**DEVELOPMENT OF AN ONLINE CRIME REPORTING MANAGEMENT SYSTEM**

**RESEARCH PROJECT**

**BY**

**ETUKUDOH, UNWANA THERESA**

***AK15/NAS/CSC/022***

**SUBMITTED TO**

**DEPARTMENT OF COMPUTER SCIENCE**

**FACULTY OF PHYSICAL SCIENCES**

**AKWA IBOM STATE UNIVERSITY**

**IKOT AKPADEN, MKPAT ENIN LGA**

**AKWA IBOM STATE, NIGERIA.**

**NOVEMBER, 2020.**

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# AKWA IBOM STATE, NIGERIA.

# In Partial Fulfilment of the Requirements for the Award of Bachelor of Science (B.Sc.) degree in Computer Science

# NOVEMBER, 2020.

**CERTIFICATION**

This research work titled ‘**Development of an Online Crime Reporting Management System**’ was carried out by **Etukudoh Unwana Theresa (AK15/NAS/CSC/022)** of the Department of Computer Science, Faculty of Physical Sciences, Akwa Ibom State University. “This work has not been presented elsewhere for the award of a degree, except as reference, this is an original work by me”

ETUKUDOH, UNWANA THERESA DATE

(STUDENT)

**APPROVAL PAGE**

This research work titled ‘**Development of an Online Crime Reporting Management System**’ by **Etukudoh Unwana Theresa (AK15/NAS/CSC/022)** has been approved by the Department of Computer Science, Faculty of Physical Sciences, Akwa Ibom State University as a document of the Department by:

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**(External Examiner) Signature/Date**

**DEDICATION**

This research work is dedicated to the almighty God for his immense love, mercy, grace, kindness, protection and guidance upon my life.

**ACKNOWLEDGEMENT**

My gratitude goes to God almighty for his grace, kindness, and love upon my life. My Project Supervisor, Dr. Etebong Isong for his patience, guidance, and understanding.

I also use this medium to say a big thanks to my grandfather Otuekong Paulinus Etukudoh and Mr. Etukudoh Michael Usoro for their support towards the pursuit for academic excellence. I will not fail to acknowledge the admirable support and encouragement of my lecturers, Mrs. Idara I. James, friends and course mates for their prayers and support throughout the period of this work.

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## CHAPTER ONE

## INTRODUCTION

## 1.0 Background of study

Crime is an unlawful act punishable by a state or other authority. The term "crime" does not, in modern criminal law, have any simple and universally accepted definition, though statutory definitions have been provided for certain purposes (Addington, 2006). Crime can say to be an offense (or criminal offense), an act that is harmful not only to some individual but also to a community, society or the state ("a public wrong"). Such acts are forbidden and punishable by law.

In other hand, security is becoming a serious concern transversely several countries in the world. The hunt to control the rate of crime and breakdown of law and order increases. The society grows and diversity of human intentions and interactions abound. An ideal society is governed by laws and regulations that are collectively agreed upon and measurable consequences that will be meted out for any member of the society that is found culpable to have floated any specific component of the legal infrastructure.

The legal infrastructures decide the extent to which law enforcement agents can act or protect the common interests of individuals in the society. Members of the society have several responsibilities to the government of which such include reporting any incidence of breakdown of law and order to the appropriate civil and security agency. Such incident cases reported are supposed to be smartly collected, analyzed and investigated to a more conclusive and justifiable conclusion. Investigations are carried out without fear or favour, any attempt to prevent due process during crime investigation is in itself a crime and it is also punishable under the law.

Until lately, the process of reporting a crime case is tedious as it is manually done. An individual who may have some complaints will need to work into any offices of the security agents (e.g. Police) to inform and write in statement issues that may need their attention. At these offices, the security agents will raise an incidence form and ask the reporter to fill some appropriate section. The security agents will also ask some questions from the reporter to help make notes for preliminary investigations.

However, the introduction of technology has set a new front of opportunities of leveraging on the assorted benefits of information technology to crime reporting. Our local communities are filled with many crimes, including sexual assault, drugs and violent crimes, robbery, cultist activities, all of which endanger the public. While some people may be willing to actively report illegal acts, others choose not to do so, as they are worried about the fallibility of the policing, reporting and criminal justice systems, based on previous failings in all three departments (Tzay-Farn, Chin-Ling, Bo-Yan, & Yong-Yuan, 2019).

People are afraid for their own safety should those they report identify them. Moreover, people who are afraid of intimidation may choose not to offer information, or stand as a witness to criminal acts, despite a high reward being offered for such information. All of these concerns, have in the past contributed to an environment in which crime is more difficult to address, and in which crime is more likely to be committed. However, recent years have seen rapid developments in Internet technology, which have made possible an online crime reporting system.

There are various technology platforms that have been developed to assist how crime incidences are reported, the technological applications have gone from telegraph, special radio communication, and dedicated phone lines to a more responsive and more pervasive technological application platforms (web and mobile software applications). Majority of the members of the society nowadays have mobile devices that can easily access the internet. This makes the web approach the most economical and open approach for reporting crime with a far-reaching benefits and coverage.

## 1.1 Statement of Problem

Crime and illegal human activities have always been part of the society. These crimes are being committed in various locality including tertiary institutions. These crimes are being committed every day and the crime rate keep increasing at a high speed, because most of these crimes committed were unreported to the authorities because of the fear of getting involved. Some people fail to report a crime due to the costs and time incurred in travelling to police stations that are situated far from their homes and workplaces.

In other occasion, residents might wish to report a crime incident but would not want to when considering lengthen processes involve in laying crime incident statement at the station. These processes include, waiting for the inspector to be in office before the crimes are reported.

However, considering school environment, there has been acknowledged increase in crime within tertiary institutions environment ranging from robbery, sexual harassment, rape, cultic activities, etc. with most of them not being reported or the reporting done too late and the cases go unresolved and victims have limited options of acquiring justice. Many of this incident are not being reported to the school authority because of fear of intimidation, time, and or who to report to.

Given these facts, in this research study we present the development of an online Crime Reporting Management System. With the use of the system, students/residents would easily report the ongoing crimes and issues in their area. The system would also lessen the fear of the students/resident who witnessed the crime, which is one of the factors why some cases take too long to be solved.

It is essential to have well organized and widely available method for reporting criminal activities to the relevant authorities and support for quick response units. This information needs to be transmitted instantly and remotely without the technical and the cumbersome need to physically access security department.

## 1.2 Aim and Objectives of Study

The aim of this research work is to develop an Online Crime Reporting Management System that will be easily accessible to people to report crime and any illegal actives within one’s locality.

The objectives are as follows:

1. To design a system that is easily accessible by the people for making crime report.
2. To design a database for proper safekeeping of data (crime record)
3. To develop a prototype system using PHP programming language and MySQL as database.

## 1.3 Significance of Study

Developing an online crime reporting management system in this research study will greatly aid in crime reporting by the public. Furthermore, substituting the manual police statement with an online platform will make crime reporting easy and safe, as many people would not want to go to the police station to make statement with reasons that they might have to spend a lot of time at the station. Also, introducing well designed electronic database will make information retrieving and modification easy.

## 1.4 Scope of Study

This research work will cover designing an online crime reporting system for Akwa Ibom State University, Security department that will provide a platform for students to report all manners of crimes or illegal activities within the school campus. The student will be able to freely report, and get feedback of the reported cases without fear or intimidation. The System will also have posts like announcements and even the wanted or expelled student.

## 1.5 Definition of Terms

*Security*: the state of being free from danger or threat.

*Information System*: A computer system or set of components for collecting, creating, storing, processing, and distributing information to solve business problems.

*Crime*: a crime is an unlawful act punishable by a state or other authority.

*Expelled*: To force something or someone out, or to kick someone out of a social club, school or other group

*Database*: A data structure that stores organized information.

## CHAPTER TWO

## LITERATURE REVIEW

## 2.0 Introduction

This chapter provides an insight into the State-of-the-Arts and looks at the contributions from several authors on this research subject matter. It gives a brief overview of crime, crime reporting system, its merits and demerits.

## 2.1 General Overview

Crime persists as long as human society exist, consequently there is a continuous effort and legitimacy to report, investigate and render convincing evidences to prosecute individuals who commit any criminal activity. The word Crime originated from a Latin word Crimen dubbed charge or offence. Shodhganga (2020) projected Crime as a function of the adoption of standards by the society rather than individualistic standards, that is to say, the society gradually determine what is perceived as good value and bad acts and proscribe possible consequences. Tappan (2001) defined Crime as an intentional act in violation of criminal law which is without an excuse. Crime at time is not only just harmful to some individuals but also to the state or general public.

Determining what is obnoxious or sane is determined through a long and continuous complex interactions and reactions among members of a society. As society varies so what is considered as crime varies from people to people. But the dynamism of culture and unpredictability of human make it unlikely to have a general set of rules for all human societies. There is no continent that is left out when it comes to crime; (Ukoji, V. & Okolie-Osemene, J., 2016) reported that Africa is considered as a flash point for high crime. He further noted that the giants of Africa like Nigeria and South Africa now have high records of violent crimes in recent time. America also record high crime index while some places in Europe have been able to crime index by few digits.

Crime investigation and prosecution is another important constituent in the justice system. The general cognition of what Crime comprises is not enough without ultimately punishing the offender to serve as deterrent and freeing the falsely accused persons in such occasions. The general justice system constitutes the laws; which indicate what Crime is, the law apparatuses like security agencies, people and processes that are followed to implement justice. The people who are to be served by the justice system may soon begin to lose confidence and under-report or result to jungle justice to redress their anger if existing justice system continues to fail with time. Criminal justice system also comprise the system of practices and institutions of Government directed at ensuring social control, deterring and mitigating crime or sanctioning individuals who violate laws with criminal penalties and rehabilitation efforts.

However, the conceptualization of criminal justice system in Nigeria is usually put in poor light because of rapid and failing structures of the justice system. Tosin O., Adedeji O., & Sulaiman A., (2016) reported that Amnesty international has always rated Nigeria justice system poorly and it is represented as a conduit for injustice from start to end. The actors in the justice system have also not helped the situation to start acting as expected by the lofty positions they hold and the important role they play in the process of dispensing justice. There is a sentiment about law makers having vested interest thereby making inadequate laws that do not really server the interest of the general public.

The process of the justice system is very important as it determines if the people who are served will accept the outcome of the process and continue to support the system. An important aspect of the justice system is being able to report cases, investigate and prosecute based on laws and get sentencing. Until recently, most communities report crime incidences on papers, which make the process vulnerable to alteration, theft; mutilation and erase of evidences that could have made the system apportion justice appropriately. With the advent of information technology, crime reporting has taken a new turn, has many cases can be reported independently and security agencies can easily access them and act promptly.

In Nigeria, there are few electronic platforms for reporting crimes and are isolated and not been visited by the Nigerians majorly because of the distrust towards the process of justice, no feedback on reported cases and isolated crime reporting (mainly for financial crimes). There is a need to increase the awareness of an encompassing electronic platform that will accommodate all crime incidences, open to all and does feedback to the members of the public. This strengthens our legal infrastructure and justice system.

## 2.2 Elements of crime

For an act of crime to be accomplished, the following four elements are needed:

1. *Individual***:** The first and the most important element for commission of a crime is an individual who has an intention and is prepared to commit a crime.
2. *Mens rea:* *Mens rea* in Latin means “guilty mind”. For a crime to be committed, a criminal intention is an essential element.
3. *Actus rea***:** *Actus rea* in Latin means “guilty act”. For a crime to be committed, along with a criminal intention there should also be an external act.
4. *Injury/hurt:* The criminal act should be accompanied by an injury or hurt which is physical, mental or monetary which violates a law of state.

## 2. 3 Stages of committing a crime

The commission of crime involves four stages:

1. *Intention:* For the commission of crime, the first important stage is criminal intention. However, just having a criminal intention is not punishable until it is conveyed to someone else in words or by acts. Example: An intention to kill someone.
2. *Groundwork:* To commit a crime, prior preparation is necessary if the crime is intentional. It is difficult for the court to punish an individual purely based on a preparation plan until and unless it is executed. For example, murder, dacoit.
3. *Preliminary crime:* An attempt to commit a crime is considered as preliminary crime. An attempt should include a criminal intention, an act towards committing a crime and an act of crime which is not completely accomplished. Example: Attempt to murder
4. *Completion of crime:* This is the last stage in commission of crime. The criminal completes the crime. A suspect is guilty of an offence only if he succeeds in his criminal activity. Example: Successful accomplishment of murder

## 2.4 Causes of crime

No individual is a born criminal, it is the situations and the conditions around the individual which make him act as a criminal. There are several causes which make an individual turn into a criminal. The main causes of crime are:

1. Social causes
2. Economic causes
3. Psychological causes
4. Biological causes.
5. Geographical causes

**2.4.1 Social causes of crime**

The social causes of crime include the following:

1. *Family disorganization:* Family plays the most important role in an individual’s life. In olden days, there were joint families and there was always a family control on the children. In urban areas today, each member of the family is busy pursuing their own paths. The children are neglected and family control is lifted up and hence there are no restrictions. Individuals who are a part of nuclear families and broken families resort to crimes due to lack of love, affection and proper attention.
2. *Upbringing of the individual:* Too much strictness causes heavy influence on minds of the children. Scolding and abusing children causes humiliation and irritation in children and they become delinquents. Moral values are imported to children by their parents. It is the duty of the parents to nourish their children in healthy circumstances. If the parents resort to illegal acts, the children will also do the same. A child is first influenced by his parents and then by his own brothers and sisters. If they resort to illegal acts such as selling block tickets at cinema theatres, the younger ones also tend to do the same acts.
3. *Defective education:* Lack of proper education results in poor judgment and the individual will fail to distinguish between right and wrong. Ethical and religious education has no place in the modern education system. Even after completing education, many individuals remain unemployed. Late employment leads to late marriage increasing criminal activity.
4. *Hype created by media:* Cinemas and newspapers have led to an increase in criminal activity. The hype created by the media relating to different crimes, modus operandi and the consequences motivate young individuals to resort to crimes.
5. *Drinking and drug use:* The consumption of alcohol and use of drugs of abuse are the most important causes of crime. Under the influence of alcohol and drugs, the person loses his sense of discrimination between good and bad, right and wrong and hence commits crime. This not only affects the individual but also his entire family.
6. *Unhappy marriages and dowry system:* A marriage where a girl or boy dislikes his partner & remains unhappy and may force individuals to commit suicides. Dowry system is also a main cause of crime.

**2.4.2 Economic causes of crime**

The economic causes of crime include:

1. *Poverty:* Money is the centre of life. Everything and every relation in this world is dependent on money. Poverty is the mother of crime. The poor people are unable to fulfill their basic necessities. To fulfill the basic necessities, they resort to crimes like burglaries, murders, suicides.
2. *Unemployment:* Many young individuals who are continually unemployed resort to suicides due to frustration. Some others resort to thefts, pick-pocketing, robberies. Hence, unemployment is a major cause of crime.
3. *Industrialization and urbanization:* Urbanization is the result of industrialization. The long working hours and the petite amount of money they get, results in individuals resorting to crime.

**2.4.3 Psychological causes of crime**

The psychological causes of crime include:

1. *Intellectual weakness:*Weak minded persons tend to criminal activities very easily. Intellectual weakness is a cause of crime.
2. *Mental diseases:* The person who suffers from mental disorders tends to do illegal and violent activities. Such individuals become unsocial zed, irritable, cruel, obstinate, suspicious, self-centred, lonely, full of feelings of revenge, backward and hypersexual or uncontrolled in their behaviour. Such individual does not repent for his violent acts.
3. *Characteristics of personality:*Due to social, economic or psychopathic reasons, an individual may turn into a psychic. An abnormal person possesses degree of freedom, irresponsibility, revolt, homicidal tendency, suspicion, lack of control, sadism, emotions, social maladjustment, ill-behavior, immaturity. He tends to do violent acts. He becomes naughty, explosive, disobedient and unsocial. He indulges in gambling, cigarette smoking, narcotic drug consuming, breaking things, absconding from house, prostitution, thieving.
4. *Emotional instability:* An abnormal individual possesses emotional instability. He does not like discipline. He suffers with inferiority complex. He indulges in criminal behavior. He does violent acts with emotions. If his hero steals a diamond from Government treasury, he sees the picture several times and repeats the same act.

**2.4.4 Biological causes of crime**

Many biological factors like age, gender, hormones, etc. act as causes of crime.

1. *Age:* Crime is more prominently committed by individuals in the second and third decades of life.
2. *Gender:* On a whole, males commit more crimes when compared to females.
3. *Body type:* Muscular body type individuals are found to commit more crimes.
4. *Hormonal causes:* Testosterone hormone is the hormone which is correlated to criminality.

**2.4.5 Geographical causes of crime**

Cities or counties with larger populations have higher crime rates. Poorly maintained neighborhoods correlate with higher crime rates. High residential mobility is associated with a higher crime rate. More taverns and alcohol stores, as well as more gambling and tourist establishments, in an area are positively related to criminality. There appears to be higher crime rates in the geographic regions of a country that are closer to the equator.

## 2.5 Types of crime

Based on the medium which is being affected, crimes are of the following types:

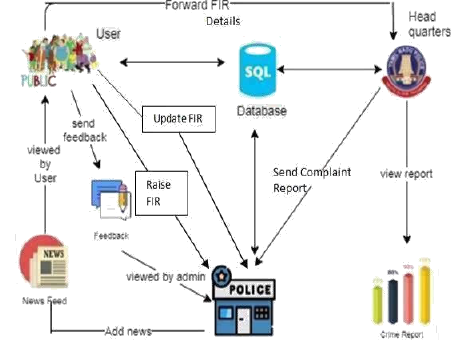
1. *Personal crimes:* Personal crimes are those crimes which target an individual person. These include murder, assault, sexual assault, etc.
2. *Assault:* Illegally attacking an individual with weapons like gun, knife, etc. in a severe manner is called assault. Assault results in severe injury. Domestic or family violence also involves assault.
3. *Homicide:* Unlawfully killing an individual is called homicide or murder.
4. *Sexual assault:* Sexual assault involves rape.
5. *Property crimes:*Property crimes are those crimes in which the target is a materialistic property.
6. *Burglary:* Illegally entering into a property and committing theft is called burglary.
7. *Theft:* Illegally taking away one’s property without force and without the notice of the owner. Example: Pick pocketing, Shoplifting, Stealing bicycles, etc.
8. *Arson fires:* Deliberately putting one’s property such a building, motor vehicle, etc. on fire is called arson fires.
9. *Automobile theft:*Unlawful theft or attempted theft of a motor vehicle.
10. *Vandalism:* Damaging public or private property without permission is referred to as vandalism.
11. *Victimless crimes:*These are acts against moral values of an individual. Commissions of crime like prostitution, illegal gambling, illegal drug use, etc. are examples of victimless crimes. Since these crimes do not have an identifiable victim, they are called victimless crimes.
12. *White-collar crimes:*Crimes committed by individuals belonging to high society. The crimes are committed to a large extent in their work place.
13. *Embezzlement:* Misusing money or property of an organization for an individual’s personal use.
14. *Identity theft:* Unlawfully using a person’s social security number, credit card number, etc. for financial gain is termed as identity theft.
15. *Fraud:* Deception of one party by another party for personal or financial gain is called fraud.
16. *Corruption:* is the use of power by government officials for illegal private gain. It includes bribery, embezzlement, etc.
17. *Organized crimes:* Organized crimes are defined as acts which are committed by two or more criminals as a joint venture in an organized manner. These crimes involve kidnapping, dacoities, marketing of illegal or prohibited goods, money laundering, trafficking people, buying votes, etc.
18. *Juvenile delinquency:*This is also called as youth crime. It is the crime committed by an individual under the age of 18years.
19. *Computer crime:*Cyber-crime is an act of crime that involves computer and a network. The computer may have been used in the commission of a crime, or it may be the target. Net crime refers to criminal exploitation of the internet. Examples of the computer crime include cyber terrorism, cyber warfare, harassment on the internet, spam, internet fraud, etc.
20. *Violation of public safety:* The violations of laws which threaten public safety are included under violation of public safety.
21. *Disorderly conduct:*This is the acting in a manner potentially threatening oneself or other people.
22. *Driving under influence of drinks and drugs:* Driving under the influence of alcohol or drugs may prove threatening to the individual as well as the public. Constant checks are conducted by police officials in whom the alcohol testing devices are used.
23. *Terrorism:* Violence against the normal people living in the society.

## 2.6 Related Literature

The review of literature is a critical crossroad in any research effort as it presents new windows of opportunities to re-assess the knowledge base for the purpose of expanding the frontiers of intellectual horizon. Knowledge cannot and does not exist in an intellectual vacuum, a rigorous blend of knowledge through the review of other scholarly works add a touch of value to the research activity by giving it a crucial underlay of thoroughness thereby providing an escape route from merely restarting knowledge. It provides the researcher an opportunity to add to the existing stock of knowledge with subsequent sustenance of the upward trend of the knowledge base and thus opens a wholly new vista for knowledge accumulation. (Jimoh R., Ojulari K., Enikuomehin O., 2014)

**Jimoh *et. al.,* (2014)** developed a Crime Reporting System. The research looked at the variousdefinitions of criminal statistics. Finally, a prototype crimereporting system was designed that relies on four reportingforms: a complaint or dispatch reporting form, a crime event report form, follow-up investigation report form, and an arrest report form. The system consists of three functional modules: a data capture module, a report management and control module, and a data utilization module. The system maintains an event or case file and a police activity file. The conceptual crime reporting system design and data elements thusdeveloped must now be tested and evaluated in an operational environment. He recommended that the Future work on crime reporting system can be tailored towards accessibility (mobile version), awareness and improvement on the usage.

**Archana & Durga, (2016)** developed an Online Crime Reporting System using C#, ASP and SQL Server. The main purpose of the system was to manage criminal details in a centralized database and provide solution for public to give complaint through online. The project provided lot of features to manage all the data in a well manner.



**Figure 2.1: Architecture of online crime reporting system**

(Source: Archana & Durga, 2016)

The system was implemented in such a way that the victim can file the FIR through the website under various sections. The user can also send photo evidence if any. In the system, user’s information was kept confidential and only users complain will be forwarded to the nearest police station. Users complain numbers were also forwarded from the server side automatically and for identifying location and authentic person, concept of cookies and IP addressing were also being used.

In this paper, a completely integrated and compact system was developed that can be used by the common man as well as the police. One of the weakness of the system was that the system did not implement the QR code scan for the privacy of the user while downloading the FIR details.

**Yugandhar & Muni (2018)** in a research entitled Crime Reporting System, the authors reported that crime has long been a central part of news coverage in free press societies, because crime stories are usually newsworthy. For this reason, they developed a crime reporting system. This software provides facility for reporting online crimes, complaints, missing persons, show criminal details. This software was developed with scalability in mind. In that regards, additional modules can be easily added when necessary. The software was developed with modular approach. All modules in the system was tested with valid data and invalid data and everything work successfully. Thus the system had fulfilled all the objectives identified and was able to replace the existing system. The project was being completed successfully with the maximum satisfaction of the organization. The constraints were met and overcome successfully. **The system was designed as like it was decided in the design phase. This software had a user-friendly screen that enables the user to use without any inconvenience. Validation checks induced have greatly reduced errors. Provisions had also been made to upgrade the software.**

Tomas U., John S., Ronalyn D., & Jeromme G., (2019)proposed an online crime management and reporting system which helps citizens to report crime incidents from an online platform. The authors draw their motivation from the inconvenience of going to the police station and personal belief of the weak investigative capabilities of the authorities to resolve petty crimes and limited spreading of crime information to the community. The main aim of their work was to give report of crime including the location of the incidence and to secure and make the privacy of crime-related data over manually data storage. The system had functionalities such as the complaint registration, the area of the incident where it happens and the type of crime. The result of the system showed that the potential users where willing to participate and already recognized the usefulness of the system. The willingness of the police to use the system and their recognition of its usefulness was enough to try the system for community use according to the authors. Based on the result of the study, the researchers recommend the work for further study; they suggested email verification can be integrated. The researchers also recommend that the Crime Management and Reporting System be designed as an android application. In the work the authors make used the Modified Waterfall methodology in the development of the system.

Selvakani et al. (2019) proposed A Web Based Online Crime Reporting System using Asp.Net.In this paper, the manual arrangement of the police headquarters is extensively studied and was identified as tedious. After a gritty investigation of the present framework, (Selvakani S.  *et al.* 2019) proposed another framework which dependent on the PC. The proposed framework is planned to evacuate every one of the downsides and impediments of existing framework and make progressively mindful to the client and the administration needs. The real targets of the proposed framework are to give the quicker methods for Crime Grievance Report. It will diminish the time devoured motel planning of reports and get the opportunity to profit by the most recent innovation of PCs.

The proposed framework incorporates following highlights:

1. Citizens not have to go police headquarters to see the criminal's information.
2. They can legitimately observe data on location.
3. Visitor can without much of a stretch get the data about the crime.
4. Reduce the labor and time.
5. Member can see the present status of the crime reporting.

A straightforward working methodology is incorporated so the client can comprehend the distinctive capacities obviously and rapidly. At first as an initial step the executable type of the application is to be made and stacked in the regular server machine which is available to the whole client and the server is to be associated with a system. The device includes five practical modules: a police station registration module, victim FIR register module, investigating evidence register module, department module and report module. The machine keeps an occasion or case report and a police activity record. The conceptual crime reporting device layout and facts elements for that reason evolved ought to now be examined and evaluated in an operational environment. The system has a few loopholes, which are; This Framework being online and an endeavor of Digital Security Division should be altogether tried to discover any security holes and a comfort for the server farm might be made accessible to enable the work force to screen on the locales which were cleared for facilitating amid a specific period.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of Authors** | **Title** | **What was done** | **Limitation** |
| Tomas U. Ganiron Jr *et al*, (2019)  June  Asia | *Development of an Online Crime Management & Reporting System* | The main aim of their work was to give report of crime including the location of the incidence and to secure and make the privacy of crime-related data over manually data storage. The system had functionalities such as the complaint registration, the area of the incident where it happens and the type of crime. | The system didn’t give room for email. The system was not designed as an android application version. |
| Selvakani S.  *et al.* (2019)  August | *Web Based Online Crime Reporting System using Asp.Net* | The framework comprises of three useful modules: an information catch module, a report the board and control module, and an information usage module. | The system was not custom-made towards availability (portable rendition), mindfulness and enhancement for the utilization. |
| Jimoh *et. al.,*  (2014) | *A Scalable Online Crime Reporting System* | The system consists of three functional modules: a data capture module, a report management and control module, and a data utilization module. | The system was not tailored towards accessibility (mobile version), awareness and improvement on the usage. |
| Yugandhar P. and Muni B.Archana  (2018)  Archana M. And Durga S, (2016) | *Online Crime Reporting System*  *Online Crime Reporting System* | This software provides facility for reporting online crimes, complaints, missing persons, show criminal details. The software is developed with modular approach. Additional modules can be easily added when necessary.  The main purpose of the system is to manage criminal details in a centralized database and provide solution for public to give complaint through online. While registering a case if at all the user has photo evidence he can send it too through the website for making a strong case .The users will be notified if the police have filed the FIR. | More graphics can be added to make it more user-friendly and understandable.  Multilingual support can be provided so that it can be understandable by the person of any  Language.  The system did not implement the QR code scan for the privacy of the user while downloading the FIR details. |

**Table 2.1: SUMMARY REVIEW OF RELATED WORK**

## CHAPTER THREE

## SYSTEM ANALYSIS AND METHODOLOGY

## 3.0 Introduction

System analysis is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. It is a problem solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

Analysis specifies what the system should do. Systems analysis is the process of observing systems for troubleshooting or development purposes. This chapter takes overviews on the system analysis and various research methodologies and the entire research work.

## 3.1 Analysis of the Existing System

The existing system that is really understudied in this research work is the work designed by Jimoh *et. al.,* (2014) presented in the paper “*A Scalable Online Crime Reporting System*”.

The research work developed a prototype crime reporting system was designed that relies on four reporting forms: a complaint or dispatch reporting form, a crime event report form, follow-up investigation report form, and an arrest report form. The system consists of three functional modules: a data capture module, a report management and control module, and a data utilization module. The system maintains an event or case file and a police activity file. The conceptual crime reporting system design and data elements thus developed must now be tested and evaluated in an operational environment.

## 3.1.1 Existing System Architecture

The system was aimed at providing a flexible platform that enhances user friendliness. In the diagram below, the information provided to and received from the ‘Online Crime Reporting System’ is identified. The arrows represent the information received or generated by the application. The closed boxes represent the set of sources and sinks of information. In the system, we can observe that the user interacts with the application through a graphical user interface (GUI). The inputs to the system are the FIRs (First Investigation Report), profile, police detail etc. criteria provided by the user and a new review written by the user to some certain entries unlike FIRs. Also, the output is in the form of repeater and grid views which present the users (Police) with the list of FIR available. The users (police) can view complete FIRs or complaints; view Images and reviews by other users (public).

User Interface

Online crime reporting system

Add to FIR, profile, edit profile abd provide different platform etc.

**Figure 3.1: Architecture of the existing system**

(Source: Jimoh *et. al*, 2014)

## 3.2 Problems of the Existing System

After scrutinizing the existing methods of certificate verification, the following loopholes were identified;

1. The system was not tailored towards accessibility (mobile version), awareness and improvement on the usage.
2. Multilingual support was not included in the design of this system so that it cannot be understood perfectly by the person of any language.
3. The system didn’t add email verification and auto-reply SMS in an off-line reporting for validation, which is texting using mobile phones or tablets.

## 3.3 Research Methodology

This is a procedure for resolving the problems of the current system by building a new system that addresses the flaws of the existing system. A system development methodology is the framework that is used to structure, plan and control the process of developing the online crime reporting management system.

The research methodology adopted for this research work is the secondary data source collection. The secondary data collection is the collection of an already made data, information obtained from sources like journals, textbook, magazines, internet. In order to achieve the research objectives, the below procedures will be followed;

1. Conducting a preliminary study on the existing systems.
2. Designing the system using UML diagrams.
3. Developing the system using agile software development model.
4. Implementing a prototype system using PHP, Javascript, Java as programming languages, MySQL for database, and Visual Studio Code IDE.

The system development methodology employed in this research work is the Agile Methodology approach. Agile methodology is a software development process framework that adopts the iterative approach, open collaboration, and process adaptability throughout the life-cycle of the project. This iterative agile approach is more flexible and its short time-span iterations seek improvement for the project in small release, with minimal planning, rather than plan at length. This helps to minimize the overall risk, and allows the project to adapt to changes more quickly.

Agile software development life circle (SDLC) model is a combination of iterative and incremental process models which focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Every iteration process involves cross functional teams working simultaneously on various stages of the Agile SDLC.

The steps involved in agile software development process are presented in Figure 3.2.

Planning

Requirement Analysis

Design

Coding

Testing

Iteration(s)

**Figure 3.2: Agile software methodology**

## 3.3.0 Principles of Agile software methodology

The Following are the Agile Manifesto principles;

1. **Individuals and interactions**: In Agile development, self-organization and motivation are important, as are interactions like co-location and pair programming.
2. **Working software**: Demo working software is considered the best means of communication with the customers to understand their requirements, instead of just depending on documentation.
3. **Customer collaboration**: As the requirements cannot be gathered completely in the beginning of the project due to various factors, continuous customer interaction is very important to get proper product requirements.
4. **Responding to change**: Agile Development is focused on quick responses to change and continuous development.

## 3.3.1 Advantages of Agile development software methodology

1. It is a very realistic approach to software development.
2. Promotes team-work and cross training.
3. Functionality can be developed rapidly and demonstrated.
4. Responding to change over following a plan.
5. Delivers early partial working solutions.
6. Good model for environments that change steadily.
7. Early release, better stakeholders' feedback.
8. Improves stakeholders' confidence and reduce uncertainties.

## 3.4 Justification of the Research Methodology

In other to permit a code-and-fix approach to program implementation, the agile software development methodology is employed. This method is very good for medium projects whose requirements may change at any time. This method allows the programmer to effectively manage change in requirement by either modifying an existing design or adding to (updating) an existing design with a reduced cost.

## 3.5 The Proposed Architecture

The Architecture of the proposed online crime reporting management system is shown in figure 3.3; it shows the various components of the system and how they interact with each other.

Database Server

Application unit

Language Translator

User Interface

Crime Reporting System

Retrieve information

Save data

**Figure 3.3 Proposed System Architecture**

## 3.5.1 Description of key components

1. *User Interface:*The user interface is the interface which the users use to perform the queries (sending and retrieving information) from the database server. This is an interface where the user use to key in complains to the system. This user interface can be access using the android mobile app or the desktop browser.
2. *Language translator:*The language translator helps translate the information entered or retrieved by the user to any language of his choice. This module will be implemented using Google Translator API.
3. *Application unit:* Application unit process the information entered by the user, store it to the database and also retrieved the information when query.
4. *Database Server:*The database server is where all the information entered by the user using the user interface is being stored. Information retrieval is also from the database server.

## 3.6 Justification of Proposed System

After carefully analyzing of the existing system, the proposed system will greatly fill in the loopholes of the existing crime reporting management system. The system will reduce the rate of unreported crime cases to the law enforcement thus reducing the level of crime in the society. Some of the importance of the proposed system is highlighted below:

1. The system will eliminate the problem of time wasting in the law enforcement office during crime reporting. This is being tackled through making this system web-based, which a user can stay in his or her house and make a report to the station.
2. The system will equally tackle the problem of intimidation during crime reporting as the user does not really need to physically visit the law enforcement office.
3. Making the system Multilanguage will aid users in reporting crime with their fluent language.
4. With the aid of the android app the user can report any crime incident anywhere and anytime.
5. The system will also make information saving and retrieving fast and easy.

Considering the lapses of the existing system, the result of the system can be seen efficient than that of the existing system.

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