

# Understanding the business

of a Payment Services Platform in Colombia  
Proof of concept of a Recommender System

Team - 67

# Outline



## 01

Place to Play and Business Problem



## 02

Descriptive Insights



## 03

Approach: Interactive App



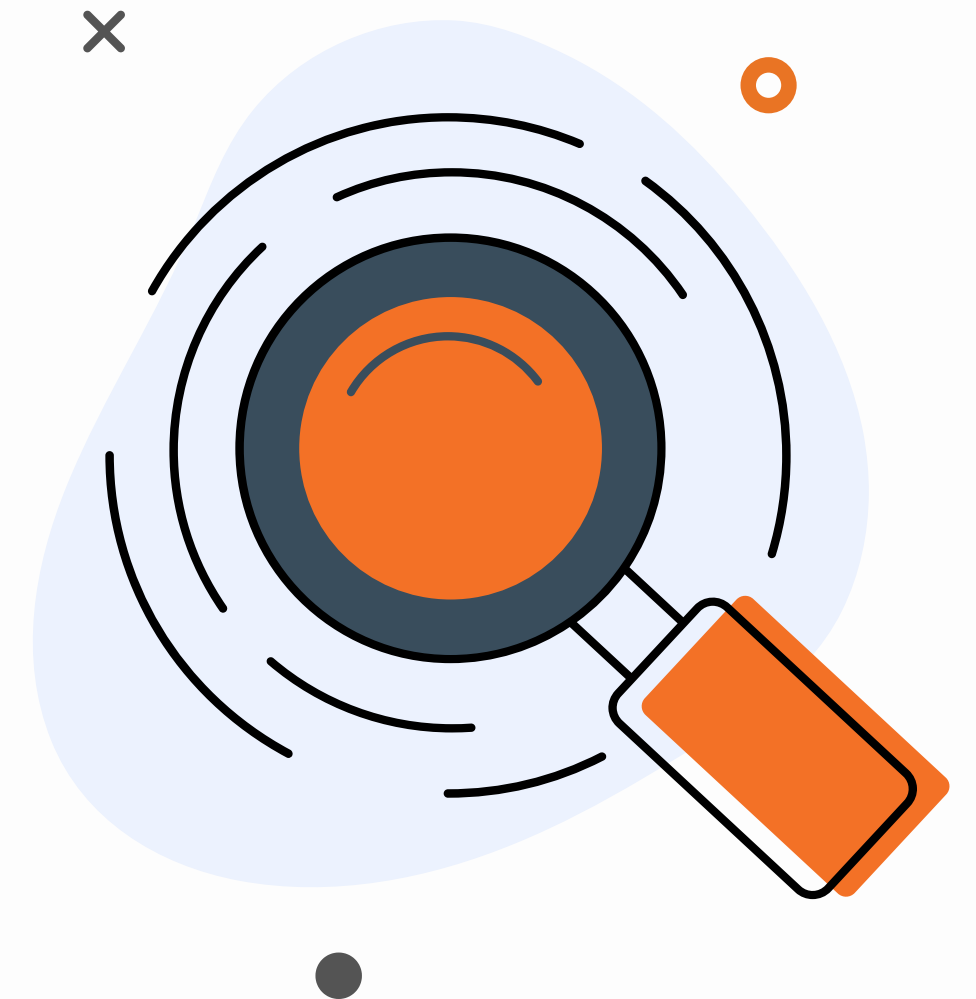
## 04

Recommender System



## 05

Conclusions and Recommendations





# 01

Place to pay

**Evertec** is a provider of payment electronic transaction services, by its platform **Placetopay** delivering more than 2 billion transactions per year

They offer integrated services besides digital transaction processing in different channels.



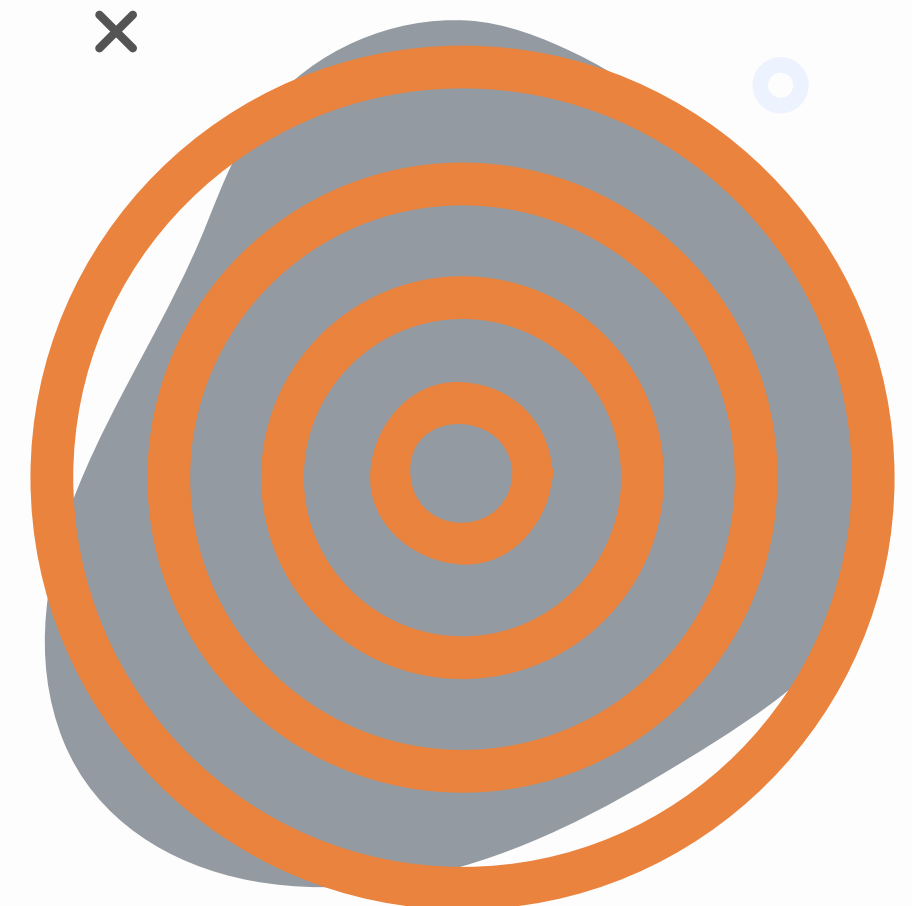
**Payments**



**Security**

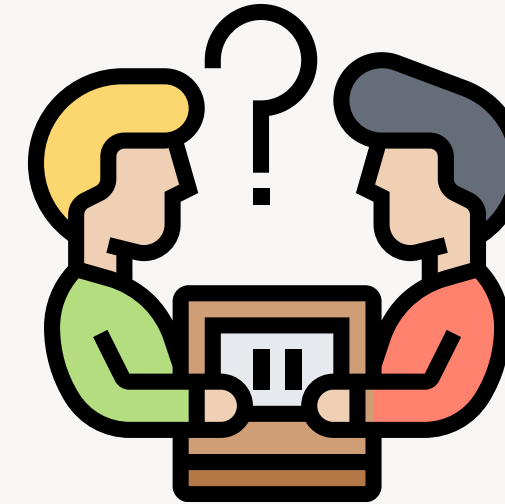


**Data Analytics**

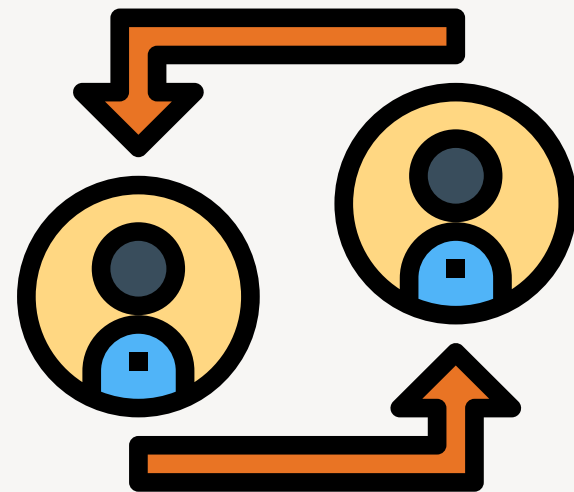


# 01

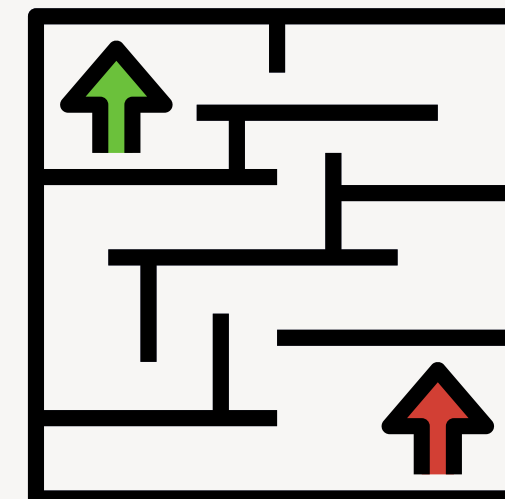
## Business Problem



Use the data collected in their platform Placetopay to understand better their visitors and users of the platform



Describe the behavior trends of the users, of the products consumed and of the merchants using Placetopay platform



Proof of concept of a Recommender System using the data available



# About the Data

01

Business Problem

Some challenges and concerns:

Tidiness

Parsing Dates

Asumptions

Structural missing  
values

matching similar but not  
identical values

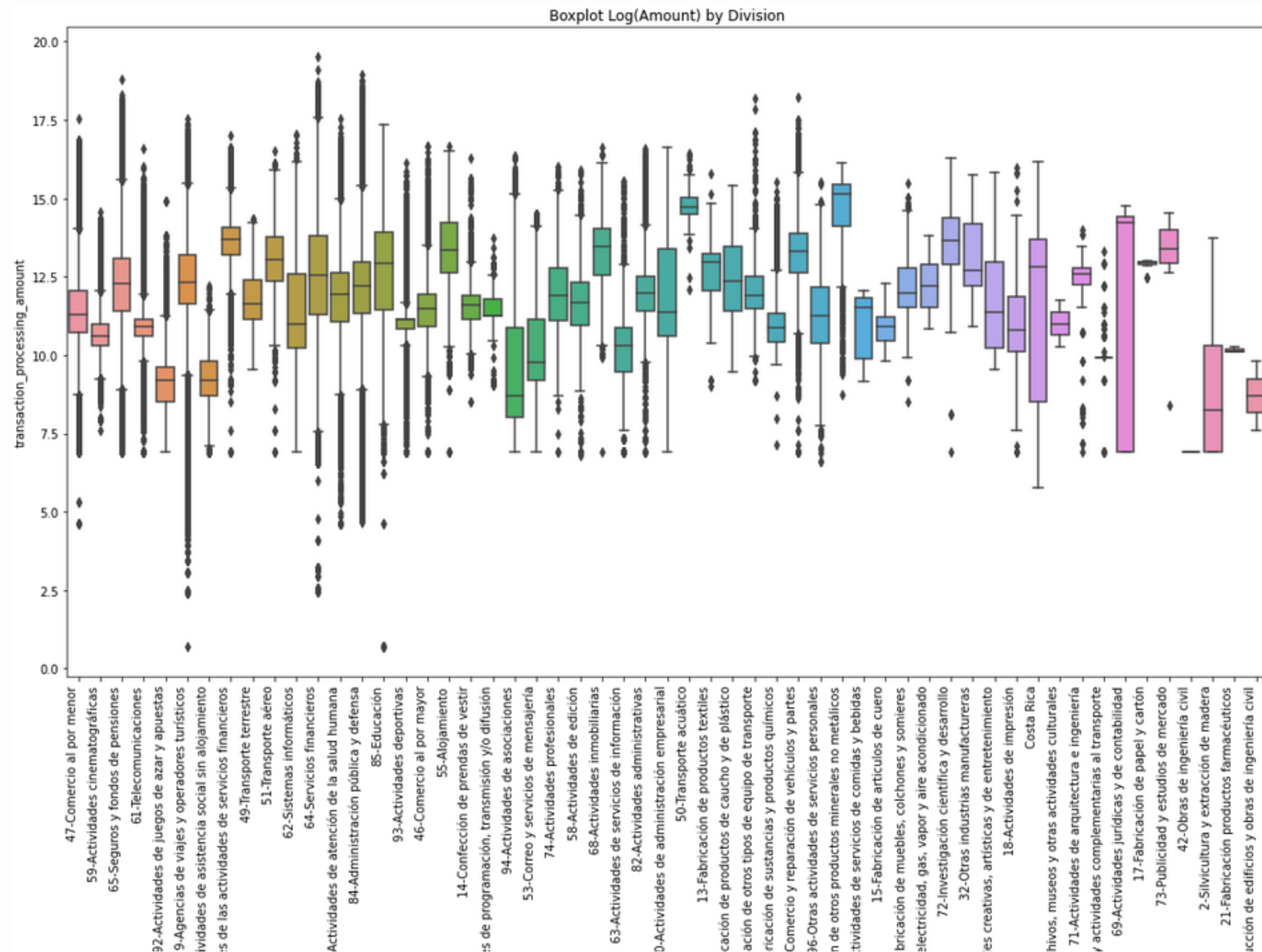
Sparsity

Ambiguity of  
Interpretation

Privacy concerns

inferences based on  
Pandemic trends





01

Business Problem

571 merchants

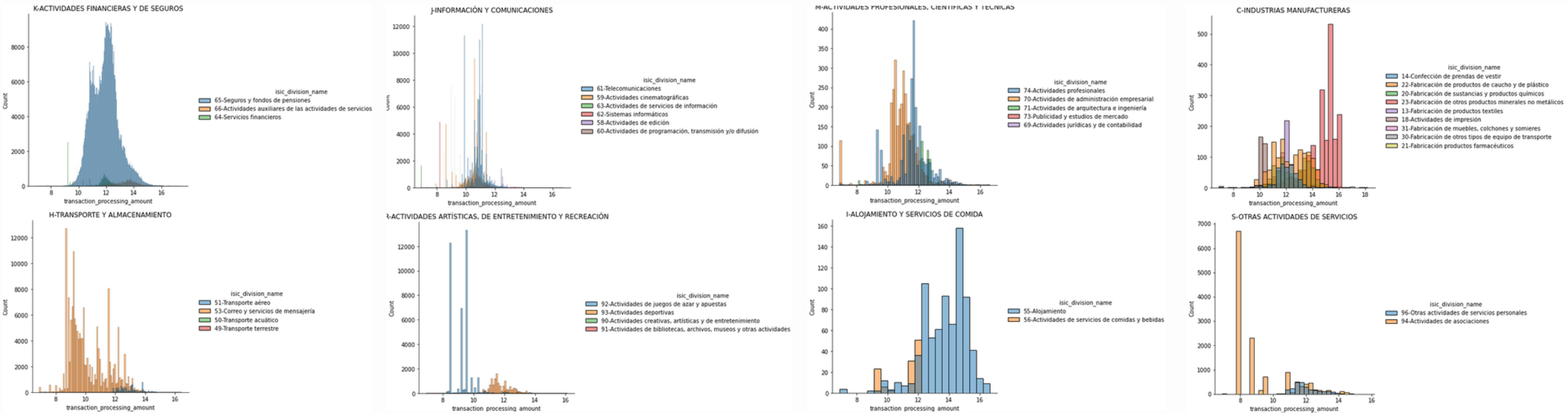
2.1 million users

12 million transactions  
over 9 months

transaction amount range  
< \$1 to \$100M

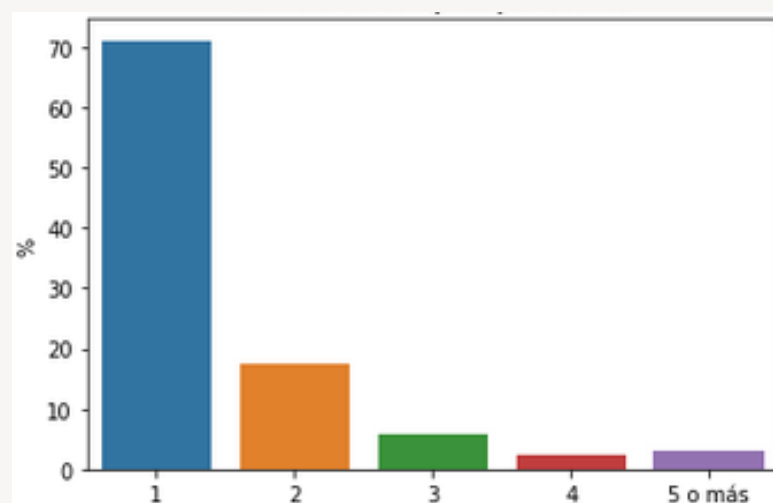


Each business sector has a distinctive footprint:



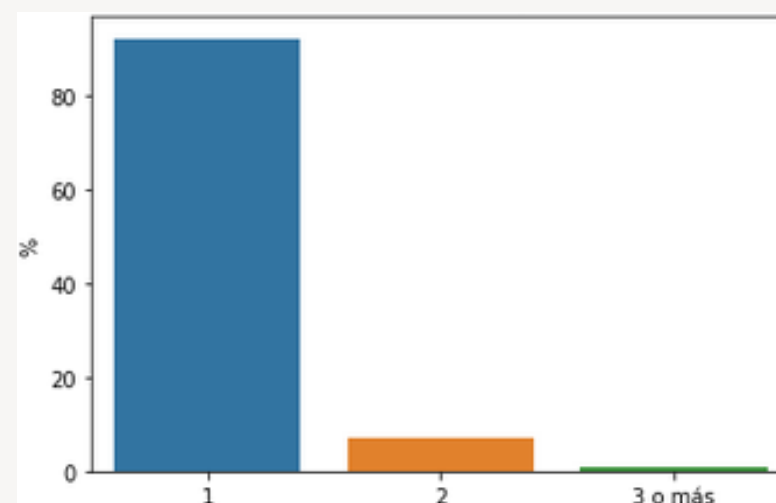
# 02

## Descriptive Insights

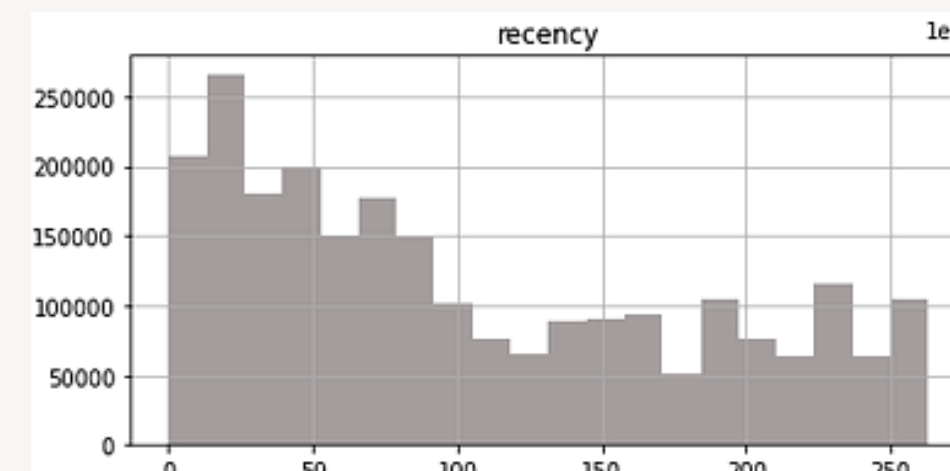


→ **70%**  
OF CUSTOMERS  
ARE SINGLE TIME  
USERS

# Findings



→ **95%**  
BUY FROM A SINGLE  
MERCHANT



→ **up to 250 days**  
BETWEEN PURCHASES

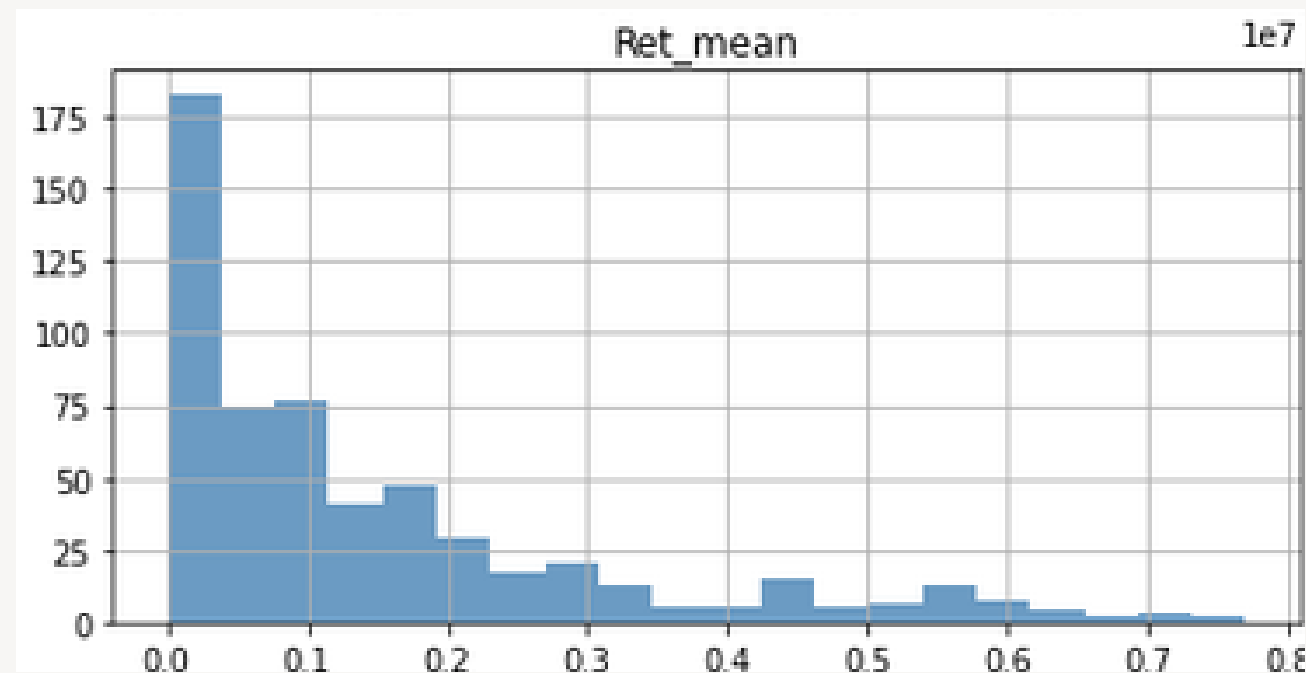




# 02

# Findings

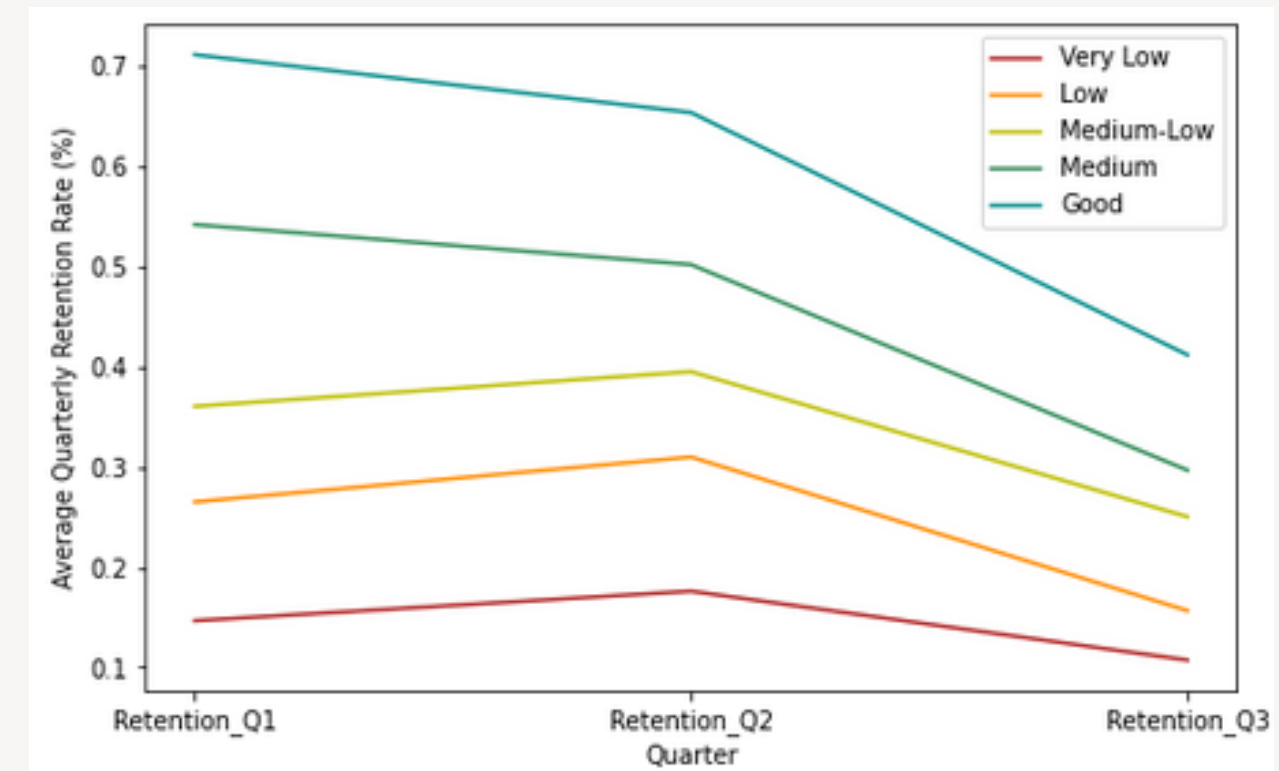
## Descriptive Insights



→ **88%**

OF MERCHANTS HAVE LESS THAN 40% QUARTERLY CUSTOMER RETENTION RATE

53% OF MERCHANTS HAVE LESS THAN 10% QUARTERLY CUSTOMER RETENTION RATE



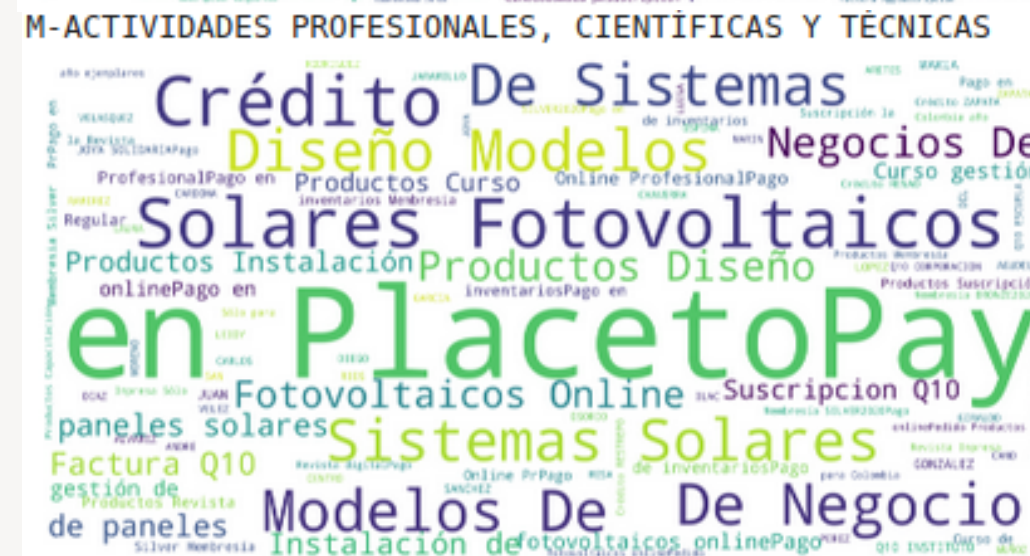
→ **94%**

OF MERCHANTS HAVE A DECREASING RETENTION RATE IN AT LEAST ONE QUARTER.

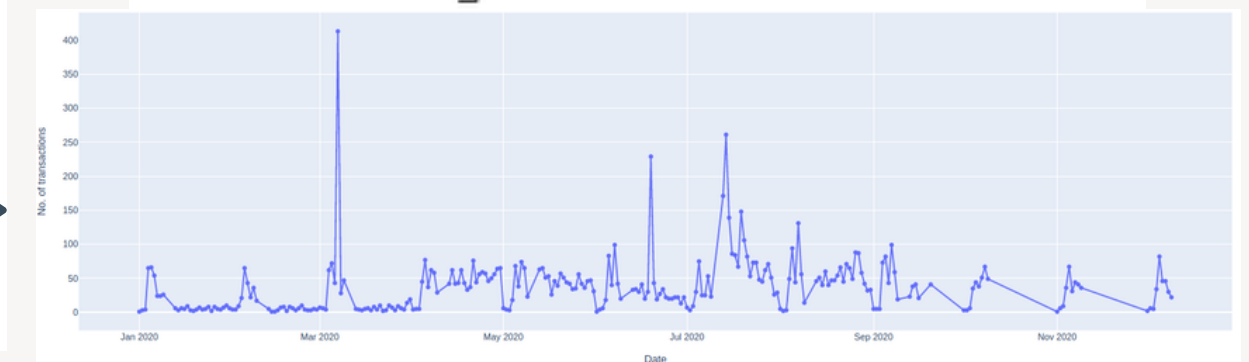
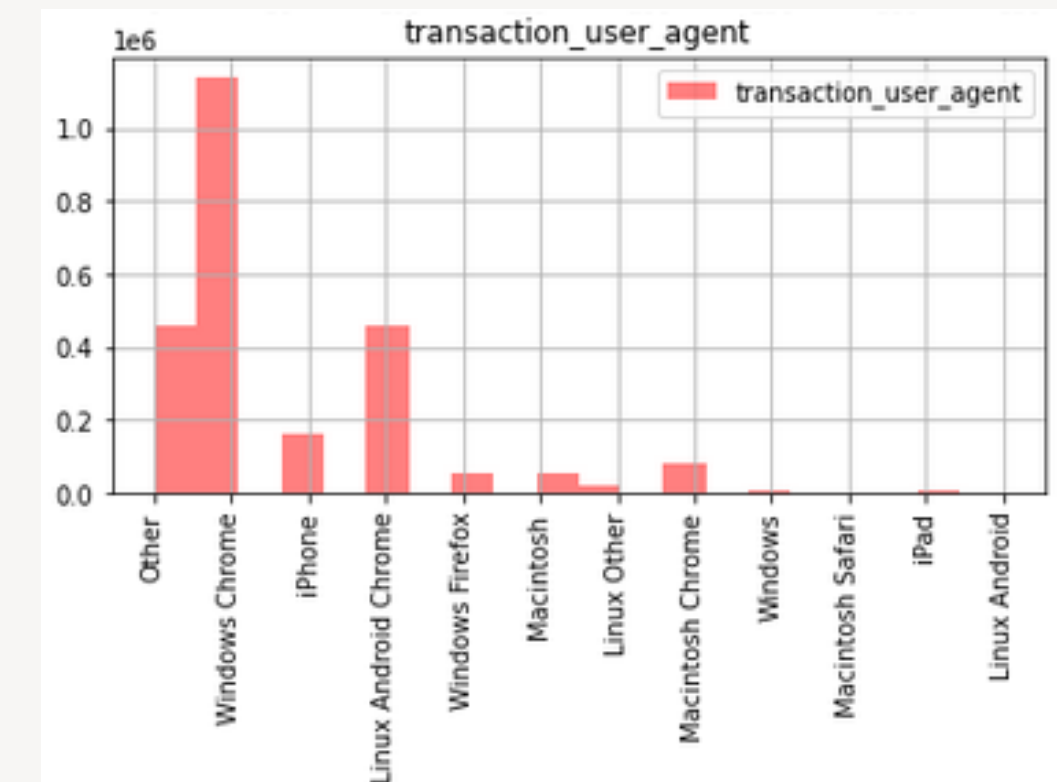
23% OF MERCHANTS ARE LOSING CONSISTENTLY THEIR CUSTOMER BASE



## Descriptive Insights



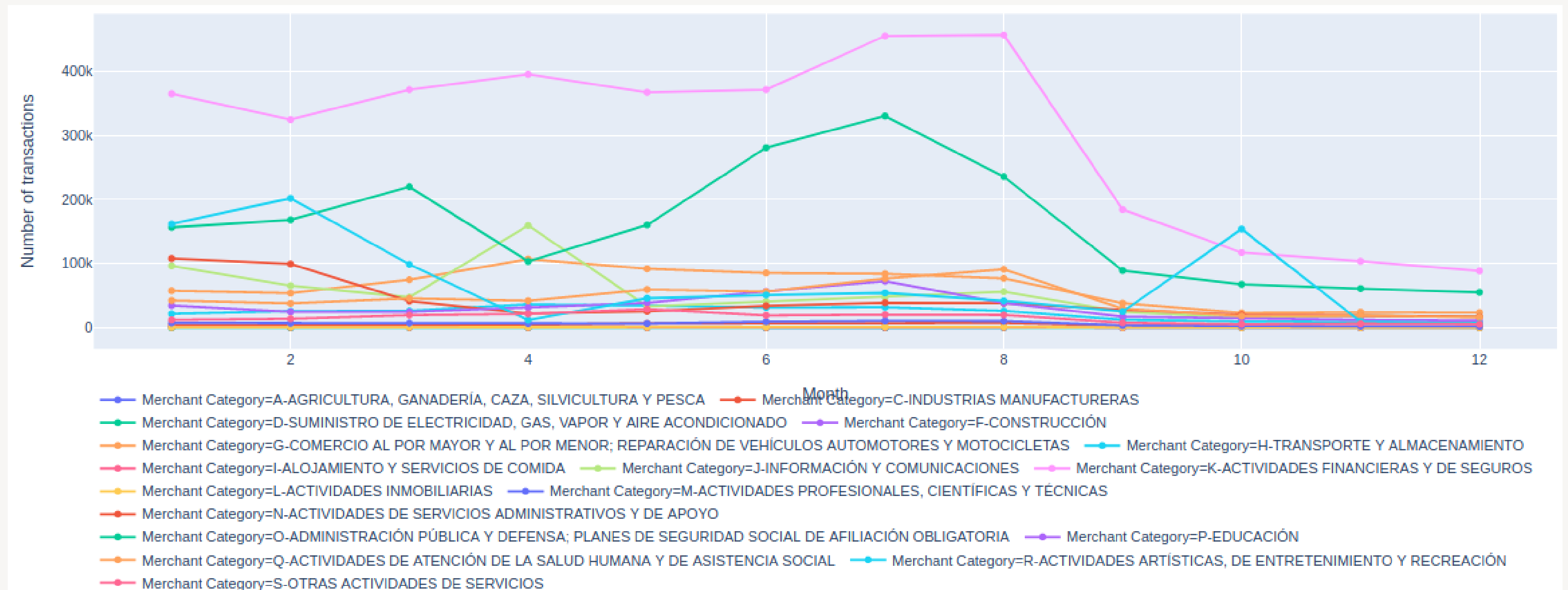
# Text Analysis



# 02

## Descriptive Insights

## Time Series by business sector



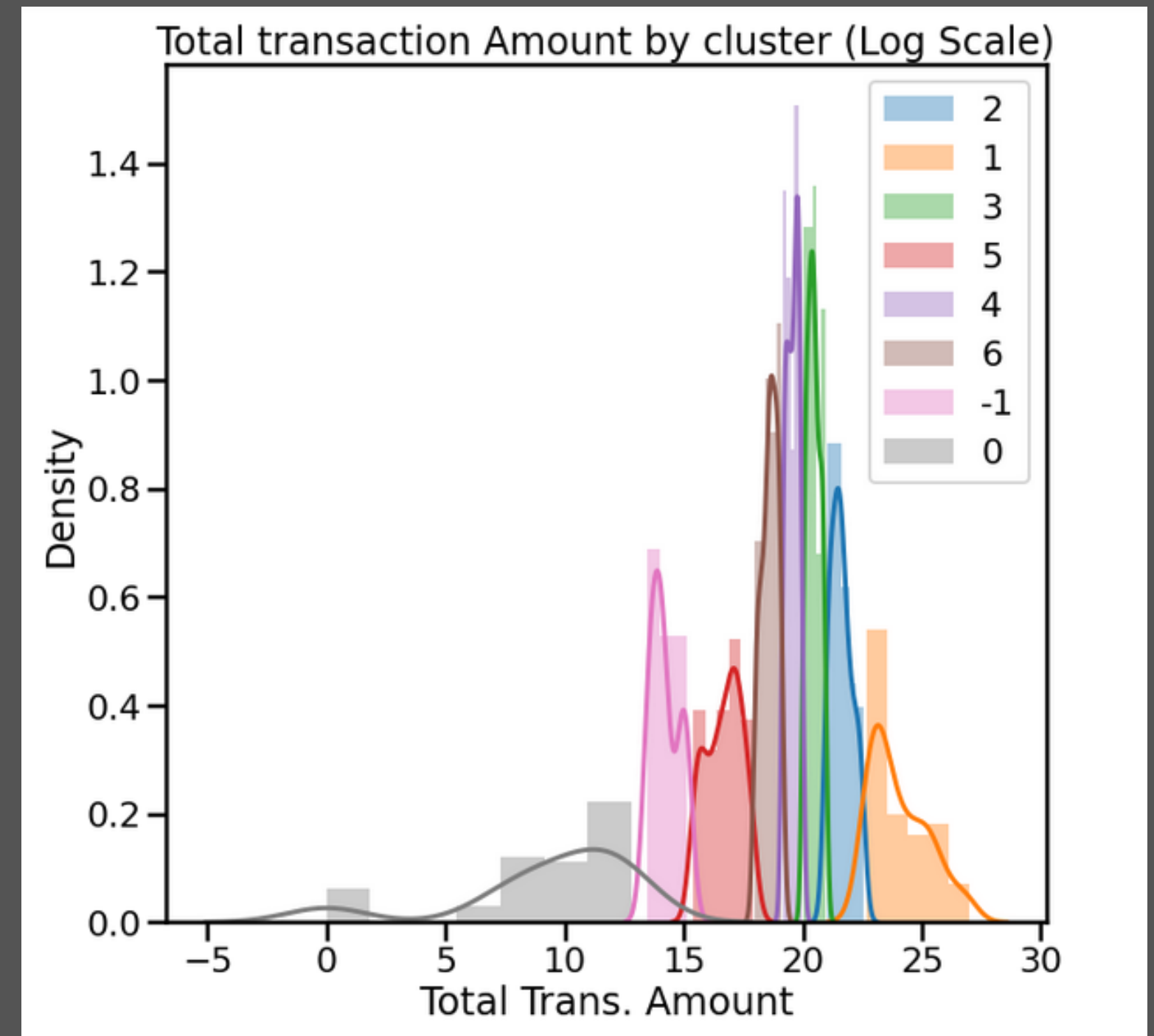
# 02

## Clusterization of merchants

Descriptive Insights

Using  
K-means algorithm,  
UMAP: Uniform Manifold Approximation and Projection  
HDBSCAN

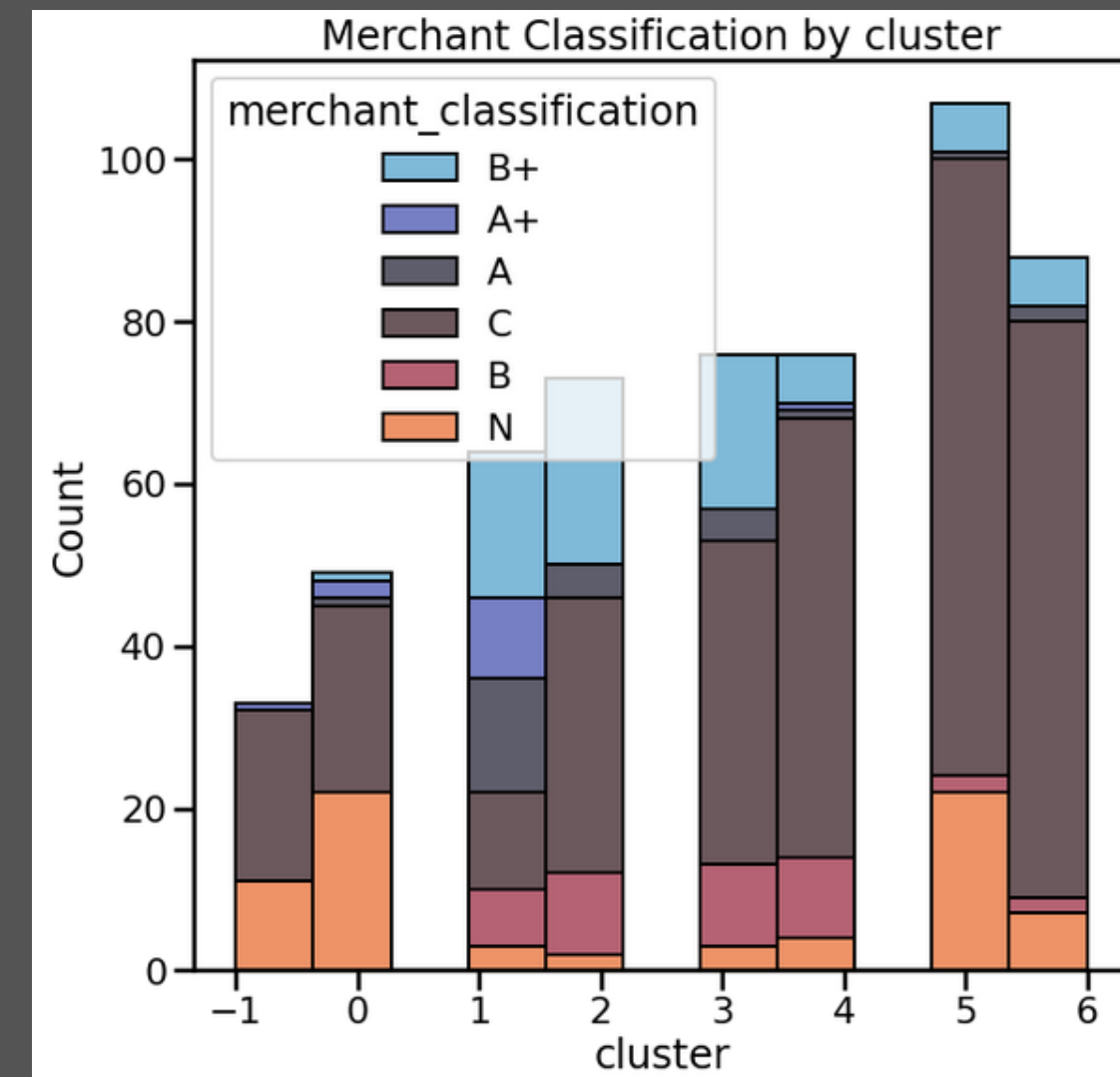
Silhouette Coefficient reached: 0.70



# 02

## Clusterization of merchants

### Descriptive Insights





# 03 - Solution

Interactive Approach



## Describe

Accurately and extensively



## Profiling

Users and trends

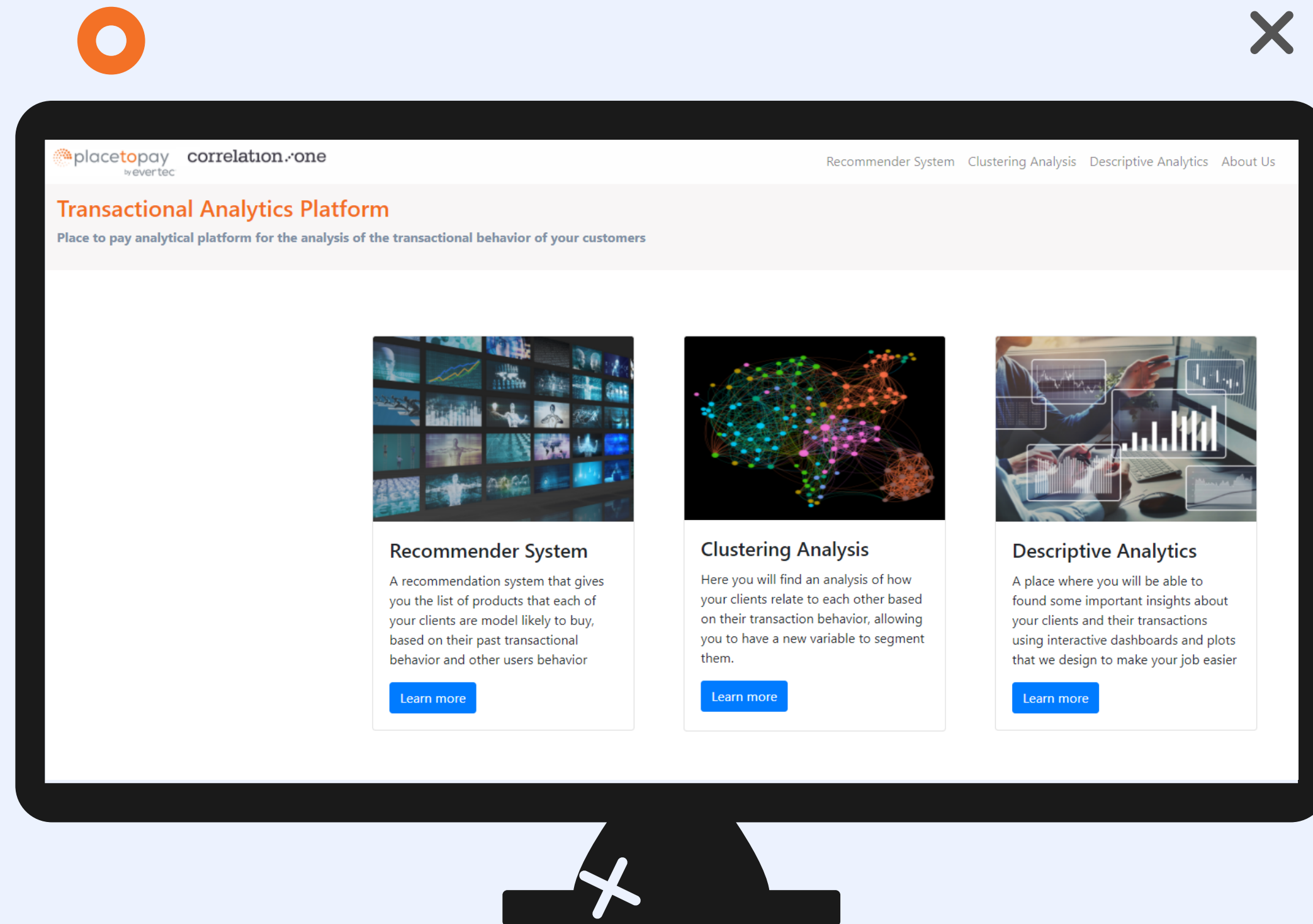


## Recommend

products and services that add value



# Interactive Application



## Transactional Analytics Platform

Place to pay analytical platform for the analysis of the transactional behavior of your customers



### Recommender System

A recommendation system that gives you the list of products that each of your clients are model likely to buy, based on their past transactional behavior and other users behavior

[Learn more](#)



### Clustering Analysis

Here you will find an analysis of how your clients relate to each other based on their transaction behavior, allowing you to have a new variable to segment them.

[Learn more](#)



### Descriptive Analytics

A place where you will be able to found some important insights about your clients and their transactions using interactive dashboards and plots that we design to make your job easier

[Learn more](#)





Merchant

Division

Category

Transaction

Payment Method

All

All

All

Division

(Blank)

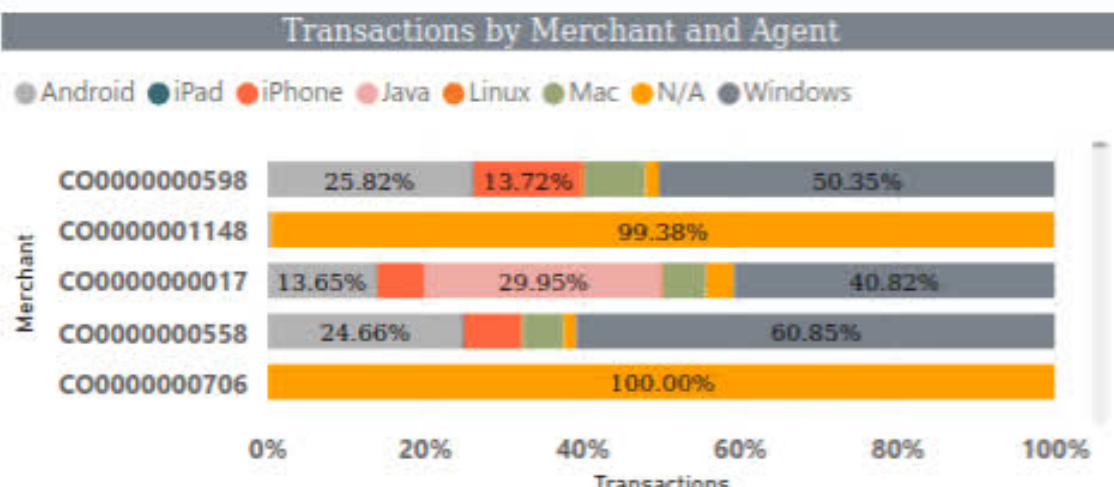
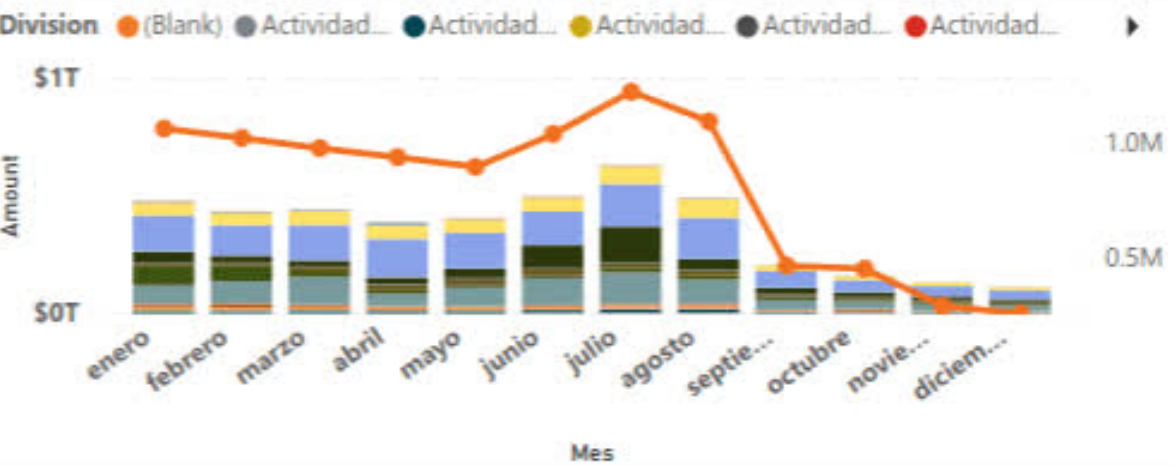
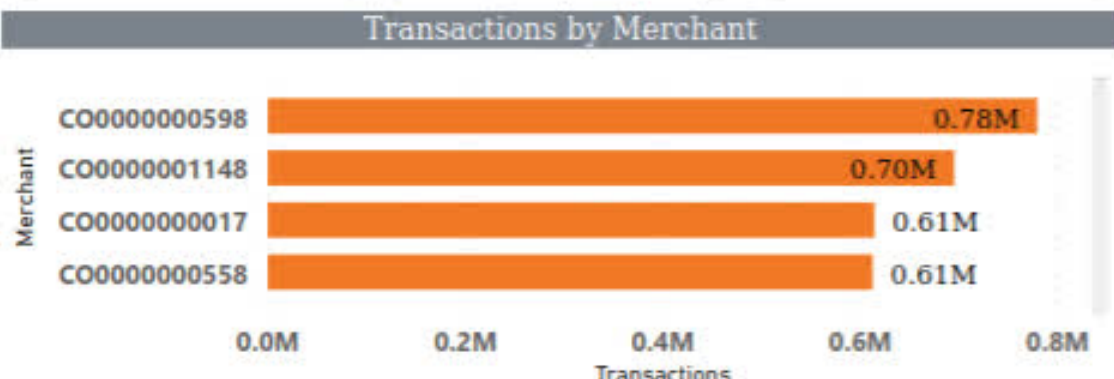
Actividad...

Actividad...

Actividad...

Actividad...

Actividad...



2.71M  
Customers



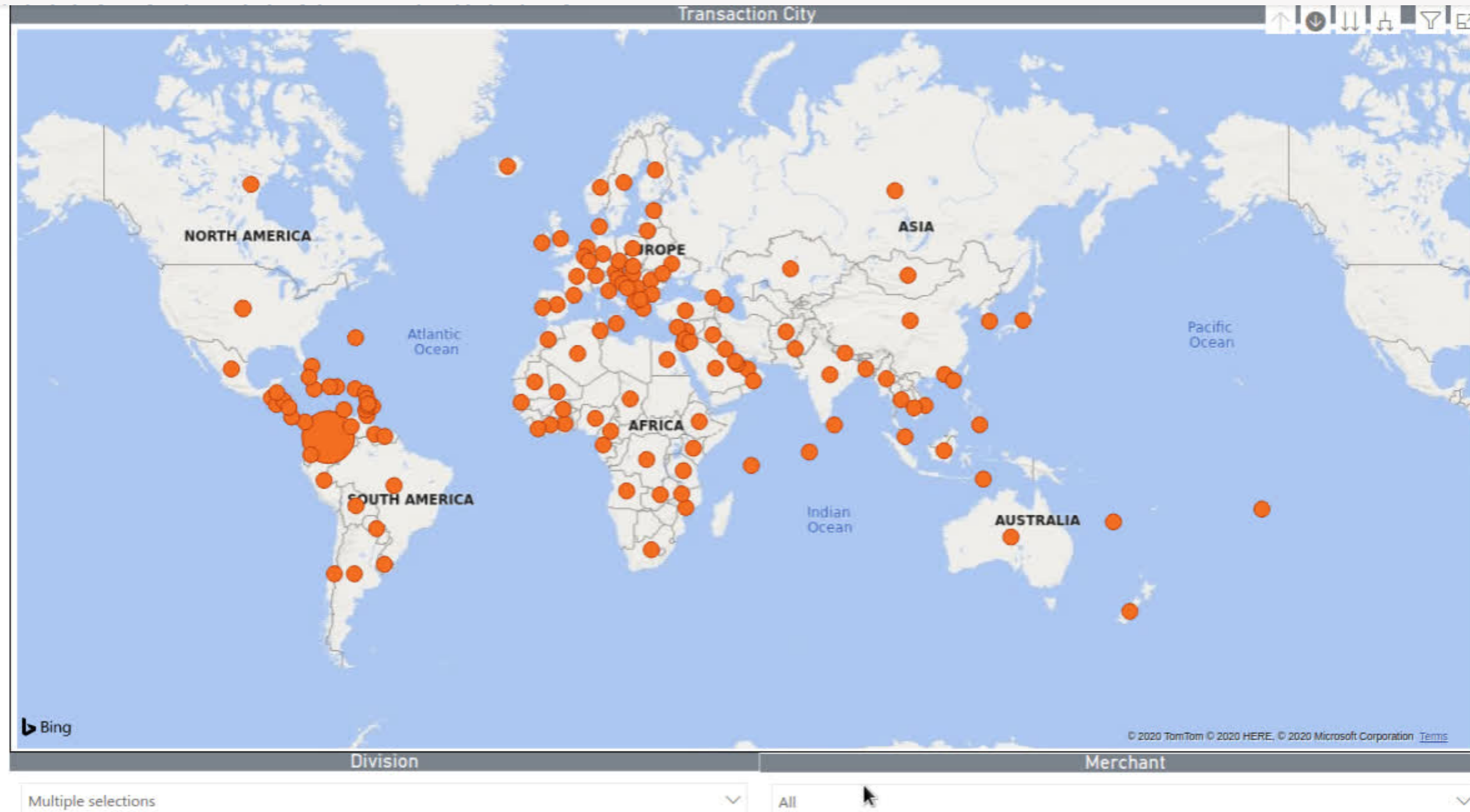
\$452.15K  
Amount per Transaction

# Where are your customers?

You can select a specific merchant or  
any merchant category to investigate  
where and how many customers are



## Transactional Analytics Platform



Geospatial information

# Given a customer

we calculate the best 5 merchants to recommend

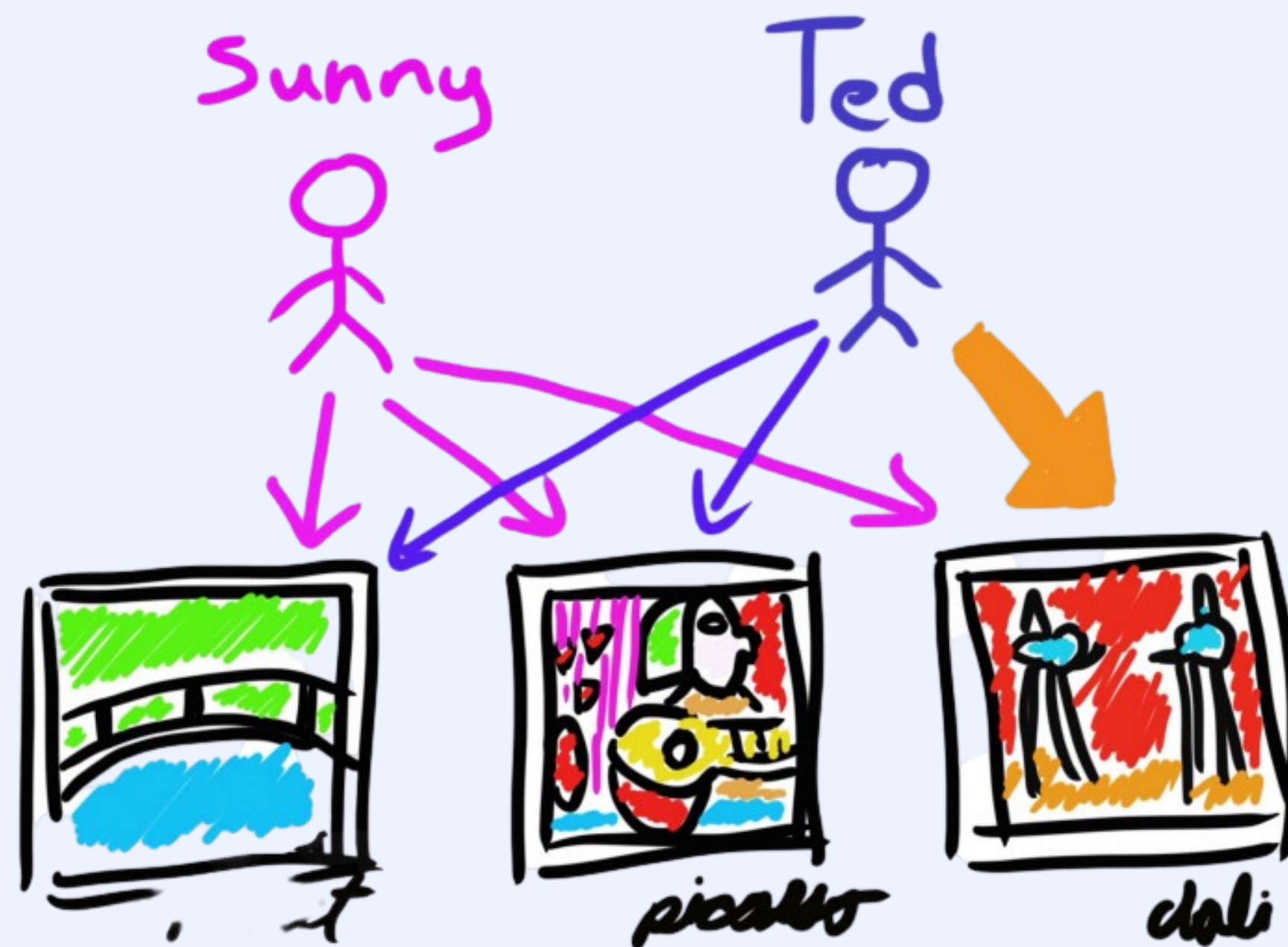


Using Collaborative Filtering, a similarity score is calculated as similarity between merchants, based on its customers



## Collaborative Filtering

Recommender system





## Recommender System

Recommendation system that gives you the list of products that each of your clients are model likely to buy

Type payer id

payer id

Submit

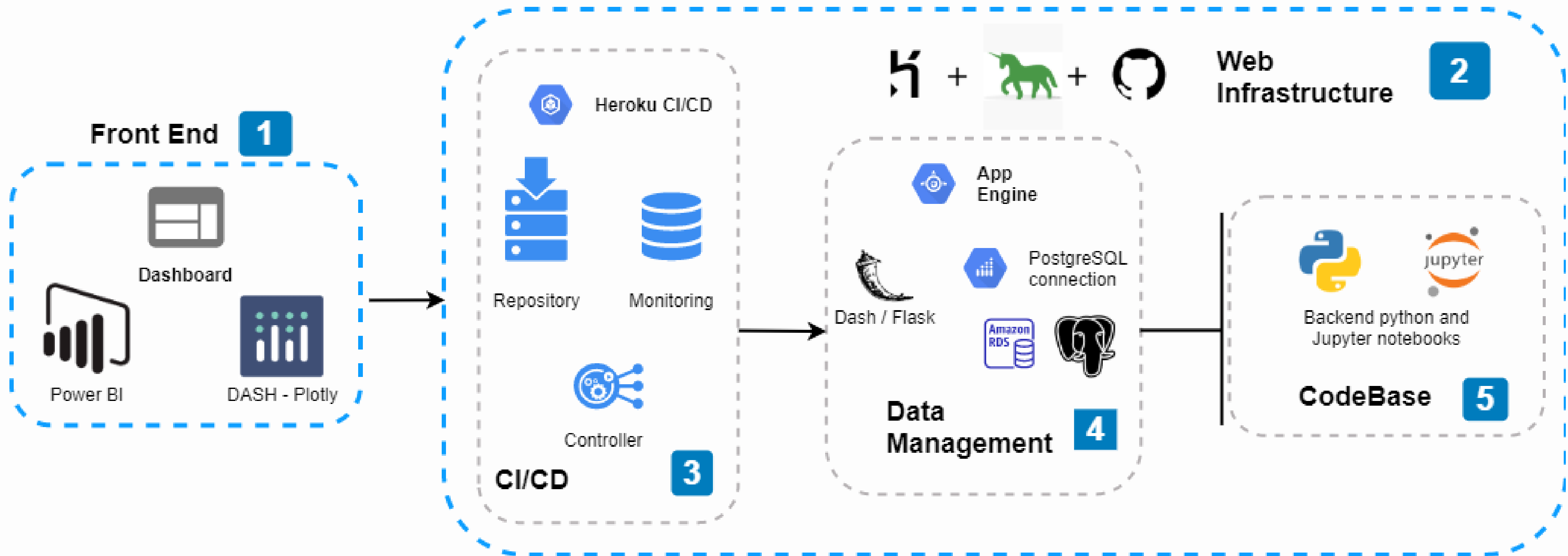


El futuro digital  
es de todos

MinTIC

correlation.:one

Recomender System



There is no modelling that can replace an indepth Exploration

Before modeling and machinel learning,  
Some cleaning has higher impact

How to deal with extreme uncertainty?

Thanks for letting us play with your data!.





# Team - 67



Edward Ortiz  
Product Manager | SWE - ML |



Ximena Astrid Borda Casallas  
Statistician



Diego Alvarez Monroy  
Computer and Telecommunications Engineering



Luis Gustavo Maldonado Archila  
Mechatronics Engineer



Luis Hernando Vanegas  
Statistician



Juan D. Arboleda A.  
Industrial engineering



Daniel Salazar Castañeda  
Finances and international relations

# Interactive Dashboard



<https://github.com/edward0rtiz/team67-ptp>



<https://t67-ptp-recosystem.herokuapp.com/>

