**MAKERERE UNIVERSITY BUSINESS SCHOOL**

**DEVELOPING A WEB APP SHOWING COVID 19 TESTING AND VACINATION CENTERES IN KAMPALA**

**BY**

|  |  |  |
| --- | --- | --- |
| **NAME** | **REGNO.** | **PHONE NO.** |
| **NIWAGABA ASHIM** | **18/U/2175/PS** | **0701565372** |
| **BOGERE HAROLD PRICE** | **18/U/3619/EVE** | **0755752065** |
| **KINTU CLIVIC** | **18/U/3570/EVE** | **0704846537** |
| **AYEBAZIBWE JOVITA** | **18/U/3541/EVE** | **0789611579** |
| **LALANGO BARBRA** | **18/U/3521/EVE** | **0706519743** |
| **NAMIGADDE NUSAIBAH JAMADA** | **18/U/3538/EVE** | **0754010734** |

**Supervised by**

Mr. Balunywa Ali, Department of Applied Computing

A Research Proposal Submitted to Makerere University Business School in Partial Fulfilment for the Award of the Degree of Bachelor of Business Computing of Makerere University

December 2021

**DECLARATION**

We, the undersigned, declare that to the best of our knowledge, this proposal is our original piece of work, and has never been published and/or submitted for any award in any other University or Higher Institution of Learning.

|  |  |  |
| --- | --- | --- |
| NAME | REG NO. | SIGNATURE |
| Niwagaba Ashim | 18/U/2175/PS | ASHIM |
| Lalango Barbra | 18/U/3521/EVE |  |
| Ayebazibwe Jovita | 18/U/3541/EVE |  |
| Kintu Clivic | 18/U/3570/EVE |  |
| Bogere Harold Price | 18/U/3619/EVE |  |
| Namigadde Nusaibah Jamada | 18/U/3538/EVE |  |

Date: …...

**APPROVAL**

This proposal has been submitted with my approval as supervisor and my signature is here appended:

Signed……………………………………… Date: ……………………………… Mr. Ali Balunywa

Makerere University Business School

TABLES OF CONTENTS

**DECLARATION**.........................................................................................................................................i **APPROVAL** ...............................................................................................................................................ii

**1.0 INTRODUCTION** ................................................................................................................................. 1

1.1 Background to the Study ..................................................................................................................... 1

1.2 Statement of the Problem.................................................................................................................... 2

1.3 Purpose of the Study/ General Objective............................................................................................ 5

1.4 Specific Objectives of the Study ......................................................................................................... 5

1.5 Study Scope ........................................................................................................................................ 5

1.5.1 Subject/ Conceptual Scope........................................................................................................ 5 1.5.2 Geographical Scope.................................................................................................................... 5 1.5.3 Time Scope .................................................................................................................................. 5

1.6 Justification/significance of the Study ................................................................................................ 5

**2.0 LITERATURE REVIEW**.................................................................................................................... 6

2.1 Automated Financial Technologies [Fin Techs)/ Digital Financial Inclusion .................................... 6

2.2 Management of Savings and Credit Societies ..................................................................................... 6

2.3 SACCOs in Uganda ............................................................................................................................ 6

2.4 Mobile Financial Management Apps and Systems............................................................................. 6

2.5 Applications of Digital Mobile Financial Management Apps in Saccos............................................ 6

2.6 Designing Digital Mobile Financial Management Apps ..................................................................... 6

2.6.1 Implementation of Digital Mobile Financial Management Apps ................................................ 6

2.6.2 Importance of Digital Mobile Financial Management Apps ....................................................... 6

2.7 Challenges in Designing and Implementing FinTech Systems for Saccos......................................... 6

2.7.1 Overcoming the Challenges ......................................................................................................... 6

2.6 Conclusion .......................................................................................................................................... 6

**3.0 RESEARCH METHODOLOGY**........................................................................................................ 8

3.1 Research Design/ Research Approach ................................................................................................ 8

3.3 Study Population ................................................................................................................................. 8

3.3.1 Sampling Design/ Sampling Technique [Optional] ..................................................................... 9

3.4 Sources of Data................................................................................................................................... 9

3.5 Requirement Elicitation [Data collection] Techniques....................................................................... 9

3.6 System Analysis and Design ............................................................................................................. 10

3.7 System Design Approach .................................................................................................................. 10

3.8 Limitations of the Project .................................................................................................................. 10

3.9 Ethical Considerations ...................................................................................................................... 10

**References: Starts on a fresh page.**.......................................................................................................... 12

**APPENDICES** ........................................................................................................................................... 13

1. **INTRODUCTION.**
   1. Background of study

Data dashboards are one of the technologies that most organizations in the western world use when it comes to sharing information to different people around the world. With this technology, information is gets to the intended user in real time. This is simply done through the user visiting the companies’ website and he/she browsing through the uploaded articles. Users usually first registers online with the company and whenever they need information they will login and access the information they need. The system designed in this project will enable people go online and search covid19 vaccination centers, covid19 testing centers and places to avoid.

Increased awareness of internet and the technologies associated with it have made it possible for several opportunities to emerge on the web. Many organizations easily share their information to clients and start their businesses because of the internet. Online data dashboards is one way to that information has been shared by organizations today. Organizations now days prefer real time information that the old-fashioned way of using telegraphs posters to share information to their clients.

The ministry of health (Uganda) have designed the covid19 dashboard showing the number of covid19 cases around the world and Uganda in particular. This has been helpful to number people especially those who are able to access the internet to get all the related information about covid19 like SOPS. Data dashboards however have a number of disadvantages, information goes only to the people who access to the internet services and gadgets like smartphone and computers, and this therefore means that groups of people who may also need this information are left out.

What we propose is an online covid19 dashboard showing the vaccination, testing centers and places to avoid in Uganda, to reduce the spread of covid19 in Uganda. The core advantage of this system is to make it easy for people to find the nearby vaccination centers and speed up the vaccination among people reducing the spread of covid19 in Uganda. The covid19 dashboard system is also to let people know the places they should avoid going that is the crowded places in this covid19 period without having to move but using their gadgets and searching from the google maps. The system provides information in real time, which makes so advantageous.

* 1. **STATEMENT OF THE PROBLEM**

Covid-19 dashboards provide reliable, accurate, and real time information about covid-19 for example SOPs the number of active corona virus cases, number of deaths and all the other statistics about covid-19. However, the ministry of health only has statistical data covid-19 cases in the world and SOPs in Uganda. This provides inadequate information to people who should be aware of not the statistics about covid-19 but also places that highly might accelerate the spread of the virus that is the crowded places and the covid19 vaccination/testing centers. Following this kind of situation Uganda will still have number of increased corona virus cases unless an action is taken to address this. A web based Covid-19 dashboard showing vaccination/testing centers and crowded places is capable for solving this problem.

* 1. **Objective of the study/General objective/purpose**

This proposal is looking to design and develop a web covid-19 dashboard for vaccination centers in Uganda.

* 1. **Specific objectives**

1. To study and analyze the current web based covid-19 dashboards in Uganda.
2. To identify requirements for designing and developing web based covid-19 dashboard.
3. To design and develop web based covid-19 dashboard for vaccination centers in Uganda.
4. To test the web covid-19 data dashboard that has been developed
   1. **Study scope**

In this project, a covid-19 dashboard is designed and developed to enable Ugandans easily access vaccination centers that are near them and to get people aware OF the crowded places that may increase the spread of covid -19 most especially in city places of Uganda like Kampala city.

* 1. **Significance of the study**

In view of the rapid development of computer technology in almost all the fields of operation and its use in relation to information management, it has become important to look into the development of online ordering system for firms to meet up with demands of the customers. Therefore, the food ordering and delivery system will help customers and management to:

1. LITERATURE REVIEW.

**INTRODUCTION**

Covid-19 dashboards are website like sites that provide real-time information about covid-19 for example metrics about covid-19 around the world.

Since the outbreak of COVID-19, the development of dashboards as dynamic, visual tools for communicating COVID-19 data has surged worldwide. Dashboards can inform decision-making and support behavior change. To do so, they must be actionable. The features that constitute an actionable dashboard in the context of the COVID-19 pandemic have not been rigorously assessed.

**COVID\_19 IN UGANDA**

Ministry of health(MOH, 2020) reports that on 21st March 2020, Uganda reported the first confirmed COVID-19 case and three months on 9th June 2020, it had surpassed the one thousand mark in overall COVID-19 cases. By this is time, Uganda had introduced a variety of measures to limit the spread of the virus like lockdown of different sectors in its economy, mandatory face mask wearing by its people in public areas. Quarantine or isolation of infected people and massive testing of the virus among the population and massive sensitization of the people about basic personal hygiene like washing of hands to stop the spread of the virus.

On 11 March 2021, making it one year since Uganda registered its first case of COVID-19; it launched its first vaccination campaign that would be able to benefit the lives of the people. First emphasis was put on the elderly community in the country since they were the most vulnerable to the virus and later the other communities in the country were introduced to the vaccine.

With the inconsistency in COVID-19 testing in the country like delayed results and limited or unknown vaccination centers, people have lost morale in the government and resorted to not taking the vaccine. However, through the web application, the inconveniences were taken care of as follows;

Providing a home page with Google maps showing all the vaccination centers. Google maps shows road layouts, location of towns and other geographical features, allow easy sharing of coordinates among people, and provide directions to various places using different transportation means. By integrating, it within the website’s home page can enable users to easily access the vaccination centers around them and choose which transportation means they can use to access them.

Providing real time information to people about COVID-19 and vaccination. Through creating a dashboard, the web application can have all the information in real time like the number of COVID-19 cases registered within a day and a cumulative figure of the total number of cases registered. The web application can also show the users the available vaccination centers that enables them to easily access them. Users can easily interact with the web application and can give suggestions or request for help in case of a problem which guarantee’s easy use of the web application.

Creating a user-friendly interface where anyone can be able to get information about COVID-19. A user friendly dashboard can provide users with services like number of COVID-19 cases in the country, number of people who have been hospitalized, number of people who have succumbed to COVID-19 in the country, number of people who have been treated and recovered from the virus and number of people who have been successfully vaccinated. The interface is created with appealing visual colors and bold, readable texts, which make the work of the user easy by identifying the important information.

Linking important websites like WHO and Ministry of Health COVID-19, dashboards to the web application interface. The WHO website contains advice to people on how to combat the virus and advice to doctors and countries on how to treat the disease and measures to implement to control the spread respectively. The website also provides research made about the virus and its various strains and shows the importance of vaccination. Which vaccines should be recommended and when to administer them while the Ministry of Health COVID-19 website contains the journey Uganda has made ever since the virus was first discovered in the country, from tight measures like economy total lockdown to staggered re-opening of the economy and sensitization about vaccination. By linking such important websites in the web application’s dashboard, the users are given a chance to fully research and understand the dangers of COVID-19 and the importance of vaccination to their lives and the economy.

**COVID-19 WEB BASED DASHBOARDS**

Having recognized a need for real-time, region-specific COVID-19 data for each of our hospitals. The data scientists on our taskforce began compiling and automating an internal data framework which would be updated daily with state- and county-level case data using application programming interfaces from aggregated national COVID-19 data sources such as those provided by USAFACTS and the The New York Times[. Google scholar (sciencedirect.com)](https://www.sciencedirect.com/science/article/pii/S0025619620314828#cebib0010) from this data, digital scientists on the task force created red-yellow-green status visualizations of test positivity rates and CDTs at the state, county, and health referral region for each of our hospitals. This dashboard provided the task force with one central location containing high-level, near–real-time summary visualizations from which to quickly surveil key COVID-19 parameters in each of our hospital regions.

In parallel with the CDT and test positivity dashboards described above, several task force members engaged with Mayo Clinic Hospital [Incident Command System](https://www.sciencedirect.com/topics/medicine-and-dentistry/incident-command-system) leadership to create a daily dashboard displaying internal hospital-specific metrics such as total tests ordered, total positive tests and test positivity rate, current hospital and ICU COVID-19–positive census, and cumulative COVID-19 admissions and inpatient fatalities. This COVID-19 leadership dashboard used data captured by the [electronic health record](https://www.sciencedirect.com/topics/medicine-and-dentistry/electronic-health-record) (EHR) and was updated nightly; it is conceptually similar to COVID-19 dashboards recently described by other institutions.

[Google scholar (NCBI, 2021)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7906125/) the outbreak of COVID-19, public reporting of pandemic-related indicators such as new cases, death counts, and testing rates has surged. This heightened level of activity attests to the core function of governments to protect the public’s health and safety as well as their critical role of providing information to achieve this end. The uses and advantages of publicly reporting health information are known. They include enabling international comparisons, monitoring and improving the quality of care fostering, accountability and transparency, empowering the public to form an opinion on and build trust in their government’s response, and supporting individuals to make informed, risk-minimizing behavior changes.

Dashboards are a dynamic modality for reporting data visually; they are typically designed as a single screen with the aim of quickly and effectively presenting users with critical information to act upon. Unlike static reporting modalities, such as articles or reports, dashboards have the potential to present real-time (or near–real-time) data updates at a glance. In the health sector, dashboards have been relied on for health system performance assessments, internal management, and responses to earlier outbreaks.

In 2020, the urgent worldwide need for COVID-19 data, coupled with the penetration of the internet, digitalization of health information systems, and access to open-source web-based software, has enabled unmatched speed, scale, and diversification of actors in the development of dashboards to monitor and report on the COVID-19 pandemic. As a result, public web-based dashboards have been widely adopted as a reporting modality for COVID-19 data. Examples extend well beyond national, regional, and local governments to include dashboards by international organizations (e.g., the World Health Organization (WHO), academia (e.g., the Johns Hopkins Coronavirus Resource Center), and industry (e.g., Deloitte), as well as independent initiatives (e.g., nCoV2019.live).

Although COVID-19 dashboards may be widely accessible, their effective use to modify the course of the pandemic through the translation of data to information, information to opinions, and opinions to decision-making is determined by their actionability. To be actionable, the information should be both fit for purpose meeting a specific information need and fit for use placing the right information into the right hands at the right time and in a manner that can be understood. In other words, the mere accessibility of COVID-19 dashboards does not guarantee data-informed decision-making. Although communication sciences, health promotion, and the emerging field of health care performance intelligence offer insights into the effective delivery of information, the factors that make dashboards actionable in the context of COVID-19 have yet to be rigorously assessed.

According to ([intechopen.com, 2020](https://www.intechopen.com/online-first/75324))For the problem at hand, we have available traffic jams, telecommunications OD matrices and geo-located layers such as metro stations, bus stops and road infrastructure. However, how can we use them to represent such a broad term such as mobility? It is in this part of the chapter that we will start warning the reader that a single correct answer does not exist, different interpretations of the definition of the problem will naturally lead to different solutions, and nevertheless, a substantiated approach that is able to effectively solve the problem is always of great value.

It is known that traffic jams are mainly caused by two intrinsically distinct factors [[16](https://www.intechopen.com/online-first/75324#B16)]: (a) Daily commuting, a problem caused by a recurrent overload of the road system (mostly during week days) in both the home to work commuting (typically during the morning) and again in the analogous work to home commuting (typically during the afternoon), a problem most cities still struggle to solve; (b) A random event, road accidents or city wide events such as a sports match, can cause sporadic traffic jams. While the second point can bring some great insights on how to manage mobility given an external factor or event, it is the first point the allows us to consistently take a snapshot of the daily dynamics of mobility in a city, in order to characterize such a diverse structure as a city, recurrent events are always desirable.

With such a mindset, we can consistently describe a factor of the city’s mobility ecosystem on a daily or even weekly basis. To broaden our understanding of the mobility dynamics, using the OD matrices data, given a traffic jam, we can identify from which census tracts of the city people came from and went to.

Given the real time state of traffic, one cannot accurately identify the cause of a traffic jam, but if, for the same location, there is an occurrence of traffic jam in the morning and in the afternoon, and as it is known, commuting is recurrent, so with a daily, weekly, or even monthly overlay, we can start to visualize the typology of these jams and their implications.

* 1. **METHODOLOGY**

Research methodology has many research dimensions and methods. The scope of research methodology is wider than research method. The researcher in undertaking this research mainly takes on this. Methodology is the underlying principles and rules that govern a system method; on the other hand, it is a systematic procedure for a set of activities. Thus, from these definitions a methodology is comprised of the methods used within a study. A waterfall model under the software development life cycle is the methodology used to produce the web-based covid-19 Dashboard for vaccination centers and testing centers. System developers to produce information systems and software use it. It divides the development process into several stages or processes. After the completion of one stage, it will logically move to another stage. Sometimes moving back to the previous stage is necessary due to failure that occurs in current stage. System design methods are a discipline within the software development industry that seeks to provide a framework for activity and the capture, storage, transformation and dissemination of information to enable the economic development of computer systems that are fit for purpose.

3.2 METHODS OF DATA COLLECTION

Although there are various methods of data collection, the researcher chose the two main sources of data collection in carrying out their study. They are 1. Primary source 13 2. Secondary source The primary source refers to the sources of collecting original data in which the researcher made use of empirical approach such as personal interview. The secondary sources of data for this kind of project cannot be over emphasized. The researcher from magazines, journals, newspapers and library source obtained the secondary data.

.2.1 ORAL INTERVIEW

The interview method of data collection can be defined as a systematic way of collecting data or information from a respondent through asking questions directly from the respondent and also collecting information with the aim of facilitating understanding. The oral interview was done between the researcher and the management of staff of KRISPY FAST FOOD, Awka. Reliable facts were gotten based on the questions posed to the staff by the researcher which help the researcher in starting the work and also helped in the area of solution presentation of the new design. 3.2.2 STUDY OF MANUALS Manuals and report based on fast food services were obtained and studied and a lot of information concerning the system to be produced was obtained.

3.2.3 EVALUATION OF FORMS

Some forms that are necessary and available were accessed. These includes the restaurant menu fast food order form, payment receipts etc. these forms helped in the design of the new system. 14 3.3 ANALYSIS OF EXISTING SYSTEM Throughout the system analysis, an in-depth, study of end-user information is conducted, for producing functional requirement of the proposed system. Data about the existing ordering system is collected through several fact-finding techniques such as website visit and document review, at the beginning of this stage. The data collected facilities information required during detailed analysis. A study on the current system is performed based on the collected data. As a result, user requirement of the proposed system are determined. At the end of this stage, requirement specification is produced as deliverable.

3.4 THE EXISTING SYSTEM

The existing system happens to be a non computerized operating system were all operations are done manually by the waiter carrying paper and to take down the order of the customer or making an order over the counter. This leads to mistakes because the waiter might not understand what the customer had ordered therefore serving him/her a different menu. This could be so embarrassing because the customer might not take it lightly with the waiter, which may lead to misunderstanding.

3.5 PROBLEMS OF EXISTING SYSTEM

Due to manual means being employed by the fast food restaurants, it is very difficult to satisfy the wants and needs of the customers. Most of the problems include:

1. Mistakes are made when taking the orders of the customers
2. The process of collecting customers’ purchases order is very tedious. This makes it impossible to deliver goods on time.
3. It leads to lack of understanding between the customers and the employees. 15
4. The record keeping system is poor. Losses of vital records have been reported in the past consequently. Besides, protecting the file system from unauthorized access is a problem that has defiled solution.
5. Unnecessary time is wasted conveying information through the ladder of authority. Management at times seeks to get a copy of the customer’s order form and this may take a lot of time to obtain it.
6. It causes reduction of production flow. These are the major problems facing the existing system and would be corrected with the help of the proposed system.

3.6. OBJECTIVES OF THE PROPOSED SYSTEM

The proposed system is developed to manage ordering activities in fast food restaurant. It helps to record customer submitted orders. The system should cover the following functions in order to support the restaurant’s business process for achieving the objectives:

1. To allow the customer to make order, view order and make changes before submitting their order and allow them make payment through prepayment card or credit card or debit card.

2. To provide interface that allows promotion and menu.

3. To prevent interface that shows customers’ orders detail to front-end and kitchen staffs for delivering customers’ orders

4. Tools that generate reports that can be used for decision-making

5. A tool that allows the management to modify the food information such as price, add a new menu and many others as well as tools for managing user, system menu and promotion records.