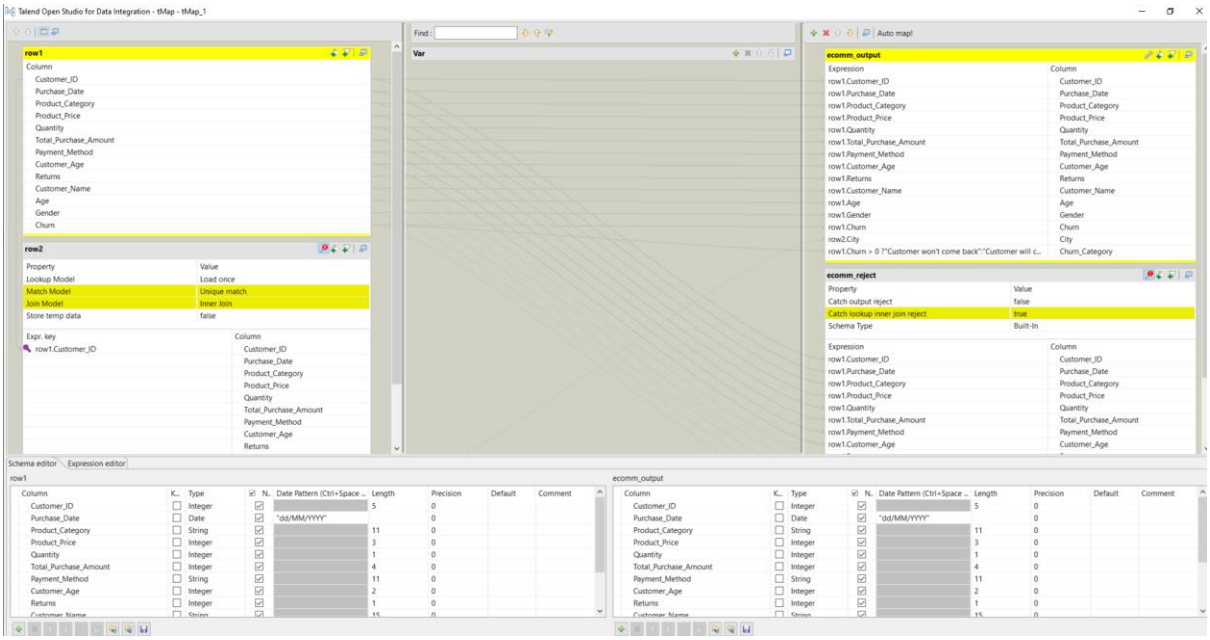


	Customer ID fr_postal_code	Purchase Date date	Product Category text	Product Price integer	Quantity integer	Total Purchase A... integer	Payment Method text	Customer Age integer	Returns int
1	44605	03-05-2023	Home	177	1	2427	PayPal	31	
2	44605	16-05-2021	Electronics	174	3	2448	PayPal	31	
3	44605	13-07-2020	Books	413	1	2345	Credit Card	31	
4	44605	17-01-2023	Electronics	396	3	937	Cash	31	
5	44605	01-05-2021	Books	259	4	2598	PayPal	31	
6	13738	25-08-2022	Home	191	3	3722	Credit Card	27	
8	13738	05-02-2023	Books	370	5	1486	Cash	27	
10	13738	09-02-2023	Electronics	40	4	4327	Cash	27	
12	33969	05-01-2023	Home	304	1	3883	PayPal	27	
13	33969	18-07-2023	Books	54	2	4187	PayPal	27	
14	33969	20-12-2021	Electronics	428	4	2289	Cash	27	

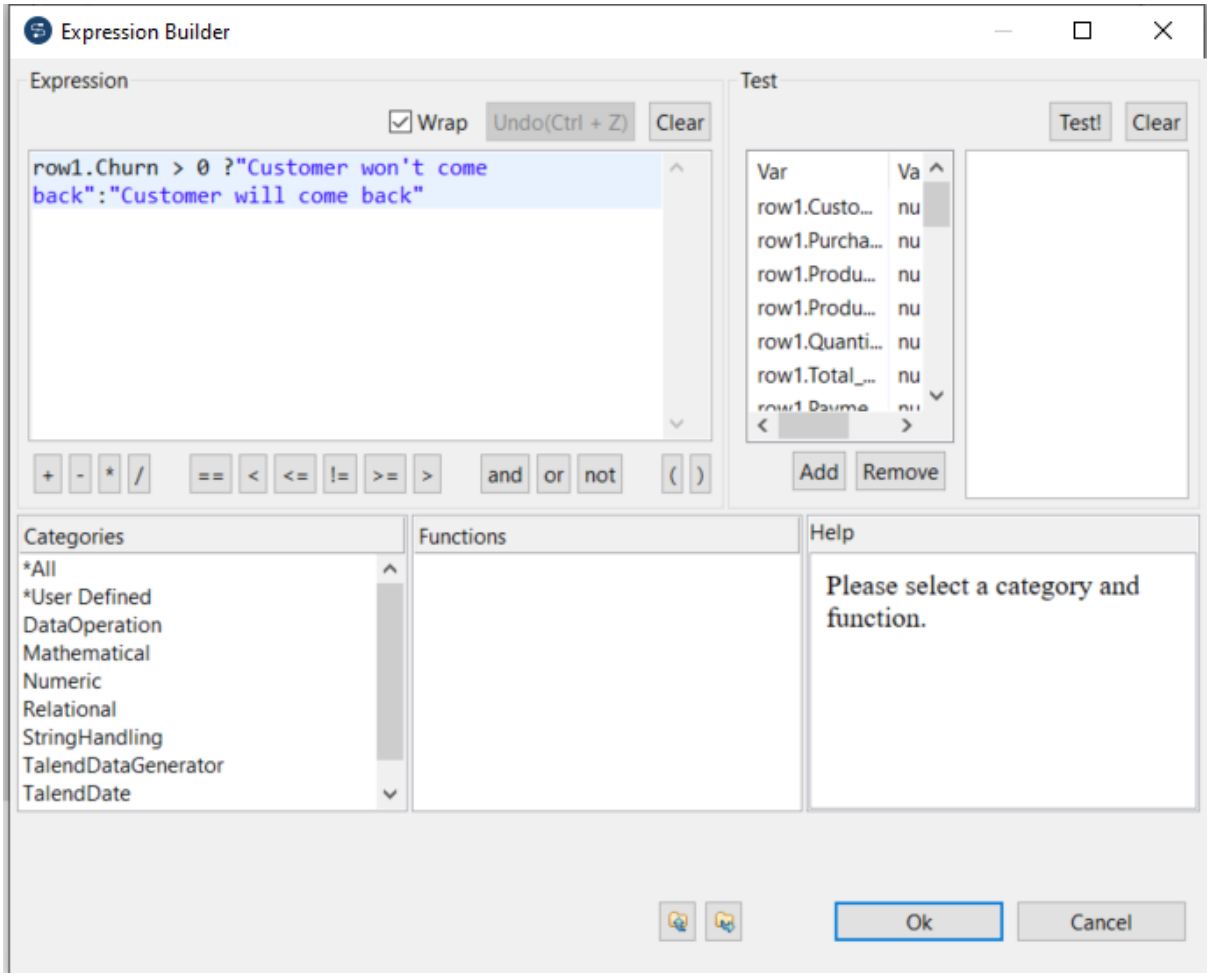
Talend Open Studio for Data Integration



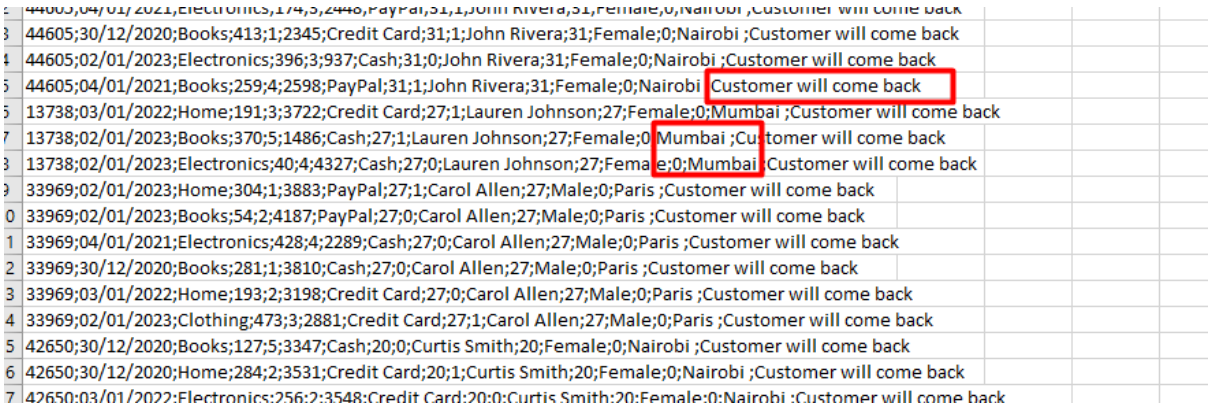
1. Combine the 2 tables. match the both table by using Customer_ID as the primary key. Execute the new table with new column that indicates the churn:



2. new column is added into the new column named as Churn_Category that potray the churn analysis (1= Customer won't come back, 0= Customer will come back)



3. The new table is generated as (ecomm_output.csv) that have the City and churn category added.



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44605;04/01/2021;Electronics;174;3;2448;PayPal;31;1;John Rivera;31;Female;0;Nairobi ;Customer will come back
44605;30/12/2020;Books;413;1;2345;Credit Card;31;1;John Rivera;31;Female;0;Nairobi ;Customer will come back
44605;02/01/2023;Electronics;396;3;937;Cash;31;0;John Rivera;31;Female;0;Nairobi ;Customer will come back
44605;04/01/2021;Books;259;4;2598;PayPal;31;1;John Rivera;31;Female;0;Nairobi ;Customer will come back
13738;03/01/2022;Home;191;3;3722;Credit Card;27;1;Lauren Johnson;27;Female;0;Mumbai ;Customer will come back
13738;02/01/2023;Books;370;5;1486;Cash;27;1;Lauren Johnson;27;Female;0;Mumbai ;Customer will come back
13738;02/01/2023;Electronics;40;4;4327;Cash;27;0;Lauren Johnson;27;Female;0;Mumbai ;Customer will come back
33969;02/01/2023;Home;304;1;3883;PayPal;27;1;Carol Allen;27;Male;0;Paris ;Customer will come back
33969;02/01/2023;Books;54;2;4187;PayPal;27;0;Carol Allen;27;Male;0;Paris ;Customer will come back
33969;04/01/2021;Electronics;428;4;2289;Cash;27;0;Carol Allen;27;Male;0;Paris ;Customer will come back
33969;30/12/2020;Books;281;1;3810;Cash;27;0;Carol Allen;27;Male;0;Paris ;Customer will come back
33969;03/01/2022;Home;193;2;3198;Credit Card;27;0;Carol Allen;27;Male;0;Paris ;Customer will come back
33969;02/01/2023;Clothing;473;3;2881;Credit Card;27;1;Carol Allen;27;Male;0;Paris ;Customer will come back
42650;30/12/2020;Books;127;5;3347;Cash;20;0;Curtis Smith;20;Female;0;Nairobi ;Customer will come back
42650;30/12/2020;Home;284;2;3531;Credit Card;20;1;Curtis Smith;20;Female;0;Nairobi ;Customer will come back
42650;03/01/2022;Electronics;256;2;3548;Credit Card;20;0;Curtis Smith;20;Female;0;Nairobi ;Customer will come back
```

SAS Enterprise Miner

1. The variables is custom accordingly by set The Chrun as the target value

2. Library is created and the data source is generated.

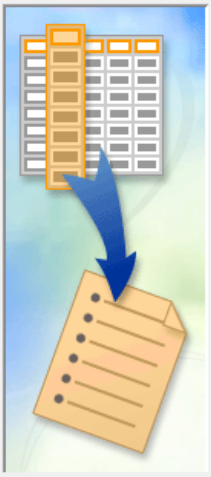
Variables - FIMPORT

(none) not Equal to

Columns: Label Mining Basic

Name	Role	Level	Report	Order	Drop	Lower Limit	Upper Limit
Age	Rejected	Interval	No		Yes	.	.
Churn	Target	Interval	No		No	.	.
Customer_Age	Input	Interval	No		No	.	.
Customer_ID	ID	Nominal	No		No	.	.
Customer_Name	Input	Nominal	No		No	.	.
Gender	Input	Nominal	No		No	.	.
Payment_Method	Input	Nominal	No		No	.	.
Product_Category	Input	Nominal	No		No	.	.
Product_Price	Input	Interval	No		No	.	.
Purchase_Date	Time ID	Interval	No		No	.	.
Quantity	Input	Interval	No		No	.	.
Returns	Input	Interval	No		No	.	.
Total_Purchase_Amount	Input	Interval	No		No	.	.

Data Source Wizard -- Step 5 of 8 Column Metadata



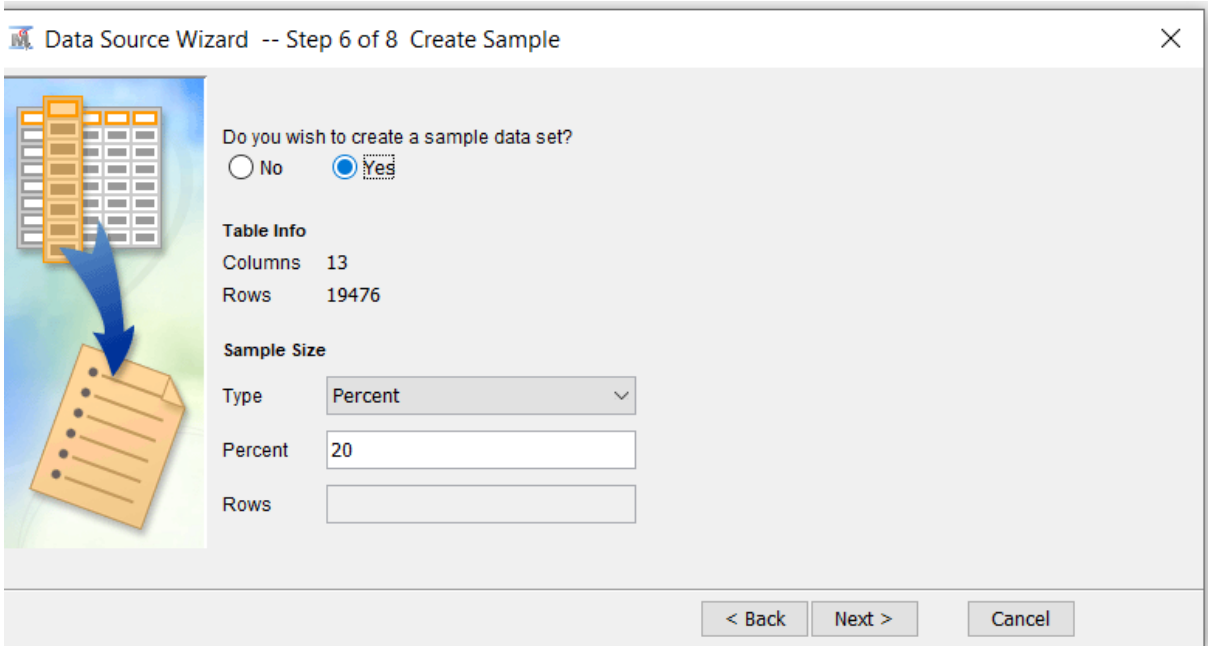
(none) not Equal to Apply Reset

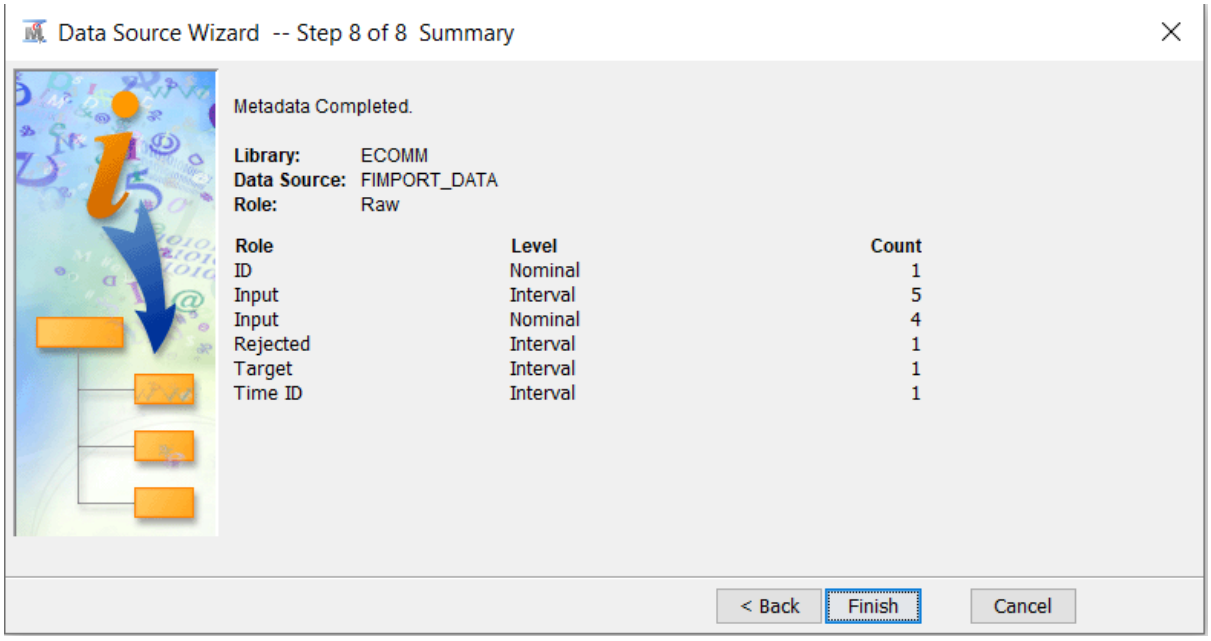
Columns: Label Mining Basic Statistics

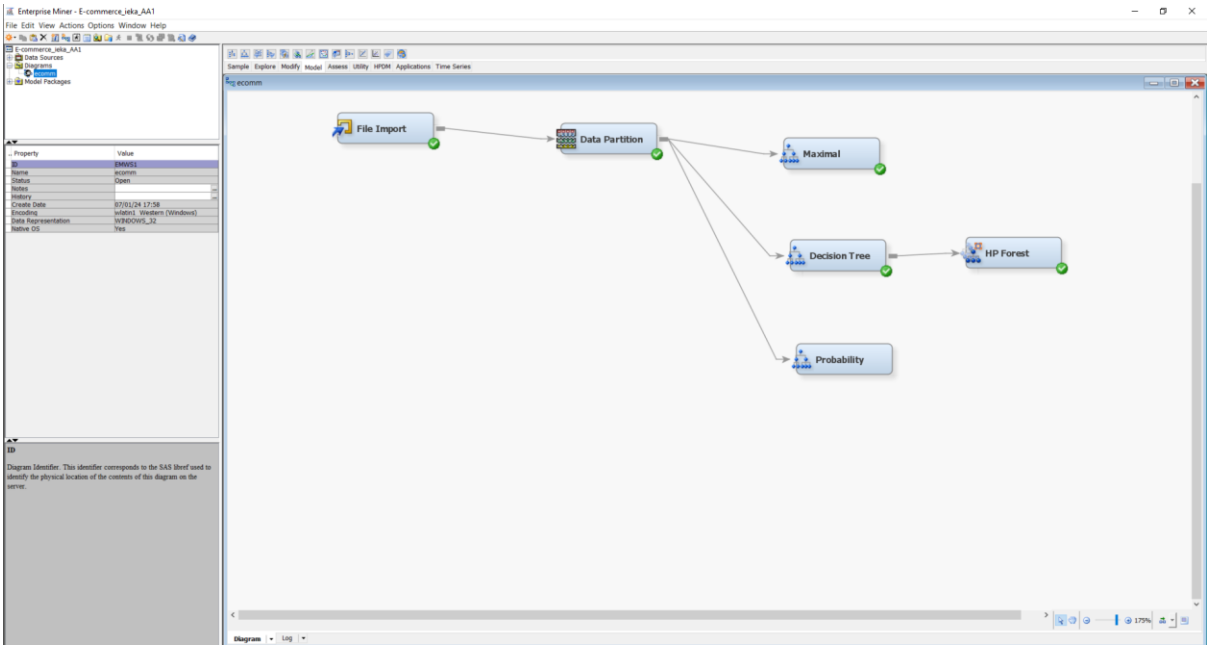
Name	Role	Level	Report	Order	Drop	Lower Limit
Age	Rejected	Interval	No		Yes	.
Churn	Target	Interval	No		No	.
Customer_Age	Input	Interval	No		No	.
Customer_ID	ID	Nominal	No		No	.
Customer_Nan	Input	Nominal	No		No	.
Gender	Input	Nominal	No		No	.
Payment_Meth	Input	Nominal	No		No	.
Product_Categ	Input	Nominal	No		No	.
Product_Price	Input	Interval	No		No	.
Purchase_Date	Time ID	Interval	No		No	.
Quantity	Input	Interval	No		No	.
Returns	Input	Interval	No		No	.
Total_Purchase	Input	Interval	No		No	.

Show code Explore Compute Summary < Back Next > Cancel

3. The sample dataset is set to 20% since the dataset is too large

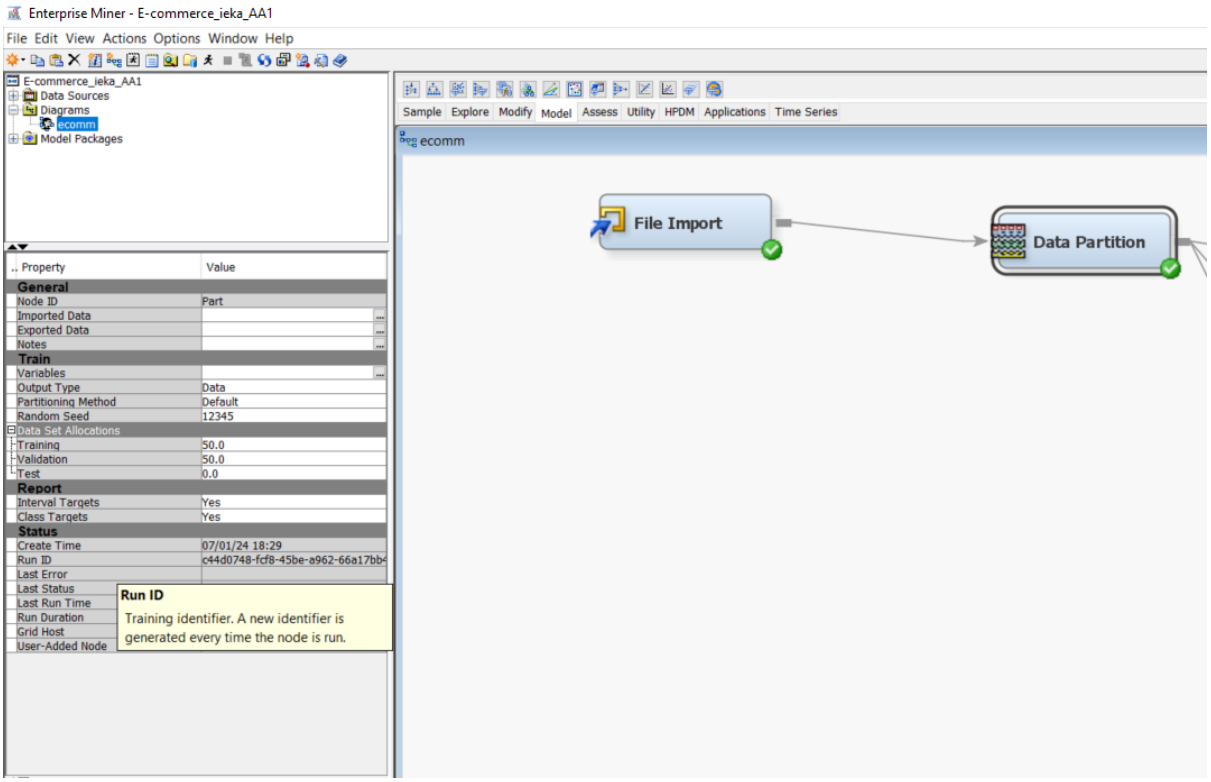




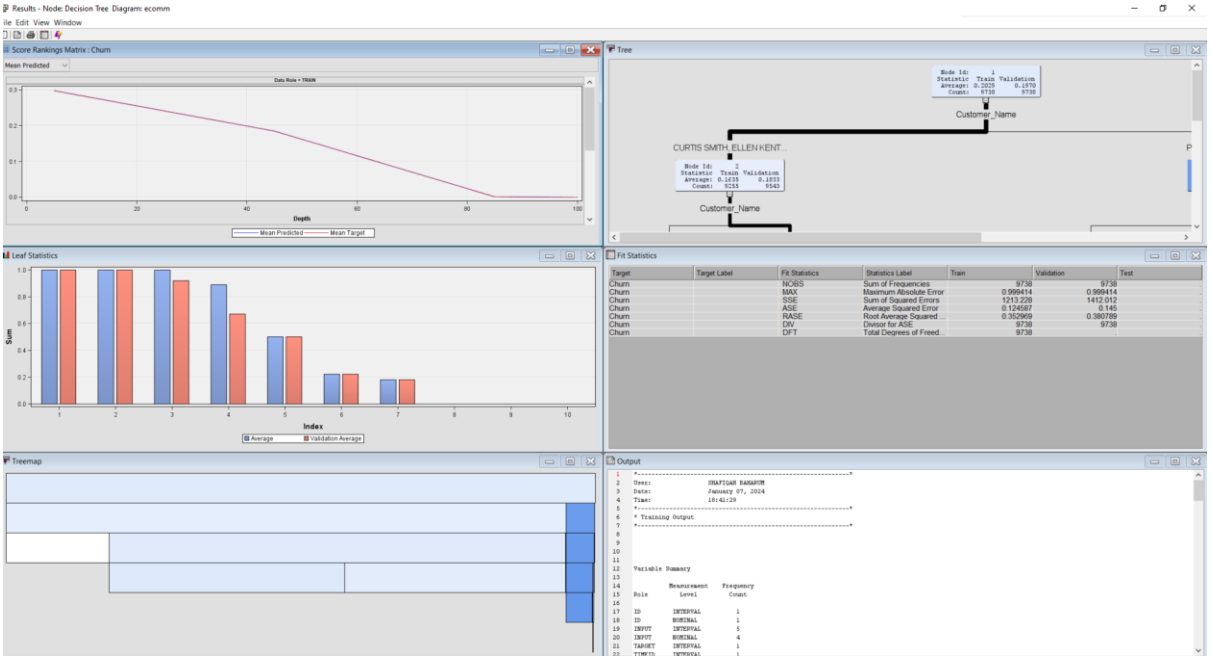
4. 

this is how it looks like on my SAS. Use the decision tree and HP Forest to generate the analysis.

5. Data partition properties:
   training and validation are set as equals.



6. Results of Decision Tree:



7. End result of Random Forest: