VIT®
BHOPAL
www.vitbhopal.ac.in

TEAM

MLcrats

Submitted To:

Placement Office

VIT Bhopal University,

Kothri Kalan, Sehore,

Bhopal, M.P.

PROJECT PROPOSAL

Retail recommendation system for Micro enterprises using AI/ML and Blockchain

Subject: A proposal to build a comprehensive web platform that would suggest to retailers the products that are most popular in their localities, forecast the profits those retailers will make after prioritizing the recommended products using data analysis, machine learning and gather feedback from the entire ecosystem using blockchain technology.

Objective: Small unorganized shops are finding it really hard to earn profit in the modern world thanks to the competition they face from big corporations. We strive to help these micro retailers by analyzing the shopping trends prevalent in their localities and recommending them the products which are the most popular among the local consumers.

Softwares used:

React, CSS, Javascript, HTML, Python, Tableau, Solidity, Ethereum testnet, jupyter notebook

Human Resource:

We are team Mlcrats, a collection of inquisitive developers, idolaters, and coders who primarily focus on leveraging computer scientific principles, such as data science, web development, IoT, blockchain, etc., to provide solutions to real-world problems.

The Team consists of:

Akhil Rajeev P - 20BCE10386
Vivek Dharewa - 20BAI10032
Gandhi Monil - 20BCE10128,
Shubham kumar - 20BCE10050
Sparsh Mahajan - 20BAI10287

Overview

- Data collection and analyzation through various bills of retail stores and prediction of the most popular items in the locality

- The shopkeepers will use our web application and as input they will add location, type of shop they are running like grocery, cloth shop, shoe shop, etc. and the capacity of their shop.

- Our web application aims to provide information about which products retailers should keep in their stores and how likely it is that they will be sold. The margin of profit they will be able to make will also be predicted by our online programme.

- Monthly feedback collection maybe done implementing blockchain technology and AWS, the system would be updated in accordance to the feedback received

- This will help small shop owners throughout the nation and since India is a diverse country, we strive to have the interface available in at least 10 Indian regional languages.

Flowcharts and Graphs:

1. ML part and datasets implementation

Out[25]:

index	category	sub_category	brand	sale_price	market_price	profit	Label_category	profit%	Sale Classification
1	Beauty & Hygiene	Hair Care	Sri Sri Ayurveda	220.00	220.0	0.00	2	0.000000	bad sale
2	Kitchen, Garden & Pets	Storage & Accessories	Mastercook	180.00	180.0	0.00	9	0.000000	bad sale
3	Cleaning & Household	Pooja Needs	Trm	119.00	250.0	131.00	4	52.400000	great sale
4	Cleaning & Household	Bins & Bathroom Ware	Nakoda	149.00	176.0	27.00	4	15.340909	moderate sale
5	Beauty & Hygiene	Bath & Hand Wash	Nivea	162.00	162.0	0.00	2	0.000000	bad sale
...	...	...	...	...	...	...	...	...	...
7996	Beauty & Hygiene	Fragrances & Deos	Dkny	5550.00	5550.0	0.00	2	0.000000	bad sale
7997	Beverages	Fruit Juices & Drinks	Diabetics Dezire	305.00	305.0	0.00	3	0.000000	bad sale
7998	Beauty & Hygiene	Skin Care	Lotus Organics+	335.75	395.0	59.25	2	15.000000	moderate sale
7999	Beauty & Hygiene	Health & Medicine	Chicnutrix	821.70	990.0	168.30	2	17.000000	moderate sale
8000	Beauty & Hygiene	Feminine Hygiene	Whisper	30.00	30.0	0.00	2	0.000000	bad sale

8000 rows × 9 columns

In [26]:
```
data['Sale Classification'].value_counts()
```

Out[26]:
```
bad sale         3623
moderate sale    2380
good sale        1060
poor sale         817
great sale        120
Name: Sale Classification, dtype: int64
```

In [27]:
```
sns.heatmap(data.corr(), annot=True)
```

Out[37]:
```
array([[741,   0,   0,   2,   0],
       [  0, 206,   0,   0,   0],
       [  0,   0,  21,   0,   0],
       [  0,   0,   0, 468,   0],
       [  0,   0,   0,   7, 155]], dtype=int64)
```

In [38]:
```
from sklearn.metrics import accuracy_score,classification_report
```

In [39]:
```
accuracy_score(y_test, y_pred, normalize=False)
```

Out[39]: 1591

In [40]:
```
clf.score(X_test,y_test)
```

Out[40]: 0.994375

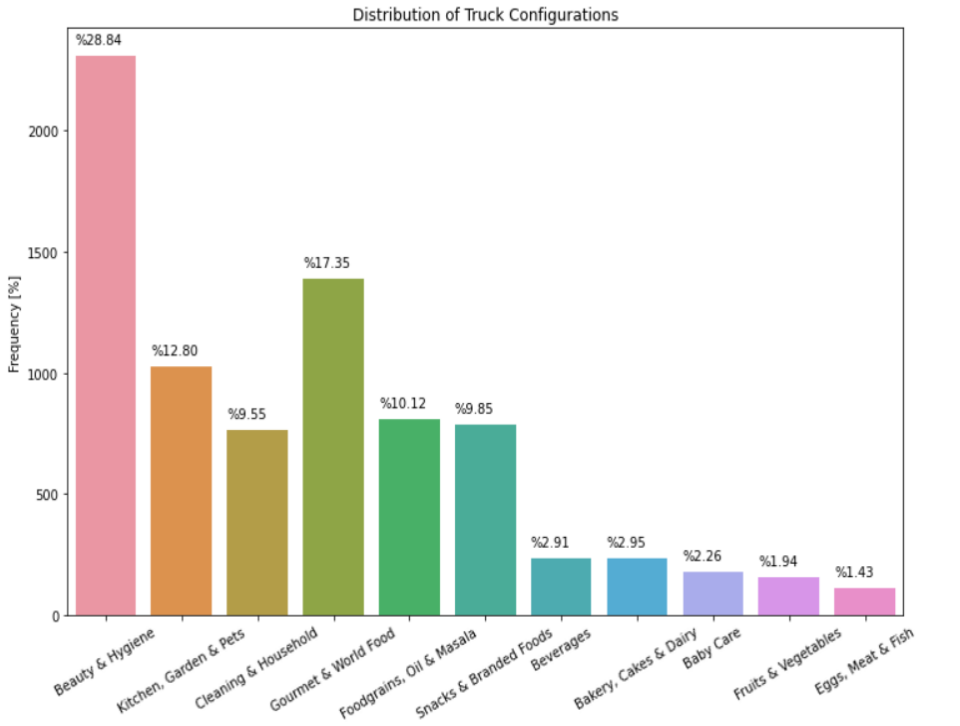
In [41]:
```
RF_classification_report = classification_report(y_test,y_pred,target_names=data['Sale Classification'].unique())
print("\t\t\t RF Classification Report")
print(RF_classification_report)
```

```
                    RF Classification Report
              precision    recall  f1-score   support

    bad sale       1.00      1.00      1.00       743
```

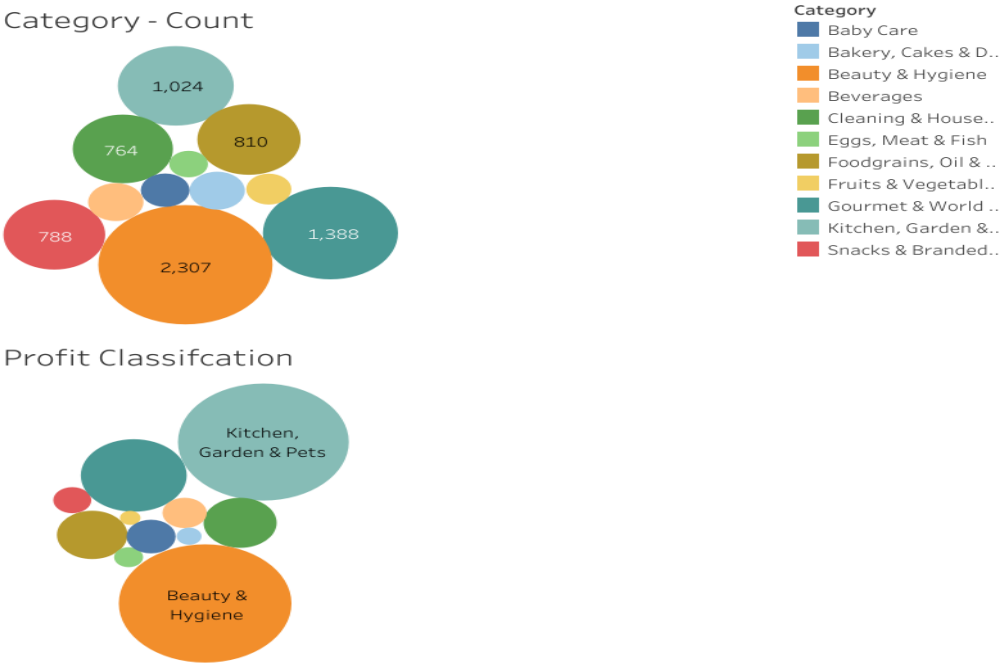
Graphs (Comparison)

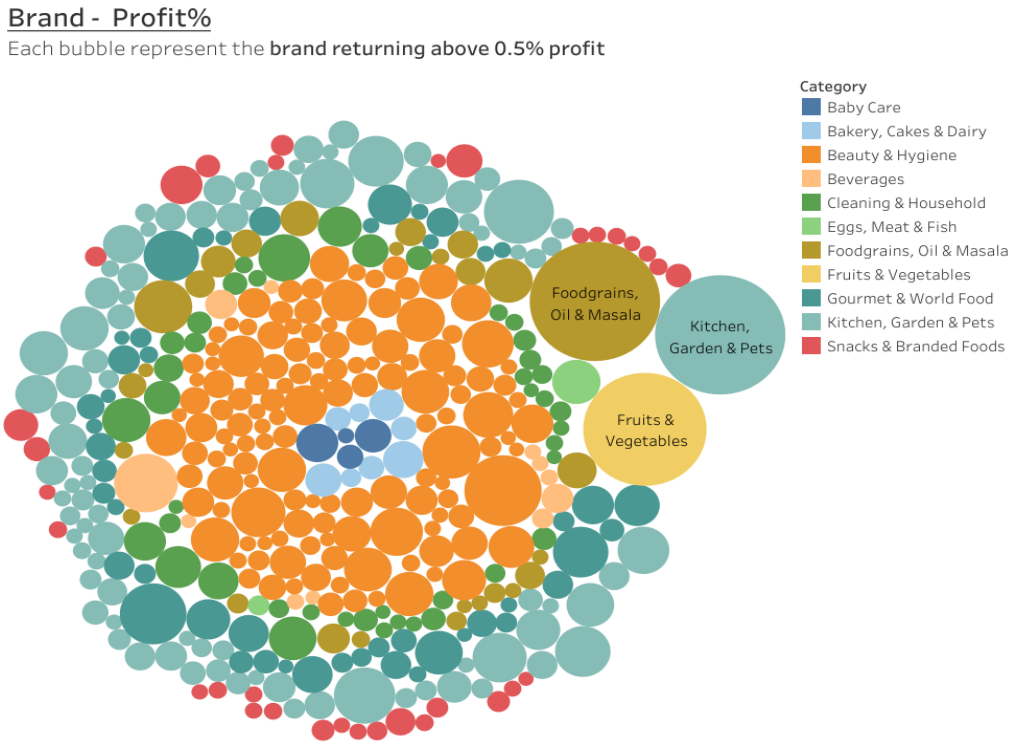
Comparison of total % sale between three districts in Bhopal



Visualization of total % sale over different categories being sold in groceries

2. Data Analysis





Project potential and impact

- **Will the idea deliver business value?**

Our project is based on retailers, basically focusing on small shops and how to make things easier for them in the times of globalization and immense competition in the market. If implemented and publicized properly then it does have a business potential.

- **Is the idea unique?**

Our project idea basically focuses on profits to small shops and was crafted after a lot of discussion and reading. Currently there is nothing available to support small shop owners with their product recommendation and we strive to fill that void.

- **Is the idea implementable?**

The idea of our project is definitely implementable as we will collect data through bills of various retail stores and we will be able to predict which items or goods shopkeepers should keep and what exactly are the consumer trends in the region.

- **Is the idea Scalable?**

One of the most striking features which makes this project unique is its scalability, which can start from a level as micro as a city locality and expand itself to a Pan-India scale

- **Extent of implementation during the MVP stage**

We work to initially implement it throughout a city's neighborhoods, such as Bhopal. If Bhopal has three neighborhoods, such as a, b, and c, then we will examine the shopping patterns in each of those areas and advise the local small business owners to stock up on the best-selling goods in their specific locale.

Attachments

Ppt Link: value-chain-analysis-infographics.pptx - Google Slides

Datasets link:
https://github.com/prodigee-project/Data-Analysis---Grocery/tree/main/Dataset

GitHub Link: https://github.com/orgs/prodigee-project/repositories

Dummy Website Link : https://mlcrats-main-project-site.netlify.app/

Regards,
Team MLcrats