Customer Lifetime Value Estimation and Segmentation

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Dataset Background

The data source for this project is available at the UCI repository and Kaggle. The dataset contains over 1 Million rows and eight attributes. Following is the snipes hot of the dataset:

	Invoice	StockCode	Description	Quantity	InvoiceDate	Price	Customer ID	Country
0	489434	85048	15CM CHRISTMAS GLASS BALL 20 LIGHTS	12	2009-12-01 07:45:00	6.95	13085.0	United Kingdom
1	489434	79323P	PINK CHERRY LIGHTS	12	2009-12-01 07:45:00	6.75	13085.0	United Kingdom
2	489434	79323W	WHITE CHERRY LIGHTS	12	2009-12-01 07:45:00	6.75	13085.0	United Kingdom
3	489434	22041	RECORD FRAME 7" SINGLE SIZE	48	2009-12-01 07:45:00	2.10	13085.0	United Kingdom
4	489434	21232	STRAWBERRY CERAMIC TRINKET BOX	24	2009-12-01 07:45:00	1.25	13085.0	United Kingdom

Customer Lifetime Value(CLV)

Customer lifetime value (CLV) is one of the key stats likely to be tracked as part of a customer experience program. CLV is a measurement of how valuable a customer is to your company with an extrapolated time span as opposed to just the first purchase. This metric helps you understand a reasonable cost per acquisition. CLV is the total worth to a business of a customer over the whole period of their relationship. It's an important metric as it costs less to keep existing customers than it does to acquire new ones, so increasing the value of your existing customers is a great way to drive growth.

Now let's discuss CLV's importance.

Why CLV?

1. CLV tell marketers, how much revenue they can expect from one customer over the course of the business relationship. The longer a customer continues to purchase from a company, the greater their lifetime value becomes.

2. CLV-based Customer Segmentation helps with more effective segmentation. Customers' value to an organization is optimized, holding the present and future into consideration.

3. Clusters of customers can be identified based on the long-term revenue potential of a customer. Once the clusters are identified, offers & products can be designed to unlock maximum customer value.

4. CLV is one of the key metrics to track the performance of the company as compared to the competitors.

Customer Segmentation

Customer Segmentation is splitting the organization's customer base into smaller groups that reflect major similarities in their behavior. The goal of segmenting customers is to make segment-wise decisions and maximize the value of each customer to the business.

Our objective is to do Customer Segmentation along the lines of Customer Lifetime Value

Modus Operandi?

Exploratory Data Analysis

Exploratory Data Analysis refers to the critical process of performing initial investigations on data so as to discover patterns, spot anomalies, test hypotheses, and check assumptions with the help of summary statistics and graphical representations.
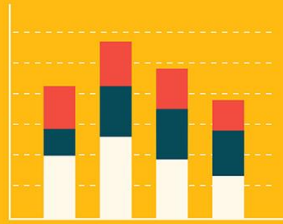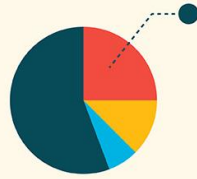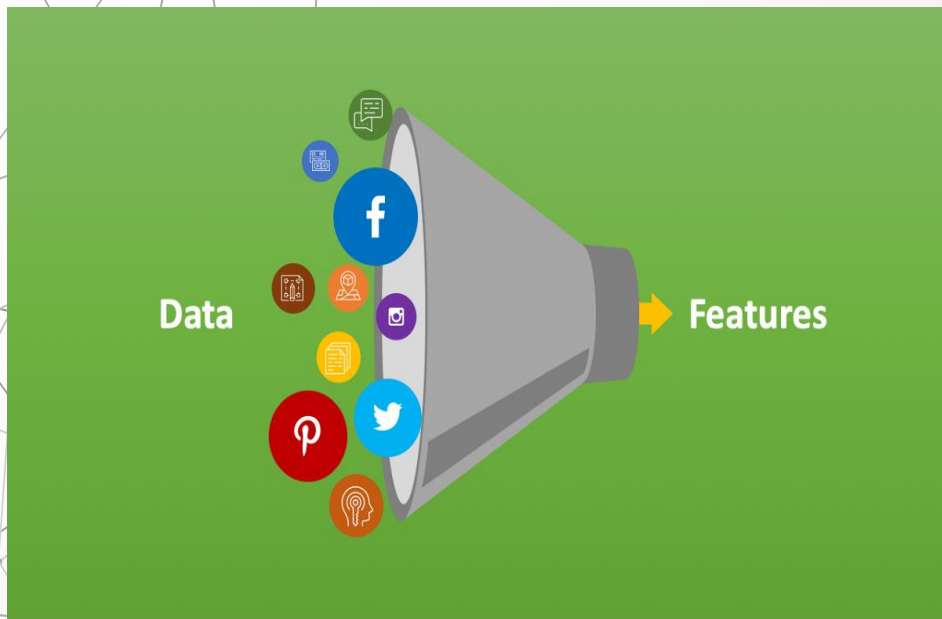
Feature Engineering & Feature Extraction

Feature engineering - is transforming raw data into features/attributes that better represent the underlying structure of your data, usually done by domain experts.
Feature Extraction: **transforming raw data into the desired form**.

RFM Analysis

Recency: When was the last time the customer visited the store?

Frequency: What is the frequency of visits and purchases made by the customer?

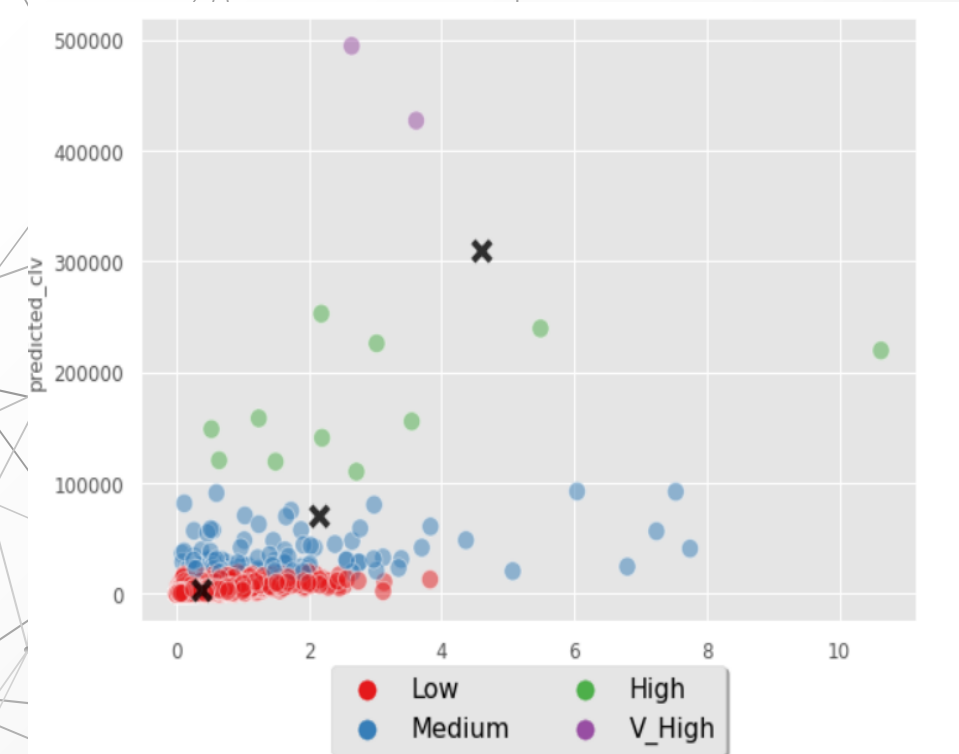**Monetary**: What is the spending habit of the customer?

CLTV Estimation Models

PARETO/NBD MODEL
GAMMA-GAMMA MODEL

LTV Based Customer Segmentation

Customer Segmentation will help us understand similarities in customer spending habits and customers with long-term engagements, and the development of customer-specific marketing strategies, etc.

Model Evaluation & Model Deployment

Using pandas, scikit learn, NumPy, Altair, and lifetimes the project will be deployed post-model evaluation.