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AVALYN

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Abstract — Diet and exercise are components of a healthy lifestyle, and today we will examine how to improve and organize this lifestyle. To achieve this, one must accept responsibility for their behaviours and make sensible health decisions. The AVALYN idea comes into play here where it is designed for health enthusiasts and those who must maintain their health due to sickness. This application features a food sensor that can detect food quality, origin, and contamination level and identify if a meal is fresh, reheated, or contaminated. AVALYN, which signifies a beautiful breath of life in Old English, aids those suffering from food allergies. In addition, this application can be linked to smartwatches to monitor the user's hydration level through sensor scanning and provide health insights based on their health records. The AVALYN application is also particularly useful for drinkers because it detects and alerts the user to excessive alcohol consumption. Furthermore, by using smartphone and smartwatch sensors, this application can monitor a user's body temperature and alert them if a fever is detected. The application's numerous useful functions can also remind users to take their medications on time and boost their hydration by monitoring their daily water intake. This application requires all personal information from users, as well as their medical history and preferred healthy lifestyle. With all its features in one application, AVALYN would assist busy people to monitor their health conditions most of the time, providing helpful alerts and reminders along the way if abnormalities were detected.

Keywords— *Healthy Lifestyle Apps, Medicsafe, Consumption, Simplify, Alcohol Interaction Warning*

I. INTRODUCTION

The success of any business, including the health and wellness industry is dependent on mobile applications. In today's medical and wellness fields, mobile application development is critical. According to Health statistics in 2021, the mobile health industry will be worth more than 189 billion US dollars by 2025[1]. Mobile healthcare applications are important in reshaping the healthcare ecosystem by improving communication, efficiency, and service quality. Medical and health applications are designed for a variety of end-users, including healthcare professionals, labs, and patients, which influences their features, some integrations, and the level of data security required. Other types of contact tracing apps have also been available, each of which collects data in a unique way to follow its users' medical background and history.

According to the National Health and Morbidity Survey (NHMS) 2019, 30.4 percent of Malaysian adults were overweight, and 19.7 percent were obese [2]. Many people tried to live a healthy lifestyle, but due to their hectic schedules, they cannot help but neglect their diet, resulting in an unhealthy lifestyle that includes work stress, sedentary behavior, and poor eating habits. As a result, we developed AVALYN, a health-related mobile application. AVALYN, which is derived from an Old English word and carries the meaning of a *beautiful breath of life*, is a useful application that makes it easier to detect, manage, alert, and monitor one's health conditions. AVALYN application is compatible with all types of health apps and can help make health monitoring easier, convenient, and more efficient. This application offers users more convenience than with its capability of monitoring and detecting food nutrition, ingredients, or whether a meal has been freshly prepared, reheated, or contaminated. With an integrated food sensor, it can detect and communicate information regarding food quality, origin, and contamination level no matter where we are or what time of day it is, allowing us to take an offensive stance on our personal healthcare needs.

Individuals who have special religious dietary restrictions and those who are allergic to peanuts, dairy, fish, shellfish, fruits, and vegetables will benefit from these apps as well. Users will also learn about their health conditions and the causes, and then they will act based on the opportunities that are available.

The AVALYN application is also particularly useful for drinkers because it detects and alerts the users to excessive alcohol consumption. Based on the series of fatal road accidents involving drivers suspected of driving while intoxicated with alcohol, drunk driving has recently resurfaced as a hot topic in Malaysia [3]. By using this application, it aims to effectively detect how alcohol will age you and to estimate your blood alcohol content based on your body weight, the drinks you consume, and the time you drink. These may not be perfect calculations, but this application will provide the user with a starting point and will prevent them from driving while intoxicated or getting into a car with a drunk driver. Furthermore, using smartphone and smartwatch sensors, this application can monitor a user's body temperature and alert them if a fever is detected as well as alarming water consumption and hydration level.

Further to that, AVALYN functions as a 'Super App', combining multiple functions into a single application. The application includes features that make it easier for professionals to collect and retrieve information from users. The hospital can also use this application to remotely access users' information, medical history, vitals, and prescriptions.

II. OBJECTIVES

Many people are stressed out because of their hectic work schedules or disorganized lifestyles. Our way of life has begun to signal the onset of serious health problems. This is because a stressful lifestyle affects how people respond to illnesses such as heart disease, diabetes, allergies, and others. Thus, a few objectives of this study are listed below in order to maintain user health while providing a smooth user experience via a mobile app solution and played a vital role in providing quick information to the user. The objectives include:

- i. To encourage users to live a healthy lifestyle and seek professional medical assistance.
- ii. To provide real-time data and analysis to improve care by modifying treatment, actions, and decisions.
- iii. To enable and make remote user monitoring easier (body temperature, nutrition intake, hydration level, alcohol consumption, medication reminder and etc.)

III. METHODOLOGY

When it comes to healthcare apps, it is all about providing functionality in the most user-friendly way possible. It is absolutely essential that the mobile application has a user-friendly interface, intuitive user experience, and seamless functionality. Mobile healthcare applications with appealing data visualization are much more likely to retain and engage users. As shown in Table 1, certain healthcare experience touchpoints have been discovered that can provide users with a better experience and instant access to their health information. The following are some of the touchpoints:

1. Registration and Login
2. Product Instruction
3. Personal Information (Name, Email, Password, Date of Birth, Gender, Weight, Height, Blood Type, and Medical History, Emergency Contact Information)
4. Product Personalization (Allergic Information, Religious Dietary Restriction, and Special Diet)
5. Product Selection (Hydration Level, Body Temperature, Food Detector, Alcohol Consumption, Medicine Intake Reminder, and Health Insight Information)

IV. RESULTS AND FINDINGS

The result of the project is the AVALYN Mobile Application. The main feature of the application is to allow users to live a healthy lifestyle. In addition, this app can be connected to a smartwatch for more convenience.













A. Food Sensors

Food sensors have been developed to check food quality and detect contaminants to improve food management. You can use this application to determine the condition of a meal, such as whether it is contaminated. The ingredients of a meal can be identified using a smartphone camera as a built-in food sensor. This is useful if you are allergic to certain foods, such as peanuts or milk.

B. Alcohol Consumption Detector

For many people, alcohol has historically and continues to play an important role in many people's social engagement and bonding. Socializing can be a great way to unwind after a long day or reconnect with old friends, but when it becomes excessive, it poses a significant threat to personal and national health. Keeping track of your level of intoxication is critical, but the number of drinks consumed is not always a reliable measure because everyone's tolerance varies. Here comes AVALYN, where a smartphone accelerometer can determine one's alcohol capacity. This is especially useful for reminding drinkers of their drinking limit. If it detects a high alcohol level, it will alert the user via the smartphone's alarm.

Table 1. The Function of AVALYN Mobile Apps

DESIGN	DESCRIPTION	DESIGN	DESCRIPTION
	<p>A. Step 1:</p> <p>Users need to download and install the application on their smartphones. Users need to register and log in before using it.</p>		<p>F. Step 7:</p> <p>Next, by scanning the food, users can detect food allergies such as peanut, dairy, fish, shellfish, fruits, and vegetables, calorie intake, religious dietary restrictions, and food quality.</p>
	<p>B. Step 2:</p> <p>New users can create a new account by filling in their name, email, password, and date of birth.</p>		<p>G. Step 8:</p> <p>Users must enter their daily water intake target and the warning alarm will go off if users did not consume enough water.</p>
	<p>C. Step 3:</p> <p>Once the user is done with the registration, they need to log in once more.</p>		<p>H. Step 9:</p> <p>Next, the user must enter their historical medication record as well as an emergency phone number in case they require assistance. Users can also fill out their daily health routine.</p>
	<p>D. Step 4:</p> <p>For users who forgot their password, they can fill in their email and the application will send a new password through email.</p>		<p>I. Step 10:</p> <p>Users also can check their temperature by using this application.</p>
	<p>E. Step 5:</p> <p>To begin using The AVALYN Mobile Application, users can click on "All Categories" to view all of the mobile apps' functions.</p>		<p>J. Step 11:</p> <p>Users can use this application to enter the desired alcohol level, and the warning alarm will be activated if they exceed the capacity warning.</p>
	<p>F. Step 6:</p> <p>The first features are the user's Personal Information. User must fill in their personal information such as name, gender, age, blood type, height, weight, medical history, religious dietary restrictions, and special diet.</p>		<p>K. Step 12:</p> <p>The final feature is the medication reminder. Users simply enter the time and type of medication that they require.</p>

C. *Body Temperature Sensor*

When connected to a smartwatch, the application can determine a user's body temperature. This feature is useful for busy people who are frequently unaware of their health. When it detects a high temperature, it warns the user that they might be suffering from a fever. It can also monitor a user's water consumption. As a result, this application can remind users to drink when they are dehydrated. Finally, this application could be used as a medication reminder. It may notify the user at a predetermined time each day, which is particularly useful for forgetful people.

V. CONCLUSIONS

Mobile applications or smartwatches can provide users with real-time functional access to the products, information, processes, and services they require. It also allows applications to send reminders about product and service updates. Even if you do not have internet access, the apps can perform basic functions. As a result, this application effectively increases business accessibility. AVALYN can be used by health enthusiasts and those who need to stay healthy due to illness in all areas. In the future, these apps will provide user benefits and additional operations, allowing AVALYN to be used by people from all walks of life.

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