

Mobile Daily Diet Guide and Advisor for Filipinos

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Abstract: Because of the saying “Health is wealth”, more people become conscious about their health. The proponents decided to develop a mobile application on “food nutritional daily diet guide for Filipinos. The objective of the study is the same as the researchers’ concern about the increasing number of unhealthy people especially the Filipino youth, that’s why the researchers want to help people to have a healthy diet. The system is considered as effective in terms of its usability, functionality and reliability. The users were able to understand how to operate the system in just a short span of time, indicating that they found it user-friendly. Because of the system’s portability, it can be easily installed to user’s mobile phones without the hassle of connecting to the internet. The users can use the system to monitor users’ health status and food intake or just to check for a food’s nutritional foods. In general, findings of the system were found to be usable, functional and reliable. The proposed system must not consider only the BMI status, calories, and diet plan in giving an advice; instead the future researchers must include other health factors such as frequency of exercise, hours of sleep, allergies and illness. The proposed system must advice also an exercise closely if not tailored to Filipino’s diet plan.

Key words: Mobile application, health status, food nutrients, machine translation.

1. Introduction

Because of the saying “Health is wealth”, more people become conscious about their health [1]. The proponents decided to develop a mobile application on “food nutritional daily diet guide which is designed to direct people in selecting healthy meal choices” [2]. This tool can help people to measure and estimate serving size depending on what their bodies need [3]. Aside from its benefits like measuring one’s food weight, the researchers through the system can provide users the nutritional information (such as fat, saturated fat, cholesterol, salt, sugar, dietary fiber, carbohydrates and protein) proportions for the exact serving size of food they put on its glass platform [4].

The researchers found out that the problem with most Filipino people is that they confined their health on how they feel. Henceforth, people feel healthy does not mean that they do not need diet guide. When sickness suddenly strikes or any related health problem, or sign of old age, or any feeling of weakness - people begin to search for information on either medical or herbal supplement to help them get out of their existing health problem which could be prevented by healthy diet guide. By having busy lifestyle, the ever-tempting convenience of fast food, it is now very difficult to enjoy excellent daily nutrition [5].

In doing so the researchers hope to reduce the burden of diet related chronic diseases like type two diabetes mellitus and coronary artery disease from society [6]. The researchers want to normalize eating with a stable, diet-free lifestyle and meet people's nutrient and energy needs [7]. This can help control, prevent, aid, or improve nearly every aspect of their health and body [8]. And a nutritional eating plan will definitely improve their chances of fast weight loss or it will give them a healthy body [9]. Through the mobile phone, the diet application can be used on a large scale and basically anywhere we go, in any kind of situation [10]. The researchers are using a mobile device application to work at this intersection [11].

The objective of the study is the same as the researchers' concern about several if not increasing number of unhealthy people especially the youth, that's why the researchers want to help people to provide a healthy diet guide. The researchers want to help the user to choose a healthy diet by advising them the proper nutrition. The researchers would like to include the diet guide as one of the mobile phones' applications or software [12]. The mobile phone has gained incredible ground all over the world and is one device most people would not leave home without [13]. This paper recommends cell phones as the perfect device to be used in monitoring people's diet.

1.1. Students

The paper would help students especially those who work to monitor their health conditions. Students do not have enough time to keep an eye on their daily intake so this study will help them monitor their daily intake in more accessible and in a simpler way. By using mobile phones, they can supervise their health anywhere and anytime.

1.2. Student Athletes

The study will help an athlete to know the food that contains the right nutrition that their body needs. As an athlete they have to monitor their daily diet to maintain their fitness. Instead of consulting a Dietician they can just check their health using mobile diet guide.

1.3. Future Researchers

The study wants to give an idea to the future researchers who are interested to expand the study of mobile diet guide based on the recommendations of this paper.

1.4. Community

This study can benefit the community in general in a way that it will lessen the obesity and malnutrition of people. This will be a better substitute to monitor the daily nutrients that they take. The study is used to show the importance of nutritional contents in every food taken. The study will help the people in our community to live healthy and to become aware in what food will be applicable to their health.

Researcher's contribution to the development of Department of Computer Science is to share the use of mobile application. The researchers want to give more information to all Computer Science students about mobile application programming and implementation of decision tree algorithm as an expert system.

The researchers used the Mobile java application. The mobile phones that are compatible with the application are .jar file supported and it should be well-suited in configuration with CLDC 1.1 and profile of MIDP 2.0 or 2.1. The general scope of the Diet Guide is focused mainly on the food ingestion of an individual as input to the system, including the food's nutrients that were taken and the needed nutrients. The system will be centered on advising the user on their daily diet.

The mobile application system is limited to monitoring and guiding the daily food intake of a single user only. The user will be taken to create his profile and to provide his personal data. It does not include the past illness, hours of exercise, hours of sleep, metabolism, daily activities of the user or other health factors; it is only bounded on the food taken and its nutritional contents. The advice will only depend on the user's age, the user's chosen diet plan and BMI (Body Mass Index) that will be generated by the system according to the user's inputted data. The system's database will contain different types of Filipino food, their

macronutrients, calories and the daily advices by the system for the daily summarization for the user to view. The user can also edit his weight, height, and age.

The subject respondents of the researchers are found in Polytechnic University of the Philippines. The researchers will focus on 3rd year enrolled students. The researchers will ask students especially those who are overweight and underweight. Students who are overweight and underweight are our prospect evaluators. Pregnant women are not included because pregnant women's nutrition is strictly guided by their dieticians. From the second week until the fourth week of September will be the days of implementation. These can prove that the advices from our system will help the evaluators become healthier.

Purposive sampling, one of the most common sampling strategies, groups participants according to pre-selected criteria relevant to a particular research question (for example, HIV-positive women in Capital City). Sample sizes, which may or may not be fixed prior to data collection, depend on the resources and time available, as well as the study's objectives. Purposive sample sizes are often determined on the basis of theoretical saturation (the point in data collection when new data no longer bring additional insights to the research questions). Purposive sampling is therefore most successful when data review and analysis are done in conjunction with data collection.

The researchers used this technique in choosing the specific group of people or types of people, expert and quota sampling. We conduct brainstorming to identify the specific respondents and we found students specifically those who are underweight, overweight, and obese to become our respondent. By using this technique we found out the people who are not applicable to use the research. The researcher's purpose in choosing this group of people is to help them in monitoring their health even if they do not have time.

The respondents consisted of twenty two students who have a BMI status of underweight and overweight. There are ten 3rd year Bachelor of Science in Tourism students and twelve 3rd year Bachelor of Science in Computer Science students of Polytechnic University of the Philippines (PUP). The chosen students used the system for 1 day.

The data gathered from the 3rd year Polytechnic University of the Philippines (PUP) enrolled students were interpreted in relation to the research's objectives. This chapter discusses the result of the survey questionnaire answered by twenty two participants. The data collected in this study is showed in tabular and textual forms, which are carefully analyzed and interpreted. The Likert's scale below is used to interpret verbally the computed values.

2. Developed System

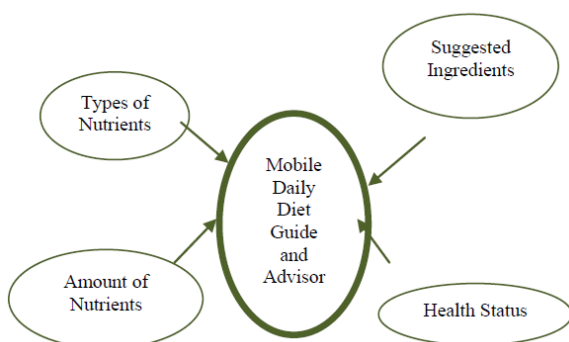


Fig. 1. Assumptions of the system.

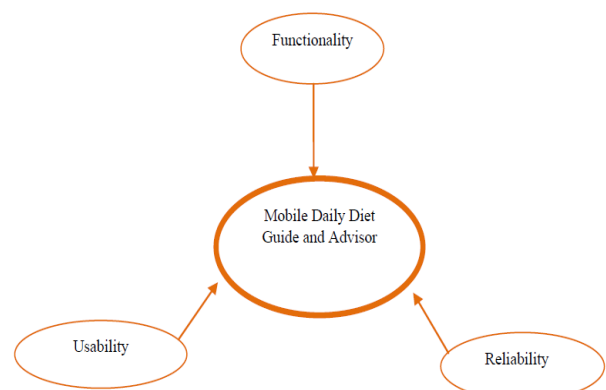


Fig. 2. Assumptions of the study.

Assumption 1: The lesser types of nutrients stored in the database, the lesser the memory size the system

will take.

Assumption 2: The lesser the amount of a particular food entered in the system, the more the system will suggest food which contains nutrients that is truly needed by the user.

Assumption 3: The more suggested ingredients in the product input are, the more nutritional facts the system will provide.

Assumption 4: The better the health status, the easier for the diet guide to suggest food to take. (See Fig.1)

Assumption 1: If the functions in the system work correctly, the more effective the system.

Assumption 2: The lesser the button commands available on the screen of the system, the clearer its user-friendliness' function is.

Assumption 3: The more precise and reliable the recommendation is, the more the user will be conscious about his health status (See Fig. 2)

2.1 System Architecture

The researchers used algorithm –Decision tree algorithm for advising [14]. This algorithm clearly explains principles underlying processes needed in the development of the software.

2.2 Users

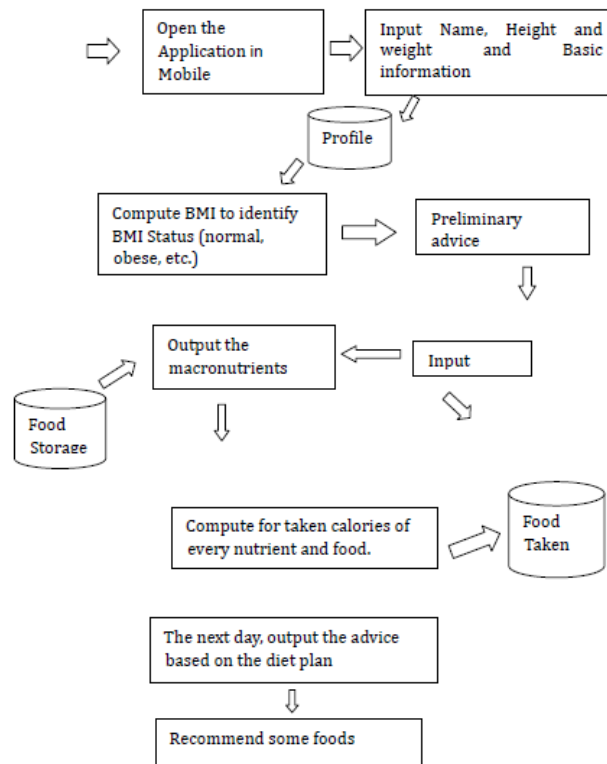


Fig. 3. System architecture.

Fig. 3 shows the System Architecture which discusses the formal description and representation of the system and how it process or translates source language/ text [11].

The proponents solved the following inquiries:

- 1) What is the effect of the Mobile Daily Diet Guide and Advisor in guiding the user to choose a healthy diet in terms of?
 - A. Nutritional Facts
 - B. Body Mass Index
 - C. Advice

- 2) What is the evaluation of the user on the following items?
 - A. Usability
 - B. Functionality
 - C. Reliability

3. Research Method and Technique

Descriptive method of research was applied in the study [15]. The researchers collected nutritional information databases of common Filipino food which were freely available over the internet, books and other publishing materials. The nutritional information provided by these materials was convoluted and hard to comprehend. It was not possible to apply it directly to our research. The proponents then process each of these databases to extract the important nutrients and their information for each food [16]. These important nutrients were based from the list of food in the food pyramid provided by the Department of Health [17]. The processed information for each of the items for this Filipino food was then visualized using a report [18]. This information became the basis of the food recommendation.

Based on the results gathered, the following findings are thereby presented:

There were a total of twenty two respondents in which twelve are third year computer science students and ten third year tourism students. Majorities are females and underweight belong to the 17-19 years of age group. There are 68% females and 32% males. In Body Mass Index status of the respondents, there 86% underweight and 14% overweight.

Effects of Mobile Daily Diet Guide in guiding the user to choose a healthy diet in terms of Nutritional facts, Body Mass Index and Advice.

The result of our findings is 3.61 for the effects of the system in guiding the user to choose a healthy diet in terms of nutritional facts, 3.62 for body mass index and 3.34 for advice. The first two findings were interpreted as Strongly Agree and the last is interpreted as agree.

A vast majority 55% strongly agreed to the effects of the Mobile Daily Diet Guide and Advisor while 7% disagree, which means the majority of the respondents strongly agree that the system helped in guiding the user to choose a healthy diet in terms of nutritional facts, body mass index and advice.

Evaluation of the user in usability, functionality and reliability.

The result of our findings is 3.40 for the usability of the system, 3.56 for the functionality and 3.57 for the reliability. Almost all the findings were interpreted as Strongly Agree except in usability that was interpreted as Agree.

A vast majority 55% strongly agreed to the evaluation of the system while 5% strongly disagree, which means that system meets the user's expectation to the system.

The food recommendations for a balanced diet require that the percent (%) of energy derived from each important nutrient category be unequal in a particular proportion [19]. Mayo clinic recommends that a balanced diet should contain 45-65 % carbohydrates, 10-35 % of proteins and 20-35 % of fats. In guiding Filipino in their daily eating guide the researchers based on the food pyramid in Food and Nutrition Research Institute (FNRI) to have a simple and easy-to-follow dietary pattern [20].

4. Conclusion and Future Works

Constructed from the findings of the study the researchers have yielded the following conclusions:

The users were able to comprehend the significance of maintaining a healthy diet because the system was able to generate accurate nutritional facts about the food Filipinos eat. As a generalization, the system was found effective in guiding the users in their everyday diet through system's daily advice/s. The provision is further explained about the user's health status and food's nutritional facts to assist people in

understanding effects of these to the body.

The system is basically considered as operational in terms of its usability, functionality and reliability. The users were able to understand how to operate the system in just a little time, demonstrating that Filipinos found the system to be user-friendly. The system's portability can be an asset for it can be effortlessly installed to their mobile phones without the hassle of connecting to the internet; the users can use the system to monitor their health status and food intake or just to check for a food's nutritional foods. As a generalization, the system was found usable, functional and reliable in its technical aspects.

5. Recommendations

Based on the computations and evaluations of the respondents to the study, the researchers' recommend the following:

- 1) The future researchers who will opt to decide to use this study must try to venture to bigger database memory to store more information on food, not only the basics but also to show more nutritional facts in every food.
- 2) The proposed system must not consider only the BMI status, calories, and diet plan in giving an advice; instead the future researchers must include other health factors such as frequency of exercise, hours of sleep, allergies and illness.
- 3) The proposed system must advice also an exercise closely if not tailored to Filipino's diet plan.
- 4) The future researchers may continue to improve the proposed system.

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