

CUSTOMER MARKETING ANALYTICS

Segmentation and Prediction

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Part of Business Intelligence Bootcamp at 





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ABOUT *BUSINESS*

iFood is online food ordering and delivery services in Brazil. They sell products from 5 major categories: wines, rare meat products, exotic fruits, specially prepared fish and sweet products. These can further be divided into gold and regular products. The customers can order and obtain products through three sales channels: physical stores, company's website, and catalogs.



The company had solid revenues in the past three years. But the profit growth prospects for the next three years are not promising



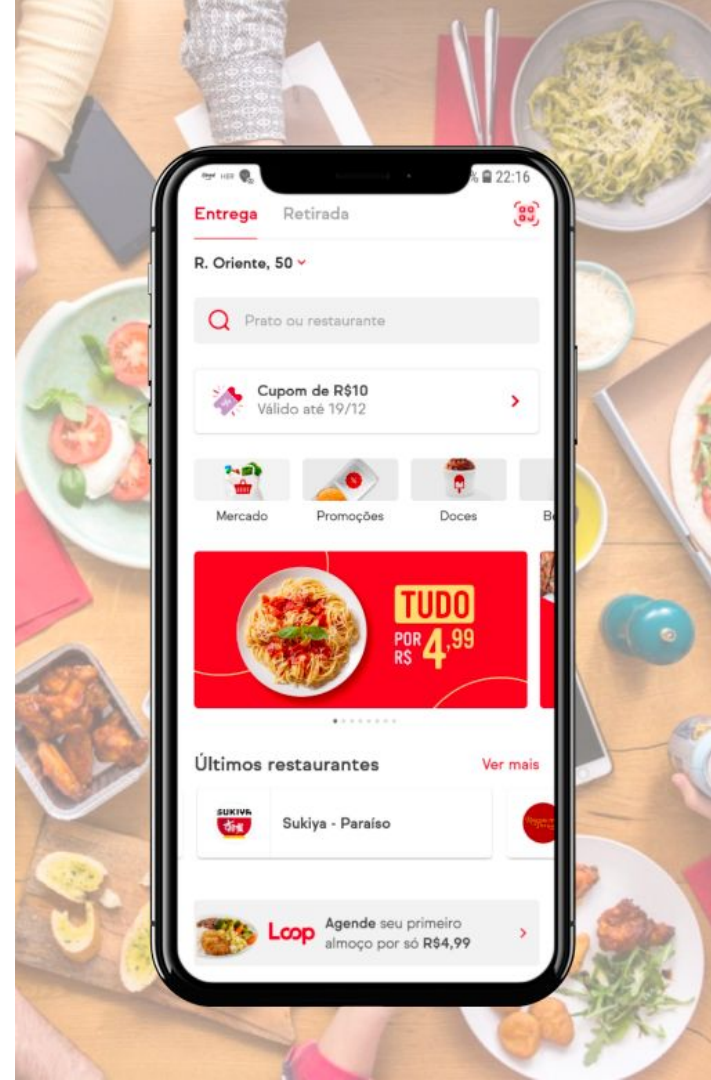
PROJECT OBJECTIVES

1

Segment customers to organize them into specific groups based on shared characteristics, behaviors, or preferences

2

Build a model that predicts customer response to the next marketing campaign



ABOUT DATA

The sample dataset consists of 39 features divided into socio-demographic features and purchasing behavior of approximately 2,205 contacted customers. It also contains labels for customers who responded to the campaign by buying the product

Customer Profile

- Age
- Marital
- Education
- Income
- Kidhome
- Teenhome
- Customer_Days
- Recency
- Complain

Product Preferences

- MntWines
- MntFruits
- MntMeatProducts
- MntFishProducts
- MntSweetProducts
- MntRegularProds
- MntGoldProds

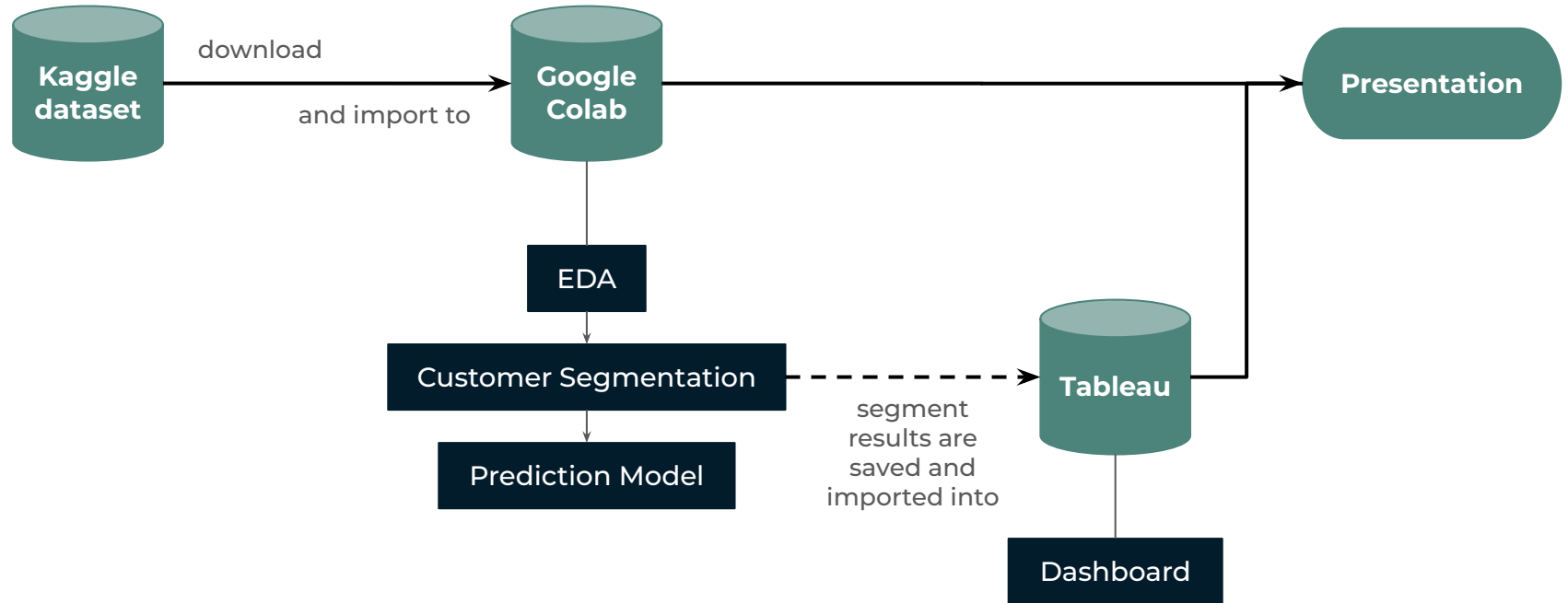
Channel Performance

- NumWebPurchases
- NumCatalogPurchases
- NumStorePurchases
- NumWebVisitsMonth

Campaign Performance

- AcceptedCmp1
- AcceptedCmp2
- AcceptedCmp3
- AcceptedCmp4
- AcceptedCmp5
- Response

PROCESS FLOW





01 |

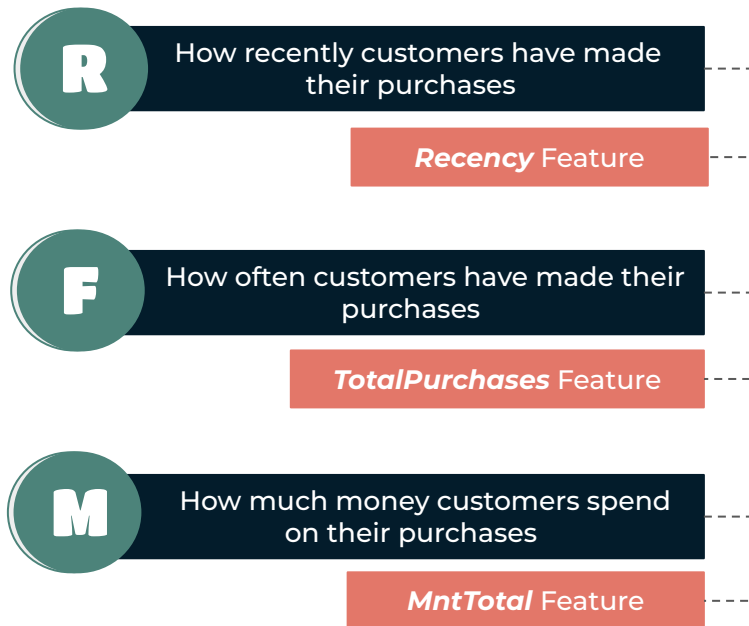
CUSTOMER *SEGMENTATION*

ABOUT

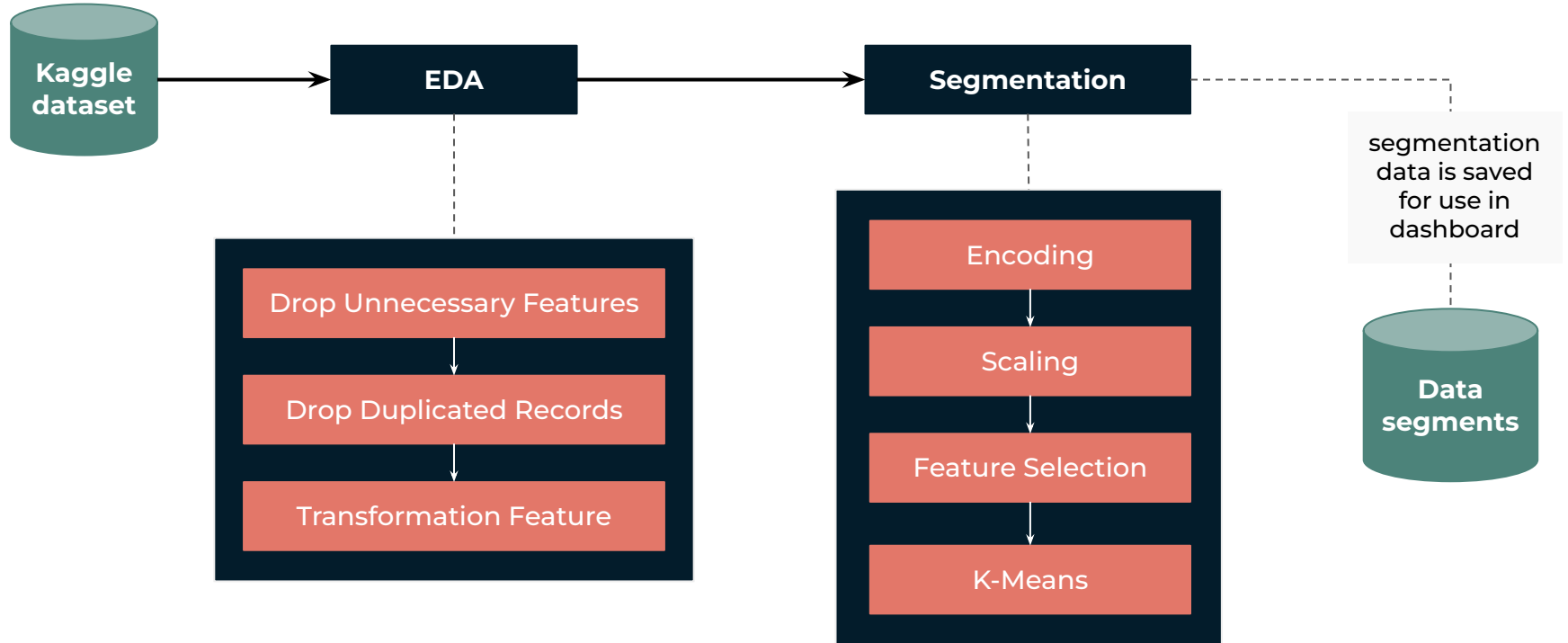
CUSTOMER SEGMENTATION

Customer segmentation is the process of dividing customers into groups based on common characteristics so companies can market to each group effectively and appropriately.





In this case, the RFM principle is used for feature selection. RFM analysis is a customer behavior segmentation technique that focuses on 3 main aspects of customers' transactions.



CUSTOMER *SEGMENTATION* PROCESS



CUSTOMER *SEGMENTS*

Segments		Description
	Champions	Customers who purchased recently, order often and spend the most. These customers are iFood's most valuable customers
	Rookies	Customers who bought most recently but only made small purchases. These customers may have just started using iFood's products
	Can't Lose Them	Customers who have made frequent, high-value purchases in the past but haven't purchased recently
	Hibernating	Customers who previously made small and infrequent purchases but have not purchased anything in a long time

DISTRIBUTION OF EACH SEGMENTS

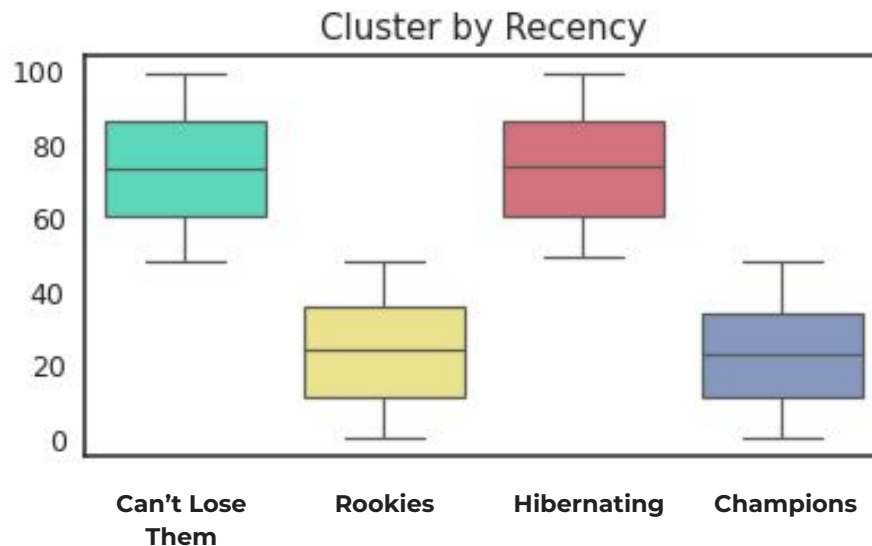


- There are more *Hibernating* and *Can't Lose Them* customers than *Champions* customers. This indicates that **company** is **having difficulty retaining customers**
- Companies need to find strategies to overcome this challenge because retaining customers will be much cheaper than acquiring new customers to replace lost customers

RFM OF EACH SEGMENTS

Recency

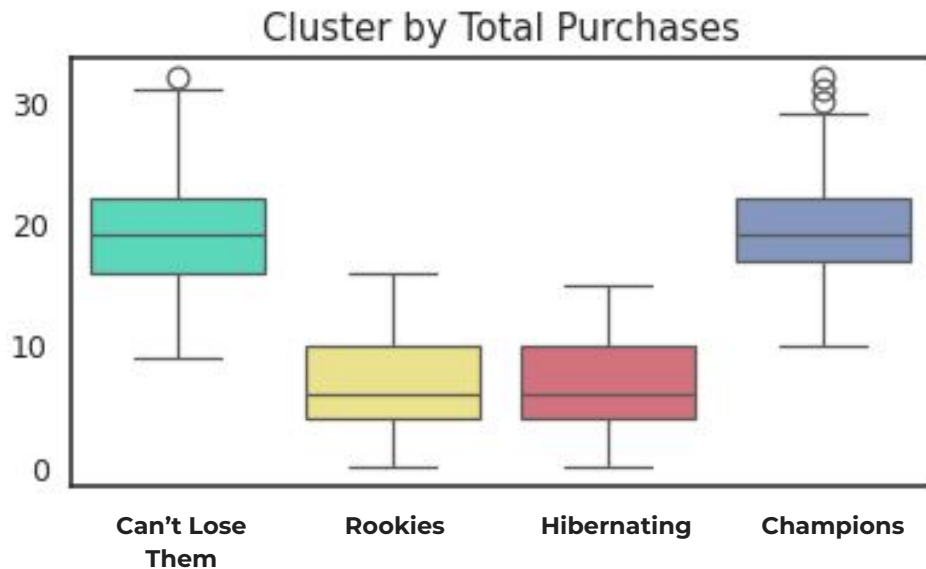
- **Can't Lose Them** and **Hibernating** are customers who have not made a purchase for a long time with the last purchase being around 73 days ago
- **Rookies** and **Champions** are customers who have recently made purchases with the last purchase being around 22 days ago



RFM OF EACH SEGMENTS

Frequency

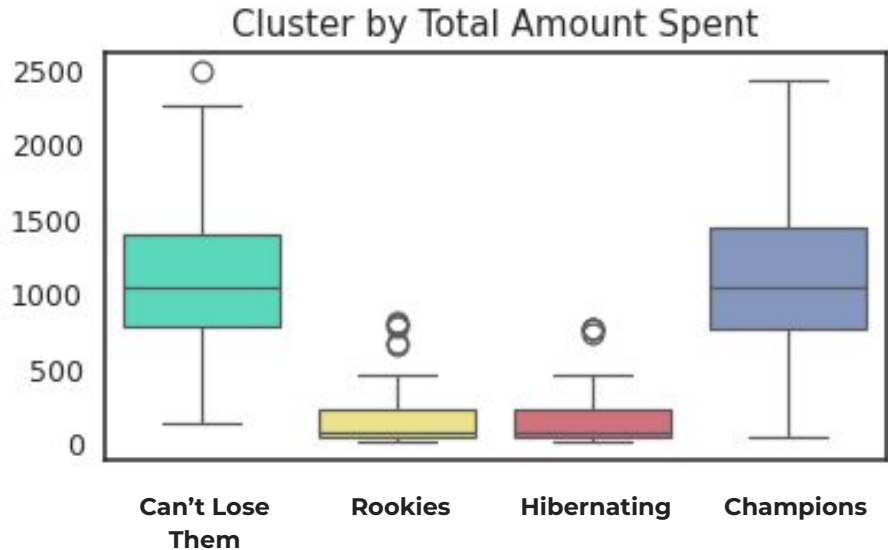
- **Can't Lose Them** and **Champions** are customers who buy frequently with an average of 19 purchases
- **Rookies** and **Hibernating** are customers who buy frequently with an average of 7 purchases



RFM OF EACH SEGMENTS

Monetary

- ***Can't Lose Them*** and ***Champions*** are customers who spend more money with the average total money they spend around R\$ 1110
- ***Rookies*** and ***Hibernating*** are customers who spend less money with the average total money they spend around R\$ 130



SEGMENTS *DEEP DIVE*

Complain



The users who submitted the **most complaints** came from the **Rookies** segment, with 7 complaints or around 36.84% of the total complaints received by the company

SEGMENTS *DEEP DIVE*

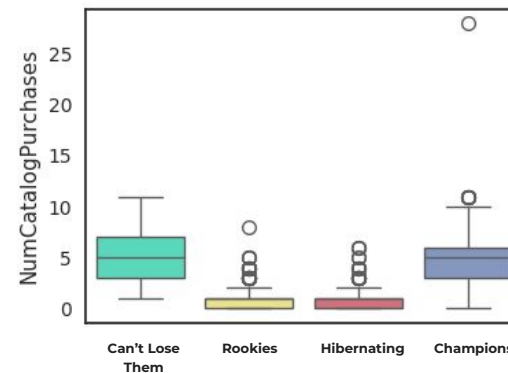
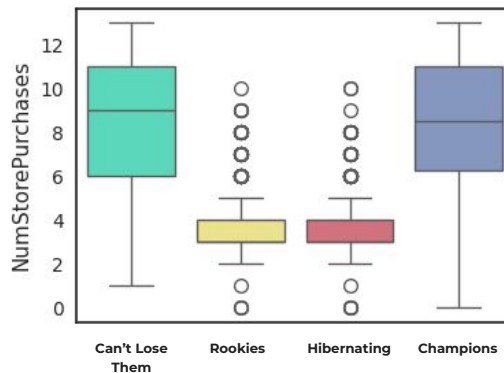
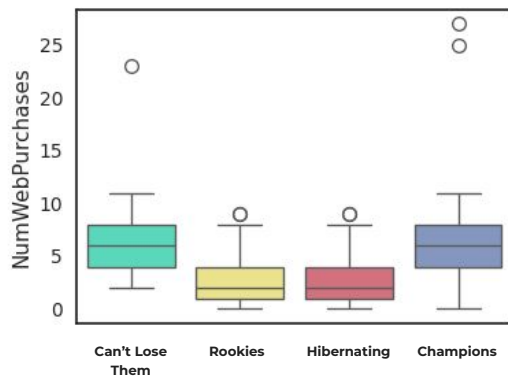
Dependent Status



Most users with dependents were in the ***Rookies*** and ***Hibernating*** segments, with more than 30% of total users for each segment

SEGMENTS *DEEP DIVE*

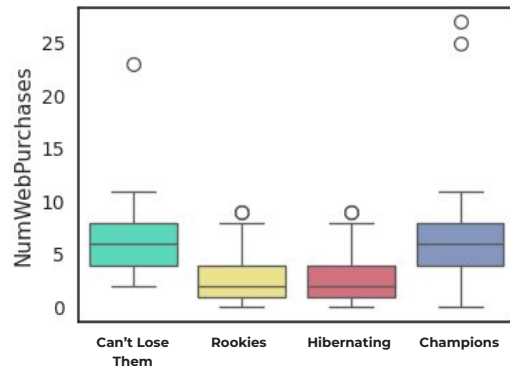
Channel Performance



- The **Store** channel is the channel with the **best performance**
- The **Champions** and **Can't Lose Them** segments have the **highest purchase frequency** compared to other segments in each channel

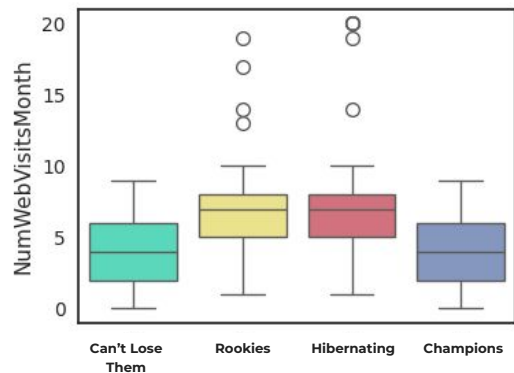
SEGMENTS *DEEP DIVE*

Web Channel Performance



Segments ***Can't Lose Them*** and ***Champions*** have a high purchase frequency on web channel but have a lower number of web visits

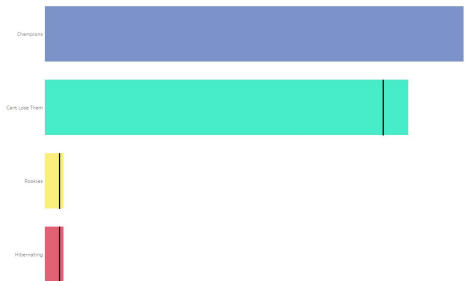
This may be because customer's already know the company's products well and they don't need a long time to decide to buy the product they want



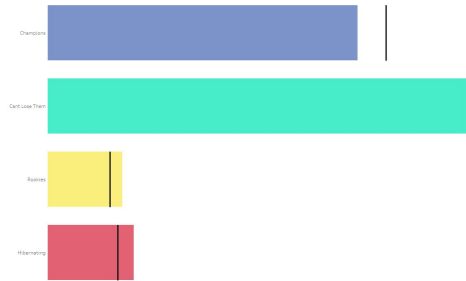
Segments ***Rookies*** and ***Hibernating*** are customers who make the fewest purchases on web channel but have a higher number of web visits than other segments

This may be because customers are still hesitant to buy the company's products

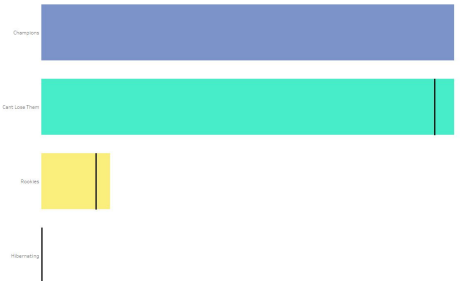
Campaign 1



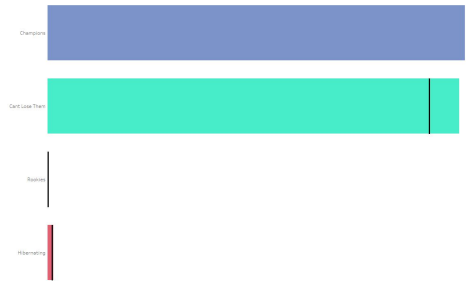
Campaign 4



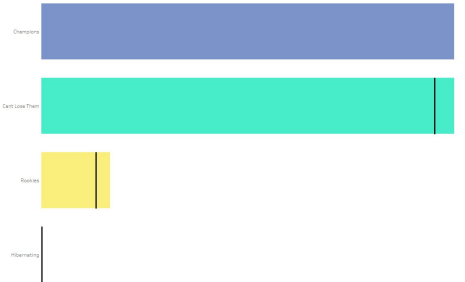
Campaign 2



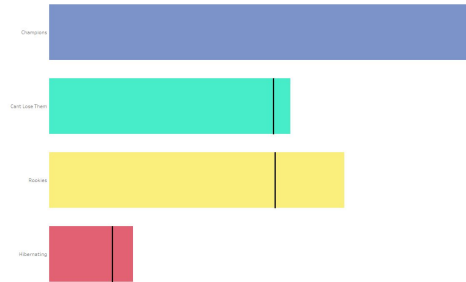
Campaign 5



Campaign 3



Campaign 6



SEGMENTS *DEEP DIVE*

Campaign Performance

Most of those who **accepted** the **campaign** came from the ***Champions*** segment. This segment is loyal to the company and has a high probability of receiving a particular campaign

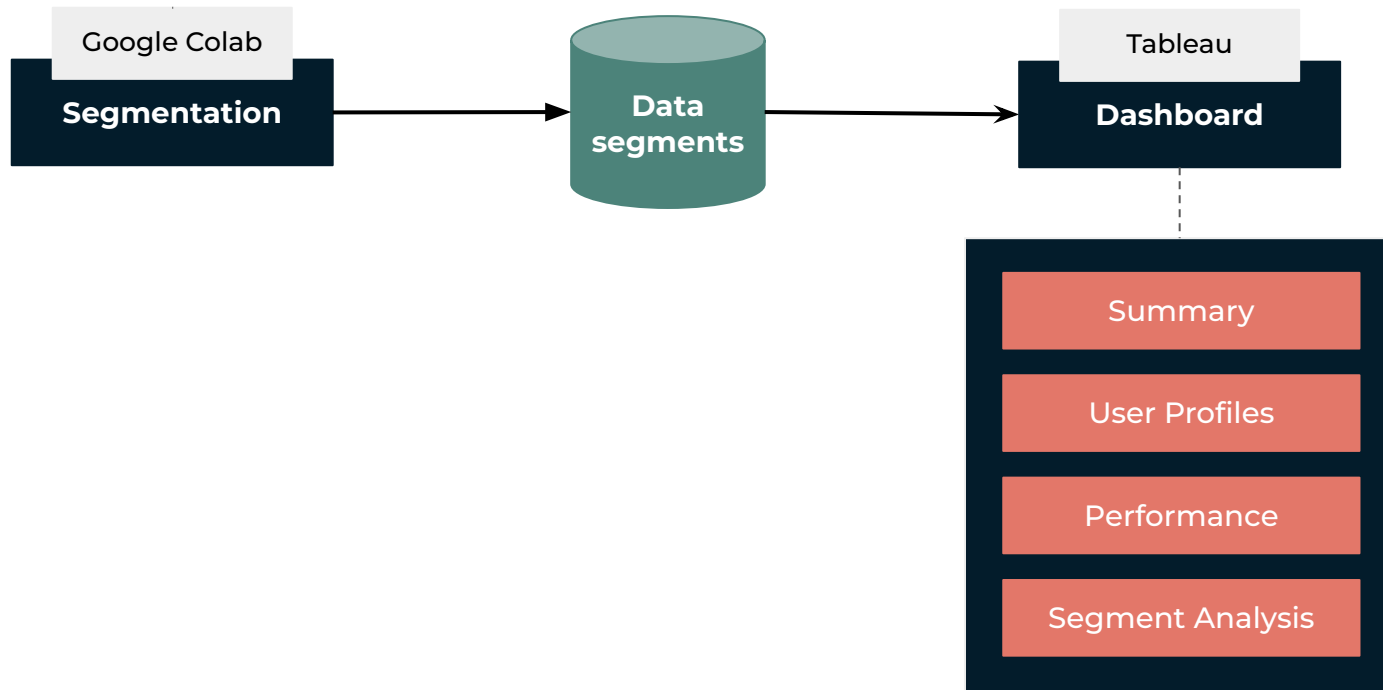
In **Campaign 4**, a difference was seen where the ***Can't Lose Them*** segment had the **most conversions** compared to the Champions segment

| **02**

CUSTOMER *DASHBOARD*

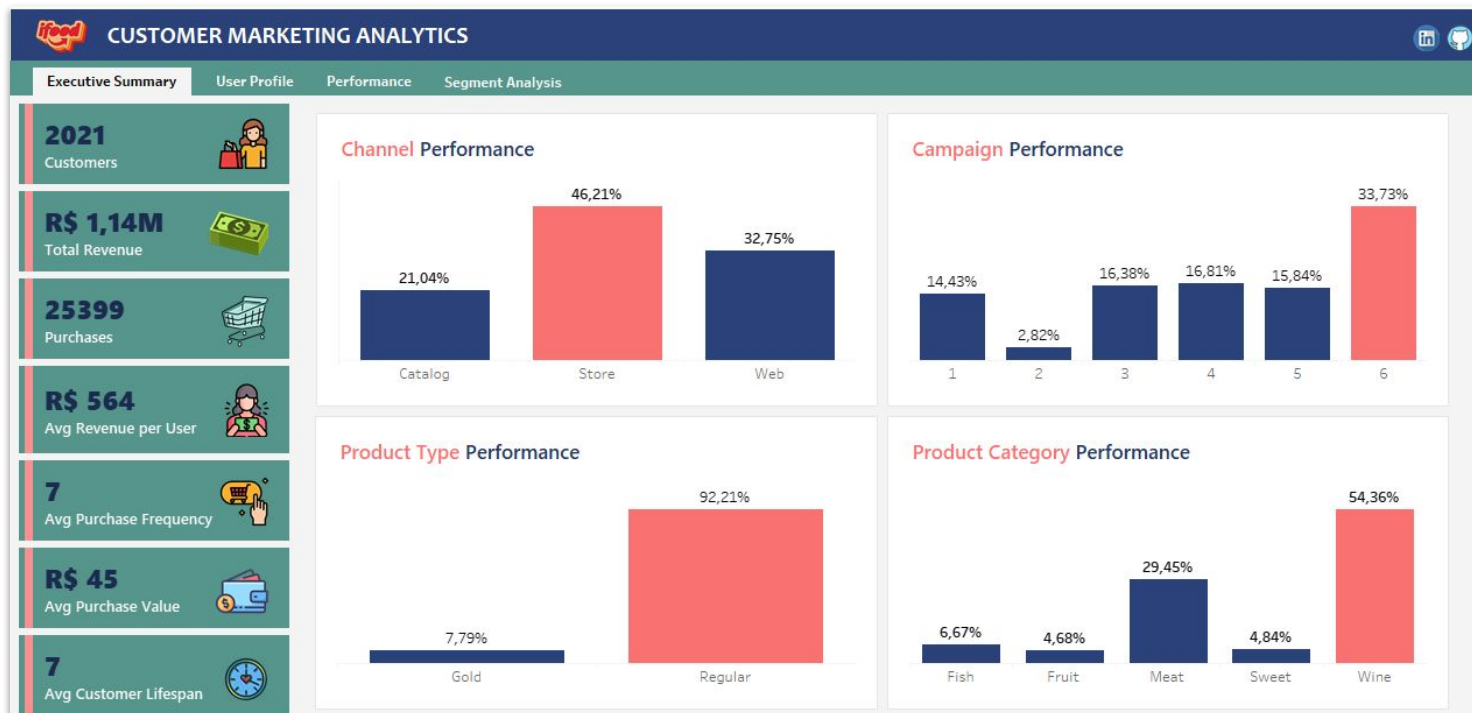


DASHBOARD PROCESS



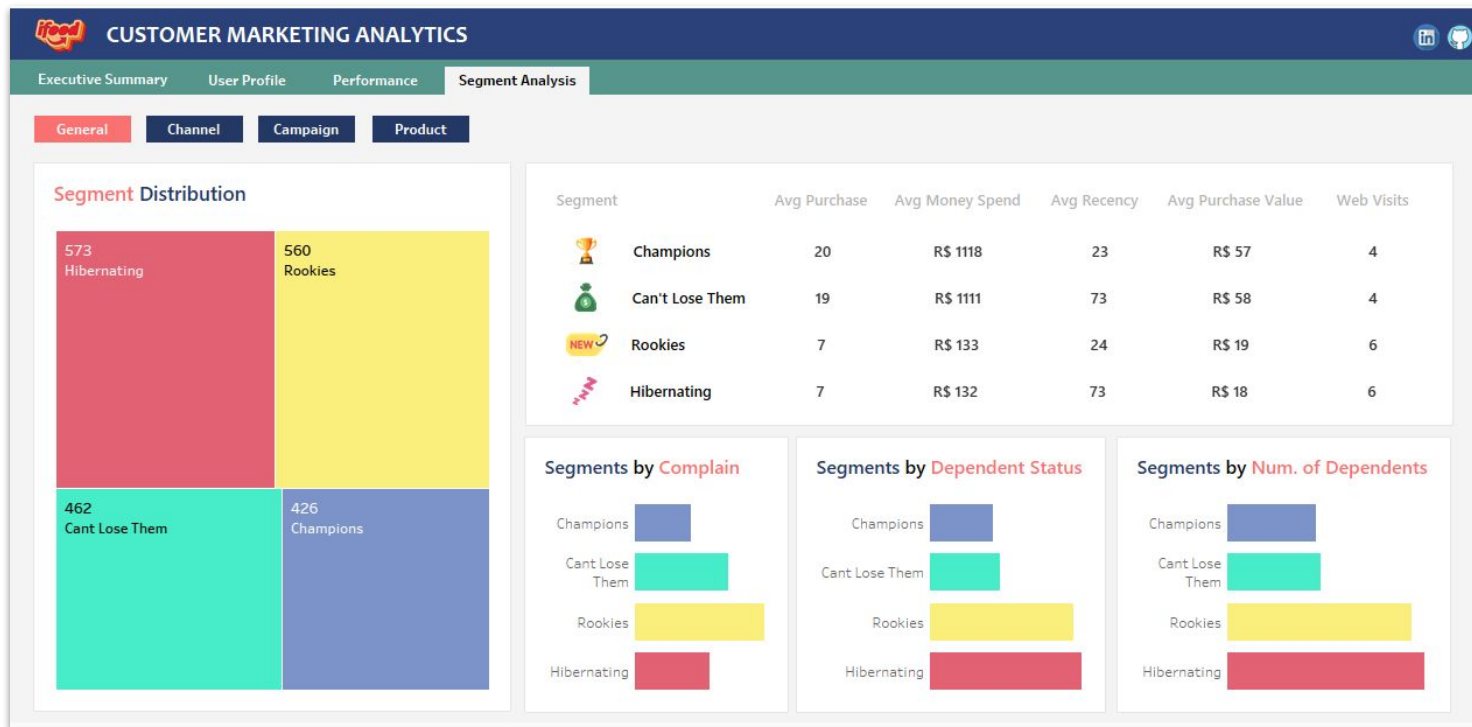
DASHBOARD *HIGHLIGHTS*

Executive Summary



DASHBOARD *HIGHLIGHTS*

Segment Analysis





03

CUSTOMER *PREDICTION*

ABOUT

CUSTOMER PREDICTION



GOAL

Builds a prediction model to predict customers response to the next marketing campaign



FEATURES

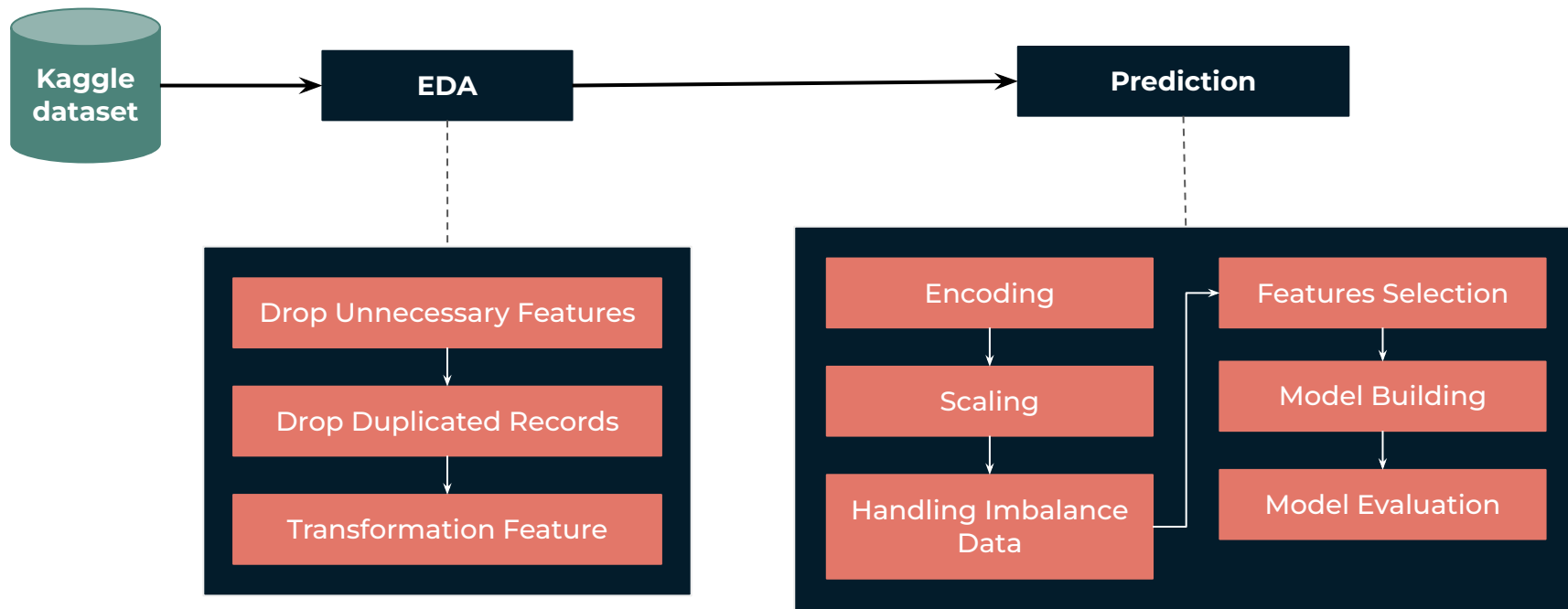
The features used are features that have a correlation > 0.1 with the *Response* feature



ALGORITHMS

There were 6 algorithms that were tried and then evaluated to determine the best algorithm for the prediction model

CUSTOMER *PREDICTION* PROCESS



MODEL *EVALUATION*

Train and Test Accuracy

Algorithms	Training Accuracy	Testing Accuracy
Logistic Regression	0.84	0.86
Decision Tree	0.99	0.87
Random Forest	0.99	0.94
K-Nearest Neighbor	0.90	0.87
Naive Bayes	0.70	0.69
XGBoost Classifier	0.99	0.94

Compared to the Random Forest models, which have the same high accuracy values in the training set. The difference in accuracy between training and testing sets on the xgboost model is smaller than in the random forest model

MODEL *EVALUATION*

Accuracy, Precision, Recall, F1 Score

Algorithms	Accuracy	Precision	Recall	F1 Score
Logistic Regression	0.86	0.83	0.89	0.86
Decision Tree	0.87	0.86	0.88	0.87
Random Forest	0.94	0.93	0.94	0.94
K-Nearest Neighbor	0.87	0.81	0.98	0.88
Naive Bayes	0.69	0.72	0.60	0.66
XGBoost Classifier	0.94	0.94	0.95	0.94

XGBoost models performs the best in terms of accuracy, precision, and F1 Score

BEST MODEL

XGBOOST

The **XGBoost** model is the best model for predicting which customers are most likely to respond to the next campaign

Accuracy

0.94

Precision

0.94

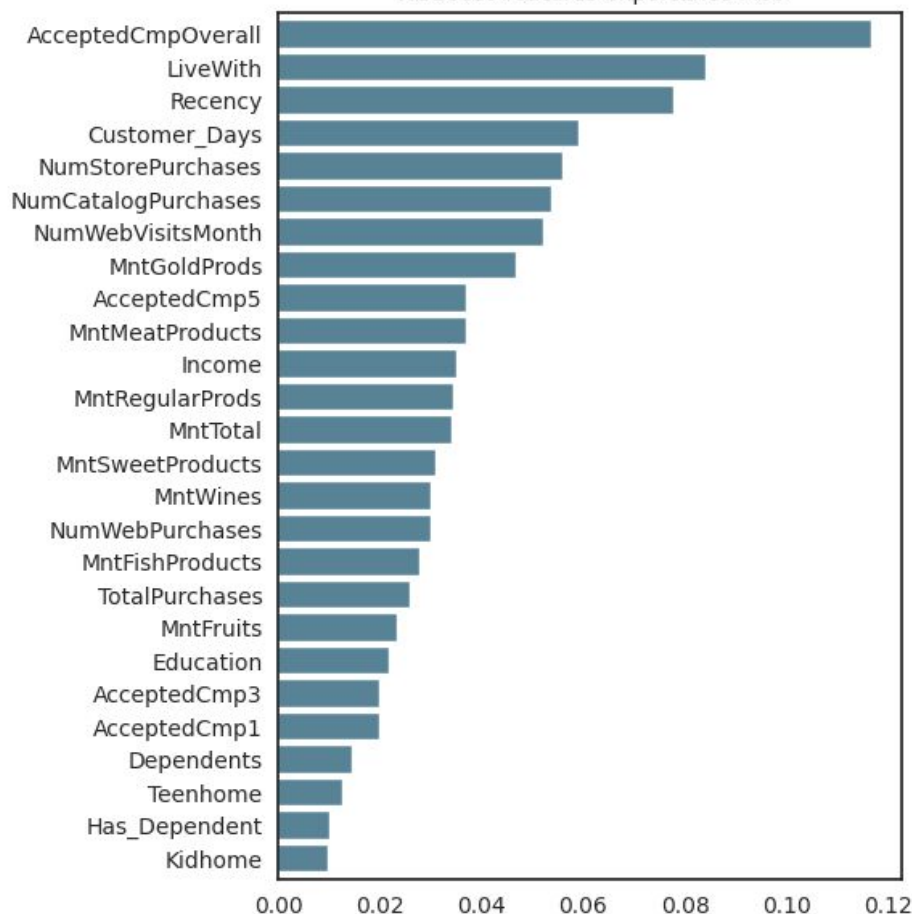
Recall

0.95

F1 Score

0.94

XGBoost Features Importance Plot



RECOMMENDATION

- The most successful products are wines and meats

Focus advertising campaigns on boosting sales of the less popular items

- The best performing channel is store channel

Focus advertising campaigns on the more successful channels, to reach more customers

- **Potential customers for the next campaign** are **Champions**. These customers without hesitation buy the company's products even though they have a small number of web visits

RECOMMENDATION

The following are recommendations for each segment:

Champions	Reward these customers. They can become early adopters for new products or campaign, and will help promote your brand
Rookies	Start building relationships with these customers by providing onboarding support and special offers to increase their visits
Can't Lose Them	Bring them back with relevant promotions, send them personalized messages, and run surveys to find out what went wrong and avoid losing them to a competitor
Hibernating	Considering the amount of investment they made, this category should be put as the last priority. Offer them renewals to encourage another purchase

**You can see the entire project
documentation [here](#) !**



REFERENCES

- <https://www.kaggle.com/datasets/jackdaoud/marketing-data>
- <https://github.com/nailson/ifood-data-business-analyst-test>
- <https://www.behance.net/gallery/97395037/iFood>



THANKS!

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