VARENDRA UNIVERSITY

বরেন্দ্র বিশ্ববিদ্যালয়

VARENDRAUNIVERSITY

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

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


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# Introduction:

Managing customer satisfaction has become a crucial issue in fast-food industry. This study aims at identifying determinant factor related to customer satisfaction in fast-food restaurant. Customer data can be analyzed by using data mining method with two classification techniques such as decision tree and neural network. Classification models can be developed using decision tree and neural network to determine underlying attributes of customer satisfaction. Generated rules are beneficial for managerial and practical implementation in fast-food industry. Data mining helps to find out the customer behavior towards a business and also helps in making crucial decisions for the business.

# Objectives:

This research was conduct to find out the factors for customer satisfaction. The feeling of pleasure and disappointment is known as Satisfaction. If the product was not satisfied person feelings, then it will be dissatisfied, and if product satisfied person feelings after the use they will be satisfied. Customer is the key role in any business.

Here are some key objectives:

- To identify the customer's satisfaction in the fast-food restaurant.
- To discover what factors, make customers happy.
- To explore and to examine the utilization of information-based marketing strategy by extracting useful data using DT and NN.
- It will allow the people to know which factor leads to customer's satisfaction that the owners can make crucial decision for their restaurant.

# Literature Review:

The research is to examine the predictors of customer satisfaction in restaurant sector in the context of kishoreganj, Bangladesh.

- Tools: Used Linear Regression method, statistical software SPSS, MS Excel and frequency distribution table.
- Limitations: It is limited to small sample size and is not conclusive research in nature. The study conducted survey over online, denoting the customers might not have real-time experience at fast food restaurants while fulfilling the questionnaires. Finally, this research is conducted only in perspective of Kishoreganj.

Analysis of customer satisfaction with fast food restaurants at one of the fast-food restaurants, namely KFC in the city of Medan, Indonesia.

- Tools: C4.5 algorithm (data mining algorithm)
- Limitation: Conducted only in perspective of Medan. Conducted only based on KFC restaurant.

This research is focused to find what are the key success factors for fast food industry in region of Pakistan.

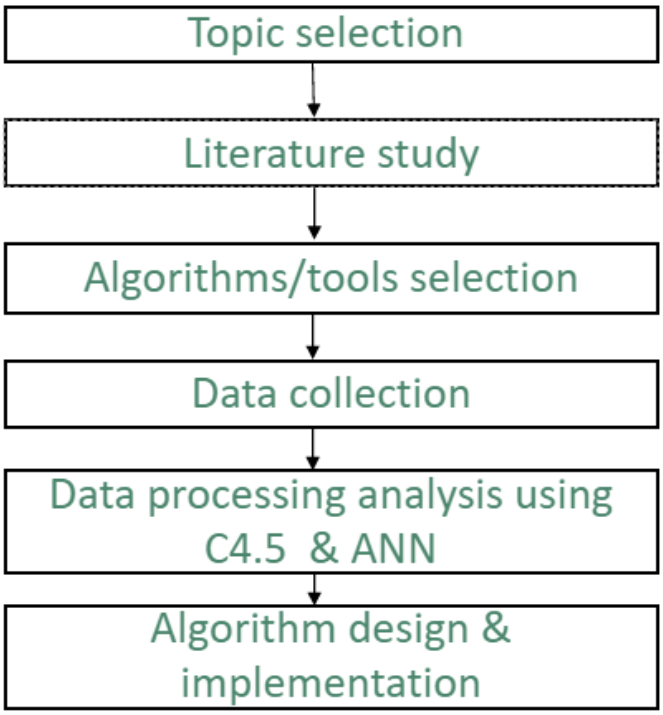
- Tools: Theoretical Frame work, multiple linear regressions, ANOVA, Regression Co-efficient.
- Limitations: The research is not based on full area of Pakistan; some customers can give the wrong data in that case the output will be different.
- Result: 1st table shows Promotion, Service quality, Customer expectations, Brand, Physical Environment, Price, and Taste of the product factors are responsible for satisfying customers. 2nd table shows comparative figures of the satisfaction and the factors causing satisfaction in the purchase of fast food. 3rd table shows positive values and sub factors are significant and it is concluded that the entire list of hypotheses is endorsed.

# Methodology:

Algorithms: C4.5 algorithm (decision tree)- The C4.5 algorithm is used in Data Mining as a Decision Tree Classifier which can be employed to generate a decision, based on a certain sample of data (univariate or multivariate predictors). It can work with both Discrete and Continuous Data.C4.5 can handle the issue of incomplete data very well.

Artificial Neural Network (ANN): An Artificial neural network is a series of algorithm that endeavors to recognize underlying relationship in a set of data through a process that mimics the way the human brain operates. It is usually a computational network based on biological neural networks that construct the structure of similar to a human brain. It can perform tasks that a linear program cannot. It can adapt to change input; so, the network generates the best possible result without needing to redesign the output criteria. It helps to perform specific tasks like classifications, pattern recognition, clustering and so on.

Framework:



# Dataset Analysis:

Demographic item:

- Name
- Email
- Gender (Male, Female, others)
- Age (from 10-17, 18-26, 26-40 and above 40)
- Monthly Income (Below 10k, 10-25k, 25k-40k, above 40k)
- Occupation (Students, job-holders, others)
- No. of items order per month

Variables:

- Price fairness (Inexpensive, expensive, fair)
- Ambience (very good, well, bad)
- Service quality (very good, bad, average)
- Food quality/flavor/taste (very good, well, average, bad)
- Restaurant location
- Level of satisfaction (Satisfied, Not satisfied)

# 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:

Concerning all types of business organization customer satisfaction is the most important issue, and considered as most reliable feedback, for the excellence of any business organization. Customer satisfaction is the part of marketing and play important role in the market.

This research is aimed to investigate the association of influential determinant with customer satisfaction and explore the most influential factor at fast food restaurants in Rajshahi, Bangladesh.

Data mining approaches based on decision tree and neural network to identify the most determinant predictor in influencing customer satisfaction in fast-food restaurant is proposed.

This research provides some findings that are useful for the marketers, policy makers who have interest in customer satisfaction research.

Finally, it will be useful if more data samples can be collected for implementation.