**Topic: An SMS and USSD community-based information sharing system to support the welfare of community members.**

# INTRODUCTION

# **1.1 Introduction**.

Communities depend on sharing of information to operate efficiently. (CAFOD, Boughen, and Sweatman, 2010) define information sharing as being accountable to the people we support by ensuring people are aware of their rights and entitlements and have access to relevant and appropriate information about the project to enable their participation and feedback.

This study is aimed at building a community information-sharing system.

**1.2 Background to the problem**

Sharing of information is vital in the continuation of activities in a community. The covid-19 pandemic has brought about lockdowns in various countries including Uganda.

Communities in Uganda tend to get their information through various channels of communication which include: local council meetings, mobile public address systems, radios and televisions, pamphlets.

With a lockdown in place, traditional means of information sharing are no longer possible and this means people miss out on vital information shared within the community.

**1.3 Problem statement.**

There is a need to keep people informed of the activities that are taking part in their area conveniently and safely that does not involve in-person gatherings during times of the covid-19 pandemic.

**1.4 Aim and Objectives**

**1.4.1 Main objective**

To develop a USSD and SMS-based information sharing application for local communities.

**1.4.2** **Specific objectives.**

* To review literature about community information sharing systems to aid in identifying requirements.
* To design a model for the application based on the requirements.
* To implement the application based on the design.
* To test and validate the system based on the requirements.
* To deploy the application

**1.5 Research scope**

| **Geographical Scope** | **Theoretical Scope** |
| --- | --- |
| The geographical scope for this system will be the Seeta Goma division | The application will allow the users to access the information about the community using a USSD code.  The information will then be sent to them through SMS.  The users will be able to post information or inquire by using SMS.  The application’s information includes Security, welfare both child and elderly care, waste management, and announcements. |

**1.6 Research significance.**

**Community.**

The application will help the community stay informed and aware of the activities in their communities.

It will give the members of the community a voice to get involved in the activities of the community.

**Local leaders**

The application will help local leaders to stay in touch with their constituents and address their issues.

It will allow local leaders to have comprehensive information about the community to aid them in decision-making.

Regulators

1. **Literature review.**

This section introduces the available literature by different scholars, newspapers, and bloggers that are related to various community information sharing systems.

| **System** | **Strengths** | **Weaknesses** |
| --- | --- | --- |
| **X** | **X** | **X** |
| **Lessons from mtrac that can be applied in this study:**   * **Y** | | |

| **Type/name of the system** | **Strengths** | **Weaknesses** | **Implications for this study** |
| --- | --- | --- | --- |
| **mTRAC-** the program also known as “mobile tracking” is a phone-based information sharing system that enables the timely transfer of health data among beneficiaries, health professionals, and the Ugandan Ministry of Health. (Dahmm. H *et al*) | It contains three data collection techniques namely:   * SMS based health facility tracking * An anonymous hotline that allows members of the general public to submit complaints by SMS to the government about local health facilities * An SMS-based service called U-report for registered stakeholders to share feedback on developmental issues. | * It faces network issues that hinder SMS reporting. * It still requires data to be collected from the source documents. * The anonymous hotline can provide insufficient details that require followup | * I will utilize the functionality of an SMS-based service to provide additional details that can be accessed by USSD. * I will create a community information-sharing system that caters to the general needs of the community. |
| **FamilyConnect-**According to (Taremwa, 2020), FamilyConnect is attached to the Ministry of Health’s Reproductive, Maternal, Newborn Child and Adolescent Health (RMNCAH) Sharpened plan to register and send targeted lifecycle messages via SMS to pregnant mothers, new mothers, heads of household, and caregivers about what they need to keep babies and mothers safe in the critical first 1000 days of life. | * It allows the users to self-register. | * It requires the community health workers to be registered with another system to use it. |  |

1. **Methodology**

This section aims to describe the different activities, techniques, and tools that are to be used during the preliminary study, in the development and implementation of the system. This also entails how the selected tools will be used to achieve the objectives.

Below is a table indicating techniques and methods used to achieve the desired objectives.

| **Specific objectives of the study.** | **Tools and Techniques to use to achieve the objective.** |
| --- | --- |
| 1. Review literature about community information sharing systems to aid in identifying requirements. | Use existing literature such as journals, books, and articles on the web to ensure that  the requirements are identified and understood. |
| 1. Design a model for the application based on the requirements. | * Process modeling is the graphical representation of business processes or workflows. (Vanner, 2020). Process models will be used to design the workflow of the system. * Data modeling is the process of creating a visual representation of either a whole system or parts of it to communicate connections between data points and structures. (IBM Cloud Education,2020). Data models will be used to show the data flow in the system. |
| 1. Implement the application based on the design. | Languages such as HTML, PHP used for web scripts as programming languages and MYSQL used for validating, adding, and manipulating data will be used. Javascript will be used to create an interactive interface and CSS will be used for layout. |
| 1. Test and validate the system based on the requirements. | * Unit testing will be carried out to test the individual modules of the system function as intended. * Integration testing will be carried out after the different modules of the system are put together. |
| 1. Deploy the application. | The system will then be deployed on Apache servers on the web. |

| **Methodology items** | **Description** |
| --- | --- |
| Review literature on community information sharing systems. | Identify articles and materials relevant to the following:   * Community information sharing systems. * Examples of existing community information sharing systems |
| Process modeling and Data modeling | Analyze the different requirements gathered from the literature review and come up with physical and logical models for the system and use software e.g Visio to design them. |
| Implement the design | This will be done using the following programming languages and text editor:   * HTML * PHP * Javascript * CSS * VS Code |
| Unit testing and Integration Testing | Unit testing is a level of software testing where individual units of software are tested. (“Unit testing”,2020)  Integration testing is a software testing methodology used to test individual software components to verify the interaction between various components. (Techopedia, 2012) |

**Project Implementation stage**

**-**Results of objective 1

- Limitations in executing activities associated with achieving the objective

- Actual results in terms of table and model and other visualisations.

- Explanation of the result presented. (Short sentences that captivate attention of the reader)

-Results of objective 2

Results of objective 3

Results of objective 4

**Functional Vs Non-Functional requirements.**

| **Challenges in the problem domain** | **Functional requirements to address the challenge** |
| --- | --- |
| Community members are not able to get updates about what is happening in their communities. | The users will be able to receive updates about what is happening in their community from their leaders by accessing a USSD code to access updates on various topics in the community. |
|  |  |

**References**

1. Taremwa.A.(2020, June 29) *Uganda implements new health system integration technology.* UNICEF Uganda. <https://www.unicef.org/uganda/stories/uganda-implements-new-health-system-integration-technology>
2. Dahmm, H., Espey, J., Muhereza, A., Mukasa, A. A., Yoweri, I., Badiee, S., & Neuner, J. (2020, May 18). *Data sharing via Sms strengthens Uganda's health system*. SDSN TReNDS. https://www.sdsntrends.org/research/2018/9/27/case-study-mtrac-sms-health-uganda?locale=en.
3. Vanner, C. (2020, December 15). *What is Process Modeling? 6 Essential Questions Answered*. What is Process Modeling? 6 essential questions answered. https://www.bizagi.com/en/blog/process-modeling-and-mapping/what-is-process-modeling-6-essential-questions-answered.
4. IBM Cloud Education. (2020, August 25). *What is Data modeling?* IBM. https://www.ibm.com/cloud/learn/data-modeling.
5. *Unit testing*. SOFTWARE TESTING Fundamentals. (2020, September 13). https://softwaretestingfundamentals.com/unit-testing/.
6. Techopedia. (2012, September 26). *What is integration TESTING? - definition from Techopedia*. Techopedia.com. https://www.techopedia.com/definition/7751/integration-testing.