**MACHAKOS UNIVERSITY**

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY**

**TOPIC:**

**ONLINE CRIME REPORTING SYSTEM**

**MOSES IRUNGU MWANGI**

**J77/1377/2014**

**SUPERVISOR:**

**MR. ERICK OMUYA**

**A research project proposal submitted in partial fulfillment of the requirements of the Degree of Bachelor of Science in Information Technology of Machakos University**

# DECLARATION

I hereby declare that this is my original work and hasn’t been submitted to any other university for assessment or reward of a diploma or degree.

**Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Sign : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

This project proposal has been submitted with my approval as the university supervisor.

**Supervisor Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Sign : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

# ABSTRACT

National surveys demonstrate that millions of crimes go unreported in the United States. Several reasons may contribute to this lack of reporting and we are investigating these potential reasons and how they may be addressed. We are developing an online system that provides a secure mechanism for both victims and witnesses to report crimes to police. The system is being implemented and tested on a police station. Potential users will be surveyed to determine their intent to use the system. Our respondents will find the online system useful, accessible, and safe to report crime, but the type of crime and the urgency of response is a determinant in the decision to use the system versus reporting it to a live person.

# ACKNOWLEDGMENT

Firstly, thanks to God for the idea, good health to complete this project. In preparing this project, I was contact with many people, researchers, academicians, and practitioners. They have contributed towards my understanding and thoughts.

Also thanks to my father and my mother for their continuous encouragement, guidance, critics and friendship. Without their continued support and interest, this project would not have been the same as presented here.

I’m very thankful to the University for providing good facilities in the campus. Librarians also deserve special thanks for their assistance in supplying the relevant literatures.

This project would not have been possible without the help and patience of my supervisors their good advice and support saw me through the tough times of writing this project, for which I am extremely grateful.

My fellow undergraduate students should also be recognized for their support. My sincere appreciation also extends to all my colleagues and others who have provided assistance at various occasions. Their views and tips are useful indeed. To all my friends thank you for your support, valuable opinion and sharing ideas during the progress of this project. Finally, special thank and continuous love to my family for their understanding, encouragement and support towards the completion of my project.

# DEDICATION

To my beloved father and mother, they have always gave me courage and support to finish this project. To my uncles and aunts thank you for the support, advices and helping hands to finish this project.

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# **CHAPTER ONE**

# INTRODUCTION

The study aims to develop an Online Crime Reporting System. This system is a web based solution in which it will facilitate the process of reporting crimes to police departments by the public. This system will also enhance community policing and participation so as to fight crimes within the public.

## Background Study

The background study of this project has been done in Machakos police station whereby I collected information of the process used to file a claim, how the service is, the shortcomings and difficulties encountered by police when responding to emergency crimes reported by citizens. If you've been the victim of a crime or think you have witnessed one, you always think how you can report it to the police straight away. Your information could be used to prevent other crimes and help keep other people safe but in most cases this does not happen due to poor communication channel between citizens and police department. The link of communication used today is phone calls that use unique numbers well known by citizens e.g. 999,112 but in most cases the calls are not answered. When the calls are answered it becomes hard sometime for police to really know specific place where the crime is taking place due to use of local names by citizens when giving the location and sometimes the name may not be known to police or sometimes fear to talk when reporting a crime like robbery.

By all this shortcomings there has been gap in real time communication between the two parties. Location identification has also been a major gap limiting help that police can offer in times of emergency to the citizens reporting emergency crime that need help. Crimes go unreported for several reasons. People fear repercussions (e.g., gang related crimes), are ashamed to report the crime (e.g., crimes by relatives), believe it is a private issue (e.g., a neighbor who beats his wife), believe the crime too insignificant to warrant reporting (e.g., stolen bike), or believe that reporting the crime will make no difference (e.g., graffiti). The ability to reach an authority (i.e., police presence) is another important determinant in crime reporting according to Soares [12]. Current systems rely on the telephone or in person reporting.

I will be developing an Internet-based submission system which it will facilitate the process of reporting crimes to police departments by the public real time, attach location, use different data formats (video, pictures, text), and different access methods (via computer or later cell phone). The system will automatically inform the on-duty police officers and provide searchable overviews for the public at large. We believe people might find such as system a convenient alternative for reporting crime that addresses their concerns when having to report a crime. Little if no research on crime reporting systems is available in the Information-Systems-literature on potential impacts of information technology on crime reporting. However, research on adoption of e-government initiatives may shed some light on the problem at hand.

## Problem Statement

Lack of a communication system to act as a gateway in reporting crimes and asking for help by the public to the police investigation departments in real time have been a challenge here in Kenya. This have been caused by failing and inconvenience of police calling system.

This is a major shortcoming to the police communication structure, this is because the emergency number (999 / 112) which are well and widely known to citizens to use when calling for help or reporting crime are never picked and when picked sometimes it becomes hard to explain the location of incident of crime through phone call as some citizens may not be able to tell much when experiencing the crime or emergency.

Also most of crimes in Kenya today are not put to book due to time factor considered by many citizens. Many citizens feels it takes time to go up to police stations, queue for some time to report a crime, and hence prefer not to report a crime and this leads many crimes going away unnoticed.

## 1.3 Main Objective

To see that people are served fast, retrieving and reporting of their claims is done fast and efficiently.

## 1.3.2 Specific Objectives of the Study

1. The system ensures security, privacy and confidentiality of the reporting process.
2. To enable users give feedback on system operation.
3. To enable users a platform to report their crimes and attach evidence e.g. images, video.

## 1.4 Justification

Many citizens have had a myriads of challenges when trying to reach police in real-time for help and crime reporting reason being that the emergency numbers given to public to report crimes (999/112) are inconvenient nowadays. It’s rarely picked when called and if picked it takes time before help is sent to citizen due to may be location unawareness by police.

To eradicate this, the online crime reporting system will offer real-time convenient citizens, police communication that can be detailed and can access even the citizen’s crime reports easily. The platform will enable citizens to post their crimes in real-time and attach any file related to the crime without going to the police station.

## 1.5 Summary of the Proposed Solution in a Conceptual Model

A context model is used to define the enclosing environment of some system under study. In other words, the context is the surrounding element for the system, and a model provides the mathematical interface and a behavioral description of the surrounding environment

**System**

**Administrator**

**Users**

**Police Officers Users**

**Public Users**

**Context Diagram Key**

Represents information/ data flow to or from the system.

Represents external system users/ environment

Represents the system.

**Figure 1: Context Diagram**

**Source: My Drawing**

**Explanation;**

**Admin Module –** controls the entire application. Admin can add, delete, edit and view all user details and can do all the monitoring and tuning of the system.

**Operator Module –** where police log into the system and view the reported crimes by the general public so as to respond immediately.

**User Module** –the general public log into system and post crime occurrences within their respective location which later appear on the operator’s module.

# **CHAPTER TWO**

# LITERATURE REVIEW

## 2.1 Existing Systems

These are systems that almost looks a like as the proposed system.

## 2.1.1 NCRC Kenya Mobile Application

This is one of an existing system that almost looks a like as my proposed project. The system is used by National Crime Research Centre to fight crimes through research. It gives citizens a platform to report crimes in real time with their location which is based by nearest known place e.g. sub location and then they use the data given by citizens to research on crime as provided for in Section 5 of the National Crime Research Act, for the attainment of its objects, the Centre shall:

1. Carry out coordinated research into, and evaluate the impact of programs pursued by the agencies responsible for the administration of criminal justice.
2. Collate all crime related data.
3. Carry out research into any criminal activity and in particular- crime causation and prevention, group or culture related crimes, socio-political and economic causes of criminal behavior including drug trafficking, peddling or addiction, the modus operandi of persons engaged in any criminal activity, juvenile delinquency.
4. Carry out research into deviations from the criminal justice system with a view to increasing the awareness and responsibility of the community in the rehabilitation of criminal offenders;
5. Carry out research into the efficacy and adequacy of criminal investigation and prosecution agencies, the penal system and the treatment of criminal offenders.
6. Disseminate its research findings through publications, workshops, seminars, the mass media and other appropriate means of dissemination.
7. Communicate its research findings and recommendations to the agencies of Government concerned with the administration of criminal justice, with a view to assisting them in their policy formulation and planning;
8. Liaise with any other research bodies within or outside Kenya engaged in the pursuit of similar or related research.

### System shortcomings

This application reports crimes in real time but it doesn’t offer immediate help or assistance to the citizen in crime, but it records that data and is used to research on causes of crimes, areas with most crimes, which type of crimes and recommend on what should be done where to reduce crimes. It makes its use somehow irrelevant to report crime at the system as no help will be offered to you in real time.

It also gives a disadvantage in terms of location as it doesn’t have earth map to give real locations instead uses nearest known places e.g. sub county. This limit help to reach citizens when they need to report crimes so as to get help from government may be in case of robbery or fire or accidents.

This will be solved through the proposed project as it will be connecting citizens to police departments in real time and by help of map, police will be able to reach citizens easily in case of help needed.

### 2.1.2 Directorate of Criminal Investigation System

This is another system that is used by Directorate of Criminal Investigations in its functions. The current functions of the Directorate as provided for under the National Police service Act, 2011 include;

1. Collect and provide criminal intelligence,
2. Crime among others.
3. Maintain law and order.
4. Detect and prevent crimes
5. Apprehend offenders
6. Maintain criminal records
7. Conduct forensic analysis
8. Execute the directions given to the Inspector General by the Director of Public
9. Prosecutions pursuant to article 157(4) of the constitution
10. Coordinate Country Interpol Affairs
11. Investigate any matter that may be referred to it by the Independent Police
12. Oversight Authority
13. Perform any other function conferred on it by other written Law.

### System shortcomings

Although the system should be able to allow citizens to report crimes on the system in real time, this is one of the short comings of the DCI system as it doesn’t support crime reporting in their system. This is one of major gap in the system and the proposed project will be solving this.

## 2.2 Limitations and Future Research

One limitation of this study was our inability to demonstrate the prototype to respondents. Although the questionnaire presented printed snapshots of the online crime reporting system, participants were not able to experience the system to fully appreciate its advantages. Having the opportunity to try the system and learn about all its functionality may have had a higher impact on participants’ intention to use the system. Proponents of user-center development stress the importance of user involvement in the development of systems in general. Moreover, tests of the systems need to be conducted to address usability issues. We will evaluate our system with realistic scenarios in the future and compare its usefulness for users who report crime and personnel who receive the information.

Another limitation is the demographic characteristics and size of the sample. Varying degrees of age, place of residence, and educational level might increase our understanding of crime reporting in general and of the individual characteristics that make people more likely to use the online system. However, the system is being developed for a University campus community. As such, our sample is representative of the intended users. Later, we will expand our prototype and studies for the surrounding communities. In addition to addressing these limitations, future research will investigate the specific types of crime people will be more willing to report using the online crime reporting system. This will provide valuable information to design alternative mechanisms to encourage crime reporting. We will also evaluate if people will report crimes as they here claim they will.

# **CHAPTER THREE**

# RESEARCH METHODOLOGY

## 3.1 Introduction

There are two types of research methodologies. These two types of research methodologies are *qualitative methodology* and *quantitative methodology*. All the two methodologies will be used during the system development phase. Qualitative research involves the use of qualitative data such as interviews, direct observations, survey and analysis of documents and other materials.

The research design for this project is the Descriptive Research Design approach which falls under quantitative research methodology. Descriptive research designs help provide answers to the questions of who, what, when, where, and how associated with a particular research problem; a descriptive study cannot conclusively ascertain answers to why. Descriptive research is used to obtain information concerning the current status of the phenomena and to describe "what exists" with respect to variables or conditions in a situation (*Anastas and Jeane 1999)*

## 3.2 Methodology for Developing the Prototype

A software development methodology or system development methodology in [software engineering](http://en.wikipedia.org/wiki/Software_engineering) is a framework that is used to structure, plan, and control the [process of developing](http://en.wikipedia.org/wiki/Software_development_process) an [information system](http://en.wikipedia.org/wiki/Information_system). Common methodologies include waterfall, prototyping, iterative and incremental development, spiral development, rapid application development, and extreme programming. A methodology can also include aspects of the development environment (i.e. IDEs), model-based development, computer aided software development, and the utilization of particular frameworks (i.e. programming libraries or other tools).

For the development of this project I opted for the waterfall model which is discussed below

### 3.2.1 Waterfall Model

Waterfall model is a type of linear software development methodology; basically a project will be divided into sequential phases that are emphasized on planning, project scheduling, budgeting and the implementation. The orderly sequence of development phases is to ensure the adequacy of documentation and design reviews that help to increase the quality, reliability, and maintainability of the developed software.

Choosing the right software development model has a strong bearing on the success of the project. The choice of any development model for a given system largely depends on the type of the system being developed. The development model chosen for this system is the waterfall model.

The reasons why this model has been chosen for this project is because; It is simple and easy to understand and use and it is also easy to manage due to the rigidity of the model – each phase has specific deliverables and a review process. In addition, phases are processed and completed one at a time and works well for smaller projects where requirements are very well understood.

However, this model comes with a number of challenges that must be considered. Once an application is in the testing stage, it is very difficult to go back and change something that was not well-thought out in the concept stage. Furthermore, no working software is produced until late during the life cycle. This model may also involve high amounts of risk and uncertainty.

It is important to come up with measures that ensure that these limitations are dealt with. To overcome this problems thorough requirement gathering and analysis will be conducted in order to gain full understanding of the problem and therefore the system’s requirement specifications. Feasibility test should also be conducted to ascertain the viability of the system and therefore reduce risks associated with developing the system. Risk analysis will be conducted after the completion on each phase before the succeeding phase is carried out.

Using the waterfall model, this project will be divided into eight phases each of which will produce deliverable upon completion. These phases are discussed below:

**Planning of the project:** This phase involves identifying all the intended project activities and milestone associated with the project and scheduling these activities. The timeline and budget of the project are also defined here.

**Information gathering:** This phase involves eliciting user requirement and getting to have a thorough understanding of the problem by carrying out a research. The target sources of information are the population affected by the problem and any documents relating to the problem or its existing solutions if any.

**Analysis phase:** This phase is concerned with analyzing the data information gathered in order to come up with a comprehensive user requirement document. Conflicting user requirements are also solved here by means negotiation.

**Design phase:** Systems design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. The design is made without prior consideration of any particular programming language.

**Implementation Phase:** In this phase, the system design is implemented using the appropriate programming language.

**Testing phase:** In this phase, the system is tested for various errors and any identified errors resolved before the system is deployed.

**System Deployment phase:** Once the system has been accepted, it is them deployed. This may involve integration of the system with other existing system.

**Maintenance phase:** This involves providing solution to errors that may occur after the system has been implemented and upgrading the system to support additional functionalities**.**

Documentation and verification of each phase of the project are continuous processes that take place throughout the project. Risk analysis is also carried out before each successive phase is started.

**Figure 3.0 Diagram of the waterfall model of the proposed system**

****

## 3.3 Data Collection Techniques

### 3.3.1 Questionnaires

Questionnaires refer to forms filled in by respondents alone. Questionnaires can be handed out or sent by mail and later collected or returned by stamped addressed envelope. This method can be adopted for the entire population or sampled sectors.

Questionnaires are used to collect regular or infrequent routine data, and data for specialized studies.

I used because it requires respondents to fill out the form themselves, and so requires a high level of literacy. Where multiple languages are common, questionnaires should be prepared using the major languages of the target group. Special care needs to be taken in these cases to ensure accurate translations.

In order to maximize return rates, questionnaires should be designed to be as simple and clear as possible, with targeted sections and questions. Most importantly, questionnaires should also be as short as possible. If the questionnaire is being given to a sample population, then it may be preferable to prepare several smaller, more targeted questionnaires, each provided to a sub-**s**ample.

### 3.3.2 Interviews

In interviews information is obtained through inquiry and recorded by enumerators. Structured interviews are performed by using survey forms, whereas open interviews are notes taken while talking with respondents. The notes are subsequently structured (interpreted) for further analysis. Open-ended interviews, which need to be interpreted and analyzed even during the interview, have to be carried out by well-trained observers and/or enumerators.

As in preparing a questionnaire, it is important to pilot test forms designed for the interviews. The best attempt to clarify and focus by the designer cannot anticipate all possible respondent interpretations. A small-scale test prior to actual use for data collection will assure better data and avoid wasting time and money.

Although structured interviews can be used to obtain almost any information, as with questionnaires, information is based on personal opinion. Data on variables such as catch or effort are potentially subject to large errors, due to poor estimates or intentional errors of sensitive information.

### 3.3.3 Open-Ended Interviews

Open-ended interviews cover a variety of data-gathering activities, including a number of social science research methods and it’s the one i decided to use.

**Focus groups** are small (5-15 individuals) and composed of representative members of a group whose beliefs, practices or opinions are sought. By asking initial questions and structuring the subsequent discussion, the facilitator/interviewer can obtain, for example, information on common gear use practices, responses to management regulations or opinions about fishing.

**Panel surveys** involve the random selection of a small number of representative individuals from a group, who agree to be available over an extended period - often one to three years. During that period, they serve as a stratified random sample of people from whom data can be elicited on a variety of topics.

## 3.3.4 Direct Observations

### Observers

Observers can make direct measurements on the fishing vessels, at landing sites, processing plants, or in markets. The variables that enumerators can collect include catch (landing and discards), effort, vessel/gears, operations, environmental variables (e.g. sea state, temperature), biological variables (e.g. length, weight, and age), the values and quantities of landings and sales.

In practice, observers do not only make direct measurements (observations), but also conduct interviews and surveys using questionnaires. They might also be involved in data processing and analysis. The tasks of an observer are difficult and adequate training and supervision are therefore essential.

## 3.4 **Data Analysis and Presentation**

This is the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate data. According to Shamoo and Resnik (2003) various analytic procedures “provide a way of drawing inductive inferences from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data”..

### 3.5 Tools to Implement and Test the System

I will use different types of software. The software for the development has been selected based on several factors such as:

* Support
* Cost Effectiveness
* Development Speed
* Ability to create robust application least time
* Stability

|  |  |
| --- | --- |
| **Software** | **Use** |
| XAMPP/wamp (with php interpreter and apache server) | * For creating database * Linking the website to the database * Interpreting PHP scripts |
| Browser | * Displaying the content of web pages |
| Text Editor | * For the development – html, css, php, javascript, |

Table 1

## 3.6 Time Schedule

This is a table representing the time schedule that I will use to implement this project:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ACTIVITY | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | WEEK 7 | WEEK 8 |
| FACT FINDING |  |  |  |  |  |  |  |  |
| FEASIBILITY STUDY |  |  |  |  |  |  |  |  |
| SYSTEM ANALYSIS |  |  |  |  |  |  |  |  |
| SYSTEM DESIGN |  |  |  |  |  |  |  |  |
| SYSTEM CODING |  |  |  |  |  |  |  |  |
| SYSTEM TESTING |  |  |  |  |  |  |  |  |
| IMPLEMENTATION |  |  |  |  |  |  |  |  |
| DOCUMENTATION |  |  |  |  |  |  |  |  |
| DELIVERY |  |  |  |  |  |  |  |  |

**Table 2 time schedule**

## 3.7 Budget

|  |  |
| --- | --- |
| **EXPENSE** | **AMOUNT** |
| INTERNAL BROWSING | 3000.00 |
| STORAGE DEVICES | 1000.00 |
| BINDING | 100.00 |
| PRINTING | 2000.00 |
| TRAVELLING | 1000.00 |
| TYPING | 2000.00 |
| STATIONERY | 100.00 |
| **TOTAL** | **9200.00** |

**Table 3 Budget**

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