Business Intelligence for Grand Court Hotel

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Introduction

Grand Court Hotel is a famous Hotel in Jerusalem , It was built in 1999 and contains 442 rooms. Its location is attractive to tourists because it is close to many religious places, and Optima system is used to collect data

As the large increase of data on a daily basis is an important matter for us, as the extraction and access to data is very important, and the competitive advantage and challenge lies in how to deal with the data and benefit from in proportion to the project. We used data mining to analyze and explore the data and what problems and outputs were addressed

Project Goals

01 — 02 — 03 — 04

Association Rule Discovery

Customer Segmentation

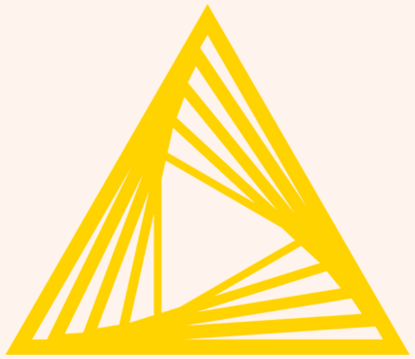
Building Dashboard

E-mail Campaign

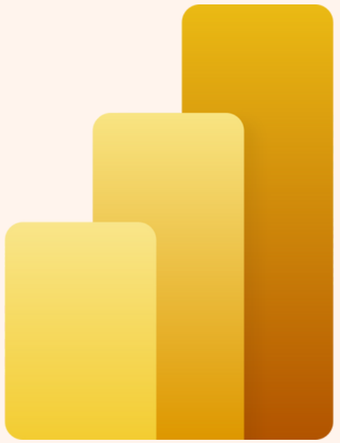
Tools Used :

1- Excel

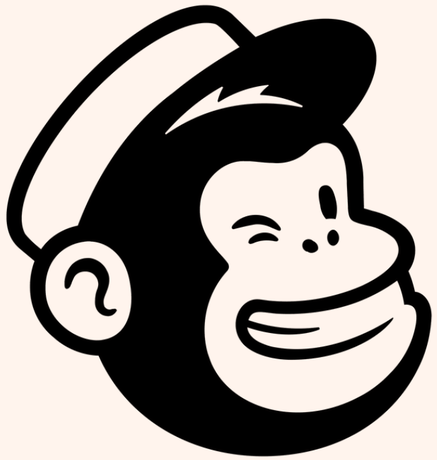
2- Knime



3- PowerBI



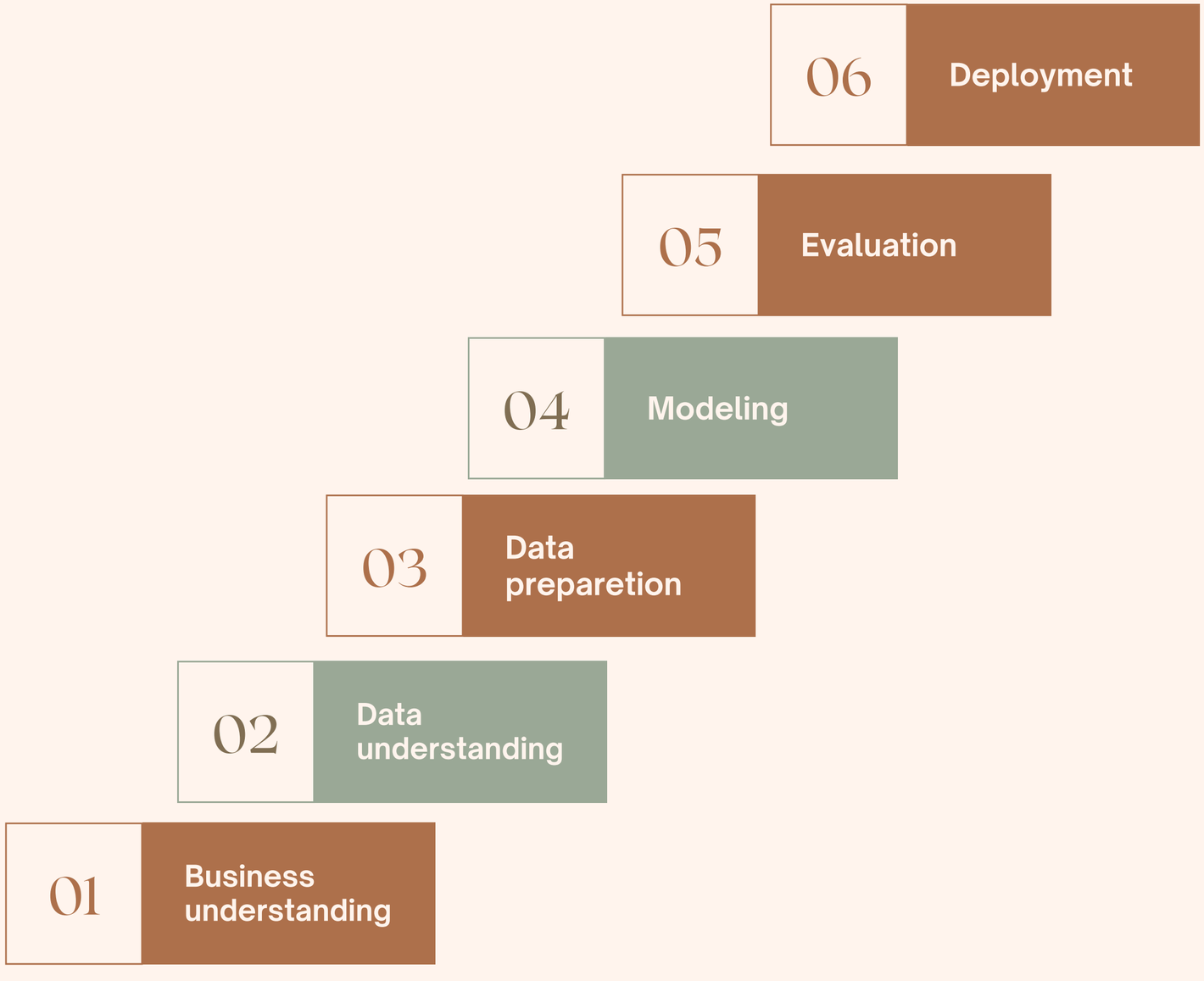
4- Mail Chimp



Data Mining Process

In order to achieve the goal and to come up with useful information from the analysis and data mining, we have used (Cross-industry Standard Process (CRISP_DM)), which is a technique and process that describes common approaches and methods used by data mining experts. Which consists of the following steps: -

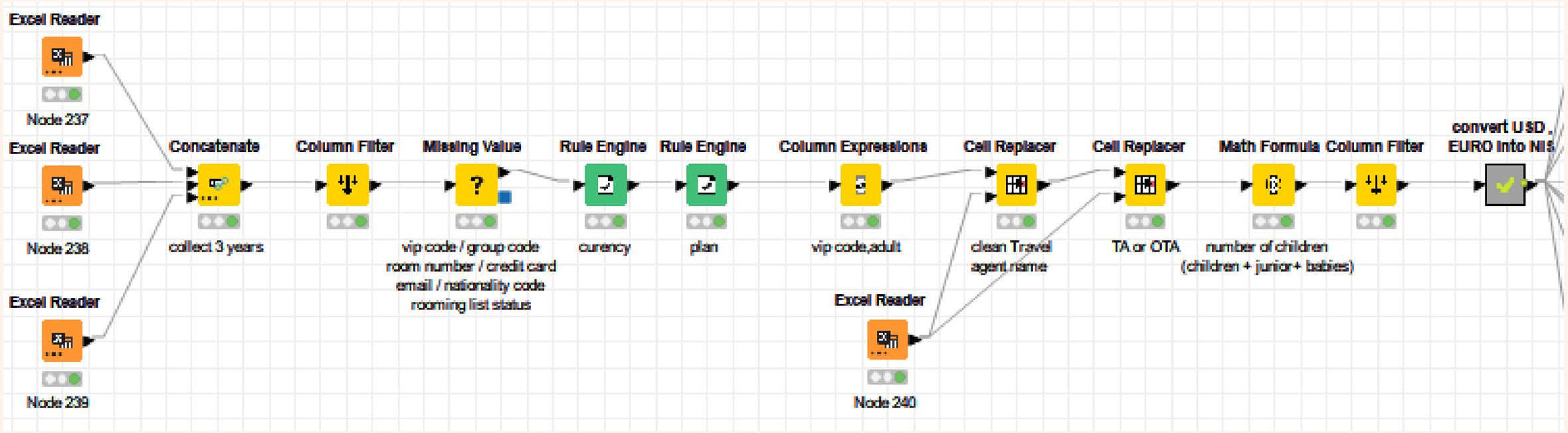
CRISP-DM Process



Data Preparation

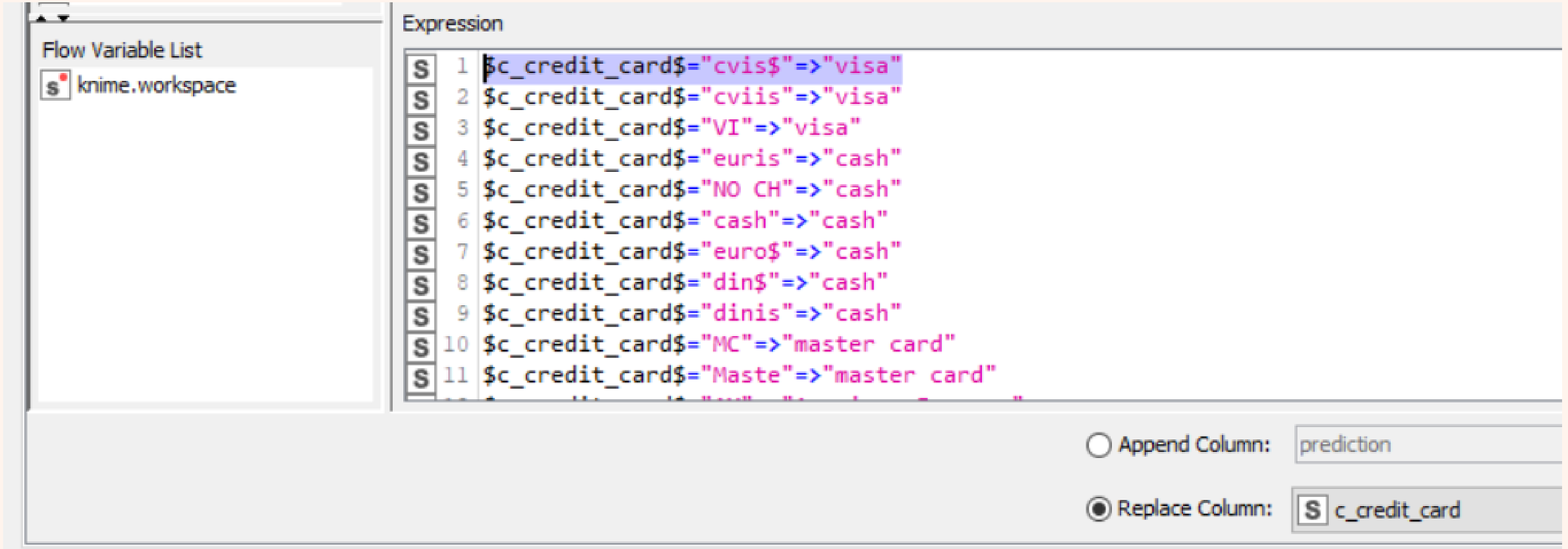
Cleaning Process

- Cleaning Workflow .



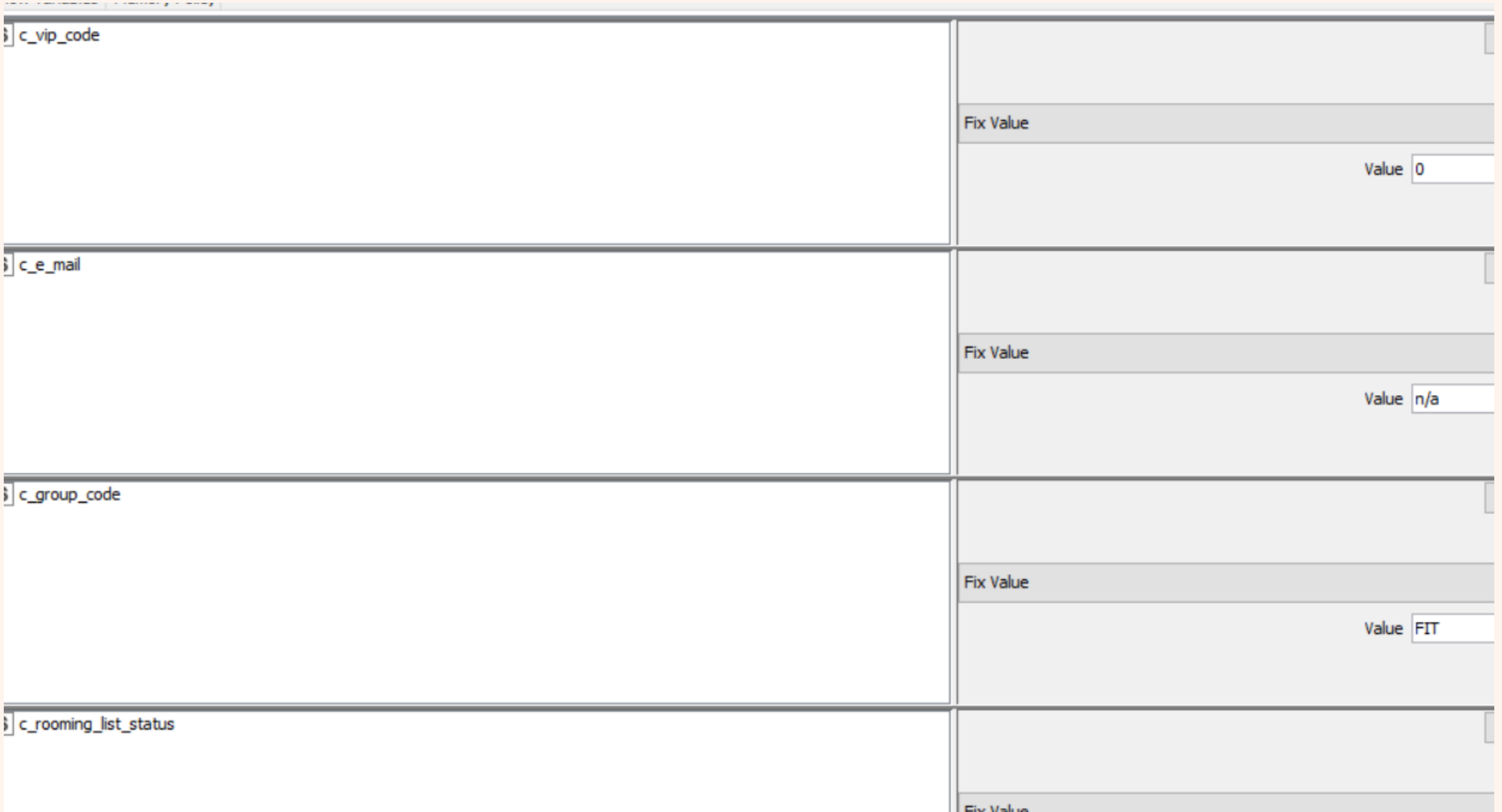
Cleaning Process

- Cleaning Example 1



Cleaning Process

- Cleaning Example 2



Travel Type

Travel type refers to the nature and size of the traveler group. In this project, travel types are determined by the number and nature of guests in a single reservation.

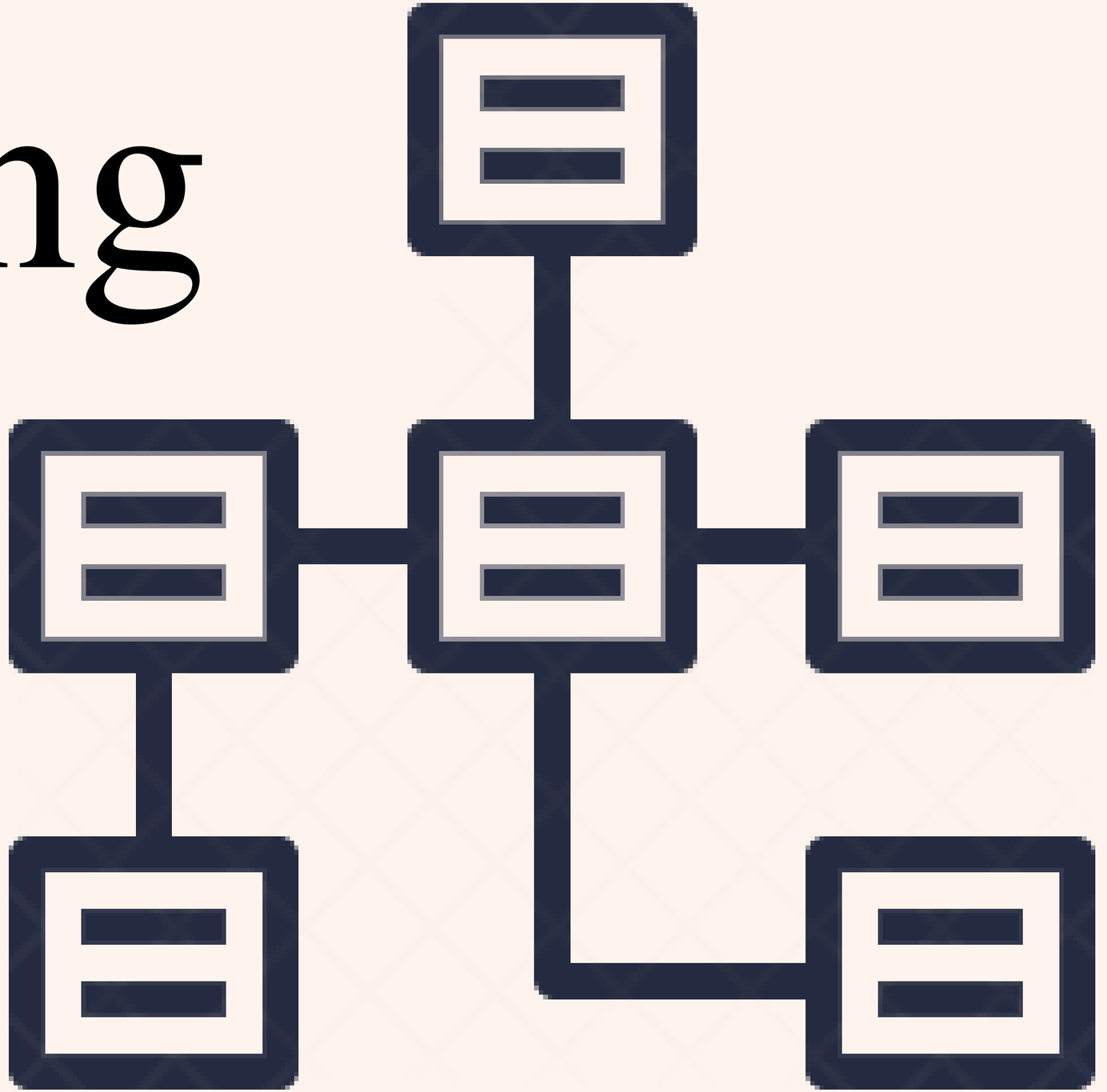
Guest_ID	# of Adults	# of Children	Travel Type
1102224	2	3	Family
2408306	4	0	Group
2404857	2	0	Pair
2408652	1	0	Single
2526193	0	4	Family Children Room

Premium Guests

Result shows when the guest reserve a room for one night and the revenue from the room is 500NIS and another guest reserve a room for two nights with the same revenue.

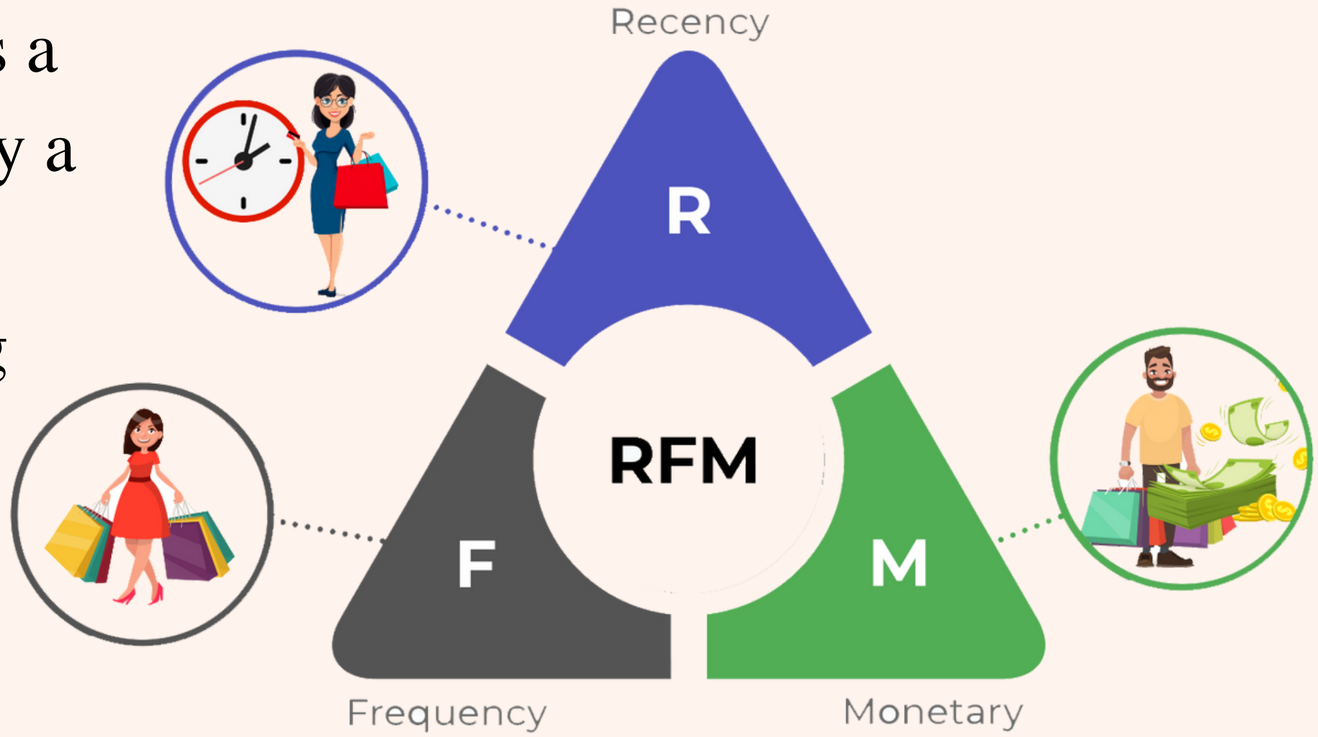
Guest_ID	# of nights	Value
2406899	2	238
2591904	3	238
888008519	3	238
2500289	4	238
2500299	4	238

Modeling



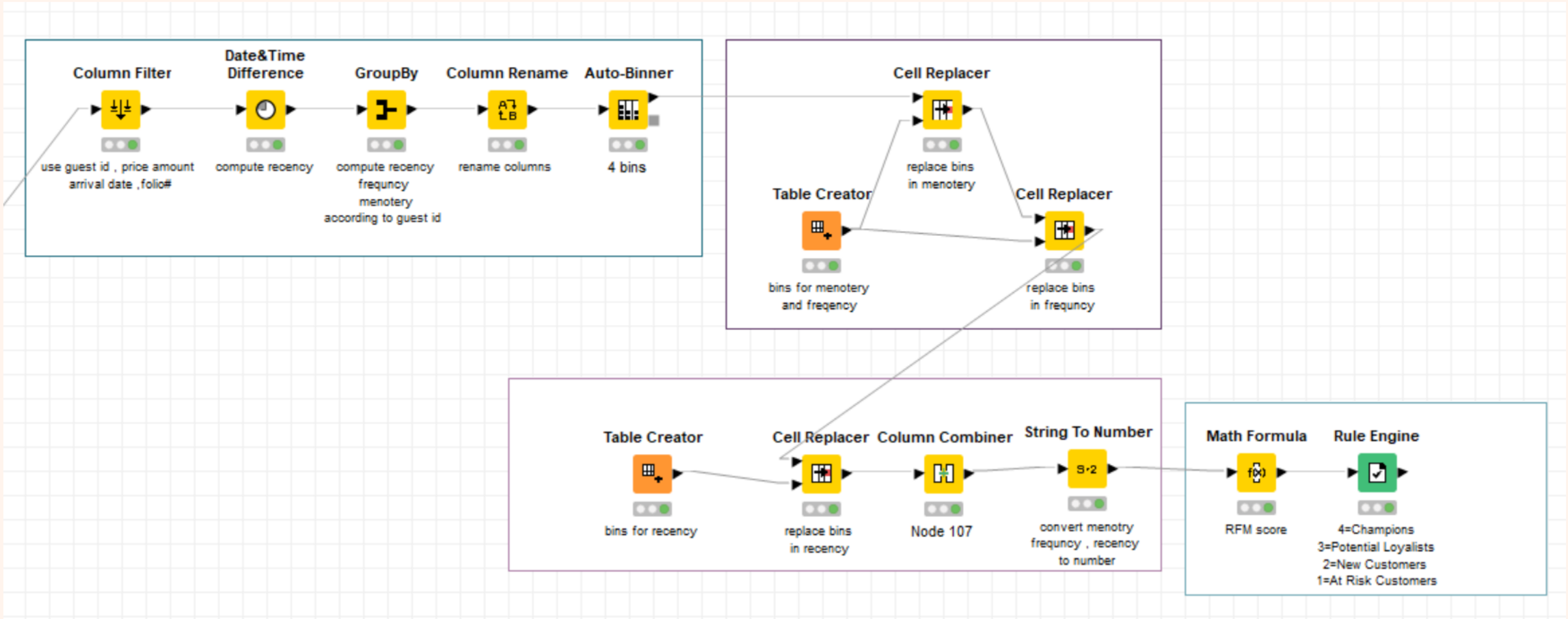
RFM Analysis

Recency, frequency, monetary value is a marketing analysis tool used to identify a company's or an organization's best customers by measuring and analyzing spending habits.



RFM Analysis

- RFM Model Workflow:



RFM Analysis

- RFM & Value Approach Result

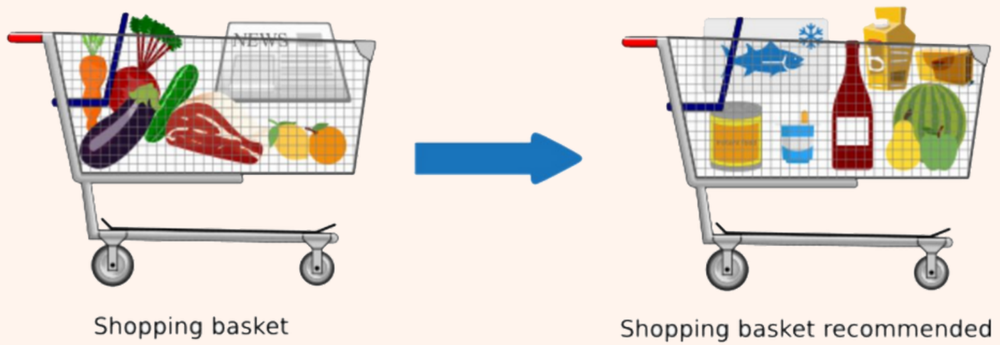
Guest_ID	Frequency	Recency	Menotery	Score	Segment
2395355	1	1285	301	"2","1","1"	At Risk Customers
1119834	1	988	408	"3","1","2"	New Customers
1129441	2	996	1489	"4","4","2"	Potential Loyalists
2119195	4	770	3368	"4","4","4"	Champions

Guest_ID	Value
2395355	0.38
1119834	0.48
1129441	0.50
2119195	0.61

Association

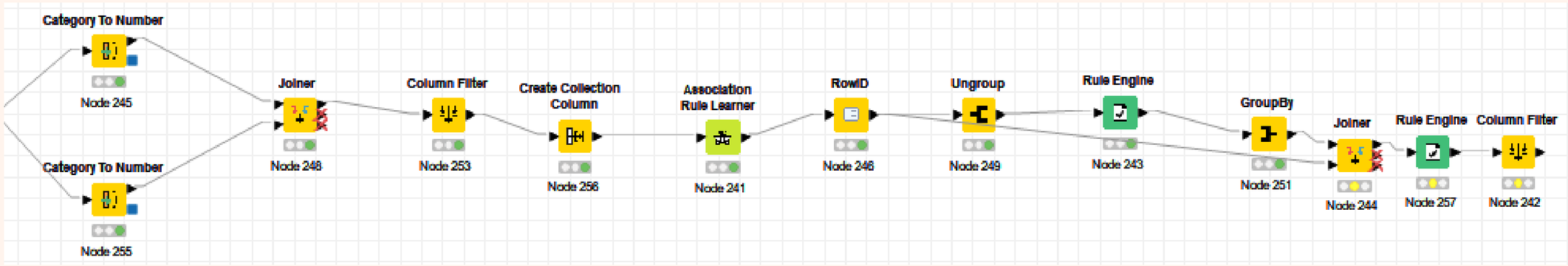
- Market Basket Analysis

Association rule learning is a rule-based machine learning method for discovering interesting relations between variables in large databases.



Association

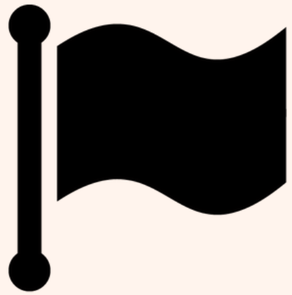
- Association Rule Workflow:



Association

- Association Rule Results:

1- Nationality:



Country

Travel Agency

Rules	Supp	Conf	Lift
{Nationality=ISR} ==> {Booking channel =TA}	0.09	0.21	1.22
{Nationality=USA} ==> {Booking channel =OTA}	0.15	0.26	1.06
{Nationality=BRA} ==> {Booking channel =OTA}	0.06	0.7	1.21

Association

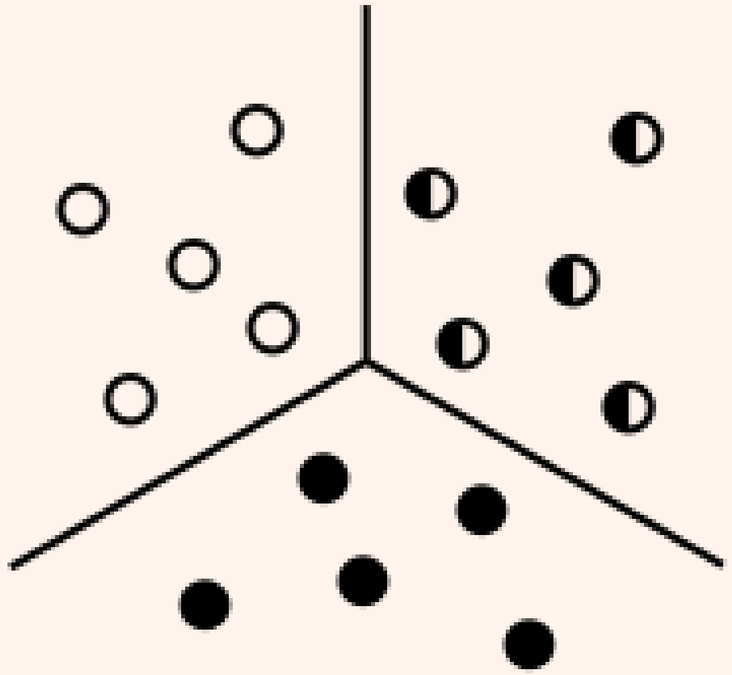
- Association Rule Results:

2- Reservation services (VIP, Room, Meal Types):

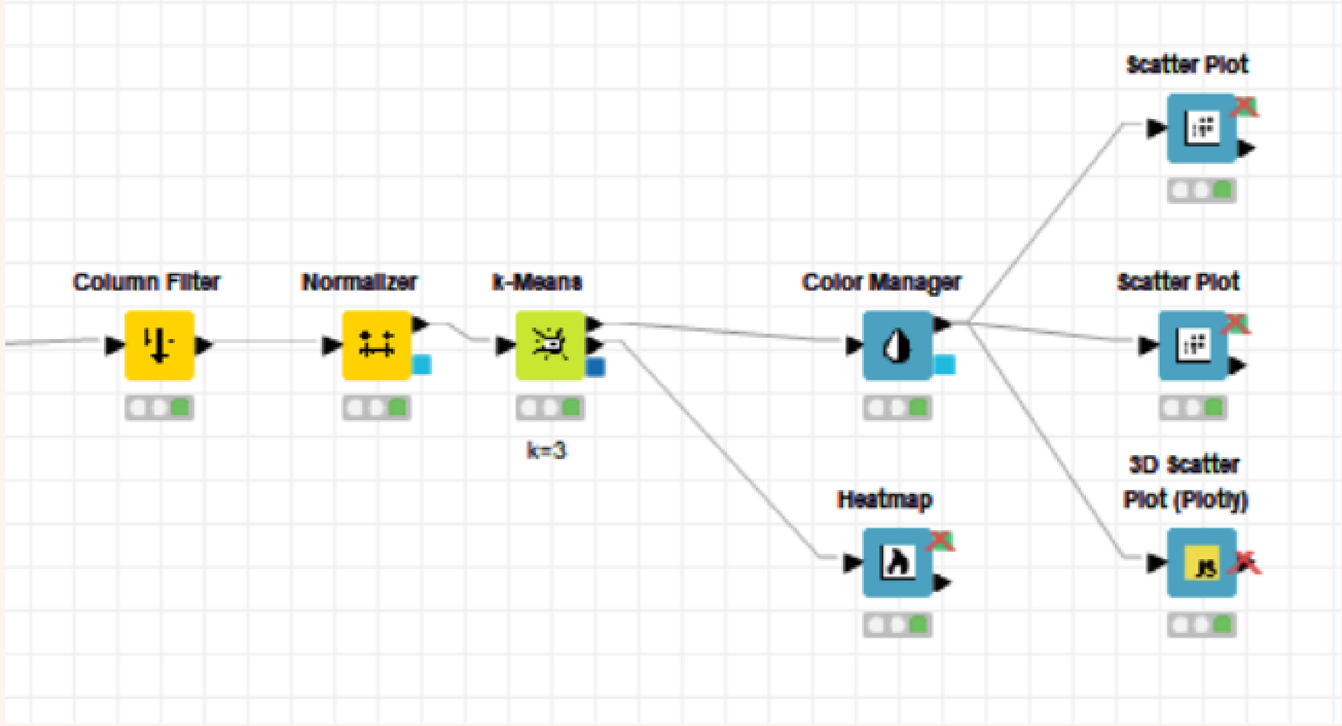
Rules	Supp	Conf	Lift
{Room Type and VIP Type =B, Suite} ==> {Meal Type=H/B}	**0.01**	**0.86**	**1.08**
{Room Type and VIP Type =B, Premium} ==> {Meal Type=H/B}	**0.02**	**0.9**	**1.08**

Clustering

In clustering, a group of different data objects is classified as similar objects. One group means a cluster of data.

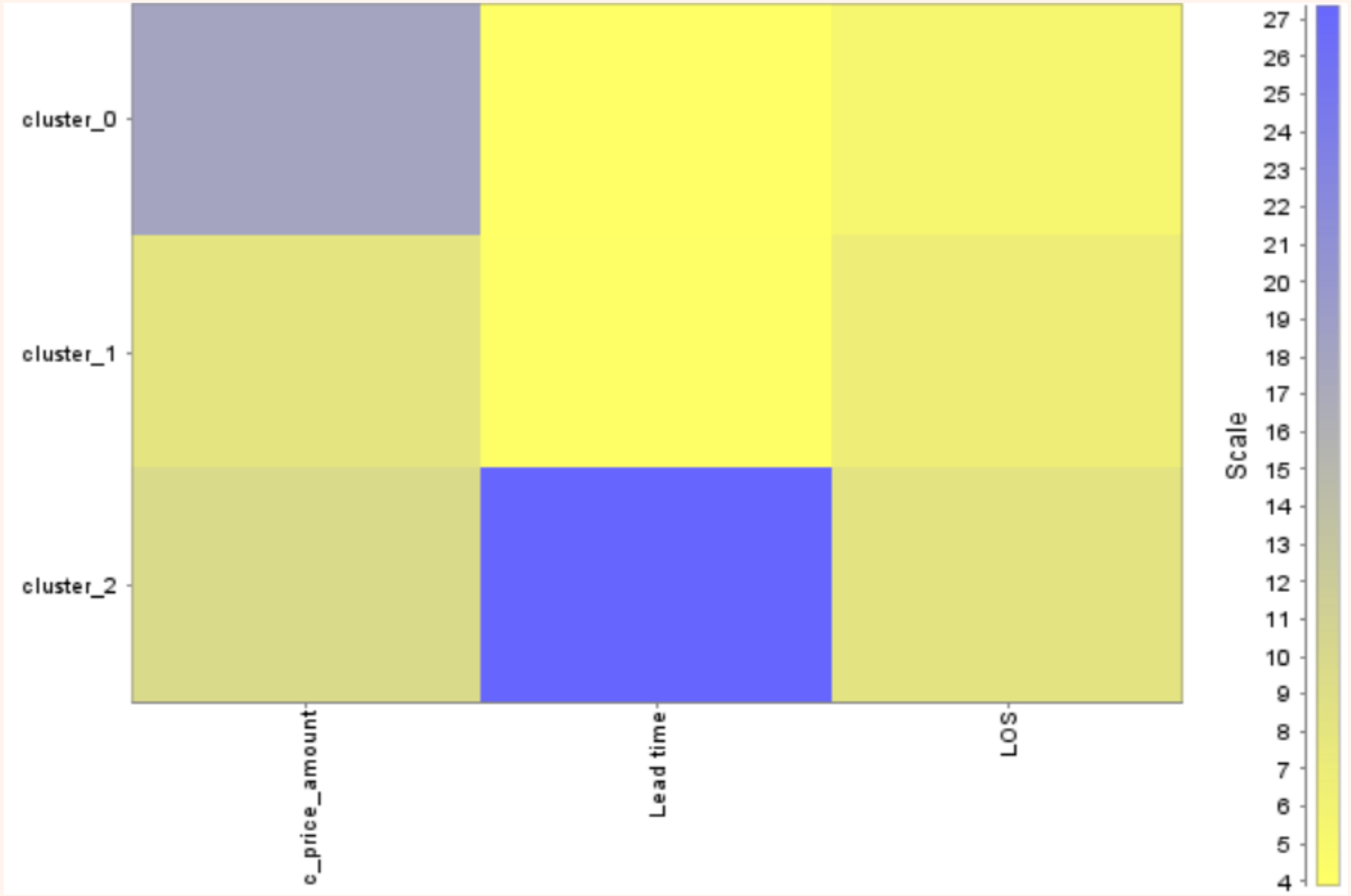


Clustering



Row ID	c_price...	Lead time	LOS
cluster_0	17.961	3.896	5.365
cluster_1	8.044	4.165	6.836
cluster_2	9.411	27.382	8.318

Clustering


cluster_0
cluster_1
cluster_2
c_price_amount
Lead time
LOS
Scale
27
26
25
24
23
22
21
20
19
18
17
16
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14
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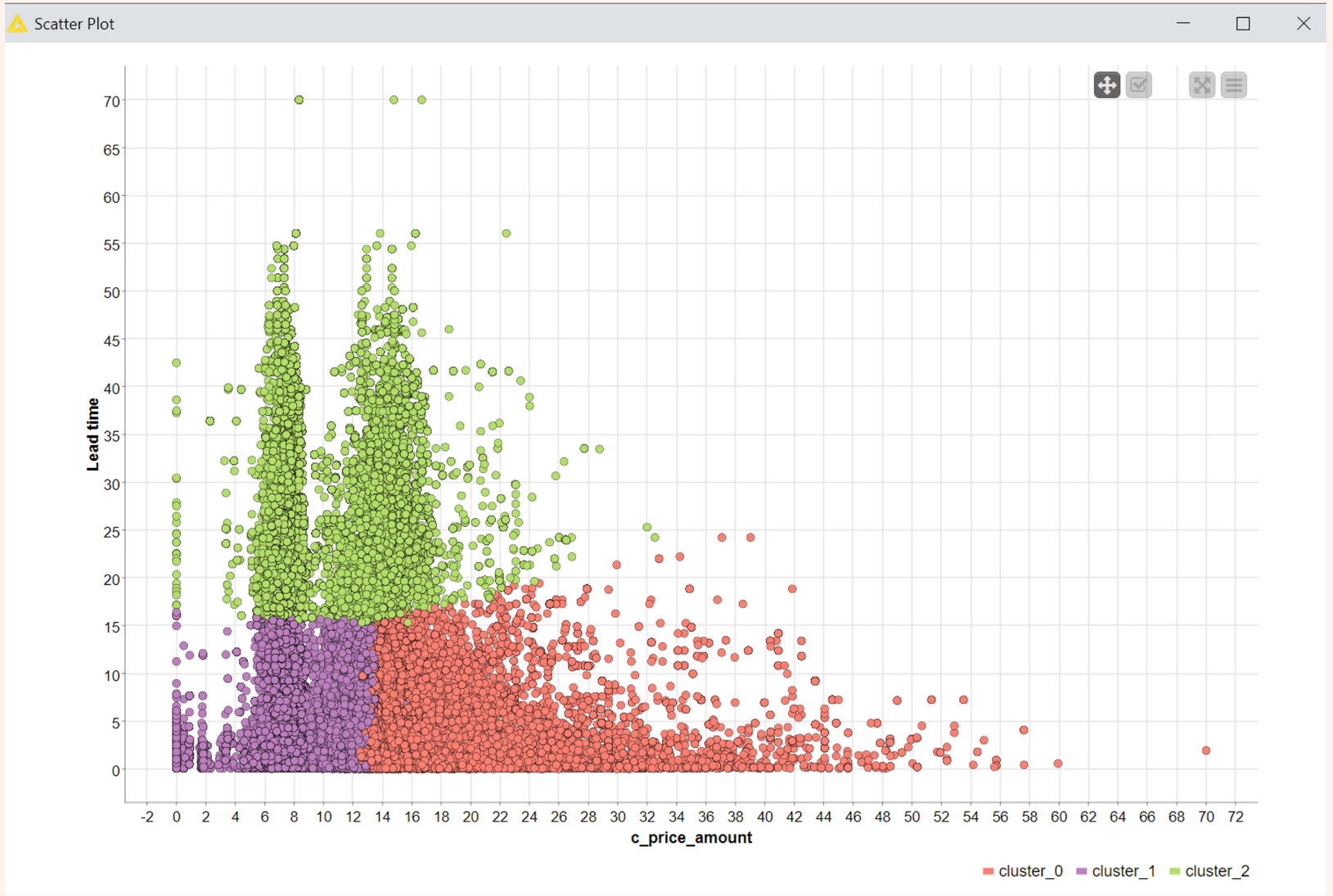
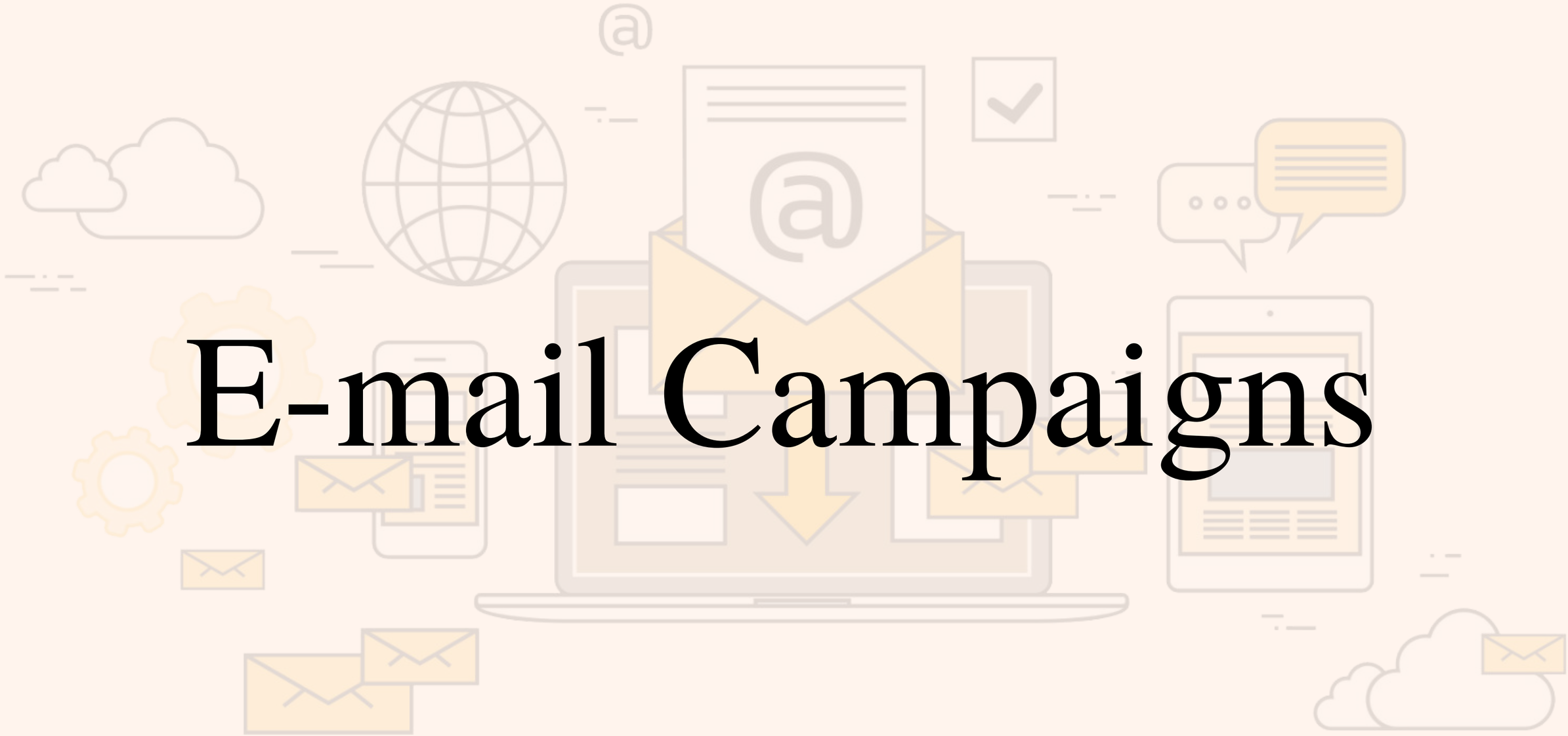
5
4

Clustering


Scatter Plot
Lead time
c_price_amount
cluster_0
cluster_1
cluster_2

Dashboard



E-mail Campaigns

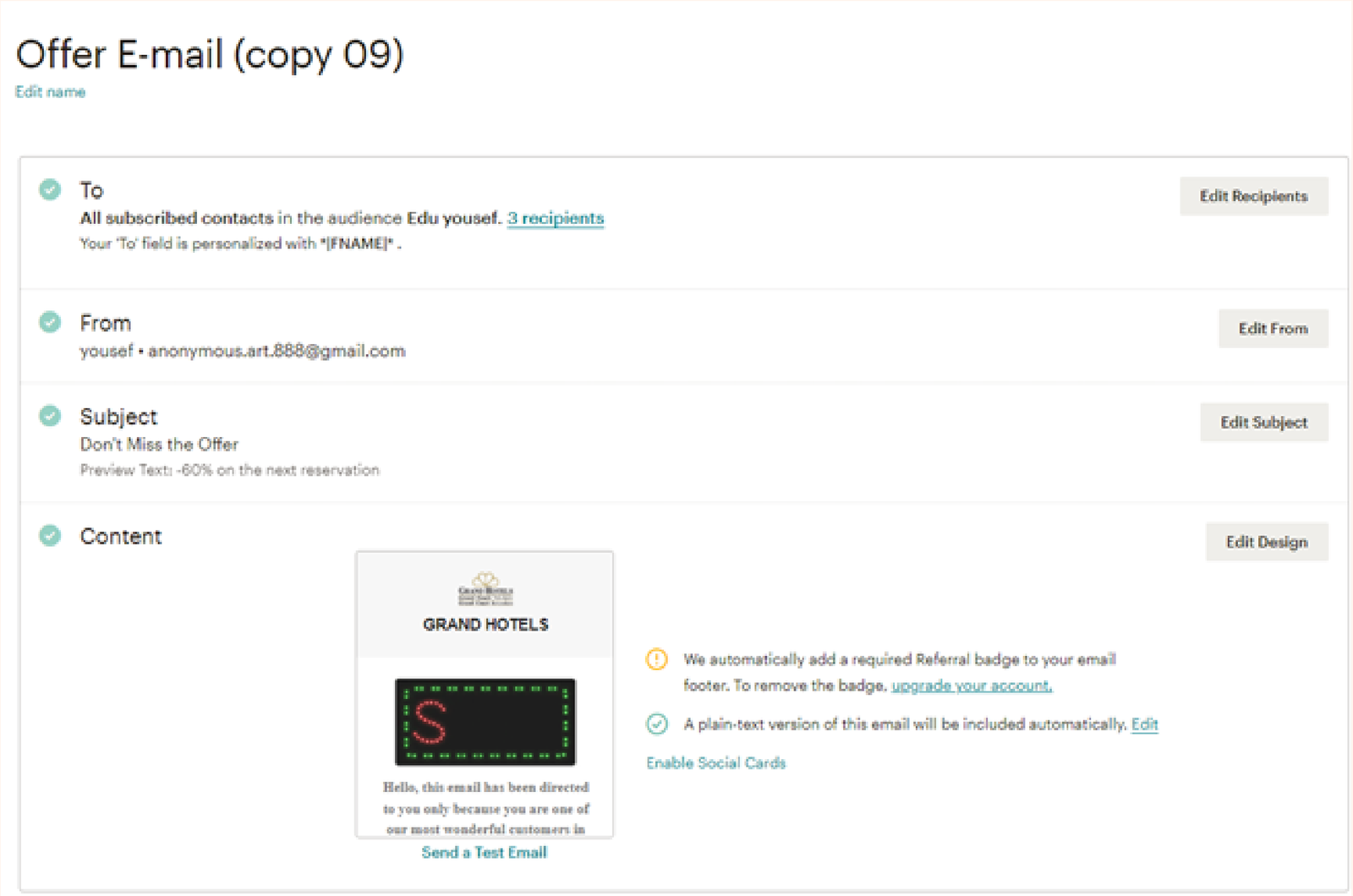
Mail Chimp

Mailchimp is an American marketing automation platform and email marketing service, used by businesses to manage their mailing lists and create email marketing campaigns and automations to send to customers.

Mail Chimp

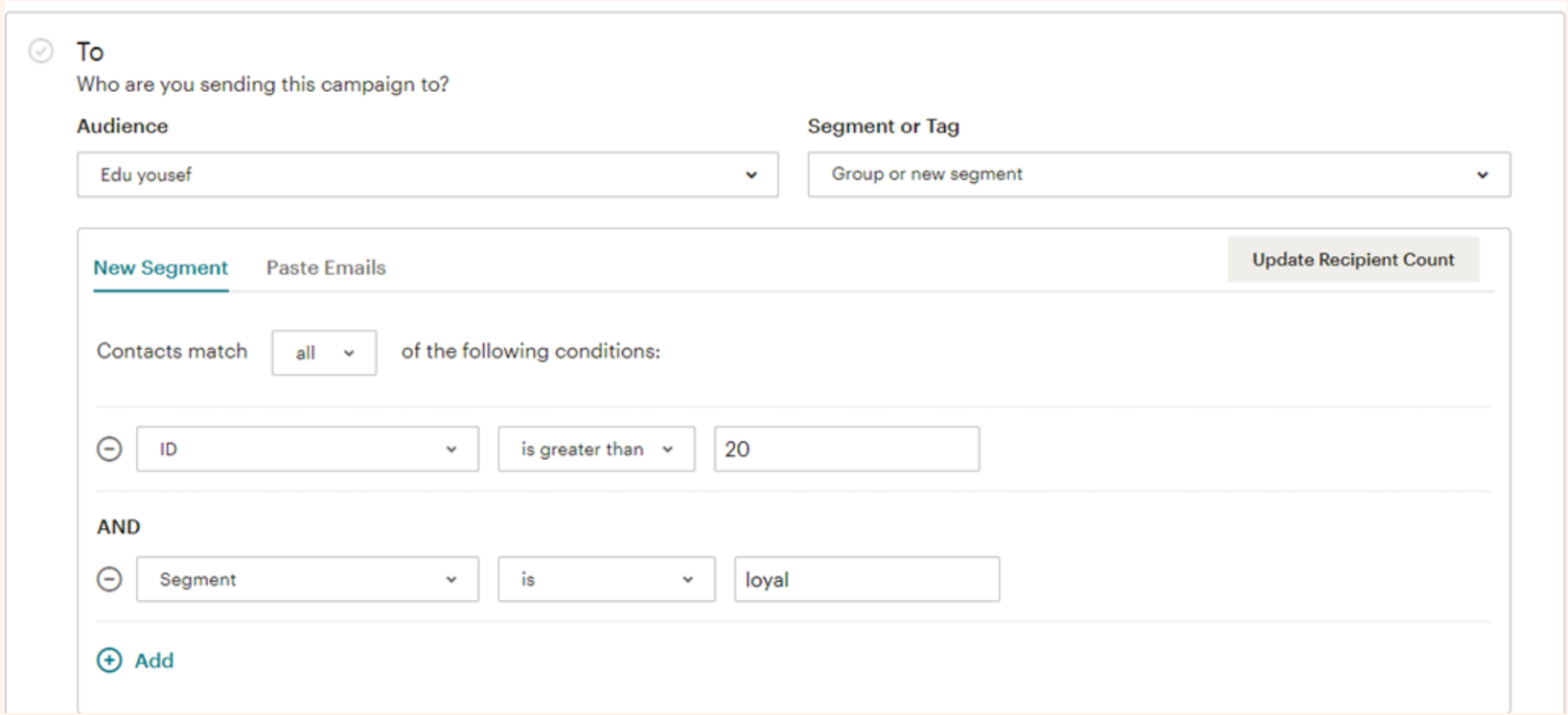
mailchimp

Campaign Details



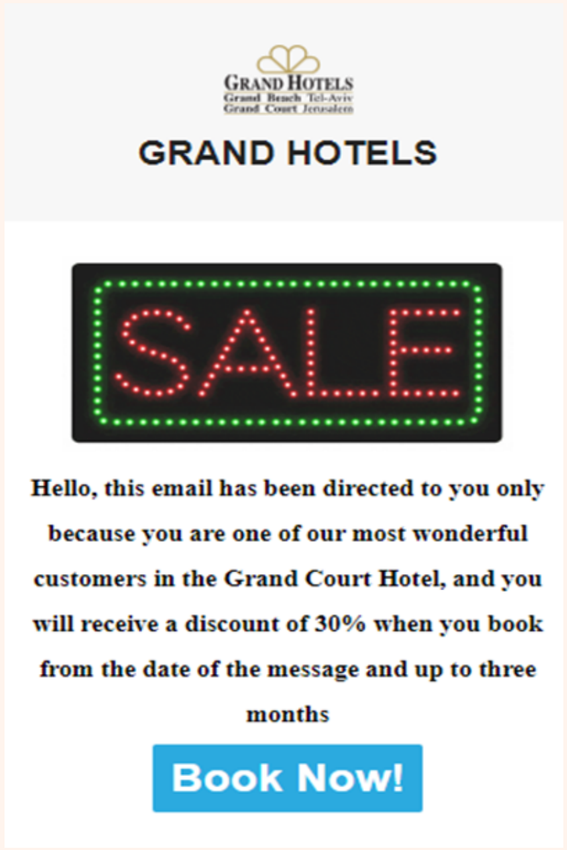
Mail Chimp

- E-mail Conditions



Mail Chimp

- E-mail Templates



Recommendation

1- They must ask about the traveler’s information.

2- Collect information in the right way.

3- Targeting guests using marketing campaigns

4- Use the workflow for all hotel branches

Thank you