

Data Collection and Preprocessing Phase

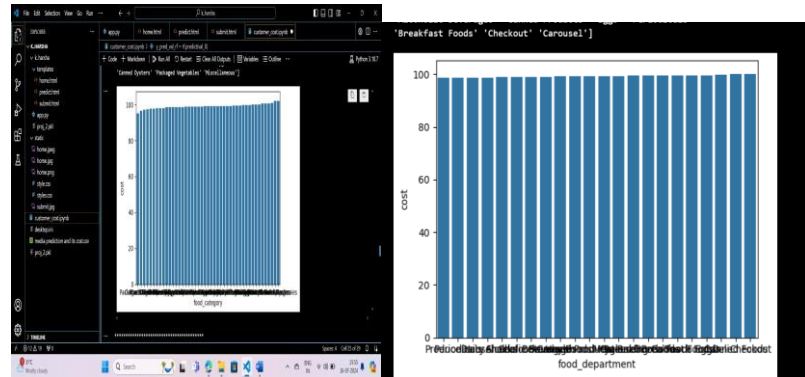
Date	20 June 2024
Team ID	740114
Project Title	Customer Acquisition cost estimation using Machine Learning.
Maximum Marks	6 Marks

Data Exploration and Preprocessing Report

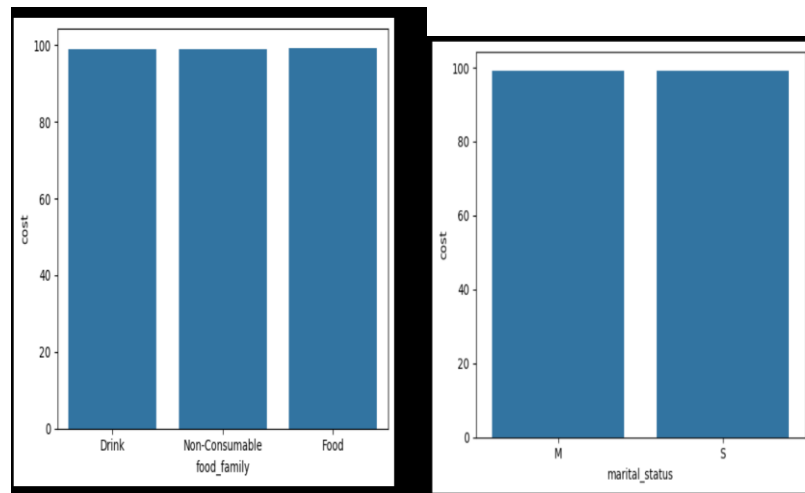
Dataset variables will be statistically analyzed to identify patterns and outliers, with Python employed for preprocessing tasks like normalization and feature engineering. Data cleaning will address missing values and outliers, ensuring quality for subsequent analysis and modeling, and forming a strong foundation for insights and predictions.

Section	Description																																																																																																			
Data Overview	<table><tr><th></th><th>store_sales(in millions)</th><th>store_cost(in millions)</th><th>unit_sales(in millions)</th><th>total_children</th><th>avg_cars_at home(approx)</th><th>num_children_at home</th><th>avg_cars_at home(approx).1</th></tr><tr><td>count</td><td>60428.000000</td><td>60428.000000</td><td>60428.000000</td><td>60428.000000</td><td>60428.000000</td><td>60428.000000</td></tr><tr><td>mean</td><td>6.541031</td><td>2.619460</td><td>3.093169</td><td>2.533875</td><td>2.200271</td><td>0.829351</td></tr><tr><td>std</td><td>3.463047</td><td>1.453009</td><td>0.827677</td><td>1.490165</td><td>1.109644</td><td>1.303424</td></tr><tr><td>min</td><td>0.510000</td><td>0.163200</td><td>1.000000</td><td>0.000000</td><td>0.000000</td><td>0.000000</td></tr><tr><td>25%</td><td>3.810000</td><td>1.500000</td><td>3.000000</td><td>1.000000</td><td>1.000000</td><td>0.000000</td></tr><tr><td>50%</td><td>5.940000</td><td>2.385600</td><td>3.000000</td><td>3.000000</td><td>2.000000</td><td>0.000000</td></tr><tr><td>75%</td><td>8.670000</td><td>3.484025</td><td>4.000000</td><td>4.000000</td><td>3.000000</td><td>1.000000</td></tr><tr><td>max</td><td>22.920000</td><td>9.726500</td><td>6.000000</td><td>5.000000</td><td>4.000000</td><td>5.000000</td></tr><tr><td colspan="7">8 rows × 23 columns</td></tr></table>		store_sales(in millions)	store_cost(in millions)	unit_sales(in millions)	total_children	avg_cars_at home(approx)	num_children_at home	avg_cars_at home(approx).1	count	60428.000000	60428.000000	60428.000000	60428.000000	60428.000000	60428.000000	mean	6.541031	2.619460	3.093169	2.533875	2.200271	0.829351	std	3.463047	1.453009	0.827677	1.490165	1.109644	1.303424	min	0.510000	0.163200	1.000000	0.000000	0.000000	0.000000	25%	3.810000	1.500000	3.000000	1.000000	1.000000	0.000000	50%	5.940000	2.385600	3.000000	3.000000	2.000000	0.000000	75%	8.670000	3.484025	4.000000	4.000000	3.000000	1.000000	max	22.920000	9.726500	6.000000	5.000000	4.000000	5.000000	8 rows × 23 columns																																		
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Univariate Analysis



Bivariate Analysis



Outliers and Anomalies

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Data Preprocessing Code Screenshots

Loading Data	<div><pre>dataset=pd.read_csv("media prediction and its cost.csv") dataset.head()</pre></div> <div>Python</div> <table><thead><tr><th></th><th>food_category</th><th>food_department</th><th>food_family</th><th>store_sales(in millions)</th><th>store_cost(in millions)</th><th>unit_sales(in millions)</th><th>promotion_name</th><th>sales_country</th></tr></thead><tbody><tr><td>0</td><td>Breakfast Foods</td><td>Frozen Foods</td><td>Food</td><td>7.36</td><td>2.7232</td><td>4.0</td><td>Bag Stuffers</td><td>USA</td></tr><tr><td>1</td><td>Breakfast Foods</td><td>Frozen Foods</td><td>Food</td><td>5.52</td><td>2.5944</td><td>3.0</td><td>Cash Register Lottery</td><td>USA</td></tr><tr><td>2</td><td>Breakfast Foods</td><td>Frozen Foods</td><td>Food</td><td>3.68</td><td>1.3616</td><td>2.0</td><td>High Roller Savings</td><td>USA</td></tr><tr><td>3</td><td>Breakfast Foods</td><td>Frozen Foods</td><td>Food</td><td>3.68</td><td>1.1776</td><td>2.0</td><td>Cash Register Lottery</td><td>USA</td></tr><tr><td>4</td><td>Breakfast Foods</td><td>Frozen Foods</td><td>Food</td><td>4.08</td><td>1.4280</td><td>3.0</td><td>Double Down Sale</td><td>USA</td></tr></tbody></table> <div>5 rows x 40 columns</div>		food_category	food_department	food_family	store_sales(in millions)	store_cost(in millions)	unit_sales(in millions)	promotion_name	sales_country	0	Breakfast Foods	Frozen Foods	Food	7.36	2.7232	4.0	Bag Stuffers	USA	1	Breakfast Foods	Frozen Foods	Food	5.52	2.5944	3.0	Cash Register Lottery	USA	2	Breakfast Foods	Frozen Foods	Food	3.68	1.3616	2.0	High Roller Savings	USA	3	Breakfast Foods	Frozen Foods	Food	3.68	1.1776	2.0	Cash Register Lottery	USA	4	Breakfast Foods	Frozen Foods	Food	4.08	1.4280	3.0	Double Down Sale	USA
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Handling Missing Data	<pre>for coli in dfc.select_dtypes('object').columns: for colj in dfc.select_dtypes('object').columns[1:]: cont = dataset[[coli, colj]].pivot_table(index=coli, columns=colj, aggfunc=len).fillna(0).copy().astype(int) st_chi2, st_p, st_dof, st_exp = stats.chi2_contingency(cont)</pre>																																																						
Data Transformation	-----																																																						
Feature Engineering	Attached the codes in final submission.																																																						
Save Processed Data	-																																																						