



Growing Popularity of Restaurant food in Bangladesh

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Approval

APPROVAL

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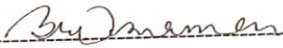
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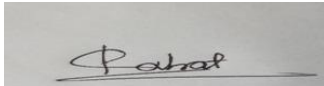


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DECLARATION

It at this moment declares that I have done this thesis under the supervisor of Shah Fahad Hossain, Lecturer Department of software Engineering, Daffodil International University. It is stated that neither this thesis nor any part of it has been submitted to any other university to receive a degree.



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ABSTRACT

Dependency on restaurant food is a common issue nowadays. People are taking outside food vastly. Excessive taking of restaurant food is harmful for general human health. It's a matter of concern. So, I have decided to do research on this issue. I made a questionnaire to survey 352 people. I conducted the survey online. I used my collected data to know the growing popularity scenario of restaurant food in Bangladesh. I used the EDA methodology. In this methodology, I collect data, then I preprocess the dataset. After preprocessing data, I analyze data and visualize data in a relevant way. I show the result based on my analysis. That's all I did in this research.

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CHAPTER 1

Introduction

1.1 BACKGROUND

Eating is a basic need of human life. Some people used to eat only for their needs. Some of them have a hobby of eating. They basically eat by taking various tests of foods. Cooked foods are common. On the other hand, restaurant or outside foods are also popular nowadays. People are pretty much interested in taking outside food parallel with homemade food.

Eating outside is a new trend of modern people. Following trends blindly is another reason behind restaurant food intake.

People who used to take outside food usually go to restaurants several times a week. There are some other important reasons to take outside foods. Professional people generally stay a long time outside so they have to take outside food by going to a restaurant.

To find out 'how much time people spend in a restaurant every week' machine learning is the best way to find this factor. Survey based relevant data are useful to do this research. This work based on survey questionnaire. Data are collected through an online survey form. The survey form is designed with some questions.

In my work, I collect data. After that, I analyze the data. Then preprocess and visualize data. Finally, I used the model to predict the results of my work.

1.2 MOTIVATION

Habit of eating outside is an issue of concern. Excessive outside food is not good for our health. Day by day people are depending more on restaurant food. There is a health issue because homemade food and outside foods are not the same.

The work will show the actual scenario of how much people are depending on restaurant food and in the end, it will show the result of how many days are spent by people in a week to go to a restaurant.

There are some other works which are related to my topic. They also work with the survey data. In their work they analyze data in a general way. But, in my work I analyze data and also visualize the data set. After visualizing the dataset I will show and discuss the result.

My research may help the restaurant owner as it consists of consumer perception based on the survey I generate. It also describes the influencing key factor of restaurant food intake. It may give an idea about the financial ability of various people who usually depend on outside food mostly.

Lastly, there are some few works on this topic in my country. My work can be helpful to the other upcoming research on this topic based on my country's perspective.

1.3 PROBLEM STATEMENT

We know that the habit of eating outside depends on different cultural, social and socio-economic elements. Actually, the habit of eating outside depends mostly on people's financial ability. It is very tough to assess consumer perception. On the other hand, excessive intake of outside food is also a health concern. Sometimes people go to restaurants just to follow the trend and spend money unnecessarily from their basic income. Some

influencing factors are playing significant roles to influence consumer mind so that they choose the outside and spend more money on it.

Many other researchers work on this type of topic. They used some models based on their work. But their research was relevant for their country's situation. In my research I collect data from Bangladeshi restaurant going people. My research consists of the actual scenario of Bangladeshi's restaurant food intake. In my work, I visualize data and analyze it based on some parameter. It may play an important role in taking ideas about the main factors of outside food intake among Bangladeshi People.

In my research, I work with my country's people. I used some models to analyze the result properly. So, my research and its results are applicable for my own country and it will help our future local researcher who will work on this kind of related topic.

1.4 RESEARCH QUESTION

1. How many days are spent by people at a restaurant in a week.
2. How much money is spent by people for restaurants in a month.

1.5 RESEARCH OBJECTIVE

The main objective of my research is to show the actual scenario of restaurant food intake. I will show you how much money you spend in a month to go to a restaurant per week. Also, I want an appropriate result after analysis so that it can show the pure scenario.

1.6 THESIS ORGANIZATION

In the first chapter, the background behind the work, motivation of the research, problem statement, research questions, and research objectives are discussed. The other parts related to our research are as below:

In the next chapter I will discuss the literature review where we can see some researcher's studies which have already been done on the same field of restaurant issues, their used methodology, lacking and on the basis of their work comparison among my work and their work. In their chapter, we will discuss the methodology of our work. In the methodology of my work, I will discuss data collection, pre-processing of data and will analyze our work. The results of the methodology will be discussed, in chapter four. The last chapter is the ending chapter.

Here I will give the conclusion part where there will be the total summary of my work. Here I have discussed what work I will do in the future for the betterment of the work

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In a literature review, a researcher reviews the previous work, research, conference paper, books, article, etc. with that one can find out what work has already been done on the topic, summarize the whole topic, find out what is lacking in the work. after analyzing they can work on limitations and overcome the limitations to get better results.

2.2 PREVIOUS LITERATURE

The idea of this type of research started when the restaurant food culture was growing vastly. This type of research work has been happening in recent history. Many researchers do this kind of work by using different types of methodology. Some of them used the EFA, CFA method. Some of them used survey method or sampling methods etc. In my work, I used the SVM and Decision Tree method to show results based on the Data set. My work is focused more on some specific parameter to analysis result.

Nazrul Islam et al [6] used EFA, CFA method to find six major factor that influence people to restaurant dining. They also used path model to get result. They conducted a structured questionnaire-based survey on 329 people. They used factor analysis to predict the result.

Abdul Latif et al [4] used structured questionnaire method. They also used stratified sampling method to find out compelling factors to take decision on restaurant food and motivating factors that are behind of those decision. They also conduct structured questionnaire-based survey on relevant people.

Haimanot B. Atinkut et al [8] used also survey method initially. They also used diverse sampling method to find out that how fast food are being popular in China. They also find the ongoing

popularity scenario of street foods in China. They went for man-to-man survey in China street to collect their desired data. After, collecting data set they analyze it and visualize the result

Kyungyul Jun et al [4] used self-administered questionnaire-based method to find their desired result. They work with technology acceptance model (TAM) to find and examine the influencing factors affecting customer to use online food delivery system. They collect data from questionnaire and analyze it. They also use different type of hypothesis to predict their result in their thesis.

Omid M. Ghoochani et al [5] doing the same type of research on Iranian consumers. They basically used qualitative and correlational survey on their country's consumer to find the main factors of fast food consume. They find out that health consciousness and trust is the main factor. They also find that married people are positive toward fast-food consumption.

Kimberley Petersa and Pr. Hervé Remaudo used BWS (best-worst scaling) model to find out the customer attribute towards Australian Restaurant. They took interview of total 1200+ Australian people to collect data for the research. They compare best factor with worst factor and discuss their obtained result. This was a research based on Australian context.

2.3 CONCLUSION

There are many types of methods used. For having relevant result most of them used the survey method. Questionnaire based method is the based for this type of research. In my work I also used survey method, but the difference is I visualize and analyze data with the help of machine learning. It may effective my research properly. The result of my work helps to others for future relevant research purpose.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH METHODOLOGY

I have applied EDA (exploratory data analysis) method to analysis my dataset. Here I have done, data collection, data preprocessing, data analysis, data visualization techniques to describe my research and its result. After than, I used Decision tree and Support Vector Machine model to predict my result based on analysis and find out the accuracy.

3.2 DATA COLLECTION

I have collected data from online based survey form. I used structured questionnaire to collect data through survey form. It, consist ten different types of question in the form. Though, there already had some existing datasets in different resources.

Those datasets are from out of our country. But I must go for our country's data. That is why I conducted online based survey to collect data. As this type of data were not available in the internet.



Figure 1:Data Collection Google form

3.3 DATA PREPROCESSING

As I have collected data from survey-based questionnaire. I got 352 responses from survey. So, my total number of data is 352. The dataset has total 13 columns. So, it means that this dataset has 13 types of attributes. People who responded to my survey are basically respond on different types of question. After collecting data, I merge data from survey form to excel file. This excel file is actually my dataset for my research purpose. I exported the excel file in csv format. I use this csv file dataset for all of due purposes. I import this csv format dataset into Kaggle.

Kaggle is one of the popular platforms for data science and machine learning. I used some necessary library into Kaggle to preprocessing the dataset.

```
df.head(10)
```

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
0	Timestamp	1. Your Gender as a restaurant Consumer?	2. Are you?	3. Do you prefer restaurant food as it is read...	4. Are you choosing restaurant food for your li...	5. Are you choosing restaurant food for diffe...	6. What influence you most for going restaurant?	7. What you eat most in restaurant?	8. Your monthly income?	8. Your Monthly Spent Money for restaurant foods?	9. Is Privacy a key factor for your rest...	10. Do you think that excessive restaurant foo...	10. How many times you go to a restaurant in a...
1	5/24/2022 18:22:11	Male	Youth	No	No	Yes	Friends	Burger	NaN	0-2k	No	Yes	NaN
2	5/24/2022 18:40:09	Male	Youth	Yes	Yes	Yes	Friends	Burger	NaN	0-2k	Yes	Yes	NaN
3	5/24/2022 21:24:06	Female	20-30	Yes	Yes	Yes	Restaurant's Facebook Page	Chinese Set Menu	10k-20	0-2k	Yes	Yes	NaN
4	5/24/2022 22:16:19	Male	20-30	No	Yes	Yes	Restaurant's Facebook Page	Fast food	10k-20	0-2k	No	Yes	NaN
5	5/24/2022 23:04:08	Female	20-30	Yes	Yes	Yes	Food Bank	Snacks, Dessert, Coffee	10k-20	0-2k	Yes	No	NaN
6	5/24/2022 23:07:36	Female	20-30	Yes	No	Yes	Food Bank	Snacks, Dessert, Coffee	10k-20	0-2k	Yes	Yes	NaN
7	5/24/2022 23:07:40	Female	20-30	No	No	Yes	Food Bank	Snacks, Dessert, Coffee	10k-20	0-2k	No	No	NaN

Figure 2: Data Collection Google form

3.4 DATA ANALYSIS

After collecting data and preprocessing dataset, data analysis is the most vital part for this type of research work. An appropriate result based on a successful analysis. Data analysis may be executed by following some specific techniques. Inmy analysis phase, I used EDA(exploratory data analysis) method.

3.5 EDA

Exploratory Data Analysis is one of the critical process of data analysis. It is the process of performing initial investigations on dataset. It consist discovering datapattern, perform hypothesis with the help of graphical representation of analyzeddataset.

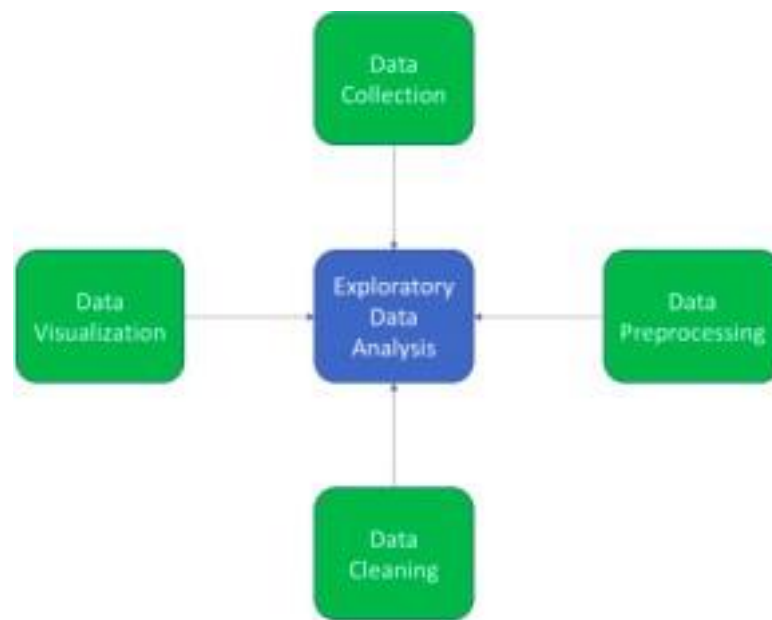


Figure 3: EDA (exploratory data analysis)

3.6Data Visualization

After 'data analysis' phase, data visualization should be performed. Without a proper visualization accurate data analysis cannot be understandable. Data visualization actually the graphical representation of analysis performed on the dataset. Data visualization contains some graph, chart, bar etc. Data visualization is a technique to present the analysis to non-technical people without any kind of confusion. The major advantage of 'data visualization' is it's easy to share information of data related work.

2. Are you_?

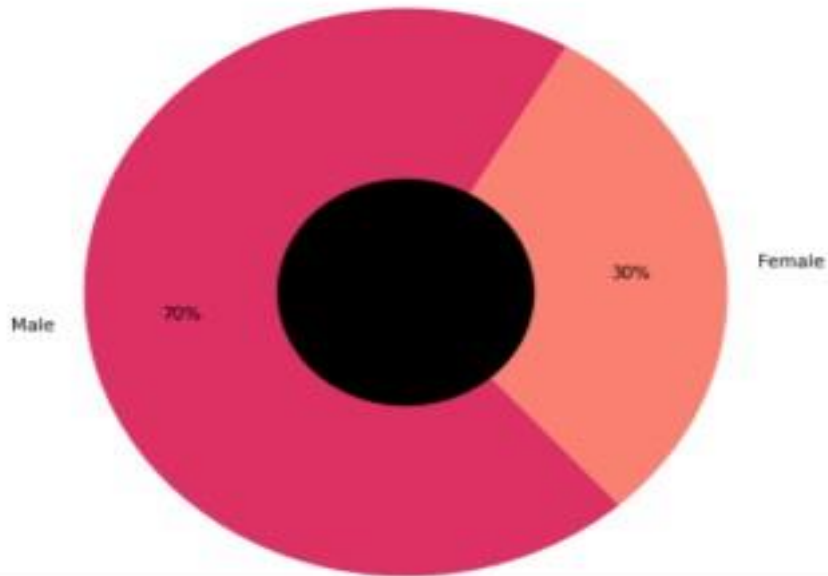


Figure 4: Gender based contributor.

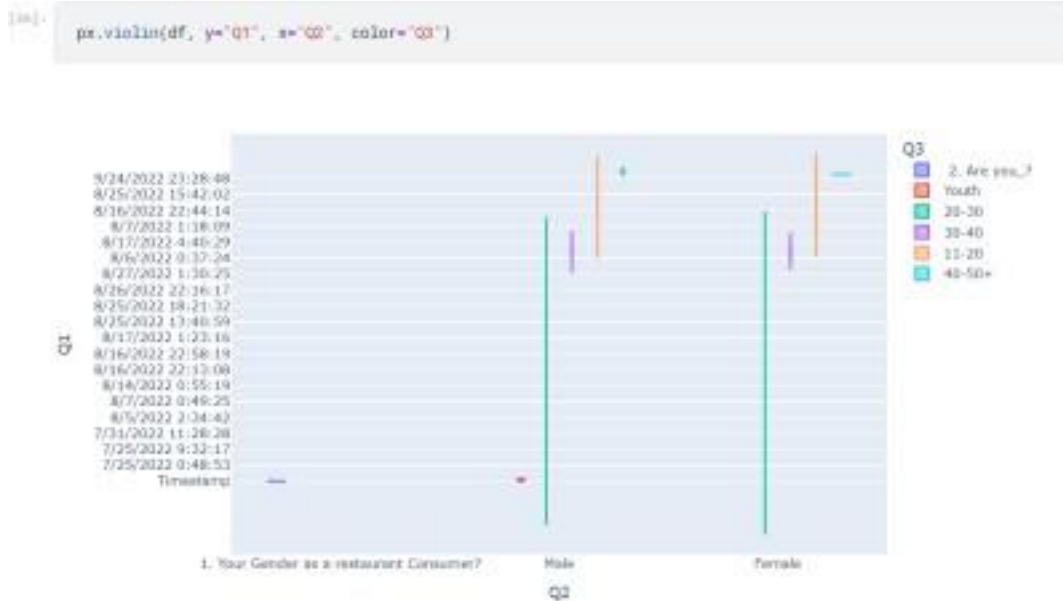


Figure 5: Male-Female contributor based on their age.

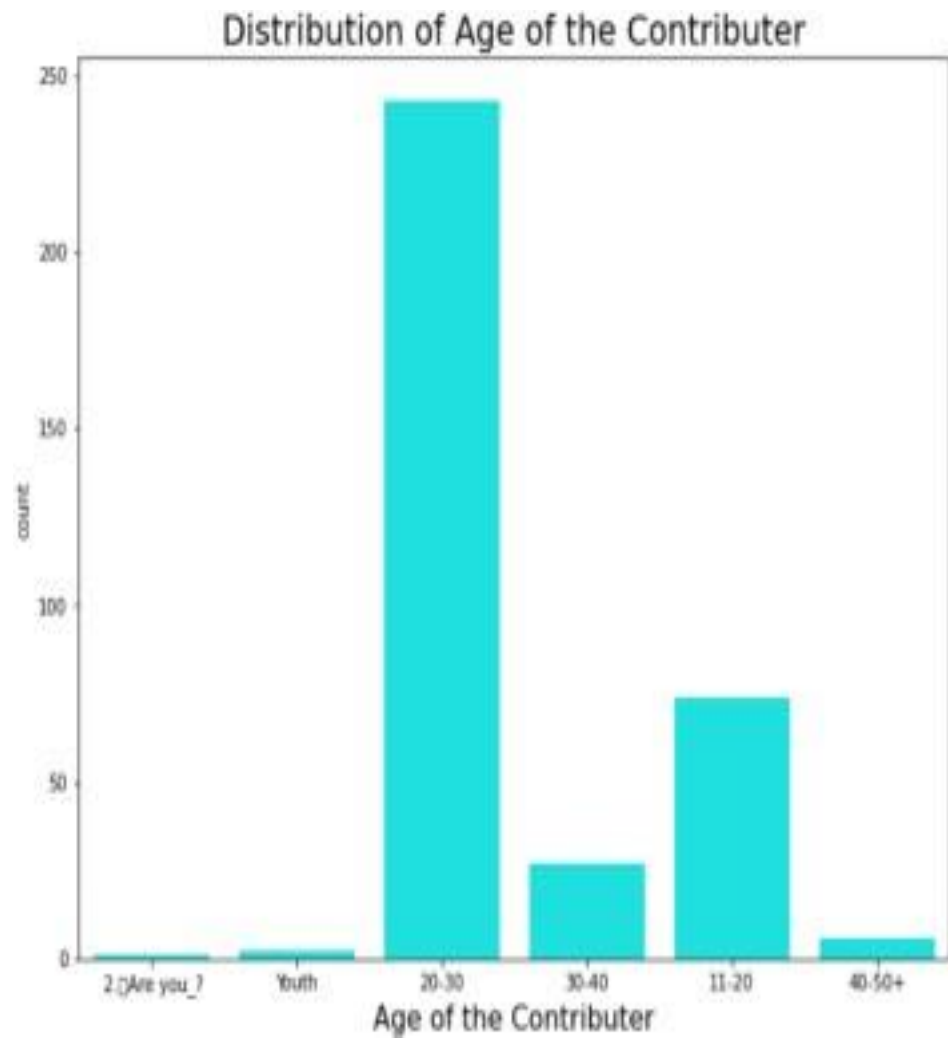


Figure 6: Contributor's Age

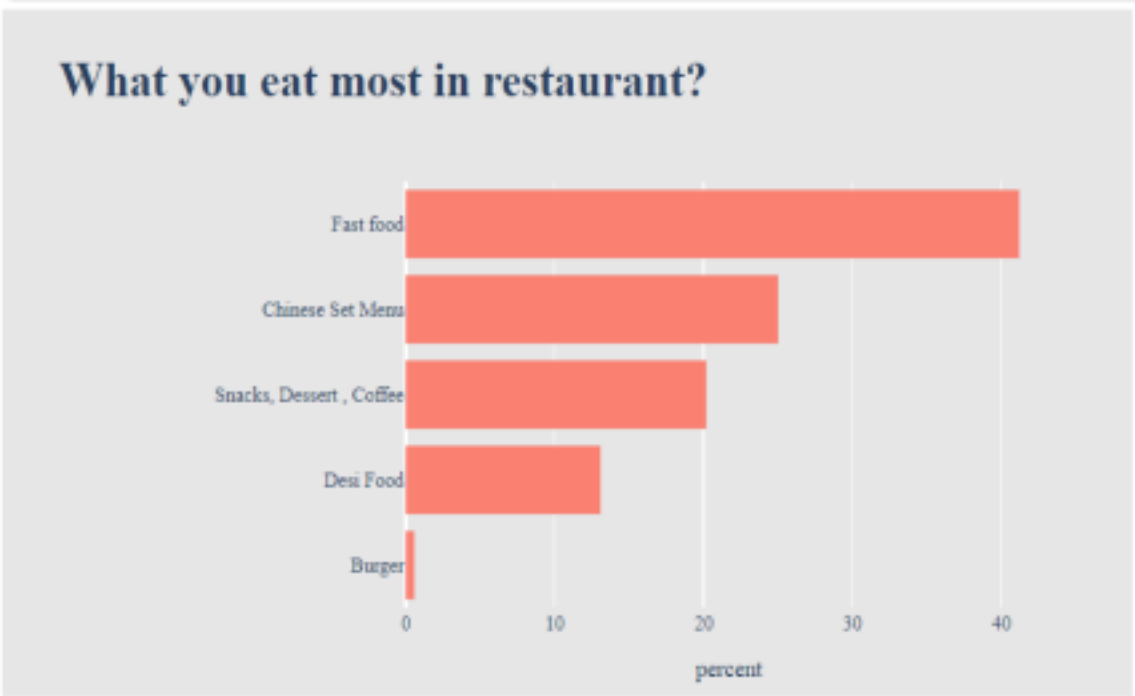


Figure 7: Mostly taken food item in restaurant.

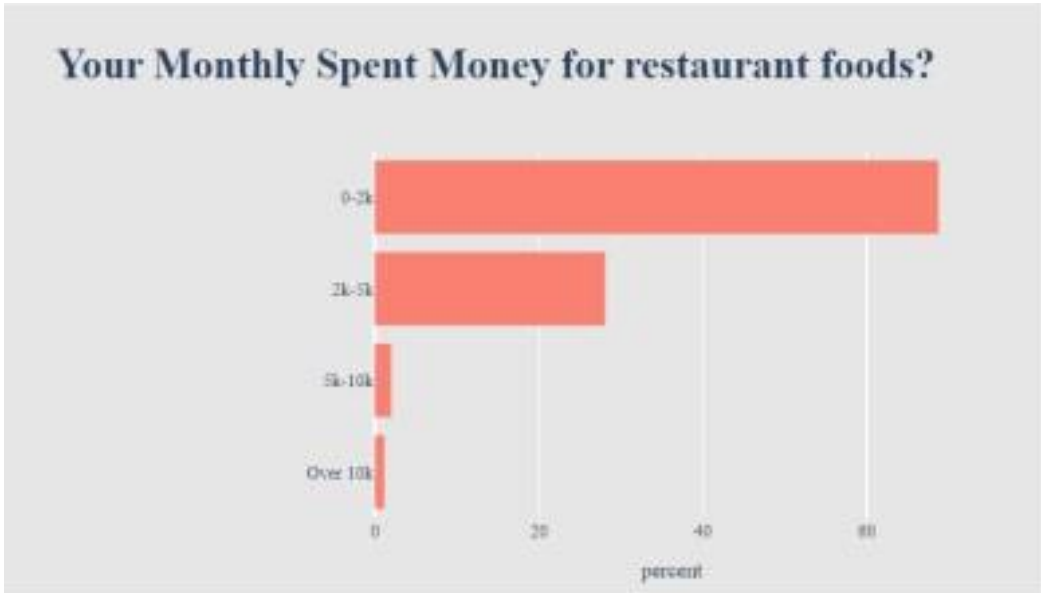


Figure 8: Monthly spend money for restaurant.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

The methods of research work are described. After the data collecting and preprocessing part, I have described the methods and which I have applied for analysis. There I will describe the results of my analysis and what I got from this research.

4.2 RESULT DISCUSSION

After Analysis with EDA method on our dataset, I got significant result. The results are based on different types of attributes on our dataset. There I visualize the results between two attributes. The attributes are showing different types of output. Here, I relate one attribute with another. Example: I got result about people from different ages think that excessive restaurant food is bad or not. This is how I got result based on my dataset. Finally, I applied two ml algorithm (decision tree and SVM) to compare my result based on accuracy.

4.1.1 Restaurant going tendency in a week of different ages.

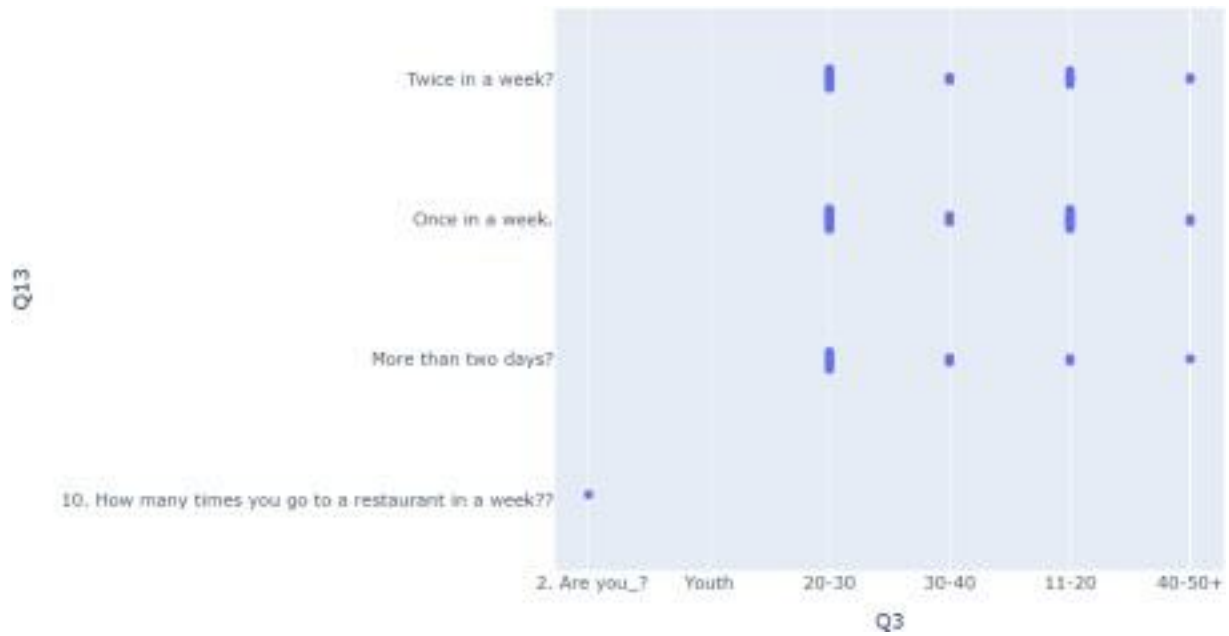


Figure 9: Weekly restaurant going tendency in different ages.

4.1.2 Influencing factor for different ages people.

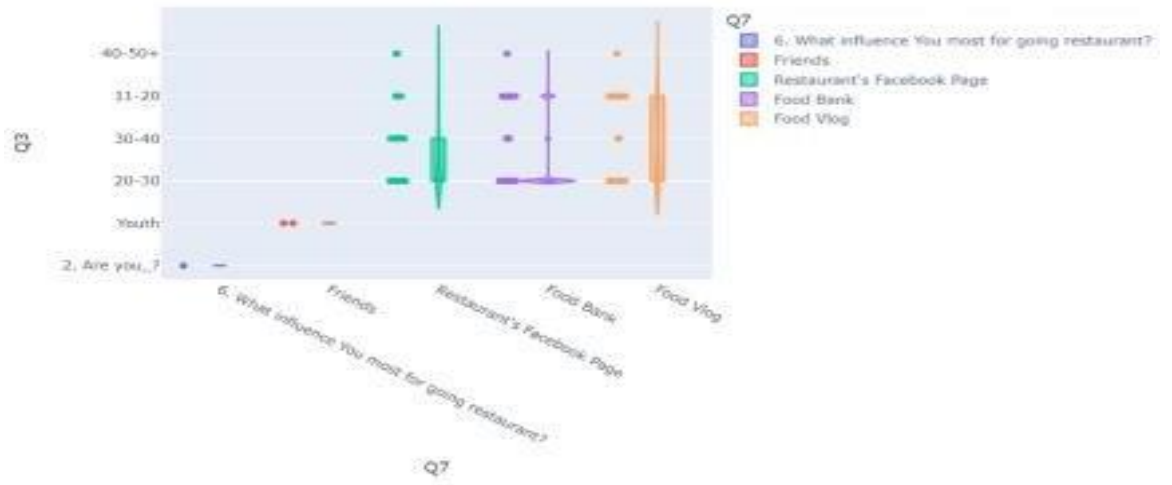


Figure 10: Influencing factors for different ages.

4.1.3 Which types of people concern more on restaurant food?



Figure 11: Concern rate among different ages.

4.1.4 Restaurant going tendency based on monthly spent money

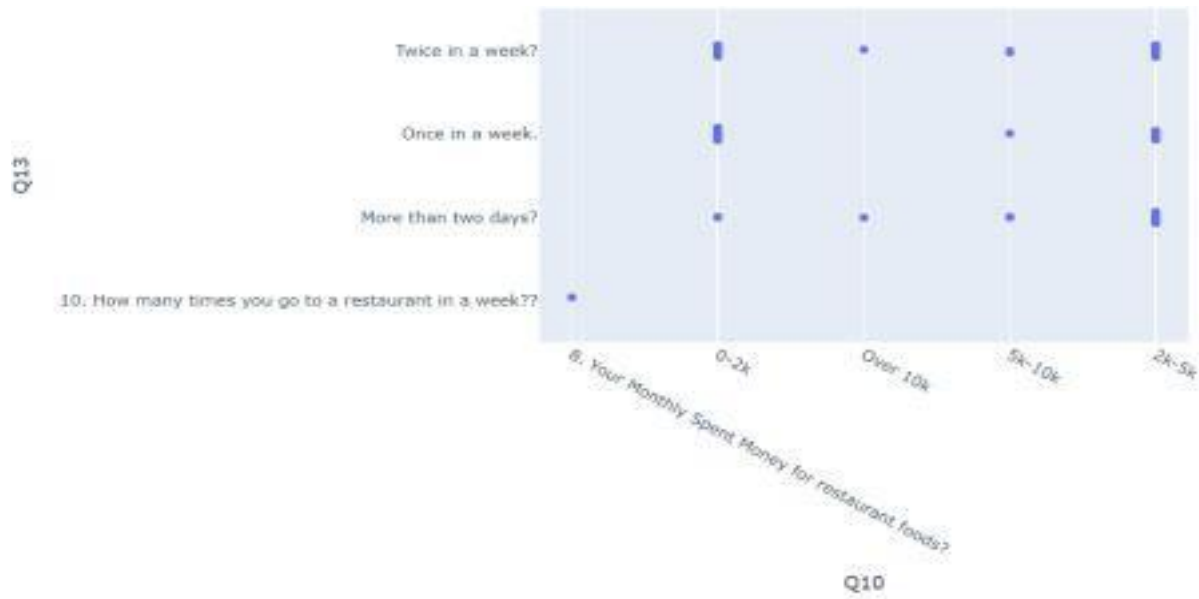


Figure 11: Restaurant going tendency based on monthly spent money.

4.1.5 Restaurant going tendency based on monthly income.



Figure 12: Restaurant Going tendency based on monthly income

4.1.6 Decision Tree

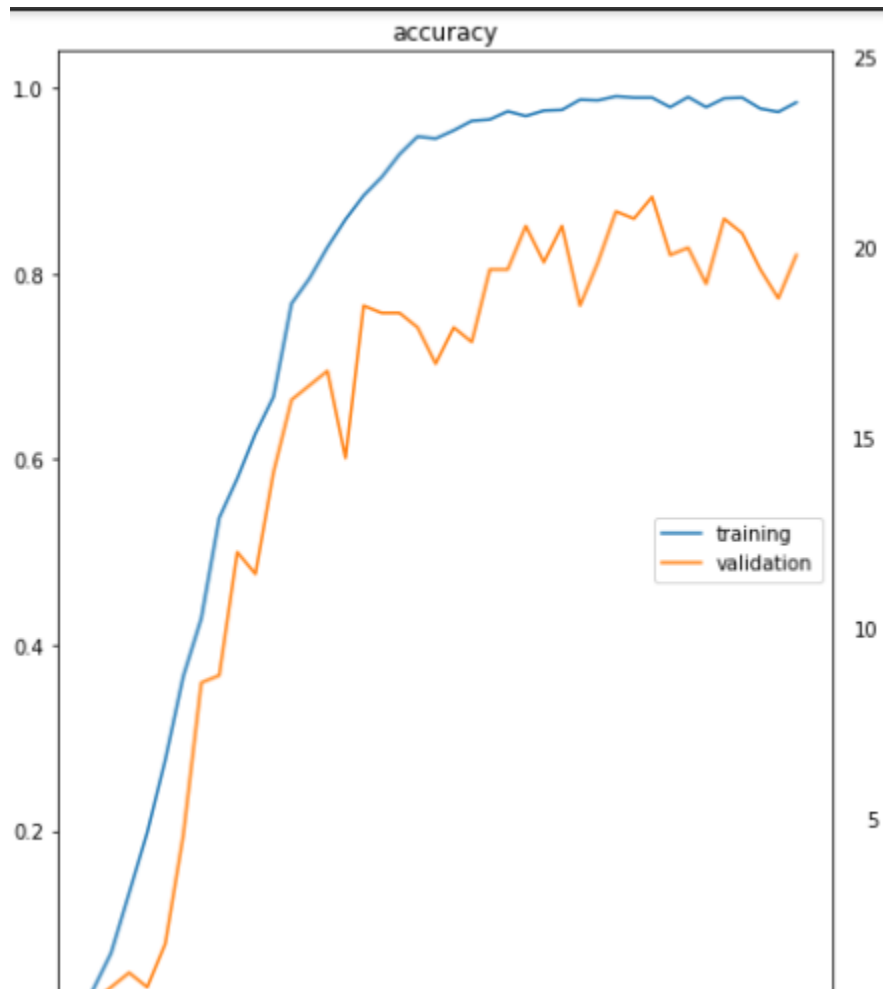


Figure 13: Decision Tree Accuracy Graph.

4.2.7: SVM

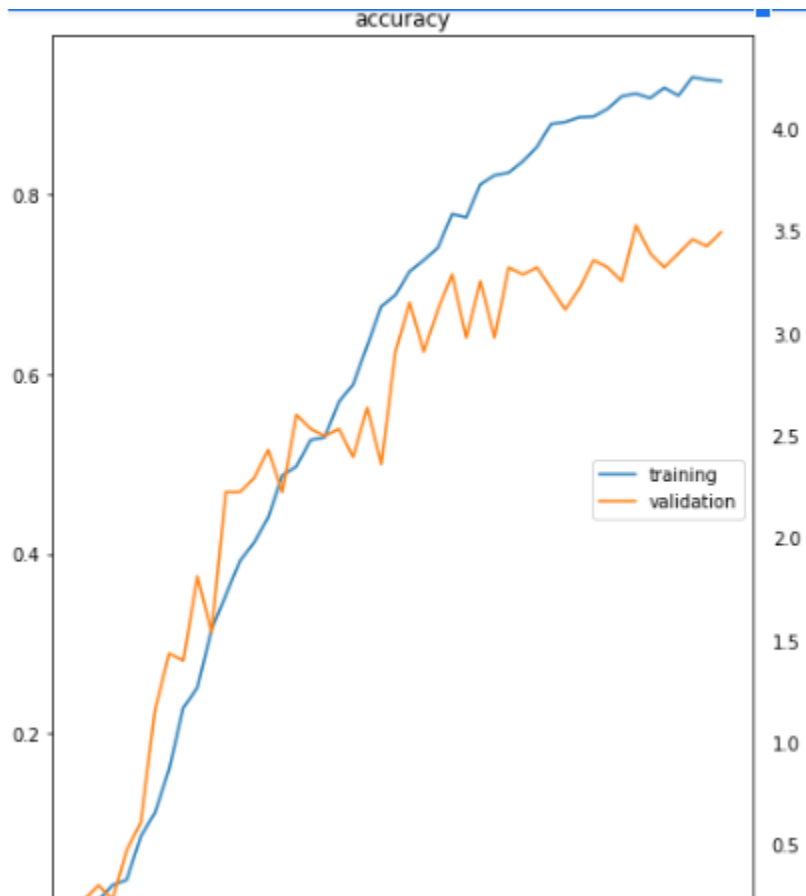


Figure 14: SVM Accuracy Graph.

Result and Analysis:

Algorithm	Accuracy
Decision Tree	89
SVM	80

Figure 15: Accuracy Compare

We got 89% accuracy with decision tree algorithm and 80% accuracy with svm algorithm. So, Here the better model is decision tree.

CHAPTER 5

CONCLUSION AND LIMITATIONS

5.1 CONCLUSION

Excessive restaurant going tendency is a major issue for our country. Currently dependency rate of restaurant foods is increasing day by day. People choosing restaurant foods for many reasons. On the other hand, following trend is a cursed. People are going restaurant just to follow the trend. Because, having food in a restaurant and share it on social media is one of the viral trends. If the situation is going like this then it's the time to concern about that. Spending money with no reason on restaurant food is not a good practice. For the upcoming and approximate global financial crisis, we have to down this restaurant going practice. Moreover, it's an issue of human health because restaurant foods are not so hygienic. Excessive taking of restaurant food may affect permanently on our health.

We need to aware people about this topic. My work may help them to understand the overall situation.

5.2 LIMITATIONS

In my work, the method is not as satisfactory. A modern machine learning method may improve the overall analysis quality. If we use a machine learning algorithm, the result will be more detailed.

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