DECLARATION

I **clementine MUTESI** do here by declare that this research project entiled “**use sweet potatoe in cake production”** is in partial fulfillment of the requirements for the award of Advanced diploma in Hospitality management in IPRC Karongi, during the academic year 2018- 2019, is my original work and has never been submitted to any university or any other institution.

Submitted by: **Clementine MUTESI**

Signature………….……………… Date….…/………/2019.

Supervisor:  **Mrs.Jean Claude MWIZERWA**

Signature………….………………Date….…/………/

**APPROVAL**

I, undersigned, **Assistant Lecturer,Mrs. Jean claude MWIZERWA** certify that this research project work entitled **“Use sweet potatoes in cake production** ” is a record of Original work done by clementine MUTESI**,** in partial fulfillment of the requirements for the award of Advanced diploma in Hospitality Management in Department of HOSPITALITY MANAGEMENT at RP /IPRC KARONGI.

Signature ………Date: …/…/2019

**Assistant Lecturer: Mrs. Jean Claude MWIZERWA**

**DEDICATION**

I dedicate this final project to the Almighty God to whom I owe my life and my studies. I also

dedicate

To my parent,

To my family

To my supervisor

To myall friends and relatives for their support each in his or her own way as my classmates.

This book is dedicated to you

I thank you all.

# **ACKNOWLEDGEMENT**

It is on realization of such a piece of knowledge that, I wish to acknowledge for a given help for us in this course of producing this project.Through not all can be acknowledged, the following deserve special mention and gratitude.Words are not enough to express my sincere appreciation to the Almighty God who has guided us through my lives and studies.

I am also grateful to my supervisor Mr. MWIZERWA JEAN CLAUDE, for their guidance, advises and valuable knowledge.Special thanks also go to all IPRC KARONGI teaching staffs especially in department of Hospitality management for the guidance and assistance they gave us throughout my studies.

To my beloved families, please kindly receive my sincere thanks for your spiritual, moral and financial support that made us strong through my academic struggle. I cannot forget you all my colleagues in your commitment and support in comfortable daily life you gave us for the period of my studies. I will always be grateful to God for them.

Almighty God blesses you all.

**LIST OF ABBREVATIONS**

**IPRC:** Integrated Polytechnic Regional College

**RP:** Rwanda Polytechnic

**%**: Percentage

**www:** wide world web

**n:** Sample Size

**http:** Hyper Text Transfer Protocol

**ABSTRACT**

*This study observed the use sweet potatoes in cake production. the general objectives this research was to recognize use sweet potatoes in cake production to improve health condition of consumer’s. the specific objectives of this research was to assess the negative effects of sugar cakes to the consumers, to prepare sweet potatoes cake and to describe the health benefit sweet potatoes cake. The research design was descriptive, the total population was 40 including 18 hotel employees and 22 hotel customers of hilltop hotel was taken as a sample size and it was chosen simple random and tools for primary data collection were questionnaires .in order to present data, the researcher used tables. then based on negative impacts of sugar cake in which was the first objectives of present research is, it was found that the majority of respondents 33%confirmed that sugar cakes consumption causes the heart diseases. from the second research objective it was found that 61% of respondents confirmed that baking in medium heat is the method used for preparing sweet potatoes cake. while 17% use over heat baking. based on health benefits of sweet potatoes cake which third objectives of the present research the results indicate that the majority hotel employees who participate in the present project represented by 83% confirm sugar free cake cakes are available at hilltop hotel and most of customers confirmed that sugar freecake have many health benefits to the consumers, and even if use sweet potatoes in cake production is not yet available in hilltop hotel. Based on the findings 50% declared of respondents confirm that sugar free cake reduces the risk of heart diseases ,27% declared that sugar free cake manages and maintain your weight, and 23% confirmed that improve the energy. and it was concluding that use sweet potatoes cake in production will have more contribution for preventing and reduce industrial sugar health problems to the consumers and it was recommending hilltop hotel to use also use sweet potatoes cake and suggested consumers to make good choice for getting more nutrients help them in the diary life.*

***Key words:*** *sweet Potatoes,cake, production*

**CHAPTER ONE**

**INTRODUCTION AND BACKGROUND OF PROJECT**

**1.1Introduction**

our health depends on the sum total of the many “small “decision that we take each day, in other words it depends on our life style Dr George, Pamplona – R (2012)

Some of our important health choices are to do with what we eat and drink. Getting the maximum benefits from our food depends not only on choosing right food but also when to eat it. how much of it to eat and our state of mind when we eat it, and the good food is the foundation of goods health at all ages.

According Dr clemency M (2014)

This research project is based on the use sweet potatoes in breads production without add sugar to the consumers. For helping consumers to maintain in good health and reducing too much sugar consuming and know how much sugar should they eat, where they found the best sugar among of the types of sugar such as naturally and industrial sugar.the sweet potatoes are used to make a variety of delicious products although the sweet potatoes are rich in starch and therefore they have the sensation of satiety thus calming the appetite. According DrGeorge. Pamplona –R ( 2012). As sweet potatoes are main ingredient of this bread have many important to the health of consumers. Sweet potatoes also contain high amounts of fiber and potassium. they have more grams of natural sugars than regular potato but more overall nutrients with fewer calories sweet potatoes may help maintain a healthy blood pressure and protect against cancer.

The high fiber content of sweet potatoes helps prevent constipation.

This chapter deals with background of study, statement of problem, research objectives, research questions, significance of the study, limitation and delimitation of the study and the scope of the study.

**1.2 Background of the project**

bread is a term with long history and denotes that is a baked flour confection (sugary)sweetened with sugar or honey: it is mixed with eggs and often , but not invariably with milk and fat and it has a porous texture from the mixture rising during cooking .According Alan D(1995).

As the bread is a form of sweet dessert that is typical baked in its oldest form, bread were modifications of breads but bread now cover a wide range of preparation that can be simple or elaborate and that features with other dessert such as pastries, meringues,custards ,and pies . (Wikipedia ,2017).

bread may be classified according to the occasion for which they are intended, for example: ,in the some ceremony bread is divided into several categories,based on their ingredients and mixing techniques. there is a butter bread are made from creamed butter, sugar, eggs, and flour. Also a sponge bread(foam bread) are made from whipped eggs, sugar, and flour.(Wikipedia ,2018).

Without adding sugar in bread, eating is a big trend at the moment, but if you want to reduce added sugar in your bread it can be difficult to know where to start.

However, you can make lots of bread without table sugar if you are happy to add sugar add other ingredients which contribute some sweetness try making reduced sugar breads with ground almonds or grated vegetables. these add a more complex texture, keep bread beautifully moist and boost flavor with their natural sweetness. BBC(2018)

**Researcher’s main purpose:** the research objectives are to find out the answer to the questions by using the specific procedures with this topic, both general and specific objectives are illustrated.

The purpose of researcher is to find out use sweet potatoes in bread production that will solve problem are diseases like obesity, cancer, blood pressure and increase nutrients value (fiber, potassium) from sweet potatoes plant.

**1.3 Problem Statement**

Today the major problems facing the consumers are diseases like heart diseases, cancer, obesity, diabetes, high blood pressure, kidney diseases because of consuming too much sugar in their daily diet. As sugar is the main ingredients used for making bread. According Linda (2017), eating too much sugar raises the risks for gaining weight and health problem that are associated with being overweight. You may suffer with diabetes, heart diseases, high blood pressure, cancer , liver failure , and kidney diseases . And we know that the main cause of the chronic diseases is unhealthy life style factors , when the causes are known , prevention is possible According Dr Clemency M (2014).

Due to this, research suggested that increasing consumption of plant foods like sweet potatoes, decrease the risks of obesity , diabetes , heart diseases and overall mortality .sweet potatoes may help maintain a healthy blood pressure and protect against cancer .According Megan W Rd Ld.(2017).

This is why the researcher is interested in finding out whether sweet potatoes breads can contribute to health benefit for consumers.

**1.4 Research Objectives**

**1.4.1 General Objectives**

The purpose of this research is to use sweet potatoes in bread production to improve health condition of consumers.

**1.4.2 Specific Objectives**

This research was achieved the following objectives:

1.To assess the negative effects of sugar bread to the health of consumers.

2. Produce sweet potatoes bread for reducing industrial sugar products health problems.

3.to determine the nutritional health benefit of sweet potatoes flour to the consumes

**1.5 Research question**

Research question are:

1.what are the negatives effects of sugar bread to the health of consumers

2.How to determine the nutritional benefit health of potatoes flour in bread?

3. What are the consumers’ views about the health benefits of using sweet potatoes in bread ?

**1.6 Research variables**

**1.6.1 Independent variable**

In this research proposal sweet potatoes were independent variable hence it doesn’t need other external factor to be utilized.

**1.6.2. Dependent variable**

In this research proposal bread production was dependent variable hence it need sweet potatoes to be a final product.

**1.6.3. Interdependence of variables**

**Topic**: Use of sweet potatoes for bread production to improve health condition of the hotel customers.

**Figure1:** Interdependence of variables

|  |
| --- |
| Independent Variable |

|  |
| --- |
| Research problem |

|  |
| --- |
| Sweet potatoes bread production  Reduction level of choresterol |

|  |
| --- |
| Dependent variable |

|  |
| --- |
| Sweet potatoes  Natural sugar |

|  |
| --- |
| Research problems  Refined WHEAT Flour increase chrostoral level in blood. |

Problem solving

Removing/ Reducing refined sugar from existing recipe

**(Figure1:** Interdependence of variables, 2021)

**1.7** As a student of hospitality management department ,after made an observation find out the way this project will facilitate the researches in getting the knowledge and skills about sweet potatoes bread and it will be good way for them to translate theory into practices that can be produced by using sweet potatoes flour this project also will help to get a job and crease own business.

**1.7.2 To IPRC Karongi**

This project responds to IPRC –karongi requirements in order to have advanced Diploma in hospitality management after submitting the dissertation to main library.

After being carried out, the findings of this research will help the Academic community, whether students or lectures, or another interested reader for further research, because it will provide useful information about how to use sweet potatoes breads making to the consumers.

**1.7.3 To the consumers**

This sweet potatoes bread will be consumable by every category of people and helping them to have good health because it contains natural sugar .for more it is not harmful to human health based on enough nutrients contained in it.

**1.7.4 Hospitality industry**

Sweet potatoes bread helped in providing satisfaction to the consumers who like pastry product and provide a good reputation of restaurants. sweet potatoes bread help reduction of disease. production sweet potatoes bread will enable the restaurants to gain more profit than expected. it was contributed to the development hotel and restaurants, and the development of our country and it will help to see the output of TVET schools in Rwanda.

Sweet potatoes cake will help and become beneficial to the consumer’s.

**1.8 Scope of the Project**

**1.8.1 Subject Scope**

This project focused on production of sweet potatoes cake in order to improve health condition of consumers.

**1.8.2 Time Scope**

This project was conducted from October, 2018 up to july 2019 in order to meet the submission date as it is required by IPRC –Karongi and respecting calendar of academic year.

**1.8.7.3 Geographical Scope**

This project was conducted in hilltop hotel located in kicukiro District, kanombe sector.

**1.9 Limitation**

However, due to practical, financial and accessibility constraints, this study could not cover all areas of our country. In the process of carrying out the research,researcher faced some challenges that included the following:

Researcher never had enough money for transport, and stationery, buying ingredients for making trials. In addition to, that some of respondents were not willing to give their views thinking that the research was commercial.

Some respondents were too busy and could not fill the questionnaire in time. and the study will be conduct during the period of others academics activities such as ordinary studies.

**1.10Delimitation**

The delimitation was solved effective time management and funds allocation were used to be able to carry out the study efficiently. however,I convinced them beyond doubt that research was not for any other reason apart from academic and they accepted to give their views ,but tried to contact friends and families’ members and were able to raise enough money for the research .

However, research kept on making on making appointment with them until they provided theneeded information.

As a student of hospitality management department ,after made an observation find out the way this project will facilitate the researches in getting the knowledge and skills about sweet potatoes bread and it will be good way for them to translate theory into practices that can be produced by using sweet potatoes flour this project also will help to get a job and crease own business.

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**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 Introduction**

This chapter presents a review of the related literature on the subject under study as presented by various researchers, scholars, analysts, andauthors.

This chapter has therefore reviewed literatures with respect to the research objectives on use sweet potatoes in cake production.

This paper discusses mainly on the following key concepts:health, sugar, sugar in production, sweetpotatoes, consumers, natural flavoring, negative effect of sugar cakes, production of sweet potatoes cake, health benefits of sweet potatoes cake.

* 1. **Definition of key concepts**

**2.2.1.Health**

According to Christian N (2017) Health is not just absence of disease but a state of overall wellbeing. The world “health” refers to a state of complete emotional and physical well-being,

Healthcare exists to help people maintain this optimal state of health.

Here are some key points about health. health can be defined as physical, mental and social wellbeing, and as a resource for living a full life.

It refers not only to the absence of disease, but the ability to recover and bounce back from illness and other problems. In 1948, the World Health Organization (WHO) defined health with a phrase that is still used today.

“Health is state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”.

This means that health is a resource to support an individual’s function in wider society. health lifestyle provides the means to lead a full life.

**2.2 .2 Sugar**

According to joseph N (2016) sugar is a simple carbohydrate that belong to a class of chemically –related sweet –flavored substances. It comes in many different forms. the three main types of sugar are sucrose,lactose, andfructose.

Even though our cells need sugar (glucose) to survive, consuming too much of it can cause numerous health problems such as tooth decay, diabetes and obesity, heartdiseases, overweight.

The American heart association (AHA) says that added sugar “contribute zero nutrients and are just empty colories “that can lead to extra pounds, or even obesity,thereby reducing heart health.

Being aware of the existing and added sugar contents of the food and drinks we consume is vital to our health. even more so today because so many products have sugar added to them.

**2.2.3 Natural sugar**

According to JJ Virgin (2018) natural sugar are found in fruit as fructose and in dairy products such as milk and cheese as lactose . foods with natural sugar have an important role in diet of cancer patients and anyone trying to prevent cancer becuase .

**2.2.4 Sweet potatoes**

According to Nicola S (2017) the sweet potato is a starchy, sweet-tasting root vegetable. they have a thin, brown skin on the outside with colored flesh inside – most commonly orange in color, but other variets are white, purple or yellow. you can eat sweet potato whole or peeled, and the leaves to the plant are edible too.

They may both be called but sweet and white potatoes are not actually related.

Botanically, the sweet potatoes belong to the bindweed or morning –glory family, whereas the white potato sits in the nightshade family. And their nutritional value is rich source of fiber as well as containing a good array of vitamins and minerals including iron,calcium, selenium and they ‘re good source most of our vitamins B and vitamin C. one of the key nutritional benefits of sweet potatoes that they are high in an antioxidant known as beta-carotene, which converts to vitamin A once consumed. also sweet potato helps in digestion because are high in fiber, which has been shown to promote a healthy digestivesystem.

Research so far has only been conducted on animals, but it would appear that the high phytosterol content of sweet potatoes does have a protective effect on the digestive system and may be important in the prevention and management of duodenal and gastric ulcers.

**2.2.5 Cake**

Cake an item of sweet food made from a mixture of flour,fat,eggs, sugar and other ingredients, baked and sometimes iced or decorated. from in Dictionary

According to Merriam –Webster (2017) cake is bread like food made from dough or butter that is usually fried or baked in small flat shapes and is often unleavened.

Cake is sweet baked food made from a dough or thick butter usually containing flour and sugar and often shortening, eggs and a raising agent (such as baking powder).

**2.2.6 Production**

Production in economics is the action of making manufacturing from components or raw materials, or the process of being so manufactured from in (English Oxford living Dictionary).

Production is a process of combining various material inputs and immaterial inputs (plans, know –how) in order to make something for consumption (the output).

It is the act of creating an output, a good or service which has value and contribute to the utility of individuals. (Wikipedia)

**2.2.7 Consumer**

According to Jemelo Figueroa (2016) consumer is someone who uses the goods or services.

According to Tebeck Jean Claude (2016) consumer is the person the uses the products.

**2.2.8 Natural flavoring**

According to shereen Lehman ( January 2019)Natural flavors is the essential oil , oleoresin, essence or extractive, protein hydrolysate ,distillate ,or any productof roasting ,heating or enzymolysis , which contains the flavoring constituents derived froma spice ,fruit or fruit juice , vegetable or vegetable juice ,edible yeast,herb,bark,bud,root,leaf or similar plant material , meat ,seafood,poultry,,eggs,dairy products ,or fermentation products whose significant function in food is flavoring rather than nutritional.

**2.3 The negative effects of sugar cake to the consumers**

According to Nutri.foodie (2012) The popular dessert of all times is the cake. but are you aware of its dangers and the side effects associated with it? cakes may satisfy your taste buds and make you hope for seconds, you need to stay aware that this high calorie dessert is perfectly capable of causing devastating effect on your health which amount to diabetes and obesity along with other conditions likely to affect the proper functioning of your body. trail down to know about the various side effects caused by eating this sweet delight.

Side Effects of consuming Cakes: Cakes have a very high content of carbohydrates and fats and so may make you put on weight. The sugars in cake may increase your blood glucose level and so you may become diabetic on a long run.

Cakes with chocolates and nuts have a high serotonin content and so may make you feel excited and happy. this psychological impact of cakes is undesirable since serotonin is stimulated by an external source.

The margarine or butter which is been used in cakes may raise your blood cholesterol levels.

**2.4 Preparation of sweet potatoes cake**

According to Laura (2014) This sweet potato cake is quite simply awesome. It completely sugar

That means it has no sugar substitute in it. It naturally sweetened with sweet potatoes which are low fructose. it hits the cake texture craving sport perfectly.

Ingredients

|  |  |
| --- | --- |
| **Ingredient** | **Potion size** |
| Sweet potatoes | 1 medium |
| Wheat Flour | 220gram |
| Eggs | 3 |
| Milk | 400 Gram |
| Baking powder | ½ table spoon |
| Butter | 80 Gram |
| Vanilla essence | 1 table spoon |

**Methods of cooking**

1.Preheat the oven to 180c and grease an 60min-90min round cake tin or a loaf tin

2.Put the flour, bakingpowder in large mixing bowl. still to combine

3.whisk the eggs, milkand butter, oil, together in Dough mixing machine

4.Pure these wet ingredients into large bowl containing the dry ingredients

5.mash in the sweet potato until really well combined with the mixtures

6.place the mixture into the prepared tin and a wooden spoon

7.bake in the oven for about 30-45 minutes then let it cool.

**2.3 health benefits of sweet potatoes cake**

**2.3.1 The Benefits of Eating natural sugar**

According to Sandra Lucas (2018) Naturalsugar helps in lower your risk of illness and disease, control hunger and cravings balancing you’

re eating helps to balance your blood sugar and eliminate cravings. This includes eating the right portions at the right times and eating whole ,unrefined foods that will be efficiently converted into energy and not stored as fat , improve your Energy and feel less sluggish (when you are eating whole , unrefined ingredients that are naturally sugar you are loading up on antioxidants , vitamins ,fiber , water and proteins that fuel your brain and your body , helping you to bounce through your day , rather than lug yourself from one sugar fix to the next) , mental enhance clarity ,improve your Appearance , manage and maintain your weight (cutting back on sugar can lead to weight loss or maintenance), improve Dental Health (they generally do not have an adverse effect on dental health).

According toDr Lisa young there are two types of natural sugar, fructose is the kind of sugar you find in fruit, whereas lactose is the kind of sugar you find in dairy. both are naturally occurring.

Dr Lisa young says nutrients help to stabilize your blood sugar levels, which prevents you from feeling hungry soon after eating.

**2.3.2 Health benefit of sweet potatoes**

Sweet potatoes are sweet, starchy root vegetables that are grown worldwide.

They come in a variety of sizes and colors including orange, yellow, white, and purple and are rich in vitamins, minerals, antioxidants, andfiber.

The fiber in sweet potatoes is also important. studies have shown that people with type 1 types diabetes who consume high-fiber diets have lower blood glucose levels,and people with type 2 diabetes have improved blood sugar,lipids, and insulin levels. One medium sweet potato with the skin on provides about 6 grams of fiber.

Protect against bloodpressure,cancer, Digestion and regularity (Because of its high fiber content, sweet potatoes help to prevent constipation and promote regularity for health digestive tract).

Help healthy vision sweet potatoes are rich in beta-carotene and anthocyanin, antioxidants that may help prevent vision loss and improve eye health.

May support your immune system are excellent source of beta-carotene, which can be converted to vitamin A and help support your immune system and gut health Erica J (2019).

**2.3.3 health benefit of whole wheat flour**

The powerful health benefits of wheat include its ability to control obesity, boostenergy, inhibit type 2 diabetes, improve metabolism, and prevent asthma and gallstones. It also boosts digestion.

Unrefined wheat contains complex carbohydrates, dietary fiber, and a moderate amount of proteins it prevents constipation, lowers blood cholesterol and might help you lose weight.

In wheat germ which is heart of the kernel, is particular rich in vitamin E .it is known to be the main source of the vitamin include vitamins like thiamin, folicacid, vitamin B6, and minerals like manganese, magnesium and zinc According Sylvie T (2018)

fiber content: one of the primary nutritional differences between whole-wheat and white flour is the food’s fiber content Dietary fiber has a number of health benefits – it prevents constipation, lowers blood cholesterol and might help you lose weight.

**2.3.5 health benefit of milk**

Milk is a white liquid produced by the mammary glands of mammals. can prevent osteoporosis it reduces blood pressure, vitamin D might play a role in cell growth regulation and cancer, for supporting metabolism and contributing to weight loss and weight maintenance. MeganW (.2017).

**2.3.6 health benefit sun flower oil**

Sun flower oil is a rich in vitamin and low in saturated fat, help prevention of asthma and colon cancer, prevent of other cancer, help in lowers cholesterol, prevention of infant infection, repairs the body, healthy nervoussystem, reduction cardiac problem.Saba(2017).

**2.3.7 health benefit of eggs**

Eggs contain many vitamins and minerals that are essential part of healty diet, helps keep muscles working well, help in brain health, eggs also give good energy production, helps in lower risk diseases, help in weight loss and maintenance, help in skin benefit. JamesMC (2018) .

**2.3.8 health benefit of butter**

Butter is a dairy product made by churning milk, a process separating the solid fats from the liquid, known as buttermilk butter is high in calories, which may contribute to weight gain if eaten high amount, butter contains decrease inflammation, and support weight control according to human and animal studies. Rachael L(2019)

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**3.1 Introduction**

This chapter describesthe methodology that researcher used during research,sampling procedures and response rate, the way in which data the data was analyzed and how limitation and barriers that arose throughoutthe conduct of research was overcome.

As explained in the introduction to the aim of this research were to assess the use sweet potatoes in cake production.

It provides details on the research design, research population, sample size, sampling techniques, data collection instruments, validity and reliability, ethicalconsideration.

**3.2 Research design**

The research design of this study is descriptive, descriptive research refers to research studies that have as their main objectives the accurate representation of the characteristics of person, situation or group According Hungler (1999, 2004) the research intend to describe the use sweet potatoes in cake production

It is important to note that the descriptive research attempts to describe, explain and interpret conditions of the interpret.conditions of the present.

**3.3 Research population**

According to Hungler (2004) the population refers toan aggregate or totality of all the object, subjects or member that conform to a set of specification. the target population in this research from whom data was collected in hill top hotel was 40 persons including 18 employees will use in the research and22 customers will use in the research. from the above mentioned people the researcher will select the sample who will contribute in providing relevant information. it is not easy for the researcher to conduct a research with the whole population .it becould extremely expensive and time consuming thus, the researcher feels a need to determine a sample size.

**Table 1: Category of population**

|  |  |  |
| --- | --- | --- |
| **People or respondents** | **Population** | **Sample sizes/respondents** |
| Restaurant manager | 1 | 1 |
| Waiter /waitress | 6 | 5 |
| pastry chef | 4 | 3 |
| Chefs cook | 7 | 7 |
| Restaurant customers | 22 | 20 |
| **Total** | **40** | **36** |

**3.4 Sampling techniques and sample size**

In this research, researcher used simple random method to the employees and customers of hilltop hotel used in the work research where every respondent had equal chance to be involve in the sample of the study. ration of sample size to the population will be use in this research.

According to Mugenda (1999) a sample is small group obtained from assessable population.

In this research it is not be possible to use the whole population, it is therefore being necessary to select a small percentage of target population called sample for that reason project will gather information from sample of employees and customers.

In this project ; the researcher used the following sample size formula based of Slovene’s formula was used n=

n=sample size

N= Total population size

e=level of significance degree which given (0.05).

According to the above formula ,the following is the sample size :n==36 People

Table 2 **Sample size of respondents**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SN** | **Category of Respondents** | **Number of population** | **Sample sizes** | **Percentage** |
| 1 | Food & beverage services staff | 7 | 6 | 16.7% |
| 2 | Kitchen staff | 11 | 10 | 27.8% |
| 3 | Number of customers | 22 | 20 | 55.5% |
| **Total number** | | **40** | **36** | **100%** |

**3.6 Data collection instruments**

In this researcher used different instruments in order to collect data such as documents for secondary data, and questionnaires for primary data.

**3.6.1 Documentation**

Phillips (1995:142) defines documents as “any written material that may be used as a source of information about the subject “through documentation technique, the research has consult books,journals,reports, and web sites, in order to establish the literature review.

**3.6.2 Questionnaire**

A questionnaire is a data collection instrument consist of a series of questions and other prompts for the purpose of gathering information from respondents Abawi (2013).

The researcher collected them in order to make an efficient analysis. This tool will be used to collect the data from the respondents, whereby respondents from the selected areas of the study will answer the questionnaires address freely by answering both open ended and closed ended questions. The questionnaires will be addressed to all respondents who participated in the case study.

**3.7 Validity and reliability**

In assuring the reliability and validity of the results, the use of sweet potatoes in cake making was pre-prepared by the researcher and it was pre-tested by supervisor and others from RP-IPRC Karongi staff in which they tested the cakes made by use sweet potatoes.

Then, the researcher submitted to them a number of questionnaires for gardening information about the researcher’ measurements and professionalism in producing cakes based sweet potatoes. Based on the findings from pre-test and comments of experts, certain amendments were made on the questionnaire and lastly by giving the necessary orientations to the researcher herself.

Justify the Validity of research instrument (questionnaire) used

Justify the validity of data used

**3.7.1 First trial**

Researcher did an effective test in effective way by comparing sweet potatoes cake with refine sugar and sweet potatoes cake without sugar, and comments from supervisorconsidered.

**3.7.2 Second trial**

A second test was conducted in order to improve the project result, and basing on the comments given.

**3.7.3 Third trial**

In this section researcher were compare the results between first trial and second trial and the researcher made improvement for getting final product.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Product name | category | Ingredients sources | Cooking methods | Cooking Temperature | Cocking time | Safety consideration |
| Sweet potatoes cake | Dessert | Vegetable and animal | Baking in medium heat | 200 degrees Celsius don’t use over heat or under heat | 50-60 minutes | Conserve in two days |

According to this table sweet potatoes cake is dessert which baked for about 50\_60 minutes in oven regulate at 200 degrees Celsius. it’s prepared by ingredients come from vegetables and animal.

**3.8 Ethical considerations and confidentiality**

In this research, ethics was highly take into account, so that the respondents may be confident in providing necessary information. in order to follow ethics, it is important to note that before submitting the questionnaires, or conducting the interview, first the participants were explaining on the researchquestion. was submitted to them.second, each participant had to accept or not to participant had to participant in research. The names of responds were not mention in the research, for confidentiality, research participant was not subject to harm in any ways whatever, respect for dignity of research participants wereprioterized.finally, the respondents were explaining that all answers they hadto provide were only use only for research purpose.

**CHAPTER FOUR**

**PROJECT PREPARATION AND PRESENTATION**

**4.1 Introduction**

This chapter presents the study findings, the researchers present the research findings from the respondents of hill top & country club hotel, in short respondents of consumer’s views.

The general objective of the project was to produce sweet potatoes cakes to improve health condition of consumers.

As such project responded to the following questions: what are health benefit of sweet potatoes cakes to the consumers, what are the negative impact of sugar cake to the consumers.

**4.2 sweet potatoes cake for 5 portions**

Sweet potatoes cake was produced based on the following ingredients:

**4.2.1 Ingredients and their measurements**

\* 2 medium sweet potatoes

\*300 g flour

\*200 g milk

\*6 eggs

\*100 g of sun flower oil

\*200 ml jackfruit juice

\*30 baking powder

\*1/4tbsp cinnamon

\*1 medium banana

\*400 g butter

**4.2,2 Method of cooking**

Baking in medium heat is the method used for sweet potatoes and for sweet potatoes cake.

**4.2.3Tools and Equipment**

\* Mixer for mixing ingredients (dry ingredients and wet ingredients)

\*table spoon for measuring some ingredients such as baking powder,cinnamon.

\*spatula for spreading the coconut milk over the cake at time of presentation to the consumers

\*oven for baking sweet potatoes and sweet potatoes cake

\*knives peeling sweet potato and jackfruit

\*baking sheet for putting the baking foam

\*mixing bowl for mixing also ingredient

\*baking form for putting the dough

\*blender for making jackfruit juice

\*measuring cup for measuring milk and jackfruit juice

\*cutting board when the peering the sweet potato and jackfruit

\*bread knife for cutting cake into parts

\*aluminium paper for baking sweet potatoes

\*containers for washing jackfruit, sweet potatoes as follow three system container

\*plate for serving to consumers

**4.2.4 preparation procedures**

In this research, researcher used the following procedures for producing sweet potatoes cake:

1.pre heat the oven and bake the sweet potatoes in the oven until well- cooked

2.then scoop out the flesh, mash and leave to cool

3.mixthe flour, bakingpowder, cinnamontogether.

4.beat the eggs then add sun flower oil, butter, jackfruitjuice, vanillaessence, milk until well mixed

5, add to the mashed sweet potatoes, banana and combine until complete mixed

6. add this to dry ingredients and mix well with a spoon.

7.place it in mould and bake for 50-60 minutes until the top is firm to touch,

8.leave to completely cool in the tin before turning out.

* + 1. **Product presentation (garnishing and dressing)**

In this research, researcher used a plastic spatula for spreading on the top of cake the coconut milk and used bread knife for slicing a cake and for cutting into small pieces after served to the consumers. safety consideration date of this cake is two days, we should conserve in fridge.

**4.2.6 Benefits of sweet potatoes cake to the consumers**

Sweet potatoes cake is a dessert supplies a certain amount of proteins and other nutrients coming mainly from main ingredients. this dessert is good for those who need nutritional dish that is delicious and satisfying without the adverse effect of too much sugar and sugar products dessert, and gain more nutrients from this cake according to the main ingredients as the following:

**4.2.6.1 Flour**

Unrefined wheat contains complex carbohydrates, dietary fiber, and a moderate amount of proteins it prevents constipation, lowers blood cholesterol and might help you lose weight.

In wheat germ which is heart of the kernel, is particular rich in vitamin E .it is known to be the main source of the vitamin include vitamins like thiamin, folicacid, vitamin B6, and minerals like manganese, magnesium and zinc According Sylvie T (2018)

**4.2.6.2 Milk**

According to the National Dairy Council milk is filled with nine essentially nutrients that benefit our health calcium builds health and teeth and protein serves as a source of energy and potassium helps blood pressure.

**4.2.6.3 sweet potatoes**

According to George Pamplona-Roger (2012) for100g of raw edible portion: energy 105Kcal, protein 1,65g, carbohydrate 21,3g, fiber 3,00, vitamin A 2,006mg, vitamin B1 0,066mg, B2 0,147mg.

**4.2.6.3 eggs**

According to George Pamplona (2012) eggs provide proteins and fats in addition to vitamin A, B12 and provide proteins that are easy to digest in omovolacto-vegeterian diet.

**4.2.6.4 jackfruit juice**

According to Brianna (2018) it has a distinctive sweet flavor and can be used

It contains a moderate amount of calories, providing 155 in one cup (165gram) serving. approximately 92% of the colories come from carbs, while the rest come from protein (3grams) and small amount of fat and fiber (3 grams)

**4.2.6.5 Banana**

According to farah shaikh (2017) for 2pcs (100g): total carbohydrate:23g, Dietary fiber :3g, sugar:12g, proteins :1g, vitamin A:64IU,vit C:8.7mg,potassium:358mg

**4.2.6.6 Butter**

butter contains decrease inflammation, and support weight control according to human and animal studies. Rachael L (2019)

**4.3 Consumer views Presentation**

This section show the methods used by the researcher to analyze and interpret data from the field, in order to reach the research objectives, where the researcher used tables to analyze the data collected from field. Equally the same thing, participants responses to the questionnaires in the tables below.

**Table 3 The Departments in which respondents work**

|  |  |  |
| --- | --- | --- |
| **Department Frequency Percentage** | | |
| Food and beverage service | 7 | 38.8% |
| Food production | 11 | 61.2% |
| **Total** | **18** | **100%** |

**Source: primary data 2019**

According to the table above, most of the contacted respondents work in food production holders61.1 % those who work in food and beverage service department were 61.1% . This meant that all respondents had more information about the topic and give meaning full views.

**Table 4 Employees’ views about availability of sugar cakes in hill top hotel**

|  |  |  |
| --- | --- | --- |
| **Option Number of respondents Percentage** | | |
| Available | 16 | 88.8% |
| Not available | 2 | 11.2% |
| **Total** | **18** | 100% |

**Source: primary data 2019.**

According to above table shows that the revealed respondents had the lowest percentages equivalent 11.2% who said that not available. while the highest percentage equivalent 88.8% who said available. it means that in hilltop hotel produce cake using sugar.

**Table 5 Respondents (Employees) knowledge about negative impacts of sugar cake**

|  |  |  |
| --- | --- | --- |
| **Option** | **Respondents** | **Percentages** |
| Yes | 16 | 88.8% |
| No | 2 | 11.2% |
| Total | 18 | 100% |

**Source: primary 2019.**

According to the above table shows that the revealed respondents had the lowest percentages equivalent 11.2% who said no. while the highest percentage equivalent 88.8% who said yes. it means that in Hilltop hotel many workers agree that sugar cake have negative impacts.**Table 6 Table 6 employee’s views about the Diseases caused by of sugar cake consumption**

|  |  |  |
| --- | --- | --- |
| **Negative impacts** | **Respondents** | **Percentages** |
| Heart diseases | 6 | 33.3% |
| Diabetes | 4 | 22.2% |
| Obesity | 3 | 16.6% |
| Cancer | 2 | 11.2% |
| Don’t know | 3 | 16.7% |
| **Total** | 18 | 100% |

**Source: primary data 2019**

According to this table 6 shows that 33.3 % of the respondents confirmed that the negative impacts of sugar cake was heart diseases 22.2 % confirmed that the negative impacts of sugar cake was diabetes 16.6% confirmed that the negative impacts of sugar cake was obesity 11.2% felt that the negative impacts of sugar cake was cancer 16.7 % felt that they don’t know the negative impacts of sugar cake was weight loss. based on results above, respondents confirmed that there are various negative impacts of consuming sugar cake to the consumers .

And Hilltop hotel should increase the use of sugar free cakes for improving health condition of consumers.

**Table 7 Availability of sugar free cake in Hilltop hotel**

|  |  |  |
| --- | --- | --- |
| **Available option** | **Respondents** | **Percentage** |
| Yes | 15 | 83.4% |
| No | 3 | 16.6% |
| Total | 18 | 100% |

**Source: primary data 2019**

According to this table 7 shows that the revealed respondents had lowest percentages equivalent 20% who said no. while the highest percentage equivalent 83.4% who said yes. it means that in Hilltop hotel have sugar free cake.

**Table 8 Employee’s views about the available types of sugar free cake**

|  |  |  |
| --- | --- | --- |
| **Sugar free cakes** | **Respondents** | **Percentage** |
| sugar free banana cake | 10 | 55.6% |
| Sugar free carrot cake | 3 | 16.6% |
| Vegan sweet potatoes cake | 2 | 11.2% |
| Don’t know | 3 | 16.6% |
| Total | 18 | 100% |

**(Source: primary data 2019)**

From the results in table 8, shows that sugar free banana cake as one of sugar free cake produce in hilltop hotel the respondents agreed to average extend as indicated by mean make 55.6%. on sugar free carrot cake the respondents agreed to average extend by mean make 16.6%. on vegan sweet potatoes cake respondents agreed to average extend by mean make 11.2% and 16.6% of respondents did not know. it mean that in Hilltop hotel produce different sugar free cake, while sugar free sweet potatoes not yet produced in hill top hotel.

**Tables 9 Employees views about sugar substitutes used for producing sugar free cakes**

|  |  |  |
| --- | --- | --- |
| **Sugar substitutes** | **Respondents** | **Percentages** |
| Fresh fruit juices | 10 | 55.6% |
| artificial sweetness | 3 | 16.6% |
| Honey | 2 | 11.2% |
| don’t know | 3 | 16.6% |
| **Total** | **18** | **100%** |

**Source: primary 2019**

From table 9. above, 55.6 % of the respondents agreed that the sugar substitutes used for producing sugar cake is fresh fruit juice, 16.6 % of respondents confirmed that they use artificial sweeteners, and 11.2% confirmed that they use honey, while 16.6 %of respondents they didn’t know. the majority of respondents confirmed that hill top hotel there are the sugar substitutes used for producing sugar free cakes.

**Table 10. Employees ‘views about methods used for preparing the sugar free cakes**

|  |  |  |
| --- | --- | --- |
| **Methods** | **Respondents** | **Percentage** |
| Baking in low heat | 1 | 6% |
| Over heat | 3 | 16.6% |
| Medium heat | 11 | 61.1% |
| Don’t know | 3 | 16.6% |
| **Total** | **18** | **100%** |

**source: primary data 2019**

from tables 10 above; 61.1% of respondents agree that the preparation methods used for producing sugar cake is baking in medium heat while 16.6% review over heat, while 16.6% reviewed that they don’t know, and 6% reviewed on baking on low heat.

overall majority of respondents had outlook on baking in medium heat

**Table 11 : Customers; views about cakes they like to eat at their breakfast**

|  |  |  |
| --- | --- | --- |
| **Option** | **Number of respondents** | **Percentages** |
| Yes | 19 | 86.4% |
| No | 3 | 13.6% |
| Total | 20 | 100% |

**Source: primary 2018**

According to this table 11 shows that the revealed respondents had the lowest percentages equivalent 13.6% who said no. while the highest percentage equivalent 86.4% who said yes. it means that many customers eat cakes at breakfast.

**Table 12 Customer’s views about most popular cakes they like to eat**

|  |  |  |
| --- | --- | --- |
| **Type of cake** | **Number of respondents** | **Percentages** |
| Sugar cake | 2 | 10% |
| Vegan cake | 5 | 25% |
| Sugar free cake | 11 | 55% |
| Chocolate cake | 2 | 10% |
| **Total** | **22** | **100%** |

**Source: primary data 2019.**

From the results in the table 12, shows that 10% of respondents eat sugar cake ,20% eat vegan cake ,55% eat sugar free cake, and 10%eat chocolate cake. However, majority of respondents had outlook on eating sugar free cake.

**Table 13. Customers’ views on health benefits of sugar free cakes**

|  |  |  |
| --- | --- | --- |
| **Health benefit** | **Number of respondents** | **Percentages** |
| Reduce the risk of diseases | 11 | 50% |
| improve your energy | 5 | 22.7% |
| Manage and maintain your weight | 6 | 27.3% |
| **Total** | **22** | **100%** |

**Source: primary data 2018**

According the above table 13, concerning to the health benefit of sugar free cake 55% of respondents confirmed that eating sugar free cakes reduce risks of heart diseases and 20% confirmed that they improve energy, while 25% of respondents confirmed that they manage and maintain the weight. Based on the results presented above table, it means that sugar free cakes contribute more health benefits to the consumers.

**4.4 Summary of the results presentations**

**CHAPTER FIVE**

**CONCLUSIONS AND RECOMMENDATIONS**

**5.1 INTRODUCTION**

This chapter provides the conclusion and recommendation that the researcher arrived at based on the findings from research questions. This chapter is divided into the following section: summary of the findings, the conclusion, recommendations for policy and practice.

**5.2 Summary of the Research Project**

This research project is based on the use sweet potatoes in cake production without add sugar to the consumers. For helping consumers to maintain in good health and reducing too much sugar consuming and know how much sugar should they eat,

The purpose of researcher is to find out use sweet potatoes in cake production that will solve problem are diseases like obesity, cancer, blood pressure and increase nutrients value (fiber, potassium) from sweet potatoes plant.

Research objectives were achievable

The research question was answered about table of views

Research Question 1 was answered table 5

Research Question was answered table 9 and table 10

Research Question was answered table 13

From the research findings it was found that indeed there are several health benefits related to eat sweet potatoes cake. this can be considered through research carried out on population of random selected from hilltop hotel & country club. according to the research objective number one, concerning to the negative impacts of sugar cakes to the cponsumers,33% confirmed that sugar cakes causes heart diseases ,22% confirmed that they cause diabetes, and 16 % of respondents that sugar cake caused obesity while 11% of respondents confirmed that they cause cancer and 17%confirmed that they don’t know.

According to research objective number two, concerning production of sugar in sweet potatoes cake ,61% of respondents confirmed that they produce cakes using baking in medium heat ,17% confirmed that use over heat and 6% confirmed that they use low heat baking. and also 56%of respondents confirmed that the fresh fruit juice used in place of sugar 17% confirmed that they use artificial sweeteners, and 11% they use honey, while 17% of respondents confirmed that they don’t have information.

Based on research objective number three, concerning to the health benefit of sweet potatoes cake to the consumers 50% of respondents confirmed that sugar free cakes reduce the risks of heart diseases, 23 % confirmed that they improve your energy, and 27% of respondents confirmed that they manage and maintain your weight.

However, it is emerging that most of consumers are faced with health problems caused by diary diet which is mainly attributed to lack of more information about food choice, change their life style and to use of excess food, the believes have about food quality.

To use natural plants like sweet potatoes in food production contribute more health benefits to the consumers and improve their health condition, current, sweet potatoes products are relative weak to use among of others plants products; the use sweet potatoes cake will be consumed by how well these consumers adapt to its import plants in their life style.

**5.3 conclusion**

It was clear that use sweet potatoes cake plays vital role in the health of consumers through its health benefit’s mentioned above like reduce the risk of attacked by heart diseases, improve your energy, help improper function of body, manage and maintain your weight. however, there is couple of challenges consumers still face like choosing what they eat, different lifestyle but challenges were also mentioned to control down these challenges and create a way forward for the better health of consumers.

In relation to research question, what are the negatives impacts of sugar cake to the consumers the majority of respondents cited that the negatives impact of sugar cake is heart diseases, obesity, diabetes, and cancer. Mean while, it was indicated that the level of people who have more information about the diseases caused by industrial sugar and their products was high compared to the consumers so, researcher hopes the use sweet potatoes cake will serve more for reducing sugar and sugar products health problems to the consumers.

**5.4 Recommendations**

Based on the results from research on assessing the negative impacts of sugar cake to the health of consumers, the research would like to provide the following recommendation to hilltop hotel, consumers and future researchers.

**5.4. To Hilltop hotel**

The management of hilltop hotel should increase the sugar free products such as sugar free sweet potatoes for helping consumers to reduce and preventing too much sugar health problems.

The study recommended that there should be often more information to customers about food quality so as to raise the level of life style, knowledge and attitudes in choosing what they eat and when they eat and when they eat and this should be aimed to the provision of good health of consumers.

**5.4.2 To the consumers**

Consumers should reduce or avoid to eat too much sugar because those too much sugar consider as enemy of good health of consumers.

They study also recommends that the consumers should adopt the use health products to improve quick their life style and to make good choice of products to eat as soon as possible.

The consumers should help each other with government for favorable policies that would favor them especially towards life style improvement, like encourage people to read label information about products.

**5.4.3 To the future researchers**

As this research project explored the use sweet potatoes cake for improving health condition of consumers. therefore, future researcher should focus on the negatives impacts of too much sugar to the health of consumers and should came up with other new sugar free cakes in order to sustain good health of consumers.

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**APPENDICES**

**Appendix I: QUESTIONNAIRE FOR EMPLOYEES TO HILLTOP HOTE**

Dear respondent,

My names is **Clementine** MUTESI, I am final year student of an advanced diploma at **RP**(Rwanda polytechnic) **IPRC** KARONGI (Integrated polytechnic Regional College),and I am currently carrying out a research on the topic **“use sweet potatoes cake** “ case study is hilltop hotel I would be grateful if you could kindly complete these questionnaires .

Ways used ensure the protection and confidentiality of employee’s responses

In this research, ethics was highly take into account, so that the respondents may be confident in providing necessary information. in order to follow ethics, it is important to note that before submitting the questionnaires, or conducting the interview, first the participants were explaining on the research question. was submitted to them. second, each participant had to accept or not to participant had to participant in research. The names of responds were not mention in the research, for confidentiality, research participant was not subject to harm in any ways whatever, respect for dignity of research participants were prioterized.

It is the part of an evolution study of consumer’s healthy style. your honest opinions will help us to implement this dissertation.

Please indicate your suggestion by putting V in the suitable cage .

**1.Which department do you work among the following?**

A. Food and Beverage service

B. Food production department

**2. If you are working in food and beverage service and production department do you produce cakes using industrial sugar.**

A. Yes

B.NO

**3.If yes do you think that it has some negative impacts?**

A. Yes

B.NO

**4.If yes do you agree that the following are the negative impact of sugar cake?**

A. Heart diseases

Diabetes

Obesity

D.Cancer

E. Don’t know

**5.In hill top hotel do you have any sugar free cake?**

A. Yes

B. No

**6.If yes what are the types of sugar free cake do you produce among the following?**

A. sugar free walnut cake

B.Vegan sweet potatoes cake

C. Sugar free carrot cake

D. don’t know

**7.Which methods used for preparing those sugar free cakes among the following?**

A. Baking in low heat

B. Baking in medium heat

C.cover heat

D.Don’t know

**8. what are the sugar substitutes used among the following?**

A. Fresh fruit juice

B.Artificial sweeteneners

C.Honey

D.Don’t know

**Appendix II: QUESTIONNAIRE FOR CUSTOMERS TO HILLTOP HOTE**

Dear Sir/Madam

My names is **Clementine** MUTESI I am final year student of an advanced diploma at **RP** (Rwanda polytechnic) **IPRC** KARONGI (Integrated polytechnic Regional College), and I am currently carrying out a project which works on **“use sweet potatoes cake “**your answers to these question will be ok great importance in the execution of research project. please answer to these questionnaires using the spaces provided below for the open questions and tick for the closed questions. we ensure you that yours will be kept confidentially.

Thank you for your cooperation and assistance,

Part two, question for customers

Questions related to the consumers’ views about the use sweet potatoes cake. please indicate your suggestion by putting V in the suitable cage.

**Q.1.Do you like to eat cake at your breakfast?**

Ayes

B.no

**Q.2. Which kind of cake do you like eat among the following?**

A. Sugar cake

B. Vegan cake

C.Sugar free cake

D. Chocolate

**Q.3. If you like sugar free cakes what do you think are health benefits of it among the following?**

A. Reduce the risks of heart

B. Improve your energy

C.Manage and maintain your weight

Thank you for co-operation

May God bless you!!