VARENDRA UNIVERSITY

বরেন্দ্র বিশ্ববিদ্যালয়

VARENDRAUNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Thesis Report

Thesis Title: Predicting customer satisfaction in fast-food restaurant using data mining.

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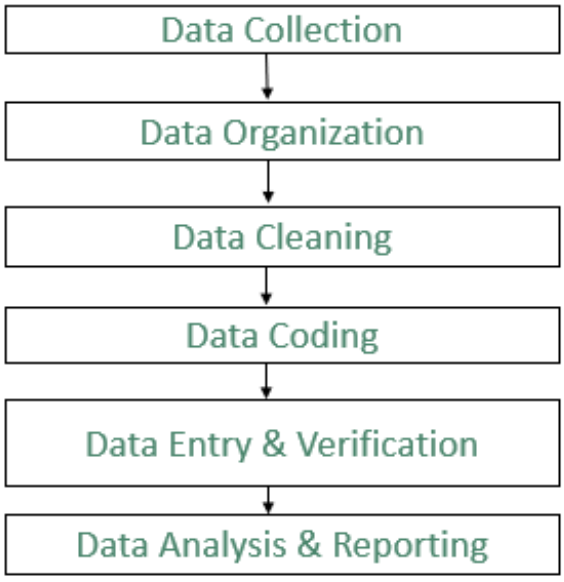
Introduction:

Data that has been generated by the researcher himself/herself for survey, experiment, specially design for understanding and solving the research problem at hand are primary data.

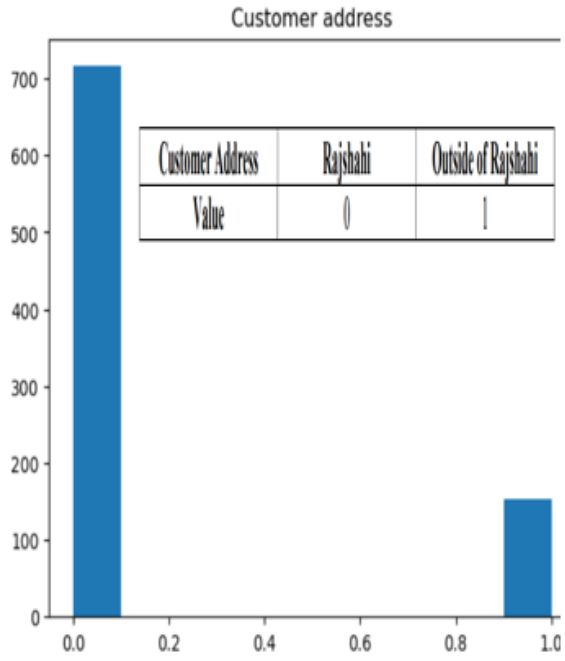
Types: Qualitative, Quantitative, Mixed mode.

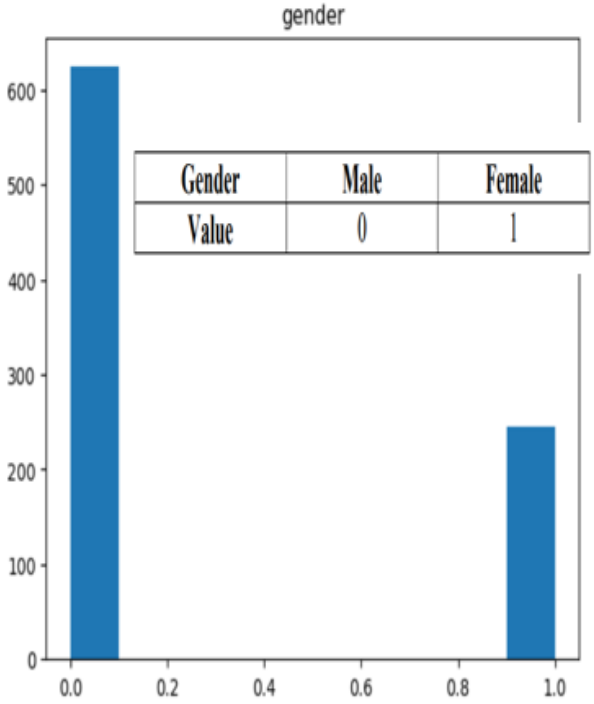
Primary Data Processing:

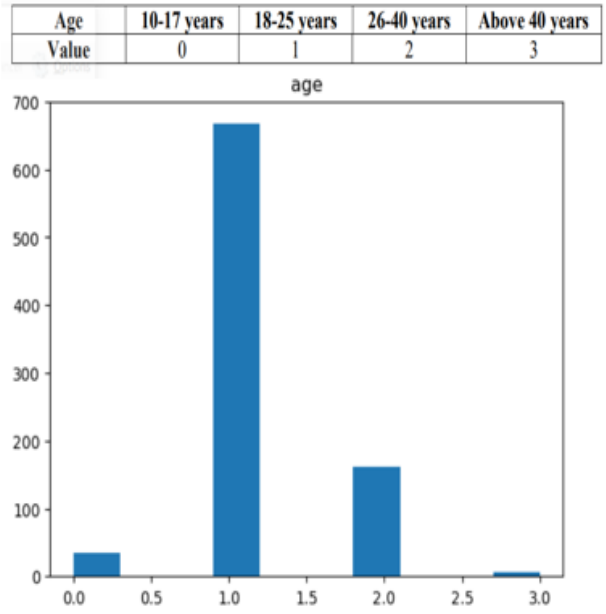
Step:

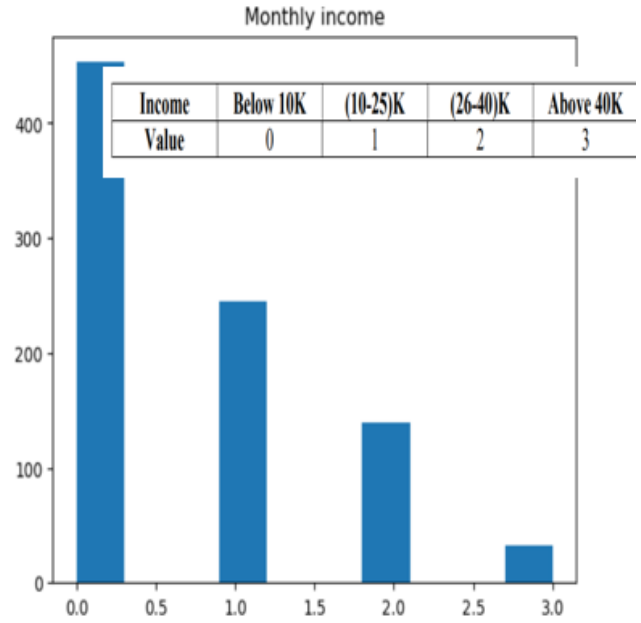


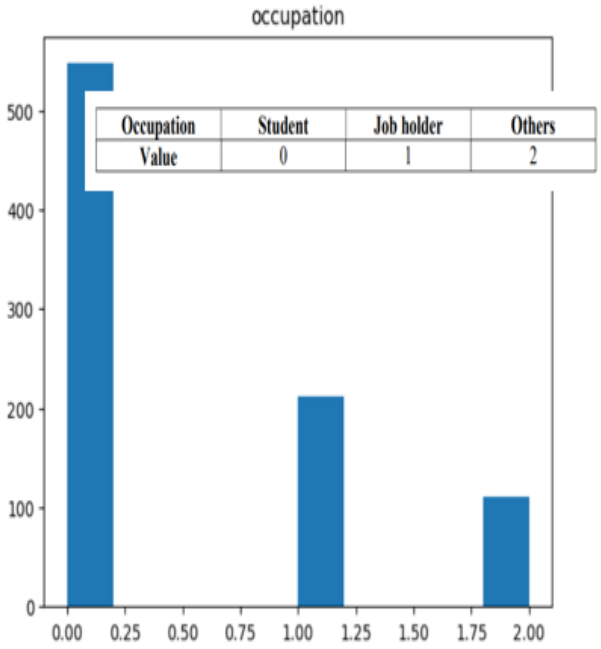
Histrogram:

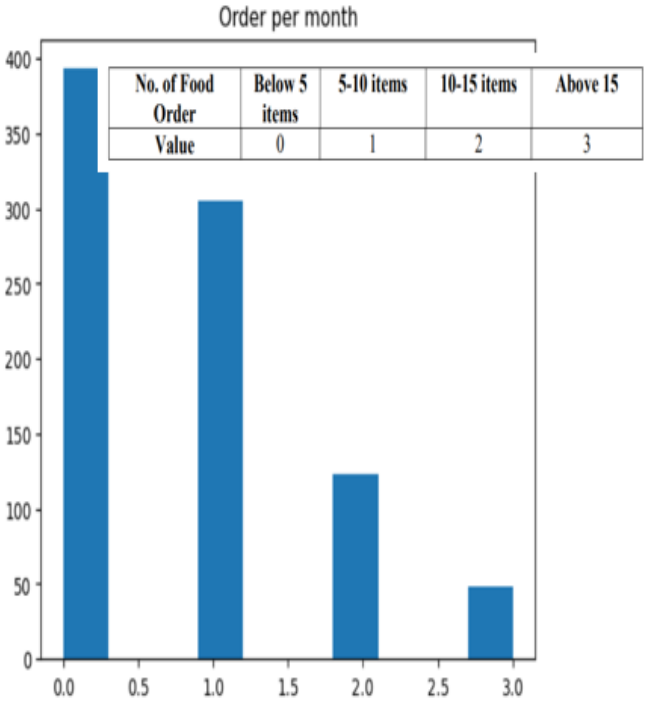

Customer address
Customer Address | Rajshahi | Outside of Rajshahi
Value | 0 | 1
0.0 0.2 0.4 0.6 0.8 1.0
0 100 200 300 400 500 600 700

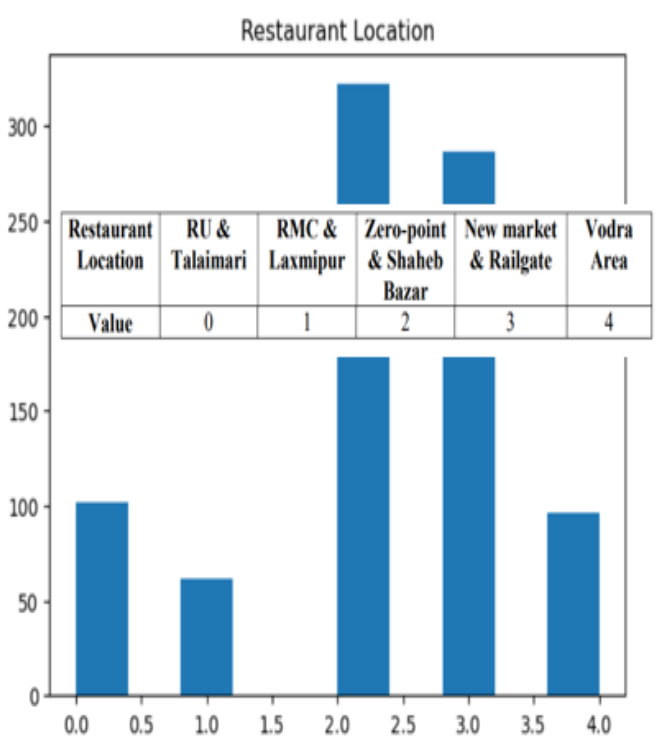

gender
Gender | Male | Female
Value | 0 | 1
0.0 0.2 0.4 0.6 0.8 1.0
0 100 200 300 400 500 600

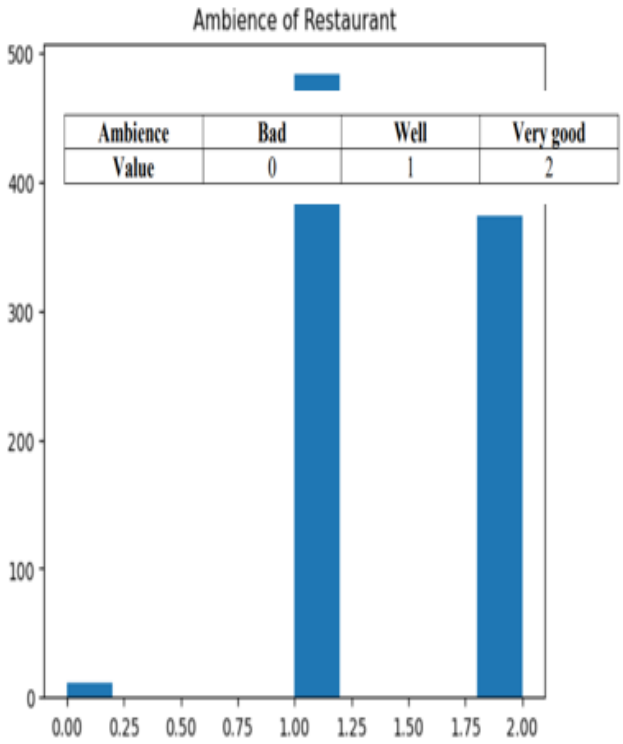

Age | 10-17 years | 18-25 years | 26-40 years | Above 40 years
Value | 0 | 1 | 2 | 3
age
0.0 0.5 1.0 1.5 2.0 2.5 3.0
0 100 200 300 400 500 600 700

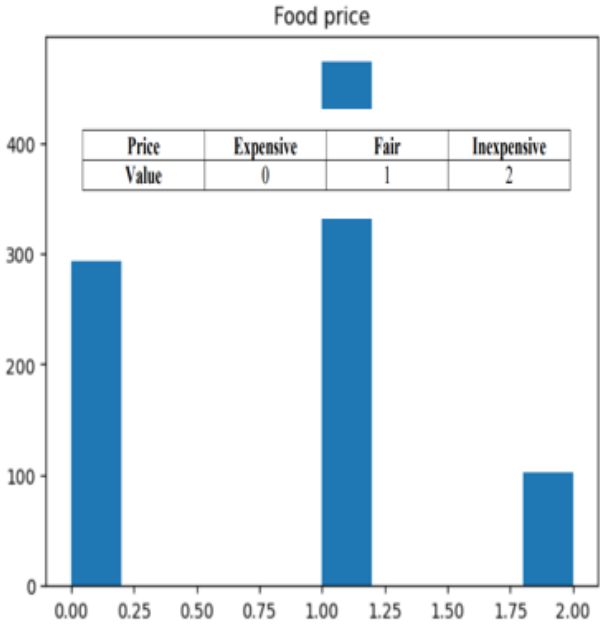

Monthly income
Income | Below 10K | (10-25)K | (26-40)K | Above 40K
Value | 0 | 1 | 2 | 3
0.0 0.5 1.0 1.5 2.0 2.5 3.0
0 100 200 300 400

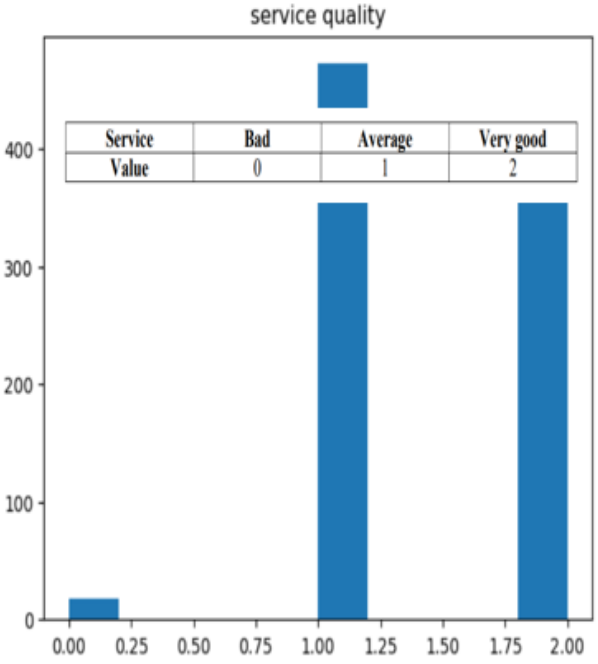

occupation
Occupation | Student | Job holder | Others
Value | 0 | 1 | 2
500
400
300
200
100
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00

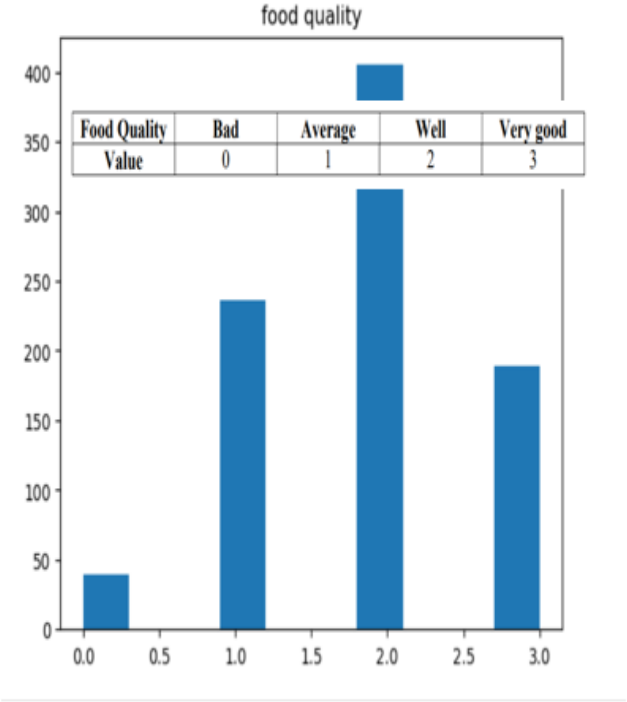

Order per month
No. of Food Order | Below 5 items | 5-10 items | 10-15 items | Above 15
Value | 0 | 1 | 2 | 3
400
350
300
250
200
150
100
50
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0

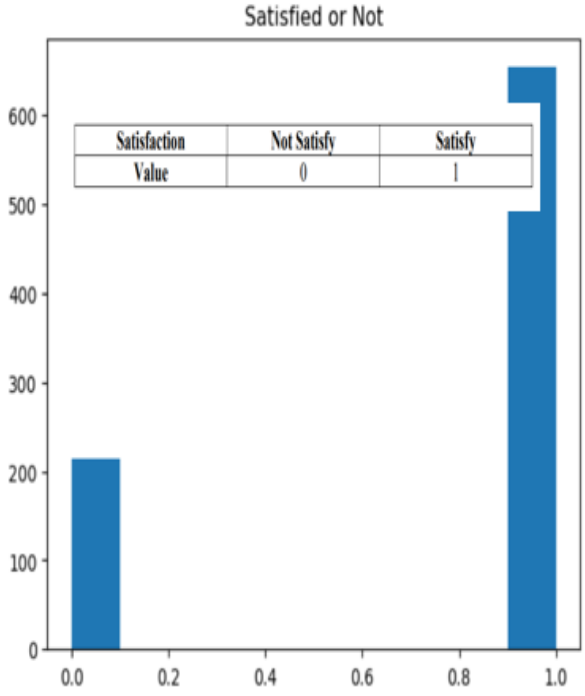

Restaurant Location
Restaurant Location | RU & Talaimari | RMC & Laxmipur | Zero-point & Shaheb Bazar | New market & Railgate | Vodra Area
Value | 0 | 1 | 2 | 3 | 4
0 50 100 150 200 250 300
0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0


Ambience of Restaurant
Ambience | Bad | Well | Very good
Value | 0 | 1 | 2
0 100 200 300 400 500
0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00


Food price
Price | Expensive | Fair | Inexpensive
Value | 0 | 1 | 2
0 100 200 300 400
0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00


service quality
Service | Bad | Average | Very good
Value | 0 | 1 | 2
0 100 200 300 400
0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00





Data Normalization:

```
from sklearn.preprocessing import Normalizer
from pandas import read_csv
from numpy import set_printoptions
filename='data.csv'
names=['Address','Gender','Age','Income','Occupation','No_Order','Rlocation','Ambience','Price','Service_quality','Food_quality',
dataframe=read_csv('/Users/sabbi/Desktop/data/data.csv')
array= dataframe.values
X=array[:,0:11]
Y=array[:,11]
scaler=Normalizer().fit(X)
normalizedX=scaler.transform(X)
set_printoptions(precision=3)
print(normalizedX[0:5,:])
```

```
[[0.    0.    0.267 0.    0.    0.    0.802 0.267 0.267 0.267 0.267]
 [0.177 0.    0.354 0.354 0.177 0.177 0.354 0.354 0.    0.354 0.53 ]
 [0.408 0.    0.408 0.    0.    0.    0.    0.408 0.408 0.408 0.408]
 [0.    0.    0.289 0.    0.    0.    0.577 0.289 0.289 0.289 0.577]
 [0.218 0.    0.436 0.218 0.436 0.    0.436 0.218 0.218 0.218 0.436]]
```

Time Frame:

From the table below the time frame for this research is given-

Semester	Work
10th	Topic selection, literature study, algorithm selection, attribute selection.
11th	Will collect primary dataset and design algorithms.
12th	Will implement the algorithms and find results.

Conclusion:

From our Primary data set we can see that our data are mostly taken from Rajshahi district and there have large number of male customer.

Age and occupation attributes have great effect in our data.

Food quality, service quality and ambience have great effect in customer satisfaction.