

## Portfolio Project Proposal – Team 2

### INFO 7374 – Algorithmic Digital Marketing

---

*“More Money than God”*



## Olist Marketing Funnel: Uplift, Personalized Recommendations and Pricing Optimization

A Data Driven Algorithmic Marketing system for brazil's biggest online marketplace, to segment customers, boost Revenue, Targeted Promotions & Personalized Recommendations, Identify Optimized Selling price for product Categories & Causal Inference.

Hruda Mohod

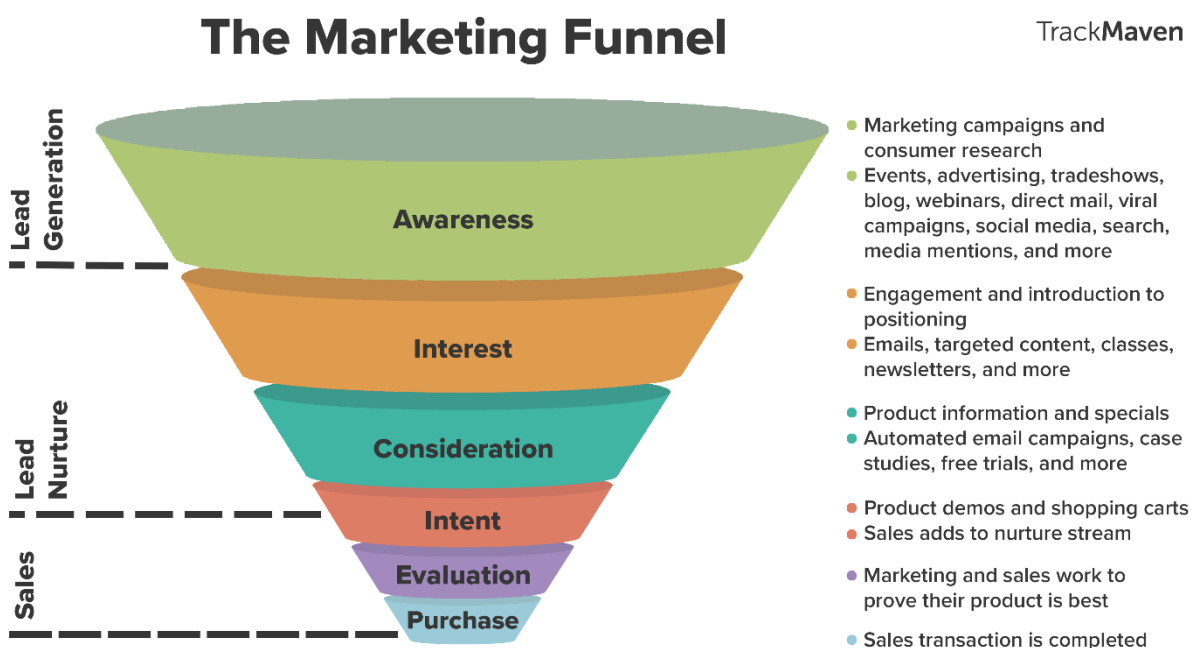
Ayushi Deval

Nikhil Kohli



## OVERVIEW

**Marketing Analytics** helps in measuring, managing and analyzing marketing performance to maximize its effectiveness and optimize ROI. Understanding Marketing analytics allows marketers to minimize wasted web marketing dollars by attributing budget to the targeted campaign, missed opportunities by not being able to show recommendations personalized as per the user's preferences.




*Marketing Funnel* is a framework for understanding the process of turning leads/campaigns into customers. The stages of a funnel can be optimized for better conversion or to cut down the user journey from lead to purchase.

## PROPOSAL/GOALS

Our goal with this project is to achieve a real-world Algorithmic Marketing System.

A system that can -

- (1) acquire sellers for Olist which will sell their products on the E-commerce using the right promotions and lead generation,
- (2) identify which marketing channel to allocate higher budget
- (3) analyze existing as well as potential customers to offer them personalized recommendations using product reviews and past purchases

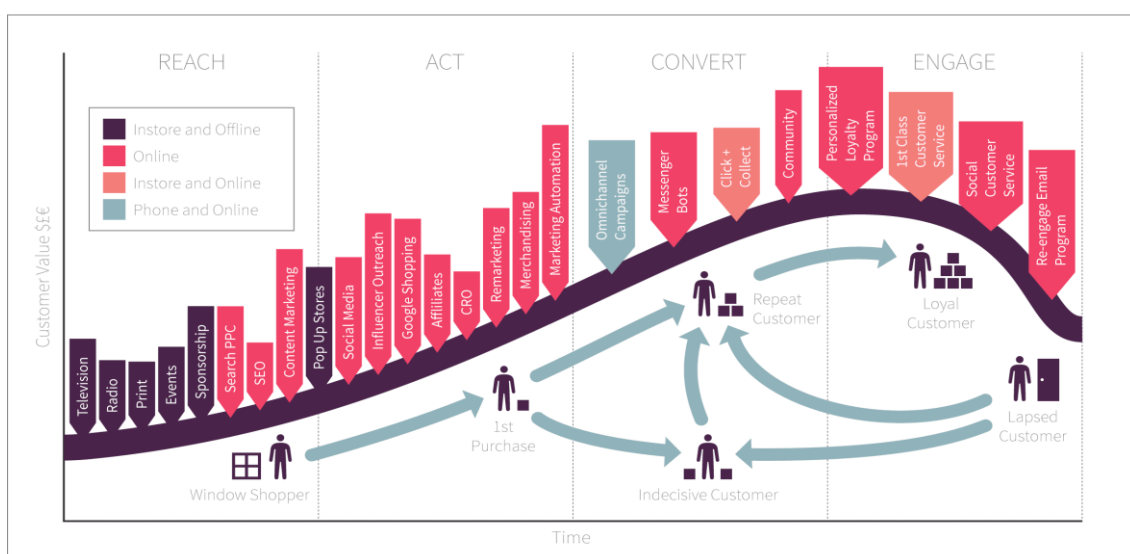
- 
- (4) Utilize uplift modeling to identify which customer's needs treatment
  - (5) identify Optimized prices for Product categories using Price Elasticity of Demand (PED).
  - (6) We will also identify the right Marketing KPIs (key performance Indicators) to measure the progress at each step.

## APPROACH


1. We will start with Segmenting customers into specific clusters based on *RFM Modeling* using their purchasing behavior. Measure *MOCP/MICP* (Marketing Influenced Customer Percentage)
2. Then we will use *Causal Inference & uplift modeling* to identify which customer needs treatment and who will buy products anyway
3. Predict *Customer Lifetime value* (LTV)
4. Personalized Recommendations using Implicit feedback in the form of customer's past purchases and Explicit feedback in the form of their Product Reviews. We will utilize *Context Aware and Sequence Models* to develop a Recommendation System. We will also try to add items which can be *Upsell or cross sell* based on customers.
5. Pricing – We will identify Optimal prices for products based on Price Elasticity of Demand (PED) and identify products which can be Bundled together.
6. We will present the outcomes as a Marketing dashboard or a Prototype of a Algorithmic Marketing.

## USE CASES

**Targeted Promotion Strategy** – A good promotion Strategy can be formed using the insights from Marketing Analytics which is essential for increase the Return on Investment.



**Personalized Recommendations** – Recommending products based on what customer has



purchased in the past or would like to purchase based on their similarity with other customers.

**Enhanced Upsell and Cross-Sell Opportunities** – Identify Upsell and Cross-sell opportunities to sell right products to the right customers at the right time with targeted ads.

**Dynamic Pricing & Optimization** – Dynamically change prices based on different factors such as supply-demand, market conditions, competitors pricing etc.

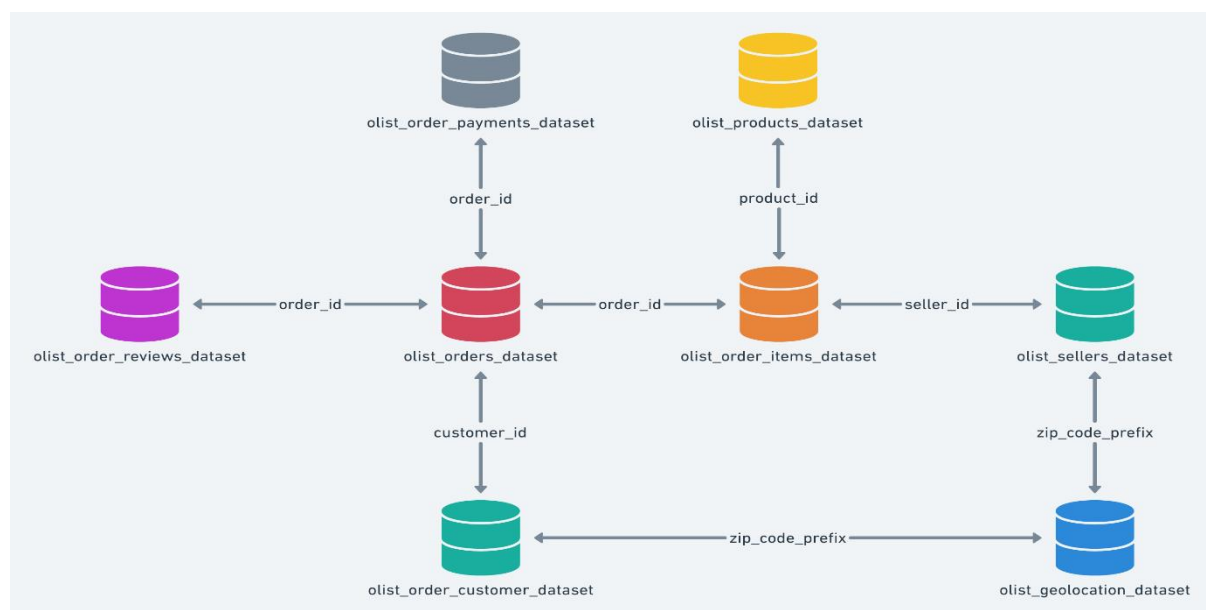
**Refined Segmentation for Nurture Campaigns** – To create customized nurture tracks using Segmentation based on Behavior data and demographic information.

**Predictive Lead Scoring** – Predictive Scoring involves correlating the actions of your existing customers to influence your future efforts as a marketer.

**Improve Content Distribution** – Content marketing has the ability to provide significant ROI. Algorithmic Marketing tackles the problem by analyzing the types of content that resonates with customers and then automatically distributing similar content to leads that mirror the same behavior.

## DATA SOURCES

We will use the Marketing Funnel and E-commerce dataset provided by Olist. The Schema is presented below. Marketing funnel has the data for sellers which have joined Olist to sell their products. E-commerce dataset has data for customer's past purchases, Reviews in Portuguese, geolocation information, seller information etc.





## ALGORITHMS

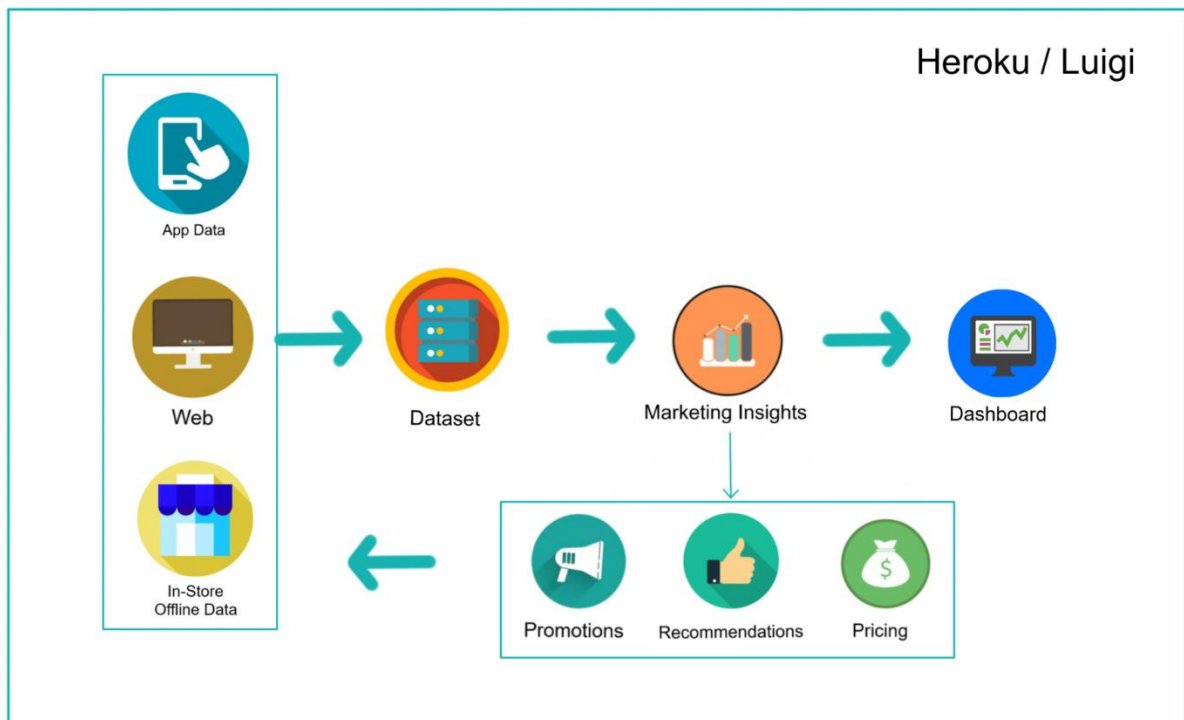
RFM Modeling, LTV Prediction, Uplift Modeling, Context Aware/Sequence Aware Recommendations, Price Elasticity of Demand

## PROCESS OUTLINE

1. Data Joining, Preprocessing & Exploratory Data Analysis
2. Customer Segmentation, RFM Modeling
3. Context Aware Recommendation System & Uplift Modeling
4. Prediction Model for Customer lifetime value
5. Identify Optimal Prices for Products based on PED
6. Identify products which can be bundled together
7. Deployment of models on Heroku
8. Build Web Application pipeline and a Marketing Dashboard to demonstrate the Insights and Recommendation results

## FLOW DIAGRAM

This is a proposed Flow diagram of our Algorithmic Marketing System. We will build a Machine Learning pipeline to update the web app with the relevant predictions and Dashboard with Latest Insights from the data.



## MILESTONES

Timeframe	Delivery
Week 1	<ol style="list-style-type: none"> <li>1. Studying about RFM, Pricing &amp; Uplift Modelling.</li> <li>2. Data Joining, Preprocessing &amp; Exploratory Data Analysis</li> </ol>
Week 2	<ol style="list-style-type: none"> <li>1. Customer Segmentation, RFM Modeling</li> <li>2. Context Aware Recommendation System &amp; Uplift Modeling</li> <li>3. Prediction Model for Customer lifetime value</li> </ol>
Week 3	<ol style="list-style-type: none"> <li>1. Identify Optimal Prices for Products based on PED</li> <li>2. Identify products which can be bundled together</li> <li>3. Deployment of models on Heroku and build web app pipeline which serves a output Dashboard</li> </ol>

## PERSONAS

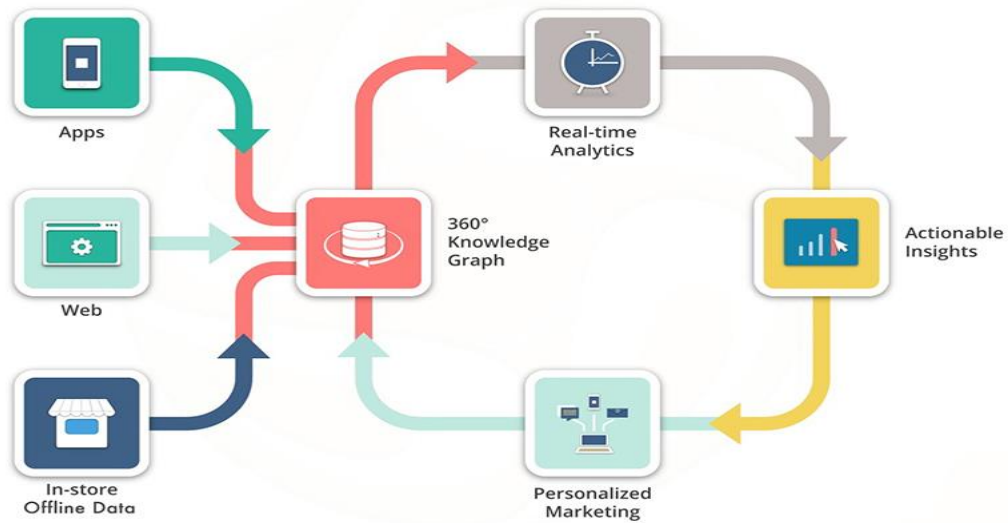
### 1) Marketing Data Scientist & Automated System:

- To form promotion strategies based on Marketing Insights
- Recommend products to customers based on their liking
- Optimize the Marketing Funnel to boost Revenue, create Targeted Campaigns
- Decide which products sell better at what prices



### 2) End Users or Potential Customers:

- Explore products recommended by the system
- Receive promotions based on their loyalty, demography
- Explore Products which are similar to what they are about to buy



## Marketing Analytics

### DEPLOYMENT DETAILS

- 1) Language: Python
- 2) Dashboard: Streamlit/Superset
- 3) Pipeline: Luigi/Databricks
- 4) Cloud Platforms: Heroku/AWS

### REFERENCES

<https://www.smartinsights.com/marketing-planning/marketing-models/lifecycle-marketing-model/>

<https://www.optimove.com/resources/learning-center/customer-segmentation>

<https://www.kaggle.com/olistbr/marketing-funnel-olist>