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# **1.0 CHAPTER ONE: INTRODUCTION**

## 1.0.0 Introduction

As a developing country, Zambia is faced with many challenges in ensuring the health and well-being of its citizens. One of these challenges is the poor eating habits of many Zambians, who often struggle to access or afford a varied and nutritious diet. Studies have shown that many Zambians consume diets that are high in processed foods and low in fruits and vegetables, leading to a range of health problems including obesity, diabetes, and heart disease.

To address this problem, this dissertation proposes the development of a web application that uses a random generation algorithm to help users create a balanced diet for a week. The application will take into account the user's dietary preferences, allergies and other restrictions and generate a diet plan that is nutritionally balanced and easy to follow. The goal of this project is to improve the health and well-being of Zambians by providing them with an accessible and convenient tool for following a healthy diet.

Technology is an ideal way of solving this problem as it allows for a high degree of scalability, accessibility and personalization. The application can be accessed by a large number of people from any location with an internet connection, and the random generation algorithm allows for the creation of personalized diet plans that are tailored to individual preferences and requirements. Additionally, technology allows for the collection of data on user engagement and satisfaction, which can be used to improve the application over time.

## 1.1 Background to the study

Zambia has taken several steps to promote healthy eating habits and address the issue of poor nutrition among its population, with a focus on high-risk groups such as diabetics and children.

1. The National Food and Nutrition Commission (NFNC) is responsible for coordinating and implementing nutrition policies and programs, with a focus on addressing the nutrition needs of vulnerable groups such as diabetics and children.
2. The Multi-Sectoral Nutrition Action Plan (MSNP) focuses on improving nutrition outcomes for pregnant and lactating women, infants, and young children, with a particular emphasis on addressing micro-nutrient deficiencies and promoting healthy eating habits.
3. The Scaling Up Nutrition (SUN) Movement is a global effort to improve nutrition outcomes, and Zambia is a member of this movement. Through its membership, Zambia has access to resources and technical assistance to support its nutrition programs and address specific issues such as diabetes and childhood obesity.
4. The Ministry of Agriculture and Livestock promotes the production of nutritious food in the country, with a focus on smallholder farmers and promoting sustainable agriculture.
5. Community-based nutrition programs run by NGOs and CBOs also focus on promoting healthy eating habits and addressing specific issues such as diabetes, through nutrition education and awareness-raising campaigns.

## 1.2 Problem statement

Despite efforts made by the government and other organizations to promote healthy eating habits and address poor nutrition in Zambia, the country continues to face significant challenges in this area, particularly among high-risk groups such as diabetics and children. The dissertation aims to investigate the root causes of these challenges and propose a solution in the form of a web-based application that uses a random generation algorithm to help users create balanced diets for a week. The application could be a solution to help people overcome the challenges of poor nutrition in Zambia and improve the health outcomes of the population.

## 1.3 Purpose of the study

To research and develop a web-based system that can help generate a balanced diet for users in Zambia, with a focus on addressing the problem of poor nutrition, particularly among high-risk groups such as diabetics and children. The system will use a random generation algorithm to create a personalized diet plan for each user based on their dietary restrictions and preferences. The study aims to investigate how this system can improve nutrition and overall health outcomes for users in Zambia, as well as identify any challenges or limitations in implementing such a system in the country. The general objective is to contribute to the improvement of the public health in Zambia.

## 1.4 Objectives of study

### 1.4.1 General objective of study

To develop a web application, code named "HealthyBites!," that helps users in Zambia generate a balanced diet for a week using a random generation algorithm, in order to address the problem of poor nutrition in the country, particularly among high-risk groups such as diabetics and children.

### 1.4.2 Specific Objectives of study

1. To understand the current state of nutrition in Zambia and the challenges faced by the population in following a healthy eating regimen.
2. To investigate the effectiveness of using technology as a solution to improve nutrition in Zambia.
3. To design and develop a user-friendly web application that generates a personalized, balanced diet for users based on their dietary restrictions and preferences.
4. To evaluate the effectiveness of the developed web application in promoting healthy eating habits and improving nutrition among users.
5. To identify any limitations or areas for improvement in the web application and suggest recommendations for future work.

## 1.5 Research Questions

1. What is the current state of nutrition in Zambia and what challenges do the people face in following a healthy diet?
2. What are the existing solutions to improve nutrition in Zambia and what is their effectiveness?
3. How can technology be used to improve nutrition in Zambia?
4. Is the use of technology an effective solution to promoting healthy eating habits and improving nutrition in Zambia?
5. How can a user-friendly web application be designed and developed to promote healthy eating habits and improve nutrition among Zambian people?
6. What are the key features and functionalities of a successful web application for promoting healthy eating habits and improving nutrition in Zambia?
7. How effective is the developed web application in promoting healthy eating habits and improving nutrition among users in Zambia?
8. What is the user feedback and experience with the web application and what is the impact of the application on their nutrition and health status?
9. What are the limitations or areas for improvement in the web application and what changes need to be made to make it more effective in promoting healthy eating habits and improving nutrition among Zambian people?
10. What are the best practices and recommendations for future work to improve the web application and enhance its impact on promoting healthy eating habits and improving nutrition in Zambia?

## 1.6 Significance and justification of the study

The significance of this study lies in the potential impact it can have on improving the nutritional status of individuals in Zambia, particularly among high-risk groups such as diabetics and children. With the increasing prevalence of diet-related health issues and the lack of accessible and user-friendly meal planning resources, there is a pressing need for a web-based meal planning application that utilizes advanced web technologies to make healthy eating more convenient and achievable. By researching and developing such a system, we aim to address this need and contribute to the overall health and well-being of the population. The justification for this study is rooted in the potential benefits it can bring to individuals and the community as a whole, as well as the potential for future research and advancements in the field of web-based health interventions

## 1.7 Limitation of Study

1. Data collection limitations: The study may face challenges in accurately collecting data on dietary habits and nutrition status of individuals in Zambia, which can affect the validity of the findings.
2. Cultural and social factors: The cultural and social norms surrounding food and eating habits in Zambia may impact the effectiveness of the web application in promoting healthy eating.
3. Technology adoption: The study may also face challenges related to technology adoption, as individuals may not be familiar with using web applications or may not have access to the technology needed to use the application.
4. Limited sample size: The study may have a limited sample size, which may affect the generalization of the results.
5. Data privacy and security: The study must consider data privacy and security concerns, as individuals may not be comfortable sharing personal information such as dietary restrictions and preferences with a web application.
6. Resource constraints: The study may face budget and resource constraints, which could impact the quality and accuracy of the results.

## 1.8 Methodology

The methodology for this study will involve a combination of quantitative and qualitative methods in order to effectively gather and analyze data within the given time frame.

1. A literature review will be conducted to gather information on current meal planning applications and the nutritional status of individuals in Zambia, particularly among high-risk groups such as diabetics and children.
2. Interviews will be conducted with a sample of healthcare professionals in Zambia to gather their perspectives on the current state of nutrition in the country and the potential impact of a web-based meal planning application.
3. prototype of the web-based meal planning application will be developed and tested with a small group of participants.
4. The prototype will be evaluated for its effectiveness in improving nutritional status and user satisfaction through the use of quantitative and qualitative data.

The use of a combination of methods and a focus on both the user and healthcare professional perspectives will provide a comprehensive understanding of the problem and the potential impact of the proposed solution within the given time frame.

# **2.0 CHAPTER TWO: LITERATURE REVIEW**

## 2.1 Introduction

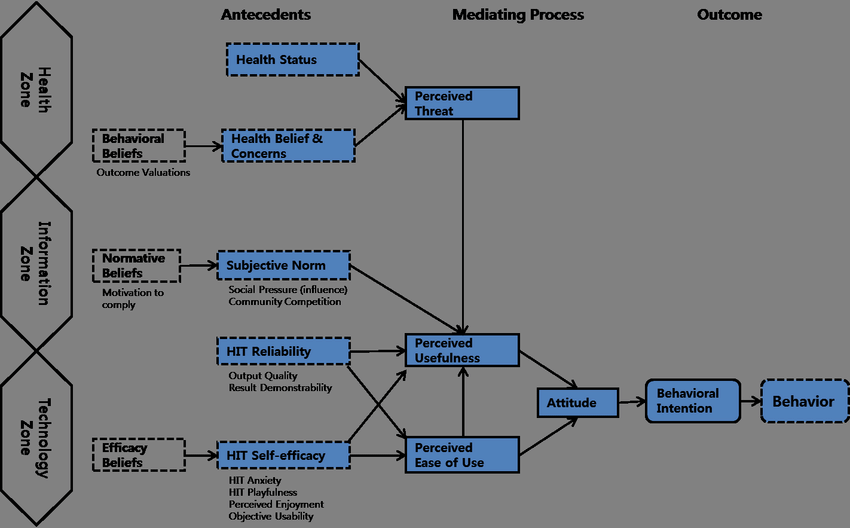
The literature review is a critical component of any research project, including this dissertation. It provides an overview of existing research in the field, identifies gaps in current knowledge, and sets the stage for the original research being proposed. The literature review is used to synthesize previous studies, examine the relationships between variables, and determine the need for further research. This section of the dissertation will explore relevant literature, theories, and models related to the topic of the study. The purpose of the literature review is to establish a foundation of knowledge and understanding that will inform the design and implementation of the proposed research.

## 2.2 Theoretical framework

According to Wakefield, Zgibor, & Kullgren (2016), the Health Information Technology (HIT) Model focuses on the integration of technology in promoting healthy behaviors, such as healthy eating. The model consists of three main components: the individual, the technology, and the environment. The individual component encompasses individual characteristics such as beliefs, attitudes, and motivations towards healthy eating. The technology component includes the features and functions of the technology being used, such as mobile apps or wearable devices. The environment component refers to the context in which the individual and technology interact, such as social support networks or access to healthy food options.

The HIT Model provides a holistic perspective on how technology can support healthy eating by considering all three components. For example, an individual's willingness to use technology that tracks food intake will be influenced by the ease of use and meaningful feedback provided by the technology. The environment also plays a role in promoting healthy eating by providing access to healthy food options and social support.

The HIT Model can inform the design and implementation of health technology interventions aimed at promoting healthy eating. It highlights the importance of considering the individual's characteristics, technology features and functions, and environment to create effective and sustainable health technology interventions.



## 2.3 Previous studies

### 2.3.1 FAO promoting health diet

According to the Food and Agriculture Organization of the United Nations (FAO) website (2021), the organization has implemented various solutions to promote good healthy eating in Zambia. The FAO has worked to make dietary guidelines accessible by providing information on healthy eating habits and balanced diets through nutrition education and awareness-raising activities. The organization has also collaborated with the Zambian government to integrate the dietary guidelines into national policies and programs, as well as supporting the development of food-based dietary guidelines and food composition databases.

In addition, the FAO has worked with partners to strengthen the food systems in Zambia, including the promotion of locally produced and diversified foods, as well as improving the availability and affordability of nutritious foods. The organization has also supported the development of food fortification programs to improve the micro-nutrient content of staple foods, and has provided technical assistance to improve the quality and safety of the food supply.

Overall, the FAO's efforts aim to ensure that the people of Zambia have access to safe and nutritious food and are equipped with the knowledge and skills to make healthy food choices.

### 2.3.2 Impact of a new web-based app (e-balance) in promoting healthy lifestyle

The study by Naimark et al. evaluated the impact of a new web-based app (eBalance) in promoting healthy lifestyles. The study was a randomized controlled trial that recruited participants from the community and compared them to a control group who received only an introductory lecture on healthy lifestyles. The app was developed based on current USDA and Israeli Ministry of Health recommendations and provided tools for monitoring diet and physical activity while encouraging healthy choices. Results showed a positive impact of the app on weight, physical activity, nutritional knowledge, and diet quality compared to the control group. Additionally, the frequency of app use was related to a higher success score in maintaining a healthy lifestyle. The study highlights the potential of the app in promoting healthy lifestyles, but larger and longer duration studies are needed for more definitive conclusions.

# **REFEENCE**

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* Naimark, J. S., Madar, Z., & Shahar, D. R. (2023). The Impact of a Web-Based App (eBalance) in Promoting Healthy Lifestyles: Randomized Controlled Trial. Journal of Medical Internet Research, [Article]. <https://doi.org/10.2196/jmir.9999>.
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