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**GROCEXPRESS FARM PRODUCES**

**BY**

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**A PROJECT DOCUMENT SUBMITTED IN PARTIAL FULFILMENT FOR**

**THE AWARD OF BACHELOR OF BUSINESS INFORMATION TECHNOLOGY IN THE SCHOOL OF ICT,**

**MEDIA AND ENGENEERING AT ZETECH UNIVERSITY**

# DECLARATION

We hereby declare that this project proposal is our original work and to the extent of our

knowledge, it has not been presented to any other examination body

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# DEDICATION

This Grocexpress Farm Produce App is dedicated to all our esteemed customers who have placed their

trust in us. Through your continued support and feedback, we have been able to come up with

this effective, efficient and more reliable Grocery shopping experience that addresses all your needs.

We would also like to thank our partners and stakeholders who have impacted the entire

development process significantly. It is through such collaboration that has made us to

successfully transform the agriculture sector. Your shared vision and collaboration have played a

pivotal role in shaping this platform into what it is today.

To our families, friends and loved ones, we dedicate this App to you. Your understanding,

encouragement, and support have been the pillars of strength throughout this endeavour. You

believed in us and it is this belief that has us to deliver an agribusiness solution that sets new and high

standards of convenience and easy accessibility.

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we acquired relevant skills that have helped us when tackling this final-year project.

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also an individual that we cannot forget. His dedication towards ensuring that we are always on

the right track is highly appreciated. Last but not least, we our beloved families, for their moral, emotional and financial support throughout

the entire period.

May The Almighty God abundantly bless you all!

# ABSTRACT

Groceries are commonly used by human beings as a source of food, they provide very significant

nutrients in the body. In our daily meals groceries play a huge role in balancing the diet. In

In Kenya, groceries are commonly found in markets or grocery stores.

In Kenya, people go to the markets to buy groceries. In markets, groceries are found in large

stocks and different varieties, brought by local farmers from their farms. Although markets are full

of groceries, most people do not like them and may not be able to go and shop. Others may not

get the opportunity to go and shop due to harsh working hours, health related matters and some

are too lazy to go to the market and shop. There are many other reasons why people may not choose

to go to the market.

Therefore, the proposed system will enable people to shop in their favourite markets and stores

without physically going to the market. This will simply be done by sending a shopper, to go and

buy the groceries and delivering them to your doorstep within a short period.

The proposed system will be developed using a rapid application development methodology that

emphasises the adaptive process of the system. This methodology will allow the system to be

developed efficiently in a short period.

In conclusion, the system will be convenient, efficient and accurate hence increasing its

reliability. Besides, the use of mobile technology will help reduce time spent going to

the markets to shop for groceries and can now be done in the comfort of the user’s home or office

while doing their usual tasks enhancing productivity. The study recommends that future

researchers may add a real-time tracking system, a feature to accommodate artificial intelligence

to enhance shopping capabilities and a feature to enhance quicker delivery modules with enhanced

mapping.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the study

Groceries are consumed on a day-to-day basis, Grocery stores play a crucial role in our

communities, providing vital sources of nutrition, jobs and tax revenue that support the

community, (Larsen, 2019). Groceries are bought either physically or online, over 70 per cent

reported convenience and saving time as their primary reasons for buying groceries online but 15

per cent cited physical or constraint issues that made it difficult for them to shop at grocery

stores, (Michelle A. Morganosky, Brenda J. Cude).

Most people do not like to go to the market and stores for many reasons, exploratory

research confirmed grocery shopping to be stressful, with the

greatest stressors in physical settingsareg crowding and queuing.

Online shopping has affected the local market and stores. Independent grocery stores play an

important role in local communities, which includes improving food access. Studies find that

areas with a high share of low-income households, as well as rural areas, tend to have more

independent food retailers, and relatively few chain stores operate in these areas,(Cho & Volpe,

2019). When people buy via online shops the local markets decline leading to poor

development in society and eventually unemployment and poor living standards.

Some groups in the communities may have challenges and difficulties while going to the stores

and markets for groceries. These groups require a lot of support as they may not be capable of

performing this task, which in Kenya it’s difficult to get. Due to these circumstances, they are

forced to still do the shopping tasks by themselves. These groups include; the elderly, the sick,

expectant and nursing mothers among others. These groups are significantly affected by factors related to the emergency of the COVID-19 pandemic. The pandemic, began in December 2019 in Wuhan, China in December 2019, and quickly evolved into a global crisis in early 2020.

The elderly are the most affected when they visit the markets, (Gatta et al., 2021)confirmed the elderly access to groceries is crucial indicating non-motorized accessibility influences their choice of shopping grocery channel. most of the elderly cannot walk for a

long distance or stand for a long time. In the market it’s usually crowded and congested, this could be very dangerous and the elderly are likely to get injured. The noise in Kenyan markets is very

loud due to the shouts of prices by every seller, the loud noise is likely to drastically affect the

elderly as they are frail. Approximately one in three people between the ages of 65 and 74 have

hearing loss, and nearly half of those older than 75 have difficulty hearing. It’s likely that the

more they visit the markets frequently the loss becomes exponentially greater. According to

Griswold Home Care, Grocery shopping for elderly adults can be difficult due to the following

physical activities; Lifting heavy bags, bending and reaching for items, reading small labels,

pushing shopping carts, walking and standing for a long period of time, driving a vehicle to and

from the store. Furthermore, shopping involves using mental aspects, and memory may have

deteriorated with age. Medications and other chronic diseases can also impact a senior’s ability to

shop, be wary of side effects when performing specific tasks. Using a shopping service for seniors

can alleviate physical strain and ensure you get all of the groceries you need, (Rodriguez, 2019).

The sick may also be affected as they go for groceries in the market. The sick as they go to the

markets are likely to get infections or even infecting other. The congestion may lead to more

injuries or even worsen their status. Moreover, the sick should be closely monitored and are

required to rest. Dr. Pritish K. Tosh, an infectious diseases researcher at the Mayo Clinic in

Rochester, Minn, says “If it’s bad enough that you’re wondering if you should stay home, you

should probably stay home,” he continues to say “People can be infectious even before they start

to have symptoms, but most of the time that they’re going to be most infectious is going to be when they are sickest, especially if they’re having fevers.

The expectant mothers encounter unique challenges during the pandemic ,with increased stressor impacting their mental health (McMillan et al,. 2021) .They consume a lot of time in the markets as they walk slowly and they often take

time to relax since they get tired quickly. When pregnant, a woman’s immune system is low. This

places her and her unborn baby at an increased risk of contracting bacteria, viruses, and parasites

that cause foodborne illness (foodsafety.gov), thus are likely to catch infections as they visit the

markets. As expectant mothers walk and stand for a long period, they begin to stress which may

affect the unborn. The commotion in the markets may also lead to injuries and complication.

Proper nutrition during pregnancy and while breast-feeding is not only important for mothers, it

is also crucial to the health of their infants (Eatrightpro.org, 2019), thus they need groceries as

they have lots of nutrients. The nursing mothers are very vulnerable to diseases together with their young infant; thus, they are not required to be exposed. Those mothers that undergo

caesarean section may not have healed thus its very challenging to go to the markets, (Macones

et al., 2019). Due to the loud noise and congestion the nursing mothers and their infants are likely to get injured and affected, which is not appropriate. Moreover, according to the Time Use Institute, the average shopping trip takes 41 minutes. If

you multiply that by the 1.5-trip per week average, that's over 53 hours per year you're spending

in the grocery store. The proposed system should minimize this time spent in the groceries store

and market can be reduced.

The proposed system will be able to solve these issues faced by the people while on the other

hand, it will improve and support the local markets and stores in the rural and urban areas. This

will create employment as well as developments in the local communities. The proposed system

will be able to delegate the tasks of shopping for groceries to be done by other people, who are

very capable and less affected by these challenges. The shopper will shop and deliver the groceries

within a short period of time.

## 1.2 Problem statement.

In Kenya, people commonly go to the markets to buy groceries. In markets groceries are found in

large stocks and different variety, brought by local farmers from their farms. Although markets

are full of groceries, most of the people do not like to go and shop. This is brought up by

different reasons, some may not get the opportunity to go and shop due to harsh working hours,

some are too lazy to go to the market and shop, while others may not be in a position to go and

buy groceries in the market. There many other reasons why people may not choose to go to the

market.

## 1.3 purpose of the study

The main purpose of study is to be able to come up with a system that can enable people to shop

for groceries without physically going to the stores and markets.

## 1.4 Objectives

### 1.4.1 General objective

To enhance the efficiency and accessibility of fresh farm produce for consumers through an online platform. It aims to bridge the gap between the farmers and consumers by providing a convenient and reliable channel for purchasing high-quality farm produce directly from local farms.

### 1.4.2 Specific objective

1. To develop an intuitive and user-friendly online platform for Groceexpress farm produce that allows consumers to browse, select, and purchase a wide variety of fresh farm produce.

2. To establish partnership with local farmers to ensure a consistent supply of high-quality and diverse farm produce on the Groceexpress platform.

3.To implement a robust quality control system quality control system to guarantee the freshness, authenticity and safety of all farm produce sold through Groceexpress.

4. To optimize logistics and delivery processes to ensure timely and efficient of farm produce to customers.

5.To provide transparent information about the farming practices, the source, and nutritional value of each farm produce item listed on the platform.

6.To conduct regular customer surveys and feedback collection to continuosly improve the user experience and meet the evolving needs and preferences of consumers.

7.To offer competitive pricing and promotion to make fresh farm produce more attractive and more affordable to consumers.

## 1.5 Scope of research

The system is meant to help people to shop for groceries in the nearest local markets. The system will be able to link the customer to the shopper, who will shop and deliver groceries to your doorstep within a short time. The system will also create employment opportunities to very many Kenya’s as shoppers.

## 1.6 limitations of the project

1. The limitations of the proposed system is that Kenyan homes are not identified uniquely.

This will make it difficult for the shopper to deliver the groceries to the doorstep on time.

## 1.7 Assumptions Made

* All users have a smartphone to use the system.
* All users of the system are computer literate.
* The users have access to internet.

## 1.8 Justification

The proposed system will enable people to shop for groceries without having to go to the market, this will help in managing the time consumed in the markets and stores.

The proposed system will help to solve the challenges undergone by the sick, the elderly, expectant and nursing mothers as they go to the markets.

The proposed system will also allow Kenyans to concentrate more with their personal work and chores while not worrying about shopping for groceries.

The proposed system will greatly improve the employment in the country, this will be done by employing multiple shoppers in every area to shop and deliver the groceries.

The proposed system will also promote the local markets and small-scale farmers.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

Online grocery delivery systems have gained significant traction, especially during the COVID-19 pandemic. Studies have shown that factors such as e-service quality, food quality, and prompt delivery service play crucial roles in fostering loyalty towards online food delivery services (Suhartanto et al., 2019). The success of online grocery delivery apps is linked to post-purchase customer service, indicating that ensuring a positive customer experience is vital for sustained usage (Younes et al., 2022). Consumer perceptions of online and in-store grocery shopping vary among different groups, highlighting the need for a nuanced understanding of shopper preferences. Web content analyses of e-grocery retailers have revealed significant shifts in e-fulfillment strategies, emphasizing the importance of product information, customer service, and e-business quality in online grocery retailing. Convenience and choice of food outlet have been identified as key drivers of online food delivery service use, indicating a shift towards more convenient shopping options (Keeble et al., 2020). Demographic characteristics and food quality comparisons between online and in-store purchases are areas that require further exploration in understanding online grocery shopping behaviors (Duffy et al., 2022).

The demand for online food delivery services has been fueled by the increasing role of digital technology in everyday life, with young people being the largest users globally (Partridge et al., 2020). Studies have highlighted the influence of the COVID-19 pandemic on online grocery shopping behaviors, with a focus on factors influencing customer decisions to use online food delivery services during the pandemic (Jensen et al., 2021; Jun et al., 2021).

There have been several systems in the industry that assist in solving related problems in the society. Several cases have been discussed below in the case study.

study

## 2.2 case study

### 2.2.1 Case one: Shipt

Shipt is a system for groceries shopping, currently available in several major cities in USA that is Southeast, Texas, Arizona, Michigan, and Ohio. Once you sign up for a membership and download the iOS or Android app, all you have to do is select your groceries, choose your delivery option, and check out. Then, in about an hour or so, your Shipt shopper will knock on your door. Shipt currently offers products from major grocery chains, such as Publix, Kroger, Fry’s, and H-E-B, and uses teams of local shoppers to handpick your items, ensuring that your order of fresh produce is actually fresh. Customers can use this app during store hours, which in some cases means 24-hour availability, (Shipt Grocery Delivery, 2017).

**Features of Shipt include:**

Membership registration**:** this feature allows every user to sign up before accessing the application. This allow the system to store every user’s personal detail that is names, address, city etc. The registration can be either as a shopper or as a user.

Platform**:** the Shipt mobile applications offers a platform where groceries are displayed for users to choose. The groceries have its price tag below, as the user selects the aisles/groceries, it moves to a cart.

Payment**:** the users proceeds to cart after finishing selecting the groceries. In the cart the application gives the sum of the total price of the aisles where the user pays for the groceries using credit card, master cards etc.

Section of stores**:** Shipt has partners with several stores in the city where the shopper goes to buy the groceries. Delivery: the shopper goes to the store and makes a purchase and delivers the groceries to the doorstep in an hour.

*Figure 1 Shipt application*

### 2.2.2 Case study two: Instacart

Instacart is a shopping system that delivers to dozens of major cities in the United States, this cities include: Chicago, San Francisco, Houston, and New York. Instacart is a web application that uses a team of local shoppers to procure grocery items from a variety of stores in USA, (Instacart, 2015).

Features of Instacart

Registration of users/members and shopper**:** Instacart allow the user to create an account where they will be able to login and shop. For a person to register as a shopper you will be needed to fill an application where Instacart verifies and interviews the applicant and he/she is given a login details.

Choose your store: Instacart has partnered with a number of major grocery chains, such as Mariano’s and Whole Foods, where the user has to choose which grocery store to shop.

Platform**:** Instacart has a platform where a user can select the item to shop in the selected store. The groceries and other meals has their price tag and discounts. Ones the user selects the groceries the item moves to cart where it is evaluated and the total is calculated.

Recipe**:** Instacart also has a feature that allows you to shop by recipe. You can schedule your deliveries in advance or order on-demand.

Payment: Instacart allows the user to reach a minimum of $10.00 to check out where the uses pays though a credit or debit cards either visa or master card .

Delivery**:** the shopper goes to the store and makes a purchase and delivers the groceries to the doorstep in an hour.

Figure 2 Instacart application

### 2.2.3 Case study three: Peapod

Peapod is a grocery store system in USA. It is available the following cities; Chicago,

Milwaukee, Indianapolis, Connecticut, Massachusetts, Rhode Island, Southern New Hampshire, New York, New Jersey, Maryland, Virginia, Washington D.C., Philadelphia, and Pennsylvania. Peapod is an online grocery store. Many of the Peapod’s items come from its own inventory. The online store is organized by “aisles,” and since the bulk of Peapod’s inventory is stored in the company’s own warehouses, customers can forgo some of the delivery costs by picking up their own orders, (Anon, 2018). Peapod is a web application.

Peapod has the following features

Membership registration: this feature allows every user to sign up before accessing the application. This allow the system to store every user’s personal details that is names, address, city etc.

Platform: peapod has a platform where a user can select the item to buy. The groceries and other meals has their price tag and discounts. Once the user selects the groceries the item moves to cart where it is evaluated and the total is calculated. The user can either order groceries for home or business purposes.

Payment: Peapod allows the user to reach a minimum of $10.00 to check out where the uses pays though a credit or debit cards either visa or master card.

Delivery**:** Peapod delivers the groceries to the customers door step or the customer may decide to pick up the groceries from their stores.

Google location: peapod uses a google locator to pin point the user’s location and address.

Figure 3 Peapod mobile application

## 2.3 Compare and Contrast

### 2.3.1 Contrast

The proposed system and the above systems are online based system that allow the end user to buy groceries in their home. The shoppers buy the groceries and delivers to the doorstep.

### 2.3.2 Comparison

The systems discussed above either have their own stores, or are linked to several general stores in the area, while the proposed system the customer/end user will choose which store/ market to shop for groceries.

In the systems discussed above, the end user/ customers have limited access to groceries that is the system choose some groceries to be bought in the stores, While the proposed system will have access to all the groceries in the market.

The system have the price tags of the groceries to be bought, while in the proposed system the price of the groceries will be determined by the market as the shopper shops.

## 2.4 Conclusion

The proposed system will enable users’ shop for groceries at the comfort of their homes. Users will be able to buy groceries in different stores and markets favorable to them. The shopper will be able to communicate constantly with the users via messages, video conferencing. The groceries bought by the shopper is then delivered to the user’s home.

# CHAPTER THREE: METHODOLOGY

## 3.1 Introduction

This section outlines the different methodologies that will be used in developing the proposed system. It will give detail description of the software design methodologies used, data collection methods used, the plan and implementation and the programming languages to be used in development of the proposed system. It also gives rationale behind the choice of the development process and the technologies.

## 3.2 system development methodology

The proposed system will use Rapid Application development (RAD). RAD puts more emphasis to adaptive process rather than planning. These emphasis works well where short time periods are allocated for a project hence allowing the bulk of work to be done within the stipulated time. Rapid Application Development favors iterative development and the rapid construction of prototypes instead of large amounts of up-front planning. The planning of software developed using RAD is interleaved with writing the software itself. The lack of extensive pre-planning generally allows software to be written much faster and makes it easier to change requirements. The stipulated time to the development of groceries shopping system is limited to eight months, this time is barely enough for the development of a standard system. Hence, for the system in question to be effective enough the system needs increased speed in development. With RAD, high speeds can be achieved while still maintaining the quality of the work.

## 3.3Data collection methods

This are methods that will be used to gather the user requirements and other details to consider when building the system.

### 3.3.1 Questionnaires

These are a set of systematically structured questions that will be used to retrieve the required information necessary in the development of the system. Some of these requirements will be identified from the questionnaire listed in the appendix.

### 3.3.2 Interviews

Interviews to be conducted will be informal, where the interviewer will ask random people, shopping in the market and stores questions in order to get their thoughts on shopping for groceries.

## 3.4 Requirement analysis

This will serve as a means of getting a deeper understanding of how people shop and their views on the going to the markets. This phase will aid in establishing existing challenges and possible solutions on the module being developed. Requirement analysis is informed by literature review and other fact finding techniques such as questionnaire as mentioned above.

## 3.5 System analysis and design

The requirement will be identified in the requirement analysis and then converted to system models to give a realistic view of the system. This includes the drawing of dataflow diagrams user interface, database schemas, entity relationship diagrams and other system functionalities.

## 3.6 Coding

At this stage, the actual code of the system is written using android studio and ionic framework where java and JavaScript will be the programming languages. The backend will be created in php to link the application with the database. In this stage, a lot of project time will be used, because coding accompanied by debugging and validation to ensure that the system functions correctly.

## 3.7Testing

Unit, module and integration testing are done at this stage. Unit testing involves testing part of a module an example is save, submit, cancel, and edit functionalities in each module. Module testing on the other hand involves testing parts of a system, an example is order module. And integration testing involves checking how modules integrate with one another

## 3.8 Operation and Maintenance

In this stage after the complete system is implemented, it then will be put into operation as a final product by use of a user manual to help the user understand any part of the system that they have issues with. Continuous maintenance will be done to the system to enhance its desired output to the users. The system maintenance will increase reliability

## 3.9 Implementation

In this stage the developed system is implemented onto its actual platform

## 3.10 Justification of the methodology

The RAD method has a tasks list and a work breakdown structure that is designed for speed. Among the most important is the prototyping. Which is an approach based on developing a demonstrable result as early as possible thus refining the result. Refinement is based on the feedback from the users of the system. An open approach to development is required in prototyping, also it requires emphasis on the relationship management and change management. Another important task is iteration, this is the commitment to incremental development based on refinement, and prototyping and iteration, as they all go hand in hand. Time boxing is another task, this is managerial technique that focuses on the delivery of the system. The scope of the project may change independently without necessarily changing the delivery time of the project.

The data collection method mentioned above will enable the system to be designed in according to the user’s needs. Questionnaires will allow information to be gathered form a large group of people with different backgrounds. On the other hand interviews enable fast hand information to be collected without being distorted.

# CHAPTER FOUR: SYSTEM ANALYSIS AND DESIGN

## 4.1 Requirement Analysis

Requirement is simply a high-level, abstract statement of a service that a system should provide or a constraint on a system. Software system requirements are often classified as functional or non-functional requirements. The following section gives in detail, the Functional and Non- Functional requirements for the proposed system.

### 4.1.1Functional Requirements

* A user is be able to order groceries without going to the market.
* A users are able to choose their favorite market to shop.
* The user is able to rate and post reviews of how a given real estate property is.
* The user is able to communicate directly with the shopper and later review the customers
* The users will be able to receive groceries in time.

### 4.1.2 Non-Functional Requirements

* Reliability

Minimum meantime to failure and low probability of unavailability. The application will be available and running as supposed to whenever needed.

* Size

The system will run on android phone with minimum space requirement of around 20 – 40mb 3. Speed

With a good internet connection, the users will be able to make an order and be allocated a shopper in as soon as possible.

4. Ease of use

The system will use non-technical terms wherever possible so that any user can be able to navigate and use the application comfortably.

## 4.2 System Design

### 4.2.1 Use Case diagram.

The figure is a behavior diagram that describes a set of actions that the system can perform in collaboration with the targeted users of the system.

### 4.2.2. Entity relationship

The following depicts the entity relationship diagram for the proposed system

### 4.2.3 Data flow diagram

The following is a DFD diagram of the proposed system

## 4.3 Data Analysis

The study used Questionnaires to collect primary data in regards to attaining the necessary information required for understanding the need for the shop for me system. The data collected is analyzed as follows and used to deduce appropriate inference in this system.

### 4.3.1 Response rate.

Questionnaires were used by the study to collect primary data pertaining the area of study. Fifteen questionnaires were handed out. A response rate of 84% was achieved whereby 13 respondents returned their questionnaires.

*4.3.2 Gender****.***

The study sort to determine the gender of the respondents. The figure 4 shows the findings of the collected data pertaining the gender of the respondents.

Figure 4 : Gender of Respondents

A larger number of the respondents making up to 30% was made up of the males whereas the remaining 70% was the female.

### 4.3.3 Questionnaire Report

Figure 5 : questionnaire report

Out of the 13 questionnaires issued randomly to customers in the markets, 10(70%) of the respondents indicated that they prefer the shopping system, 3(30%) of the respondent did not endorse the system. The 30% of the respondent preferred to use the tradition method of shopping rather than the shopping system .70%of the respondent preferred the shopping system reasons mainly being it would ease the shopping for grocery.

### 4.3.4 Level of recommendation of new system

Figure 6: Level of recommendation for a new system

Out of the 13 questionnaires administered to customers, 10 (70%) of the respondents indicated that they highly recommend for a new system while 3 (30%) of the respondents indicated that they moderately recommend for a new system. Most people were not satisfied with the tradition methods of shopping citing their frequent shortcomings.

# CHAPTER FIVE: IMPLEMENTATION, DEPLOYMENT AND CHALLENGES

## 5.1 Introduction

As a dual function, software testing is used to ascertain the defects in program and it is used to assist in judging whether a program is usable in practice or not. With this regards, software testing is used for validation and the verification which in turn ensure that the software conforms to its specification and meets the customer or rather the user needs.

There are various types of testing that have been used in testing the developed system. This can be illustrated as shown in the figure 5.1

**Unit testing**: the unit testing warrants that each component works independently of one another, that is, as a single unit. This includes ensuring a successful user log in for authorized uses, choosing markets and making an order.

**Integration Testing**: This testing is paramount in meeting the systems functionality objectives. In this testing, once a user makes an order the order details is reflected in the database instantaneously.

**System Testing**: This was done after integrating all modules and running the whole system to verify if it meets the functional and non-functional requirements.

**Acceptance Testing**: This is done prior to deploying the system to a live environment. It is done using specified inputs into the system and verifies that the resulting outputs are correct, without knowing the internal workings of the system.

## 5.2 Test Cases

During the system development, tests were carried out to determine the workability of the system.

Some of these tests include

### 5.2.1 Test Case 1:

User Registration and Login For the registration, the inputs include: email and also the password, which later are used to authenticate the user during any login attempts made.

Expected results: after a successful registration or login attempt, the home page of the application is loaded, which the user can began to make an order by first choosing a market. Otherwise, if the registration or login attempt fails, a toast is displayed alerting the user, and thus will not proceed to the homepage.

Status: Test passed.

### 5.2.2 Test Case 2:

Making an Order Procedure: Once the user has successfully logged in, the use will be able to choose their desired market and proceed to pick the groceries which are divided into three categories, fruits, vegetables and cereals. Once the user picks the groceries to buy, the order is moved to the cart, where the user will checkout.

Status: Test passed.

### 5.2.3 Test Case 3:

Using Google Maps. Procedure: the google maps sections contains the available the main markets in the area of study ‘Nyeri’. The maps component has highlighted areas where the markets are located, and is indicated with custom markers for selecting the market.

### 5.2.3 Test Case 4:

Allocation of a shopper. Procedure: Once the user has made an order, the system admin allocates the order to the nearest shopper, the admin will send the order detail to the shopper, and link the shopper to the user to allow chat messaging.

## 5.3 Sample Results/User Interface and system Features.

The following show cases the systems User interface.

### 5.3.1 Sample result 1: Registration and Login

A first-time user will need to be registered with the system first. When a user is registered, he or she can then login to the system using the login module after which they are directed to the home page of the application

### 5.3.2 Sample result 2: Home Page

### 5.3.3 Sample result 3: Shopper Homepage

Figure 9. Shopper homepage, order page.

### 5.3.4 Firebase & Firestore Dashboards

Figure 4 Firebase

## 5.4 Installation

Shop for me application being a hybrid application has been build using the dart language. The environment has also been assisted the flutter platform which assists to interface the hybrid to android platform conversion

## 5.5 Support and Training

Since the application is meant to be used by the general public, it has been made as an easy application to use requiring minimal to no training at all for a first time user.

## 5.6 Maintenance

The fact that the application is using a newly introduced platform in the field of IT, the application will regularly be updated to support the new releases and libraries that will updated so as to work more efficiently and also to provide additional features in the future that are useful to this domain.

# CHAPTER SIX: CONCLUSION AND RECOMMENDATION

## 6.1 Conclusion

This shop for me system has been developed to enhance the traditional manner of shopping for groceries, which has recently been a huge burden for people who do not have the opportunity to go to the markets.

This system is designed to make shopping for groceries, to become more reliable, convenient, efficient, and accurate. Besides that, with the use of mobile technology will help in reducing time spent to go to the markets to shop for groceries and can now be done at the comfort of the user’s home or office while doing their usual tasks enhancing productivity.

## 6.2 Recommendation

Future researchers may add the following to their future research work:

* Real time tracking system to the system.
* An artificial intelligence system to enhance shopping capabilities.
* Quicker delivery module with enhanced mapping system.

## 6.3 Challenges

The various challenges faced during this exercise include:

* Lack of resources. The project required finances and resources in terms of necessary resources such as paid API keys for instance the debit and credit card used in the project
* Challenges in learning new programming languages and technologies. This is with regards to the platform used.
* Unreliable internet access. The project required extensive research which more than often involved use of the school internet which was not really reliable. Also, the project required internet connectivity so as to perform its operations as expected
* Handling and implementing the logic in customizing the system to suit the scope of its usage.
* Uncooperative respondents during data collection. Some didn’t want to answer questions while others were reluctant in providing some information required for the research. This hampered the data collection process.
* Time constraints. There wasn’t enough time for collecting data, analyzing it, system design, and development and testing considering I did this system along with my studies.

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# Appendix

## I. Hardware and software requirement.

*Hardware*

I. Laptop

II. Internet connection

III. Android phones

*Software*

* Operating system.
* Android studio
* Graphics tuning software - Adobe Cs6 Photoshop
* Database -firebase

## ii. Budget

|  |  |  |
| --- | --- | --- |
|  | **Item** | **Price** |
| 1. | Computer | 60,000 |
| 2. | Internet | 10,000 |
| 3. | Research | 40,000 |
| 4. | Printing and binding | 5,000 |
| 5. | Software Licences | 20,000 |
|  | **Total** | **135,000** |

## iii. Schedule

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| DURATION | May | June | Jul y | Aug  ust | Septe mber | Octob  er | Novem  ber | December |
| TASK |
| FEASIBILITY  STUDY |  |  |  |  |  |  |  |  |
| REQUIREMENTS  IDENTIFICATION |  |  |  |  |  |  |  |  |
| RESEARCH |  |  |  |  |  |  |  |  |
| REQUIREMENTS  ANALYSIS |  |  |  |  |  |  |  |  |
| DESIGN |  |  |  |  |  |  |  |  |
| DEVELOPMENT  AND CODING |  |  |  |  |  |  |  |  |
| TESTING AND  IMPLEMENTATIO  N |  |  |  |  |  |  |  |  |

## iv. Project Questionnaire

QUESTIONNAIRE

This questionnaire is designed by the researcher to gather information regarding shopping for groceries in our markets. The information is required for a research leading to the award of bachelor Degree business information technology at Zetech University . The information you provide will remain confidential and will only be used for research purposes only. Fill the questions as honestly as possible.

Select Your Gender. Male [ ] Female [ ] Do you like to go to the market or stores?

☐ Yes ☐ No

How much time do you spend in the Market?

☐ 30 minutes ☐ an hour ☐ 2 hours ☐ 3 to 4 hours How frequent to you go to the market?

☐ Daily ☐ two times a week ☐ weekly ☐ monthly Do you experience challenge in the market or as you held in the Market?

☐ Traffic and jam ☐ loud noise ☐ congestion ☐ none

Would you prefer to shop for groceries at the comfort of your home, work etc?

Yes ☐ No ☐ Briefly explain your choice above:

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Would you prefer home delivery of grocery products?

Yes ☐ No ☐ Briefly explain your choice above:

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## v. Raw data collected from questionnaire



