**FACULTY OF FOCIM**

**COURSE: Bachelor of Science in Information Technology**

**SYSTEM REQUIREMENT SPECIFICATION**

**REG\_NUMBER: 19/02629**

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# Declaration

I declare that this is my own work and has never been submitted by anyone else for any such award.

**Signature**………………………. **Date**…………………….

**Mr. Mbao**

**Designation**……………………..

**Signature**………………………. **Date**…………………….

# **Abstract**.

# The KCAFE web application is an e-commerce system that enables automation of services in the KCA university cafeteria. The main objective of the project is to allow the cafeteria users to check on the traffic in the cafeteria to avoid wastage of time through queuing. The web application will also enable the users to check on the menu available. All this will be done in real time.

# This will come in handy especially during this covid times when restaurants have limitations as it will reduce congestion in the cafeteria.

The study was confined to KCA university cafeteria where research and fact-finding was done.  
The project outlines all the processes followed to come up with the software that is from analysis to the implementation of the system.

# Definition of terms

These are the terms that are used in the cafeteria that may not be familiar to everyone.

* **FIFO** – Full hands in, Full hands out; First in, First out- Referring to prepped food items.
* Upsell – A technique used to get customers to purchase more expensive items.
* Walkout- A diner that left without paying.
* KCAFE - KCA University and cafeteria

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# CHAPTER 1

# INTRODUCTION

### BACKGROUND STUDY.

The kcafe is an online web-based application that enables users of the KCA university cafeteria to be able to monitor the traffic in the cafeteria in real time.

The application also enables the users of the cafeteria to see what menu is available currently inclusive of their prices.

In the current world, most of the things are being automated. KCA university shouldn’t be left behind. Instead of a student or a lecturer coming to check whether the cafeteria is full or not, he or she may just login into the application and will be able to know of the number of people currently in the cafeteria and the menu available in real time.

This will in-turn save on a lot of time wastage and congestion especially during this covid era as people will be going to the cafeteria in shifts while continuing to do their other businesses.

The system design face of the projects includes an overview of the system and developing the basic system and subsytem architecture, the data/process flow of the system, database design, the design of the various interfaces, validation and security design. It basically involves identifying the various software requirements based on the requirements. The feasibility study of the proposed system is also included.

The system is customized to meet the needs of the KCA University cafeteria.

The system also needs an administrator who will be updating data in real time.

## 

#### 1.1 Problem statement

The purpose of the system is to reduce congestion in the cafeteria and to update the audience of the available menu.

The targeted audience is the students of KCA University,staff (both teaching and non-teaching) and anyone who uses the school cafeteria.

#### 1.2 Objective of the study

1. Study the possibility of offering an online food and beverage payment and supply to customers i.e., to identify the availability of technology for an online system and to establish if there is a demand for such a system.
2. To analyze existing solutions i.e., check if there are systems that can solve the current shortcomings.
3. To design an appropriate solution
4. To implement the solution.

#### 1.3 Significance of the study

1. Improved efficiency in service delivery
2. Reduced expenses on labor cost for hiring waiters/ waitresses
3. Helps restaurants with accounting through the daily sales report.

#### 1.4 Motivation

The motivation to build this system came up in 2019 when I was in my first year second semester and we had to wait for long before we were served in the cafeteria. The time used to queue could alternatively be used to do other things.

I remember this time when we had to leave the library where we were doing an assignment ias a group and we were hungry so we wanted to go and have lunch.

We had to come and queue for more than ten minutes due to the high human traffic experienced in the cafeteria during that time. We could have continued with our discussion if there was an application to check the availability of people in real time

#### 1.5 Scope

The system to be produced will be known as KCAFE representing KCA University and CAFE.

The system will be able to alert students of the available seats and the menu that is available at the moment.

The system will benefit the users by reducing the time used in the cafeteria waiting to be served yet one would be doing any other thing.

#### 1.6 Overview

The rest of the srs contains the general overview of the system specifications. Chapter two has the general description of the system giving the system perspective, system functionality, User characteristics, General constraints and assumptions and dependencies.

Chapter 3 gives the specific requirements which contains functional requirements, user interface requirements and appendices.

## Required Resources

### **Hardware Specifications**

1. At least 60 GB (Gigabytes) of hard disk space.
2. At least 512 of random access memory (RAM)
3. A laser jet printer for printing reports

### **Software specifications**

1. WAMP Server
2. Windows operating system
3. Internet Explorer or Mozilla Firefox web servers.
4. PHP
5. MySQL

### **Network specification**

A well reliable and fast internet connection.

# CHAPTER 2

## LITERATURE REVIEW

### INTRODUCTION

The software system will be able to keep operations flowing efficiently. There are accounting packages,customer relationship management  
(crm) packages, and a dizzying array of industry-specific software.

Modern hotel software offers the functionality that small properties need to meet traveler expectations and demands moving forward.

Some examples of the softwares that use similar system are the easy innkeep eZee Absolute and Hotelogix.

For example, eZee Absolute is a hotel management system that helps automate each major area of hotel operation with support for any size of hotel. Some of the key features is that it enables one to oversee multiple properties,booking engines and guests within a single system.

eZee absolute displays a guest contact information while completing

transactions for quick reference.

The hotelogix is a cloud-based property management software that intergrates

with other systems to create an all-in-one platform.One of its key features is that

it personalizes the booking engine to match branding on your website

#### LIMITATIONS OF THE CURRENT SYSTEMS

* There is no current system that is present at the institution or the cafeteria.

#### Issues Addressed by the current system

* The system delivers real time information about the cafeteria data
* The system will be able to update the current data about menu available in the cafeteria which will be real time.
* The system will reduce time wastage.
* The system will reduce congestion in the cafeteria.
* The system will enable closer monitoring of the meal intake by the students and staff.

# CHAPTER THREE

## RESEARCH METHODOLOGY

### Introduction

The main aim of coming up with this project is to come up with a system that will be able to alert students and staff who use the canteen about the availability of food menu in the cafeteria.Thus, a research is needed to come up with the information requirement on the current system being used.According to Neuman. researchcan simply be defined as a collection of methods and methodologies that researchers apply systematically to produce scientifically based knowledge about the social world.

#### Purpose of the research

* I noticed this problem during the one of my visits to the cafeteria.
* This observations were necessary in determining the necessity of a more organized system
* The main research method to be used will be interviews. I’ll interview the users about their comfort in the cafeteria and how they go about it upon a day to day case.
* Issuance of questionnaires will also be considered as a way of targeting.

#### Scope of the research.

The research scope refers to the areas to be covered in the research. This research covered the following areas:

* Changes that will be experienced with the current system in hand.
* Storage and retrieval of data and also the safety of the data used.
* Report generation.

#### Research questions

Research questions are necessary in the solving of a research problem. From the problems stated above the following research questions would satisfy our solution to the research problem:

1. What are your views on the proposed system?
2. What are the main problems and the challenges experienced by the current manual system at place and the users using the system?
3. What changes and improvements would you recommend?
4. What can you say about the proposed system?

#### Research methods and techniques adopted

There are different methods of data collections. Data collections form a fundamental part of a research. It involves different methods that are employed to gather the necessary system requirements needed to develop the system.

These include:

* Interviews
* Questionnaires
* Observation and discussions

Interviews to the staff who will use the current system and observation were highly used to gather the necessary important information requirement.

Usage of questionnaires was also deployed to the necessary respondents.

### 1 Questionnaires

It is a research instrument or method consisting of a series of questions and other prompts for the purpose of gathering information from respondents.

They serve the following basic purposes:

1. Collect the appropriate data,
2. Make data comparable and amenable to analysis,
3. Minimize bias in formulating and asking question, and
4. To make questions engaging and varied

#### Advantages of questionnaires

1. Practical
2. Large amounts of information can be collected from a large number of people in a short period of time and in a relatively cost-effective way
3. Can be carried out by the researcher or by any number of people with limited affect to its validity and reliability
4. The results of the questionnaires can usually be quickly and easily quantified by either a researcher or through the use of a software package
5. Can be analysed more 'scientifically' and objectively than other forms of research
6. When data has been quantified, it can be used to compare and contrast other research and may be used to measure change

#### Disadvantages of questionnaires

1. Is argued to be inadequate to understand some forms of information - i.e. changes of emotions, behaviour, feelings etc.
2. Phenomenologist state that quantitative research is simply an artificial creation by the researcher, as it is asking only a limited amount of information without explanation
3. Lacks validity
4. There is no way to tell how truthful a respondent is being
5. There is no way of telling how much thought a respondent has put in
6. The respondent may be forgetful or not be thinking within the full context of the situation

#### 2 Interviews

Interview is the verbal conversation between two people with the objective of collecting relevant information for the purpose of research. The main task in interviewing is to understand the meaning of what the interviewees say. According to McNamara, Interviews are particularly useful for getting the story behind a participant’s experiences.

#### Characteristics of qualitative research interviews

* Interviews are completed by the interviewer based on what the interviewee says.
* Interviews are a far more personal form of research than questionnaires.
* In the personal interview, the interviewer works directly with the interviewee.
* Unlike with mail surveys, the interviewer has the opportunity to probe or ask follow up questions.
* Interviews are generally easier for the interviewee, especially if what is sought are opinions and/or impressions.
* Interviews are time consuming and they are resource intensive.
* The interviewer is considered a part of the measurement instrument and interviewer has to be well trained in how to respond to any contingency.

#### Advantages

1. **Opportunity for Feedback** – Interviewer can provide direct feedback to the respondent, give clarifications and help alleviate any misconceptions or apprehensions over confidentiality that the respondent may have in answering the interviewer’s questions
2. **Probing Complex Answers** – Interviewers can probe if the respondent’s answer is too brief or unclear. This gives interviewers some flexibility in dealing with unstructured questions and is especially suited for handling complex questions
3. **Length of Interview** – If the questionnaire is very lengthy, the personal interview is the best technique for getting respondents to cooperate, without overtaxing their patience
4. . **Complete Questionnaires** – Personal ensures ensure that the respondent will answer all questions asked, unlike in telephone interview where the respondent may hang up or in mail questionnaire where some questions may go unanswered
5. **5. Props & Visual Aids** – Interviewers have the opportunity of showing respondents items such as sample products, graphs ands sketches, which can aid in their answers
6. **6. High Participation** – Interviewing respondents personally can increase the likelihood of their participation.

#### Disadvantages

1. **Cost** – Personal interviews are usually more expensive than mail, telephone and internet surveys.
2. **Lack of Anonymity** – Respondents are not anonymous in a personal (face-to-face) interview and may be reluctant to disclose certain information to the interviewer.
3. **Necessity for Callbacks** – When a person selected for interview cannot be reached the first time, a callback has to be scheduled which result in extra cost and time spent
4. **Variance Effects** – It has been shown that the demographic characteristics of the interviewer can influence the answers of the respondents.

#### Observations

According to Marshall and Rossman, observation is defined as "the systematic description of events, behaviours, and artifacts in the social setting chosen for study" . Observations enable the researcher to describe existing situations.

#### Advantages of Observation

1. Very direct method for collecting data or information – best for the study of human behavior.
2. Data collected is very accurate in nature and also very reliable.
3. Improves precision of the research results.
4. Problem of depending on respondents is decreased.
5. Helps in understanding the verbal response more efficiently.
6. By using good and modern gadgets – observations can be made continuously and also for a larger duration of time period.
7. Observation is less demanding in nature, which makes it less bias in working abilities.
8. By observation, one can identify a problem by making an in depth analysis of the problems.

#### Disadvantages

1. Problems of the past cannot be studied by means of observation.
2. Having no other option, one has to depend on the documents available.
3. Observations like the controlled observations require some especial instruments or tools for effective working, which are very much costly.
4. One cannot study opinions by this means.
5. Attitudes cannot be studied with the help of observations.
6. Sampling cannot be brought into use.

## Research techniques used

I preferred using interview because most of my targeted people whom i’ld want to interview are busy people who would prefer interviews verbally rather than questionnaires due to time consumage by the latter.

The interviews also came in handy during this covid era where hand to hand contact is so much limited.

I formulated some interview questions that would help me achieve my data collection.

With interviewing it was concluded that talking to people is a good way to get information.

#### System development methodology

The systems development life cycle (SDLC) is a conceptual model used in project management that describes the stages involved in an information system development project, from an initial feasibility study through maintenance of the completed application. These includes models like water fall, spiral, incremental and also the rapid development.

#### Waterfall method

The waterfall Model illustrates the software development process in a linear sequential flow. This means that any phase in the development process begins only if the previous phase is complete. In this waterfall model, the phases do not overlap.



#### Advantages of the waterfall method

* Good for management control (plan, staff, track)
* Works well when quality is more important than cost or schedule
* Milestones are well understood
* Sets requirements stability
* Easy to understand, easy to use
* Provides structure to inexperienced staff

#### Disadvantages of the waterfall method

* No working software is produced until late during the life cycle.
* High amounts of risk and uncertainty.
* Not a good model for complex and object-oriented projects.
* Poor model for long and ongoing projects.
* Not suitable for the projects where requirements are at a moderate to high risk of changing. So, risk and uncertainty is high with this process model.
* It is difficult to measure progress within stages.
* Cannot accommodate changing requirements.
* Adjusting scope during the life cycle can end a project.
* Integration is done as a "big-bang. at the very end, which doesn't allow identifying any technological or business bottleneck or challenges early.

### Spiral Model

The spiral model combines the idea of iterative development with the systematic, controlled aspects of the waterfall model. This Spiral model is a combination of iterative development process model and sequential linear development model i.e. the waterfall model with a very high emphasis on risk analysis. It allows incremental releases of the product or incremental refinement through each iteration around the spiral.

#### Spiral Model - Design

The spiral model has four phases. A software project repeatedly passes through these phases in iterations called Spirals.

The following pointers explain the typical uses of a Spiral Model −

* When there is a budget constraint and risk evaluation is important
* For medium to high-risk projects.
* Long-term project commitment because of potential changes to economic priorities as the requirements change with time.
* Customer is not sure of their requirements which is usually the case.
* Requirements are complex and need evaluation to get clarity.
* New product line which should be released in phases to get enough customer feedback.
* Significant changes are expected in the product during the development cycle.

#### Advantages of the spiral method design

* Changing requirements can be accommodated.
* Allows extensive use of prototypes.
* Requirements can be captured more accurately.
* Users see the system early.
* Development can be divided into smaller parts and the risky parts can be developed earlier which helps in better risk management.

#### Disadvantages of the spiral method design

* Management is more complex.
* End of the project may not be known early.
* Not suitable for small or low risk projects and could be expensive for small projects.
* Process is complex
* Spiral may go on indefinitely.
* Large number of intermediate stages requires excessive documentation.

#### Incremental model

Incremental Model is a process of software development where requirements are broken down into multiple standalone modules of software development cycle. Incremental development is done in steps from analysis design, implementation, testing/verification, maintenance.

#### Advantages

* The software will be generated quickly during the software life cycle
* It is flexible and less expensive to change requirements and scope
* Throughout the development stages changes can be done
* This model is less costly compared to others
* A customer can respond to each building
* Errors are easy to be identified

#### Disadvantages

* It requires a good planning designing
* Problems might cause due to system architecture as such not all requirements collected up front for the entire software lifecycle
* Each iteration phase is rigid and does not overlap each other
* Rectifying a problem in one unit requires correction in all the units and consumes a lot of time

## 2.1 System perspective.

* The system will be web-based, whereby the admin will be able to update the current setup of the cafeteria.

The system asks for login details from the

User

If the details are not corre

ctly input,the user is redirected

Back to the login page.

If the details are correctly input,the user is

Redirected to this page which contains two

Options..

First option is to check whether the traffic

at the cafeteria. Second option is to check

For the available menu.

If the user chooses the traffic bit then

the system will display the current

Available seats.

The user can log out

## 2.2 System Functionality.

The system will be able to update the current traffic in the cafeteria as well as display the available menu together with their prices. This inturn will save a lot of time spent on queing while you could be doing something else.

Once the user enters the cafeteria, the admin updates it in the system. Once this is done, the guys who are yet to go in would know how much of people are currently present.

## 2.3 User Characteristics.

The system users will be the admin and the guys who use the cafeteria.

The work of the admin will be to update on the current setup of the cafeteria.

The user will be able to login to view the available data in the system which will help him/her to know whether to proceed to the cafeteria or not. The system can be used by anyone who owns the smartphone hence no prior technical expertise is required.

The admin will be trained on how to use the system.

## 2.4 General constraints.

There are no regulatory policies.

The hardware requred is only for one to own a smartphone that can be able to browse hence no specific regulations.

The system will be safe a hundred percent.

## 2.5 Assumptions and dependencies.

I made an assumption that anyone who will use the system is a staff or a student at the cafeteria.

I also made the assumption that anyone who uses the system is a literate person.

I also made the assumption that anyone who uses the system owns a smartphone that can be able to browse.

# 3.1 Functional requirements

## Inputs and outputs

-The only data to be input is the registration number of the student and his/her name whereby the system will be able to allow one to get in and access whatever he or she wants from the system.

-The data to be output would be whatever the user wants. There are two categories, one is to check the traffic of the cafeteria and the other one is to check the meals available at that time. The system will be able to output either of them.

## User Interfaces

|  |  |
| --- | --- |
| Use case name | Search Article |
| Xref | Section 2 |
| Trigger | The user assesses the online cafeteria system |
| Precondition | The web is displayed with grids for searching |
| Basic path | The user chooses will choose where to go  And maybe proceed with to go to the cafeteria or not considering the traffic.  The user may also decide whether to have any of the meals available or not. |
| Alternative paths | There’s no alternative path |
| Post condition | There’s no any post condition |
| Other | None |

# Appendices.

I conducted a research using interviews which were done to 20 students who use the KCA cafeteria frequently and these were the results.

* 14 actually admitted to being slowed down by the lining while they could be doing other things. Out of the 14, eleven of them were so excited about the project an were looking forward to it.
* 4 of the twenty were not so much affected by the lining up as they didn’t mind waiting.
* The others were not sure about how they were feeling.

**.**