

## Food Nutrition Analysis for Health Using Data Mining Techniques

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### Abstract

Nowadays, manufactured food is used in most of our diet, which is related to food nutrition. Food Nutrition system is a concept widely used but there is little systematic framework that can model the entire food nutrition system. Processing on the structure and composition of food has a major impact on the nutritional value. If adolescents consume a large amount of the super processed food, they risk a rise in obesity and diabetes. As such, the author developed a system using Data Mining Techniques to improve the food nutrition values for users. It helped to identify the habits of the teenagers and their ability to make decisions. Furthermore, this project was aimed at investigating the role and relationship among food, health and the environment, as well as their chronic micronutrient deficiency (also known as “hidden hunger”).

### Keywords

Data Mining Analysis, Website System

### Introduction

With the progress of time, people pay more attention to health needs. At the same time, more and more businesses consider dietary preferences of customers and ignore the nutritional value of food. As a result, many diseases are closely related to diet. The author aims to analyze the needs of vegetables, fruits, meat etc. in the market to understand which food can provide more nutritional value to users/teenagers. In Malaysia, few people develop a nutrition system because they lack the influence. Many people understand the nutritional value of food from the Internet, however some of the information may be wrong and this may affect the knowledge of the users/teenagers. According to the recommendations provided by the nutritionists, teenagers should manage their dietary habits with three meals. Whilst according to the doctors, avoid eating some food that can cause diseases. . Subsequently, the author, with the help of a doctor, wanted to pass the nutritionist to complete the nutritional system. At the same time, this system will also be of benefit to adults because they need to be responsible for the eating habits of teenagers.



## Methodology

Knowledge discovery is the process of obtaining knowledge from various information and according to different needs. The purpose of knowledge discovery is to shield the user from the cumbersome details of the original data, extract effective, novel, potentially useful knowledge from the original data and report directly to the user. It contains many different methods of discovery, including inductive learning, Bayesian statistics, information theory, knowledge acquisition by expert systems, and information theory.

## Results and Discussion

### Acceptance testing

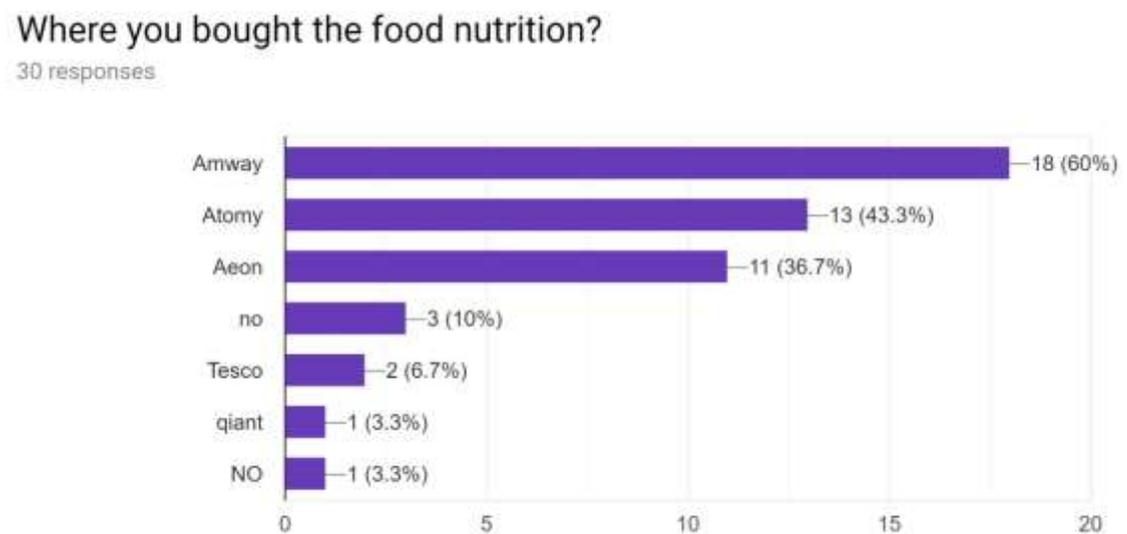


Figure 1. Bar chart to evaluate users “Where you bought the food nutrition ?”

Based on the bar chart above, most of the responses (60%) bought the food nutrition from the Amway Company. Secondly, 43.3% of the responses purchased the food nutrition from the Atomy Company. Thirdly, 36.7% of the responses obtained their food nutrition from the Aeon Mall. Another 13.3% of the responses did not buy any food nutrition. Lastly, only a few people bought their food nutrition in Tesco and Giant.

### Do you use any food nutrition system?

30 responses

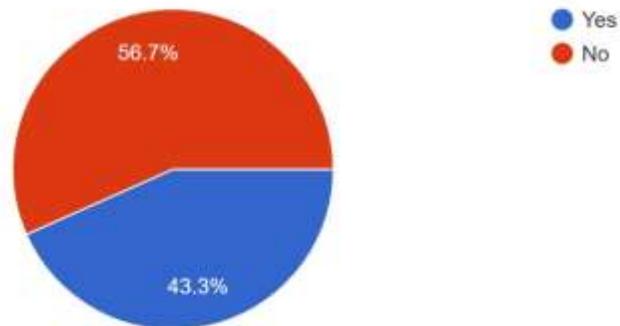


Figure 2. Pie chart to show the user experience on food nutrition system

Based on the pie chart above, most of the responses (56.7%) did not use any food nutrition system. Hence, they were not clear about the working method of the food nutrition system. However, 43.3% of the responses used the food nutrition system to process, learn and follow the guidelines.

### Which of the feature you prefer in system?

30 responses

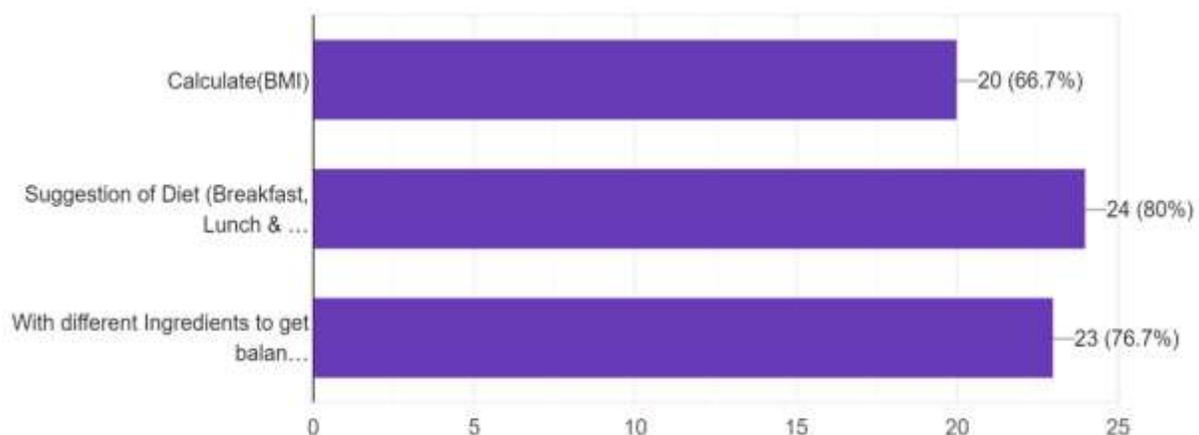


Figure 3. Bar chart to show the features for the user

Based on the bar chart above, most of the responses (80%) preferred the proposed system to suggest the method of diet (Breakfast, Lunch & Dinner). Secondly, some of the responses (76.7%) thought about the importance of the different ingredients to get a balanced nutrition in

their diet. Finally, some of the responses (66.7%) preferred to calculate and know their BMI value in order to identify any problems related to BMI.

### Graphical user interface design

Based on the information gathered from the BMI page, Users can use the BMI calculation to know their current body status (Figure 4). In order to get the BMI value, the BMI formula is used. The BMI formula is  $\text{weight}/\text{height}^2$ . Based on the range of the BMI results, the system will show the body status such as underweight, healthy, overweight or obese. At the same time, the system will give appropriate suggestions to the users on what to do.

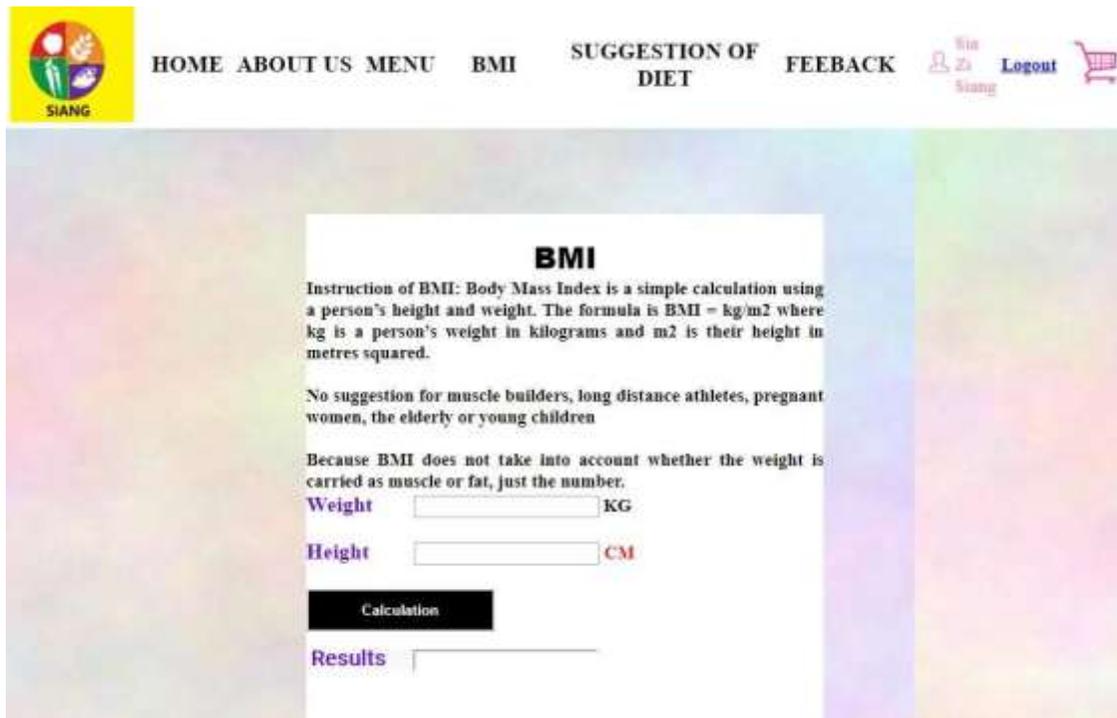


Figure 4. BMI page of the BMI Calculation in Food Nutrition System



Figure 5. Food Nutrition System Added to Chart and Check Out Page

Based on the information obtained from the page, the food nutrition system provides online transaction for the users (Figure 5). In the checkout page, users need to enter their address and mobile number. After that, click the cash button and it will process the success order. After making the payment by the users, all data will be stored in the database. Then, the author can describe or make a prediction based on the data to bring progress or benefit to the company or users.



Figure 6. Descriptive and Prediction Analysis on Food Nutrition Sales

Figure 6 provides information on the descriptive and prediction analysis. For the descriptive analysis on food nutrition sales forecasting, the author used the Tableau. It is the most suitable tool to provide analysis of the data on business intelligence. It has the feature of creating a wide range of diverse visualization to show the data of the insights. This tool allows the user to drill the data to look at the impact in the visualization format and it is easy to know by other users. The

descriptive and prediction analysis will bring benefit to the user and progress to the company through the R programming and Tableau. Based on the result, it will help the company in the process of making decisions fast and accurate.

### Conclusion

The proposed system described in this paper has been successfully designed and tested by the author. The system allows users to calculate the BMI to know the current status of the body if they are overweight, normal or underweight. Furthermore, for the users this system provides transaction features and more information about the food they consume. Through this system, most of the people will be able to take care of their diet life.

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