

# *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

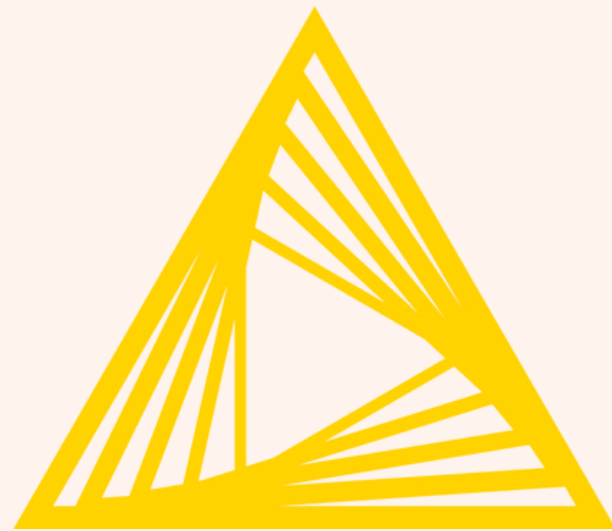
E-mail  
Campaign

# Tools Used :

1- Excel



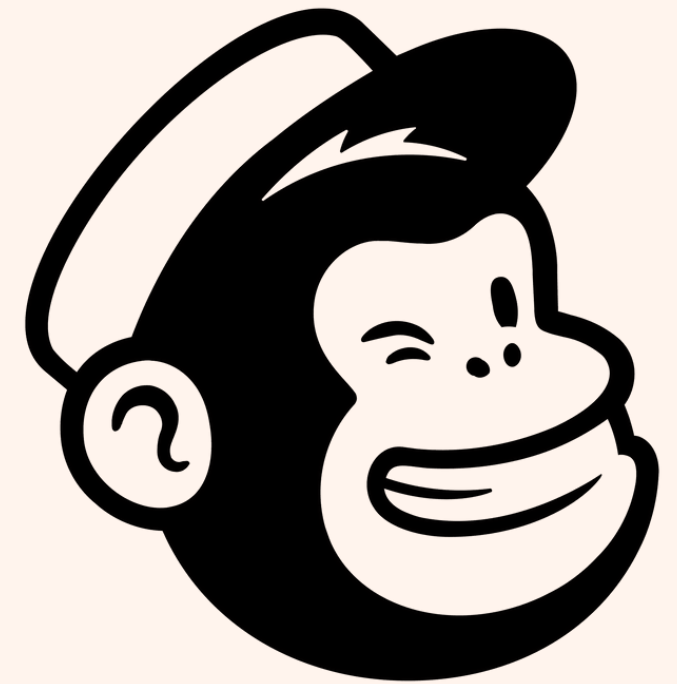
2- Knime



3- PowerBI



4- Mail Chimp



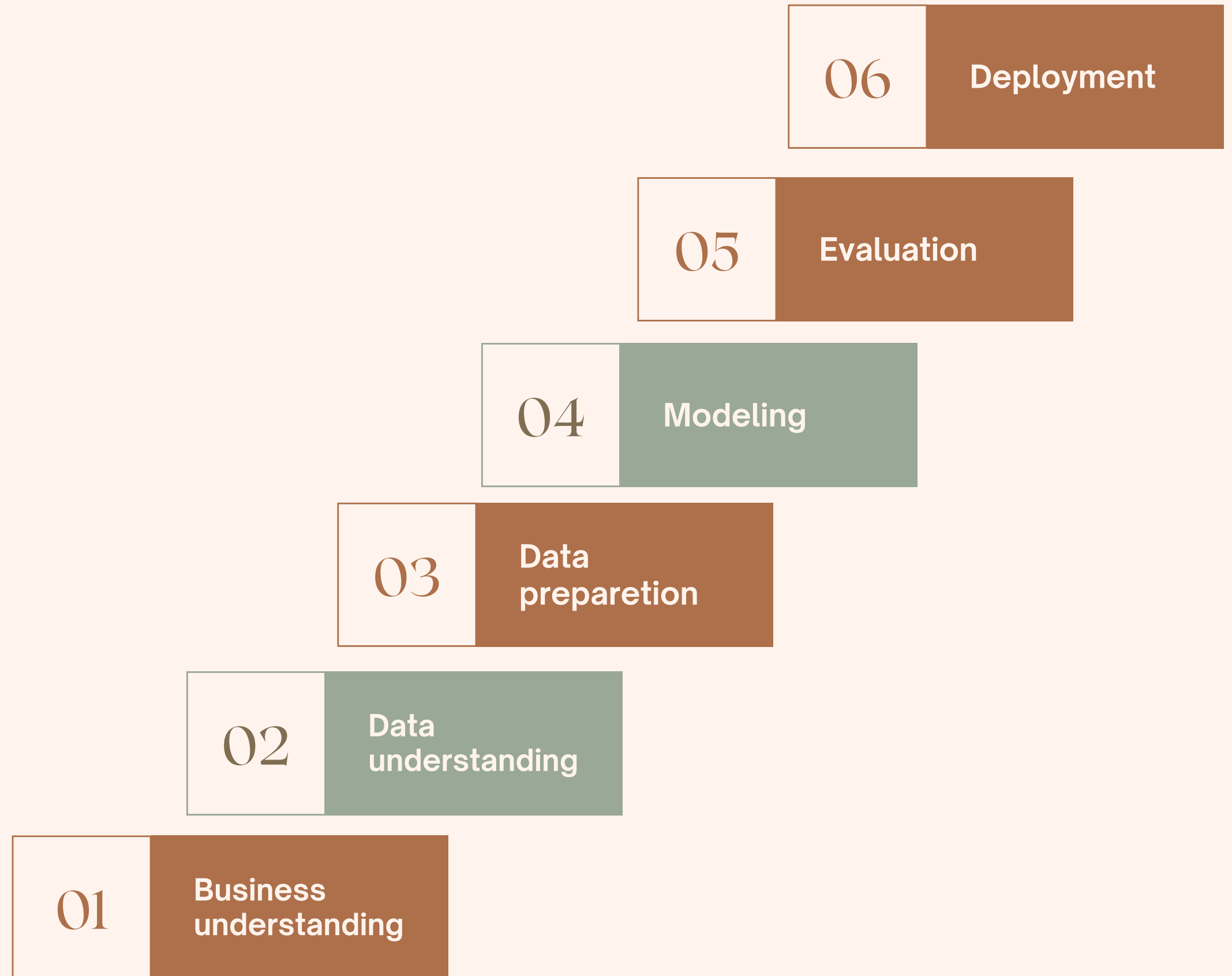
# ► Data Mining Process

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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

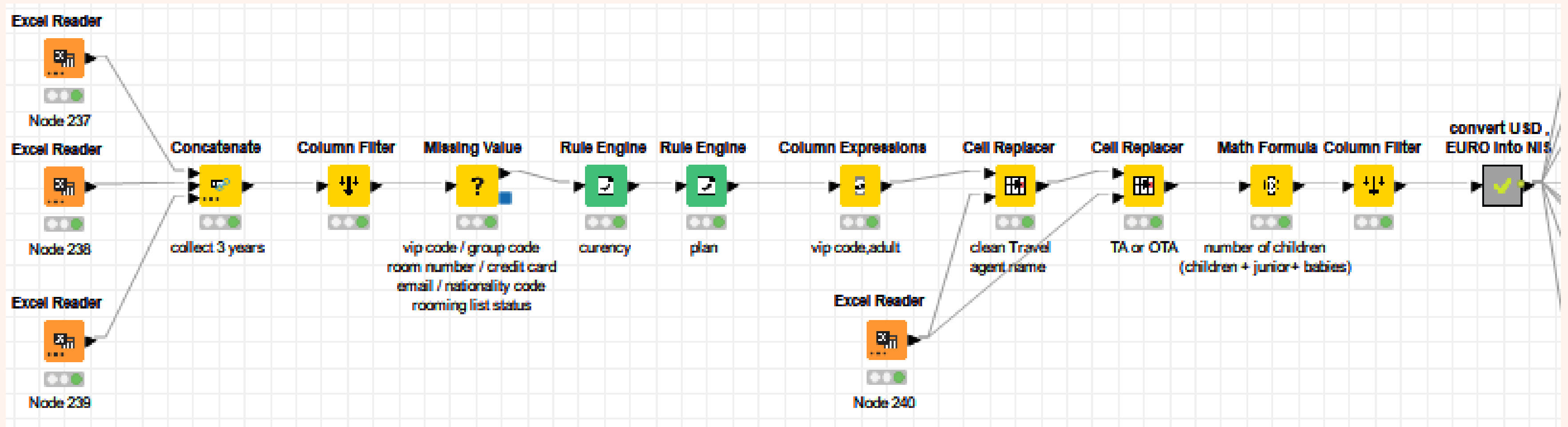


The background features a collage of data-related icons in light blue and orange. These include a bar chart with four bars of increasing height, a line graph with an upward trend, a pie chart with one slice highlighted, a candlestick chart, a grid with a checkmark and an upward arrow, and a network diagram with nodes and connecting lines. Two magnifying glasses are positioned over the central text. The text "Data Preparation" is written in a large, black, serif font, centered horizontally and partially enclosed by the magnifying glass lenses.

# Data Preparation

# ▶▶ Cleaning Process

- Cleaning Workflow .



# ► Cleaning Process

- Cleaning Example 1

Flow Variable List

- knime.workspace

Expression

S	1	<code>\$c_credit_card\$="cvis\$"=&gt;"visa"</code>
S	2	<code>\$c_credit_card\$="cviis"=&gt;"visa"</code>
S	3	<code>\$c_credit_card\$="VI"=&gt;"visa"</code>
S	4	<code>\$c_credit_card\$="euris"=&gt;"cash"</code>
S	5	<code>\$c_credit_card\$="NO CH"=&gt;"cash"</code>
S	6	<code>\$c_credit_card\$="cash"=&gt;"cash"</code>
S	7	<code>\$c_credit_card\$="euro\$"=&gt;"cash"</code>
S	8	<code>\$c_credit_card\$="din\$"=&gt;"cash"</code>
S	9	<code>\$c_credit_card\$="dinis"=&gt;"cash"</code>
S	10	<code>\$c_credit_card\$="MC"=&gt;"master card"</code>
S	11	<code>\$c_credit_card\$="Maste"=&gt;"master card"</code>

☐ Append Column: prediction

☒ Replace Column: **S** c\_credit\_card

# ► Cleaning Process

- Cleaning Example 2

c_vip_code	<div>Fix Value</div> <div>Value 0</div>
c_e_mail	<div>Fix Value</div> <div>Value n/a</div>
c_group_code	<div>Fix Value</div> <div>Value FIT</div>
c_rooming_list_status	<div>Fix Value</div>

# ▶ 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.

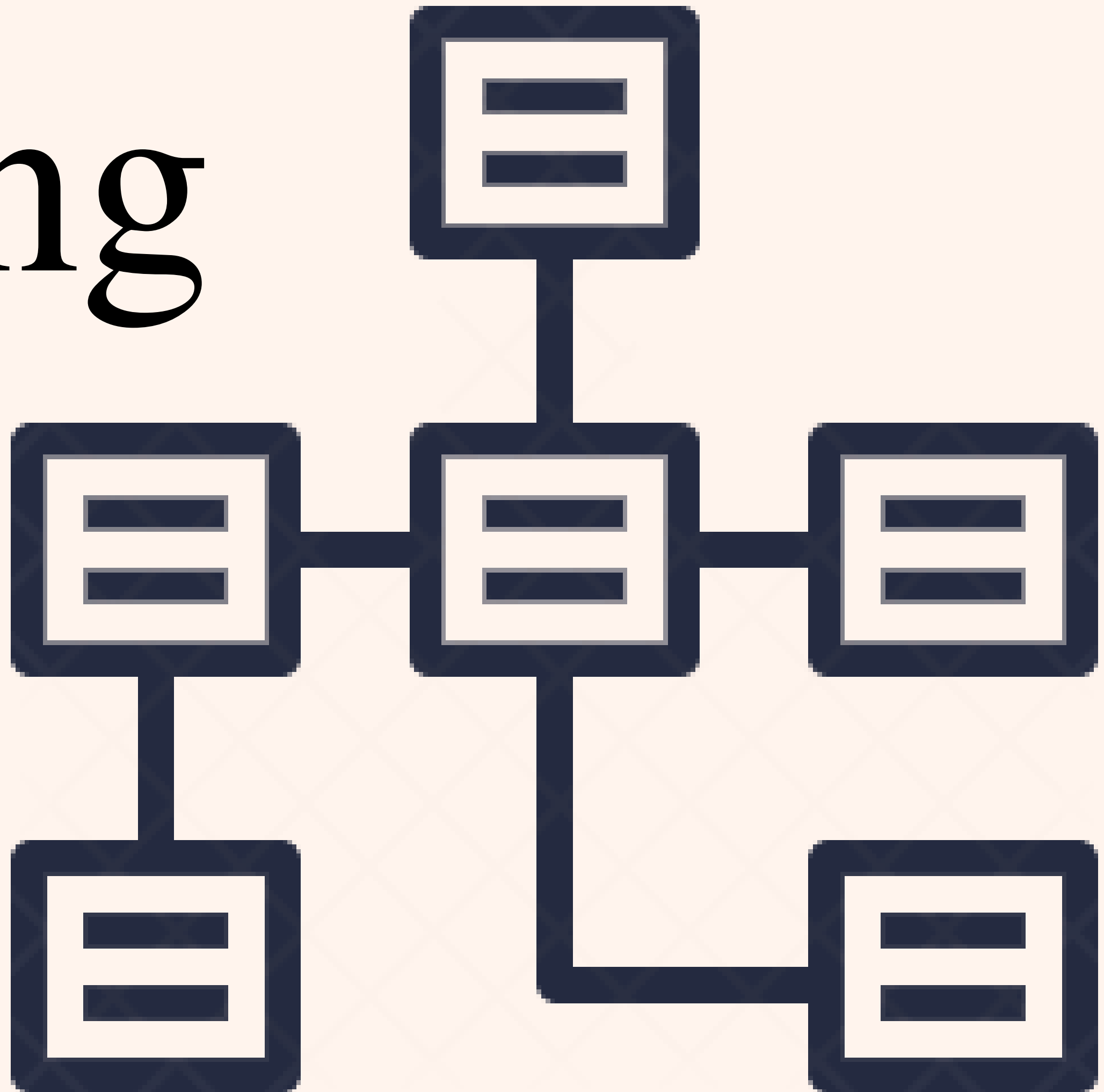
Guest_ID	# of Adults	# of Children	Travel Type
1102224	2	3	Family
2408306	4	0	Group
2404857	2	0	Pair
2408652	1	0	Single
2526193	0	4	Family Children Room

## ►► 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.

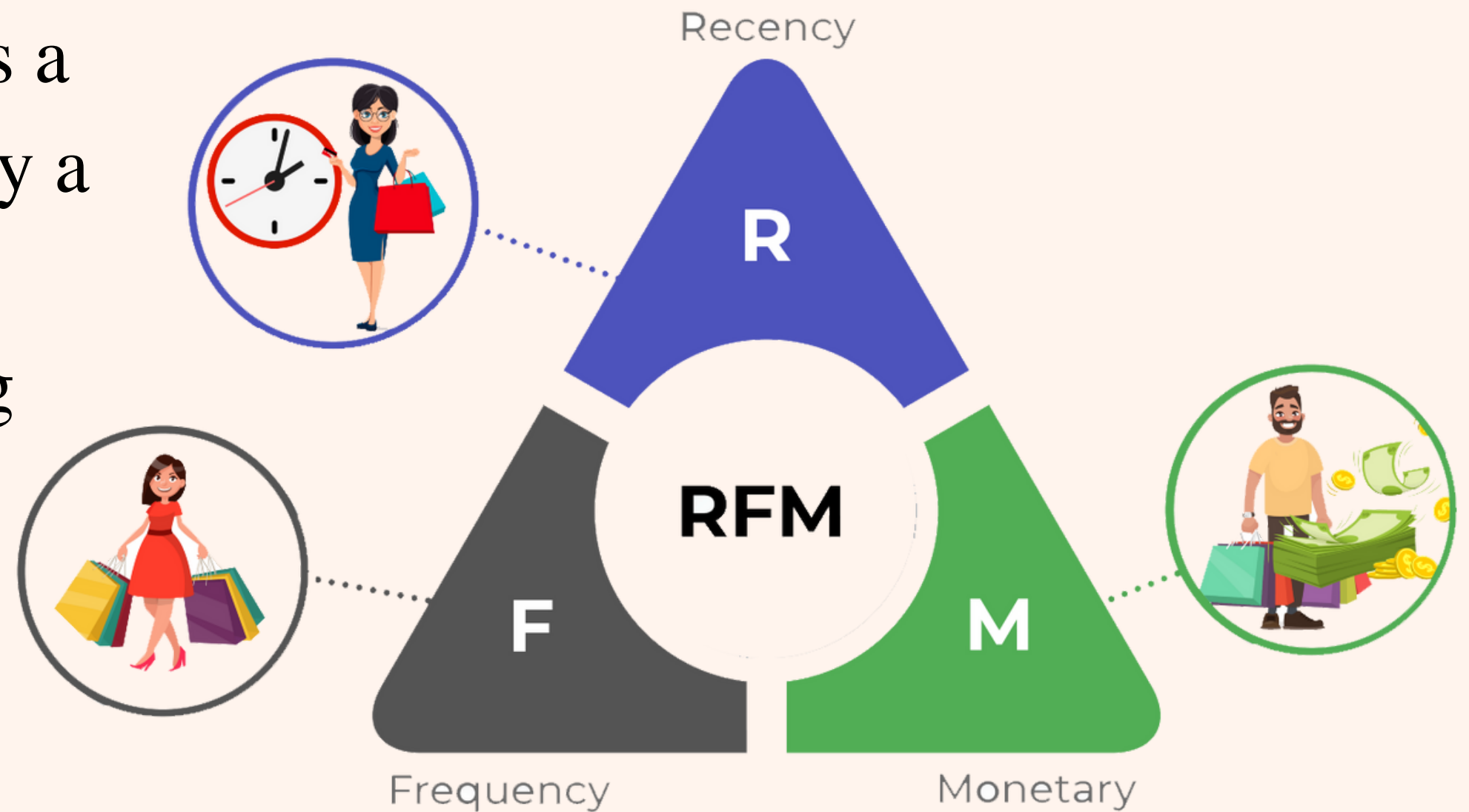
Guest_ID	# of nights	Value
2406899	2	238
2591904	3	238
888008519	3	238
2500289	4	238
2500299	4	238

# Modeling



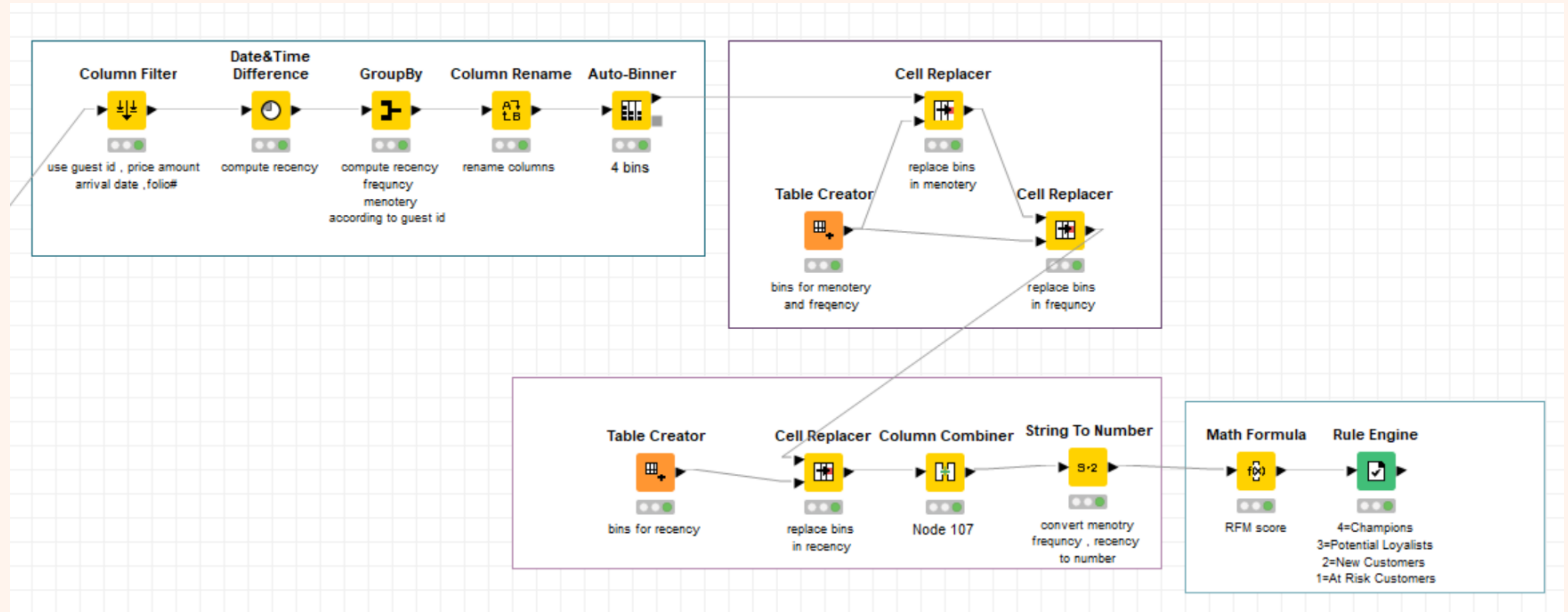
# ► RFM Analysis

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.



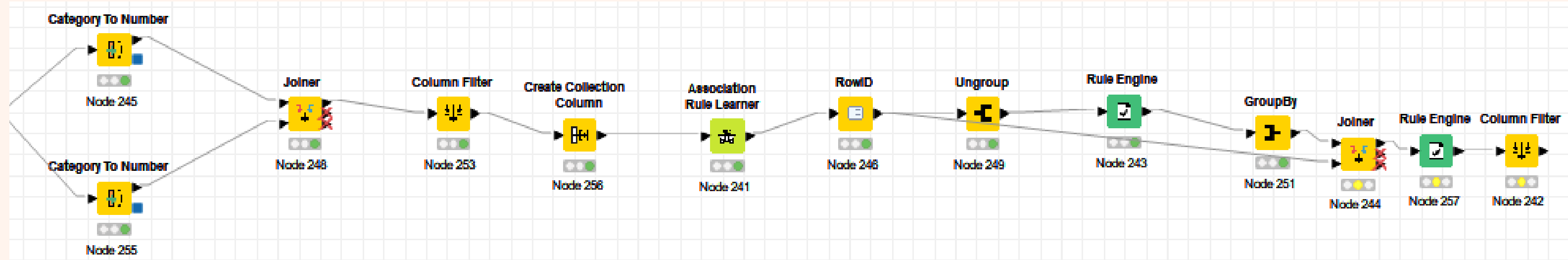
Shopping basket



Shopping basket recommended

# ► Association

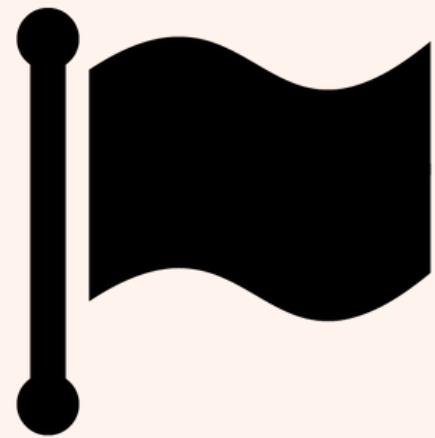
- Association Rule Workflow:



# ► 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

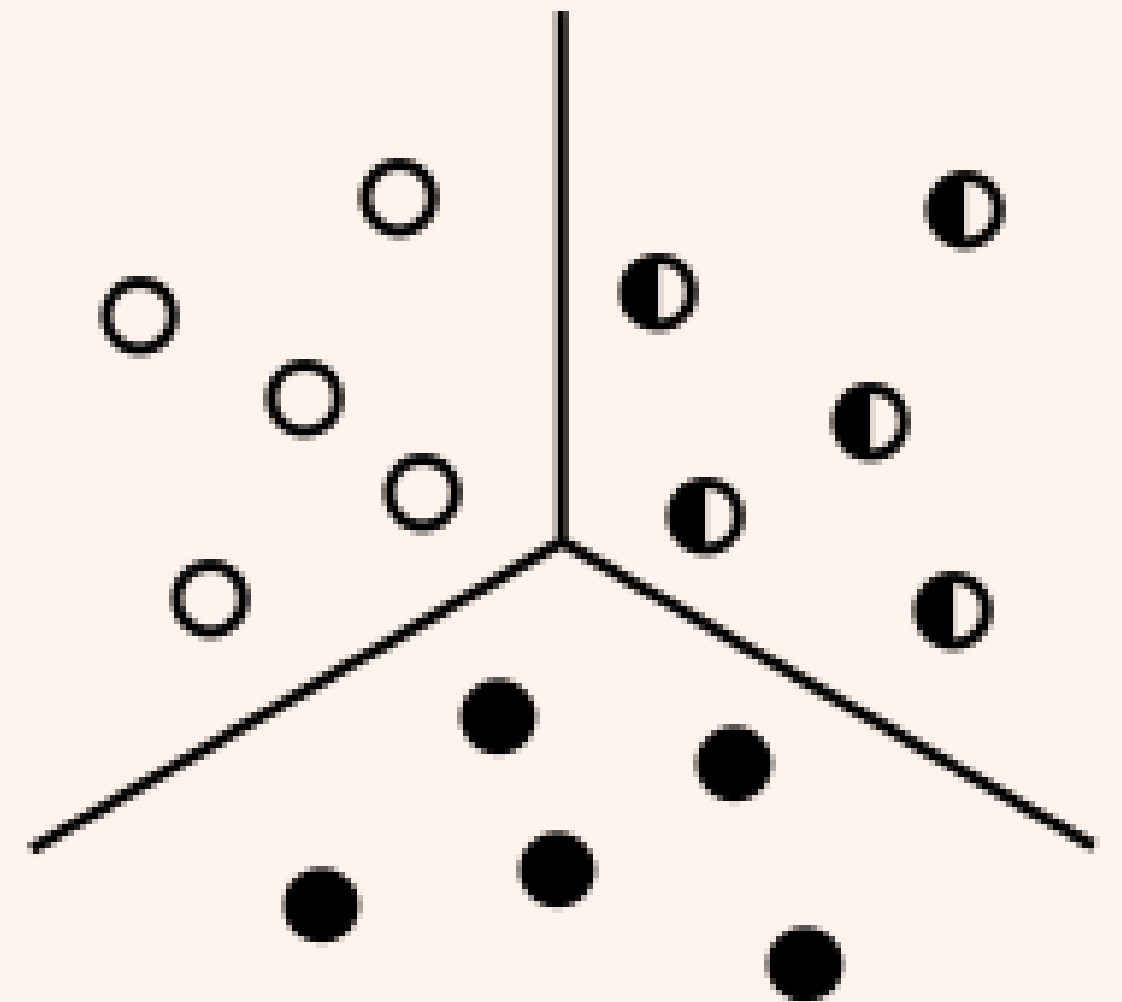
- Association Rule Results:

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

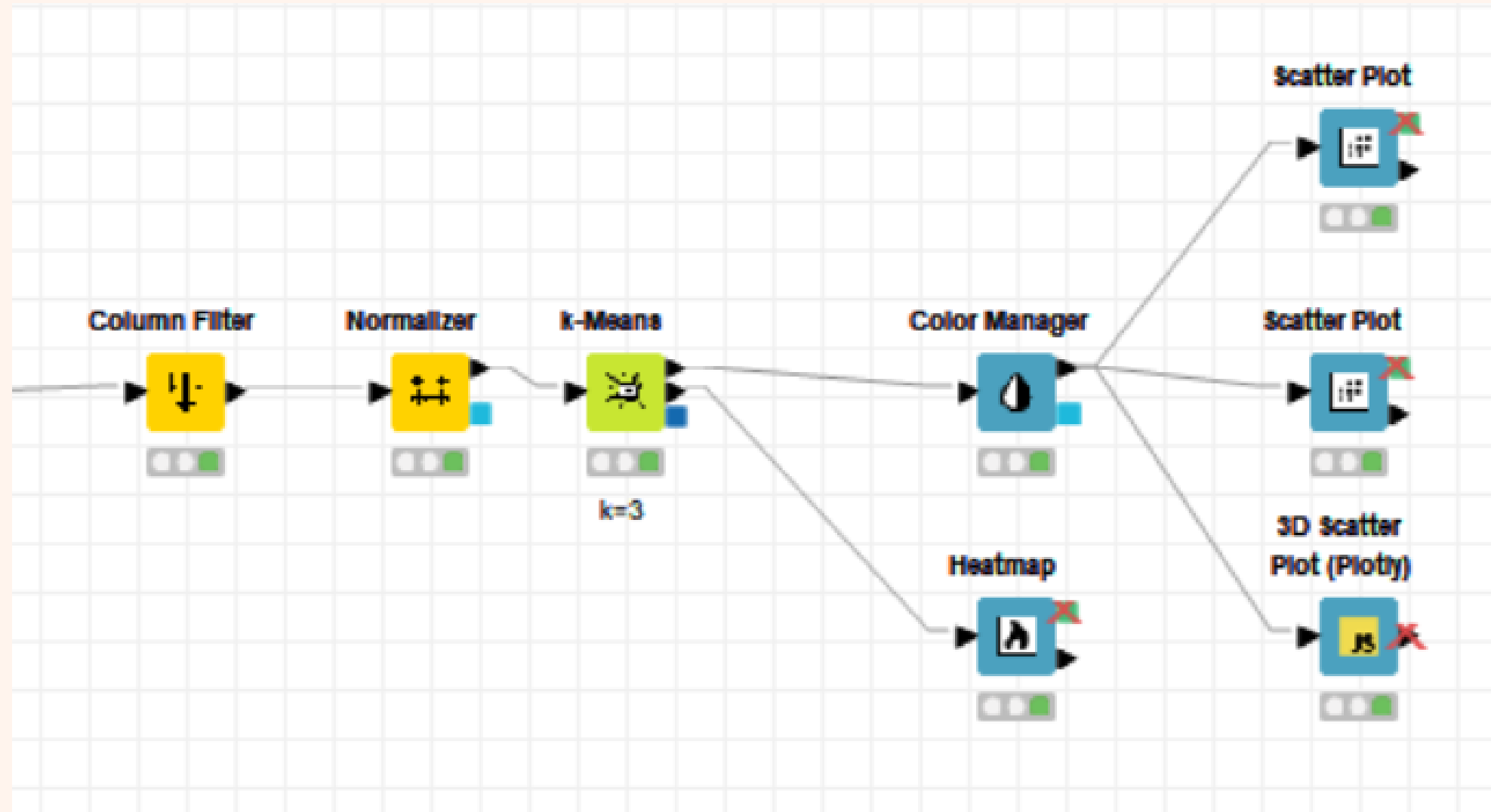
Rules	Supp	Conf	Lift
{Room Type and VIP Type =B, Suite} ==> {Meal Type=H/B}	0.01	0.86	1.08
{Room Type and VIP Type =B, Premium} ==> {Meal Type=H/B}	0.02	0.9	1.08

# ►► Clustering

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

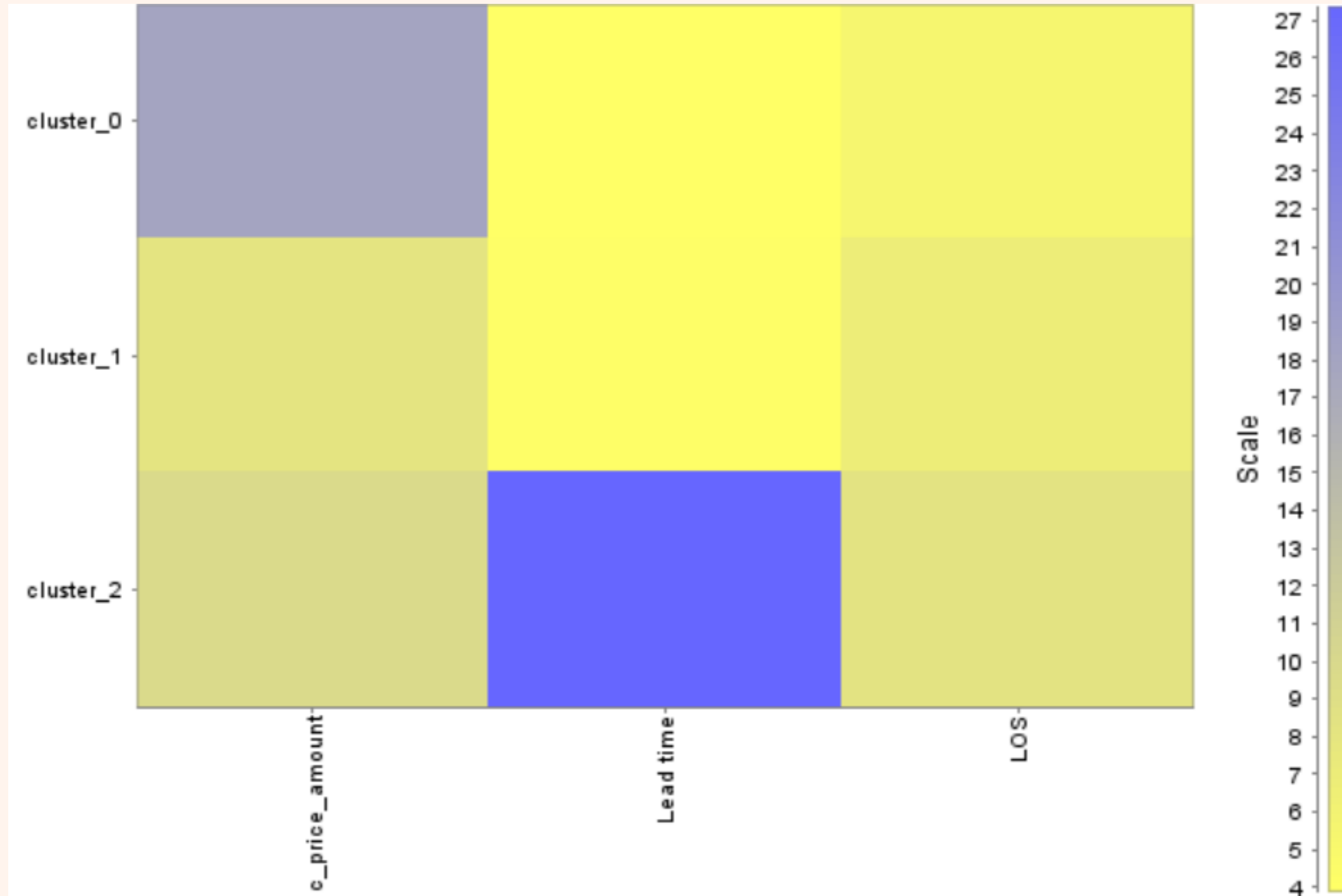


# ►► Clustering

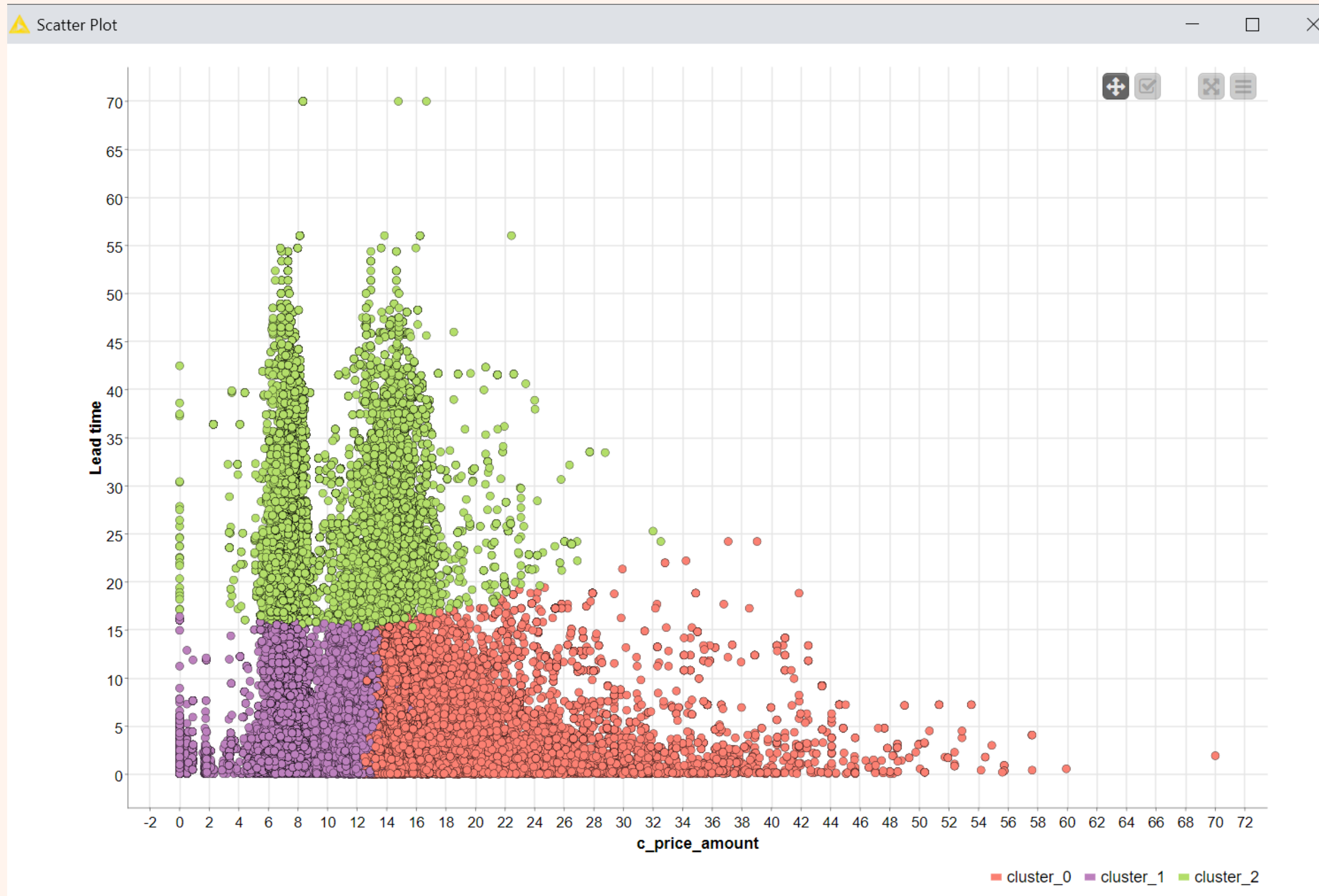


Row ID	<span>D</span> c_price...	<span>D</span> Lead time	<span>D</span> LOS
cluster_0	17.961	3.896	5.365
cluster_1	8.044	4.165	6.836
cluster_2	9.411	27.382	8.318

# ►► Clustering



# ► Clustering



The image shows a laptop screen with a dashboard interface. The dashboard contains several data visualization elements: a donut chart in the top left, a bar chart in the top right, a line chart in the bottom left, and two pie charts in the center. There are also several rectangular blocks representing text or data summaries. The word "Dashboard" is centered over the screen in a large, black, serif font. The laptop itself is a simple grey outline.

# Dashboard

The background features a collection of light gray and yellow icons. At the top center is a globe. To its left is a cloud, and to its right is a checkmark in a box. Below the globe is a laptop with a large yellow envelope icon on its screen, which has an '@' symbol on it. To the left of the laptop are two gears and a smartphone displaying an email interface. To the right of the laptop is a tablet displaying a website. At the bottom left are three overlapping yellow envelopes. At the bottom right is a cloud with a small yellow envelope on it. The text 'E-mail Campaigns' is centered over the laptop screen in a large, black, serif font.

# E-mail Campaigns



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.





# Campaign Details

## Offer E-mail (copy 09)

[Edit name](#)

☒ **To**

All subscribed contacts in the audience **Edu yousef**. [3 recipients](#)

Your 'To' field is personalized with "[FNAME]" .

[Edit Recipients](#)

☒ **From**

yousef • anonymous.art.888@gmail.com

[Edit From](#)


☒ **Subject**

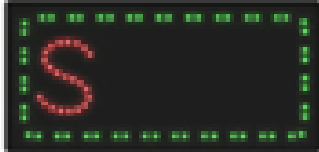
Don't Miss the Offer

Preview Text: -60% on the next reservation

[Edit Subject](#)


☒ **Content**

**GRAND HOTELS**



Hello, this email has been directed to you only because you are one of our most wonderful customers in

[Send a Test Email](#)

 We automatically add a required Referral badge to your email footer. To remove the badge, [upgrade your account](#).

☒ A plain-text version of this email will be included automatically. [Edit](#)

[Enable Social Cards](#)



- E-mail Conditions

✓ To

Who are you sending this campaign to?

Audience

Edu yousef

Segment or Tag

Group or new segment

New Segment

Paste Emails

Update Recipient Count

Contacts match 

all

 of the following conditions:

⊖

ID

is greater than

20

AND

⊖

Segment

is

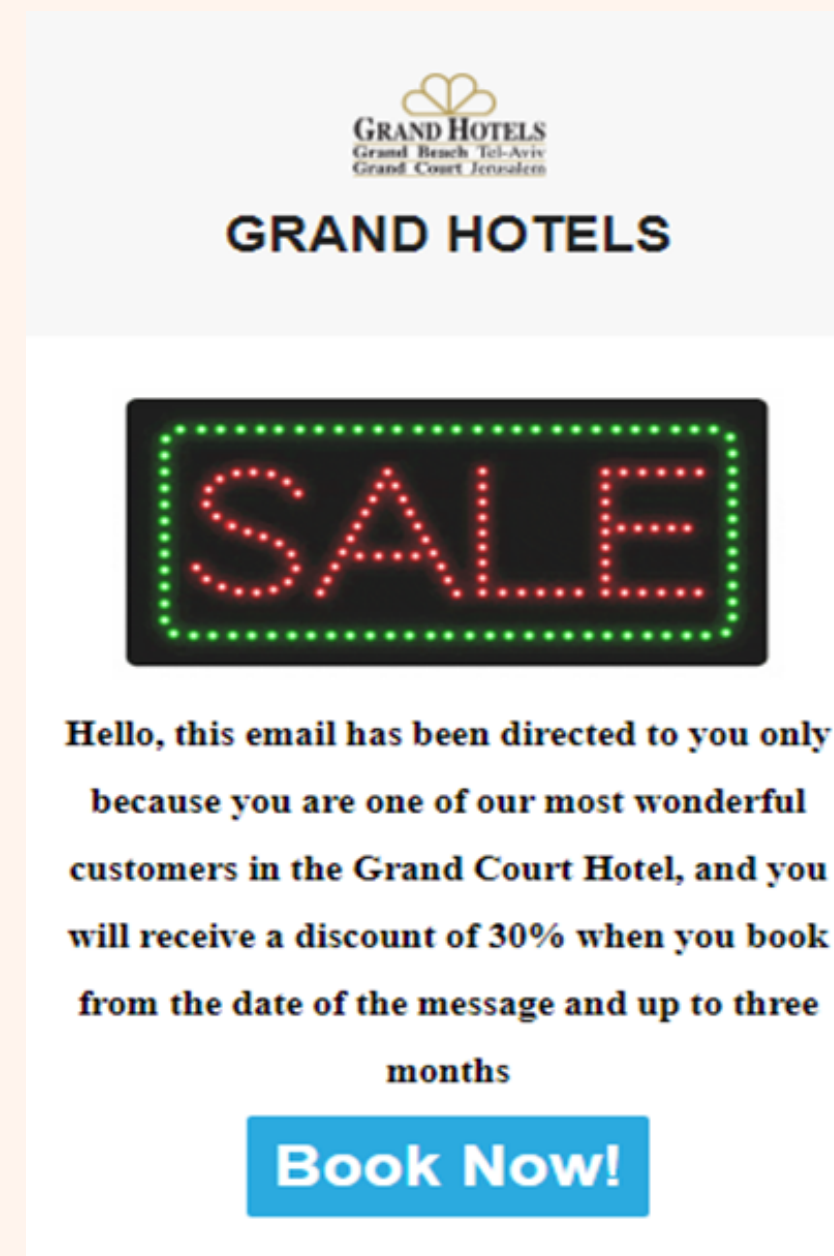
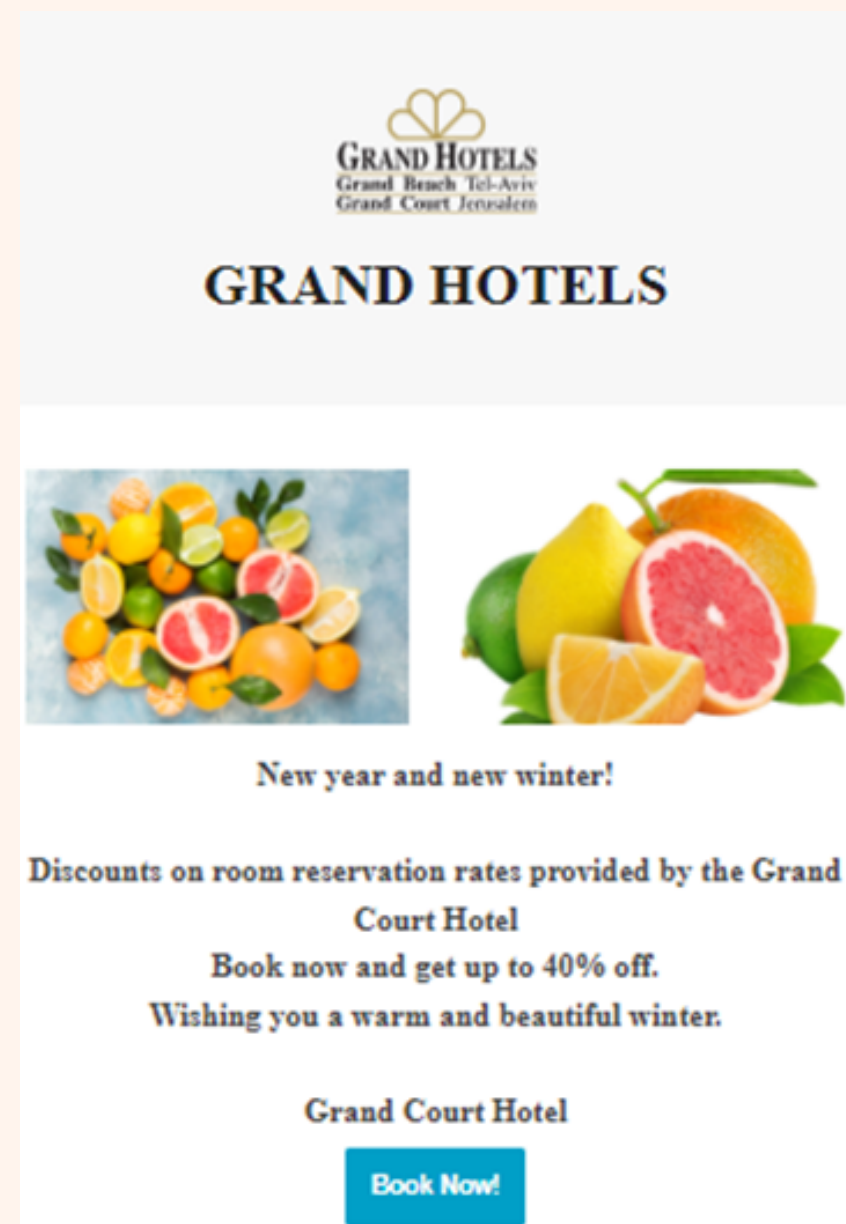
loyal

⊕

 Add

# ► Mail Chimp mailchimp

- 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

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