**#3Ib: A 117 Emergency Communication Platform for Abuse Report in a Mobile Application**

By:

Alonzo, Arlene Grace C.

Belleza, Ram Rainier M.

Dela Cruz, Diane Louise M.

Magat, Mharck Stephen P.

Mañalac, Gerald O.

Pineda, John Carlo C.

Soriano, Justine G.

BSIT 4A

October ,2021

**INTRODUCTION**

Abuse is defined as an act of violence and/or maltreatment towards a person or things to gain benefit. According to the Philippine Statistics Authority's (PSA) 2017 National Demographic and Health Survey, one (1) out of every four (4) Filipino women aged 15 to 49 has experienced physical, emotional, economic or sexual abuse from their husband or partner, or any family member. Over 16 million Filipino poorer women were more vulnerable to assault since they couldn't protect themselves, according to the survey. One of the Philippine law concerning abuse is the Republic Act 9262: the Anti-Violence Against Women and their Children Act of 2004. Devised to reduce violence against women and their children (VAWC) perpetrated by their husband, intimate partners, or member of the family.

In the Philippines, not only did the pandemic cause health and economic problems, it also heightened the occurrence rate of abuse, due to stay-at-home prevention policies. It is more difficult for a victim-survivor to report their situations particularly if they are located in an area with restricted mobility and absence of public transit. According to the Commision on Human Rights "Women and children who experience abuse are trapped inside their homes with their abusers, and have nowhere to go. Most of these women are not able to seek help due to fear of being overheard by their abusive partners or stopped from leaving home,"(Ranada, 2020). Although there are campaigns about abuse protections and hotlines to raise awareness before and during the pandemic, a lot of people are still unmindful of it.  As seen on the data gathered, the researchers decided to propose a study in the field of data analytics. Data analytics is increasingly being employed with the help of specialized tools and software (Steadman, 2020). As it brings a faster way of discovering the current trends and its accurate solutions.

With this, the researchers intend to propose an application that would be able to help decrease the escalating rate of domestic abuse and variety of physical, mental, economic and sexual abuse that is happening in the Philippines. Through the help of data analytics, it will be easier to identify the places that need monitoring and immediate assistance, regarding the abuse cases happening in the certain local area. It would also be a big help to promote awareness to the local residents.

The proposed study aims to establish an idea of a free communication platform for the victims and witnesses of abuse, that is user-friendly, with much better assistance and with immediate response, with the help and support from the local authorities and social services.

**Research Objectives**

1. To provide contact information (emergency hotlines, email address, and online group pages) and office location (station address) of the local authorities where victims and witnesses can file a report.
2. To provide a mobile application that will be able to help the victim to report their difficult situation in an easily accessible way
3. To provide a mobile application that helps the victim to know what to do in that difficult situation
4. To provide accurate data of cases and deliver comfort services to the victims that will lead to raise awareness regarding the abuse cases
5. To provide a system that can raise awareness with the discrete classification of abuse and violence with the help of the gathered data.

With the gathered data:

* Profile of the victim or the complainant

o    Full name

o    Age

o    Address

o    Contact Information

o    Unoffending Guardian (for minor victims)

* + Sex
  + Type of Abuse
    - Physical Abuse
    - Sexual Abuse
    - Psychological Abuse
    - Economic Abuse
* the authorities will also be able to know the following:

o    Number of victims per area,

o    Number of abusers per area

o    Location with high rate of abuse cases

o    Number of solved cases per area

o    Pending cases per area

o    Offenders’ information

* Name
* Age
* Occupation
* Sex
* Psychological Status/State
* and will be able to use the data as a reference to ignite and provide more help services in the area.

o    Counselling

o    Barangay Protection Order

o    Rehabilitation Support Service

* Women and Children Protection Desk (WCPD)
* Social worker of the Local Government Unit (LGU)
* Department of Social Welfare and Development (DSWD)
* Non-Government Organization (NGO)

**Scope and Delimitations**

The #3lb: A 117 Emergency Communication Platform for Abuse Report in a Mobile Application intends to provide an additional easier way to contact the local authorities and social service. Also, this app will enable them to tell their basic information such as; address or current location, phone number and name, that will be used as proof of record and contact reference. The application can only assess the submitted situation information if there is an internet connection. The age range of respondents will be from thirteen (13) years old and above. The application will only focus on the following features:

a.) Victim’s primary information for initial report,

* + - Full name
    - Age
    - Address
    - Contact Information
    - Date of Incident
    - Place of Incident
    - Brief explanation of the incident

 b.) assessment of the offenders primarily details for initial report

* + - Name
    - Age
    - Gender
    - Condition (Normal State, Drunk, Drugged)

 c.) securing the victim’s details for investigation and rescue assistance or response team.

* + - Full name
    - Age
    - Address
    - Contact Information
    - Gender
    - Type of Abuse
      * Physical Abuse
      * Sexual Abuse
      * Psychological Abuse
      * Economic Abuse

 d.) reporting or connecting the application system into the local authority’s office commuline, indicating the filing complaint transaction record.

* + - Women’s help desk
    - Police Station (per Municipality)
    - Barangay Authorities

e.) The call feature of the mobile application is recommended when the victim is unable to proceed for reporting and needs immediate rescuing response or emergency medical aid. The mobile application will redirect the call to the nearest set responders that are registered in the system.

f.) The collected data are only accessible to admin and super admin to follow Republic Act No. 10173, otherwise known as the Data Privacy Act of 2012. Furthermore, the complainant will have an option concerning the collection of his/her personal data by agreeing to the set Terms of Service and Data Privacy Policy Agreement

**Significance of the Study**

The proposed study benefits in identifying abuse cases and raising awareness against it in the Municipalities in Second District of Pampanga which are; Floridablanca, Guagua, Lubao, Porac, Santa Rita, and Sasmuan through the use of an mobile application.

The local authorities will be able to receive the complaints sent from the application. The data gathered from the complaints will be seen in charts and will be used to monitor the abuse cases occurring in the locale.

The proposed study benefits the users by providing a system that would assist them to report the dangerous situation that they experienced. The mobile application will enable them to describe their situation and report it to the authorities. The authorities could be the Barangay Officials or the designated local Police officers in the area.

The study could also serve as a reference for other possible developments for violence against women emergency communication hotline or awareness.

**REVIEW OF RELATED LITERATURES AND STUDIES**

**Domestic Abuse**

Domestic abuse occurs in homes and with the lockdown, it shows that victims are more likely to have increased risk of the abusers. Stay-at-home policies, such as school closures, have restricted access to traditional sources of assistance for families and individuals, such as friends, extended family, and professionals (World Health Organization, 2020). Not all the lockdowns are great for the victims of domestic abuse, since this constrains their movements physically from the help they need that is available outside.

With the ongoing pandemic, it creates a surge of depressive occurrences that is currently happening to people. The social isolation imposed by the various countries' policies, as well as the impact on jobs, economic instability, high levels of tension and dread of the virus, and new types of connections, have all elevated stress levels in the most vulnerable families, increasing the chance of violence (Pereda & Díaz-Faes, 2020). Moreover, the risk of being infected with the COVID-19 is still ever-present, leading to a potential high case of being infected.

**Online Platform**

Right now, there are ways to continue the learning through the online internet, however children are one of the most vulnerable to abuse even in cyberspaces. Furthermore, spending more time online may put youngsters at danger of online sexual exploitation or bullying (Kuehn, 2020). This shows that the internet can still be one of the ways to exploit and abuse children.

There also exists cases where abusers in the pre-pandemic do continually violate their companions in their relationships. According to Campbell, J. (2020), If a partnership already has a problem with domestic abuse, the coronavirus pandemic may be exacerbating it. Meaning that pre-existing conditions and circumstances in the affair can greatly affect it.

**COVID 19 Pandemic**

Abusers and victims of abuse have been around more than the pandemic. The fight against the abuse pandemic, like the fight against the COVID epidemic, will undoubtedly be a long one (Kluger, 2021). The ongoing pandemic brought more implications to society, concluding that the viral infection is not only just the worst-case scenario.

Along with the one after another losses of individuals due to the pandemic, their anxiety heightens. Stress has been a major component in the pandemic, and it is frequently caused by the loss of a job and health concerns (Calleja, 2020). The assurance of every individual's prosperity plummets as the spread of the COVID-19 virus.

Mental wellbeing is also one of the major health aspects to look out for. According to Gonzalez (2020) the COVID-19 pandemic is only one of the mounting crises that threatens the physical and mental health of survivors of gender-based violence who are imprisoned in their homes with an abuser. These impacts of abuse can inflict psychological trauma, influencing the victims’ mental health.

With protocols and mandated rules to follow, more and more people are staying at home. However, this also restrains activities and authoritative actions that may be helpful to the potential abused victims. It's more difficult for people to flee due to movement restrictions, and it's easier for loved ones to notice the indicators that something is wrong. (Wallace, 2020). Along with the victim’s continual deterioration of their health, they cannot seek help themselves alone.

According to the post on the website of Makati Medical Center (2020), “The limited movement allowed during quarantine makes it difficult for them to call for help.” This implies that in the lockdown periods, abusers can maltreat more of their victims than the pre-pandemic times. Having active social help that is promoted by certain individuals and authorities is also one way to combat domestic violence.

         Even without the lockdown or the pandemic, help was not readily accessible to them. Domestic abuse victims and their children will continue to require assistance even after the pandemic has passed (Richards & Nix, 2021). With the rising cases, this cannot go unnoticed to the public as time goes by.

**Android Application**

Based on the study, the application of the Theory of Planned Behaviour in the research conducted by the researchers of the World Conference on Gender Studies in Malaysia is effective in determining the factors of reporting of child abuse cases. The aforementioned theory explained that it showed crucial points and information about human behavior through the level of beliefs and assumptions. These findings from the results can pinpoint the problems in intervention of child abuse cases or change existing policies that can help the authorities carry out duties more effectively.

On a function in the android application Abhaya, an android application for the safety of women, it uses Global Positioning System to track users and send their location to the application. Furthermore, it also contacts their immediate registered person in their contact numbers that alerts them and sends their location using a Google Map link every five minutes. The user can provide four available contacts in the app namely a Police Officer, their families and loved ones.

Visual Information Reporting is also regarded as one of the main features in the app Relayvio that documents domestic violence. Photos from the aftermath of the abuse is seen here as it shows the physical damage dealt by the abuser by providing a picture of the users’ wounds and injuries. This app is useful in documenting abuse as it captures the images, date, and notes that can help to inform the authorities, friends, and families.

**Risk Assessment Application**

One of the most commonly used in assessing risk is the Danger Assessment found in the Mobile Application for Survivors of Domestic Violence. It contains two parts, the calendar part and the instrument part. The calendar part can mark dates where abusive events are rated one to five based on the severity of aggressions. The instrumental part contains twenty items to answer and its result can predict the power of violence that occurred to the victim.

Having and creating an Awareness Module found in the application iJuanaHelpMo educates victims that can help to know their own rights, what resources they can find, and support that is applicable to any Filipinos regarding violence and abuse they experience inside their homes. In this application module, victims can read related laws and rights related to Violence Against Women and Children. They can educate themselves as it serves a series of references that is linked to their current state.

Due to lack of web-based systems or mobile applications, Malaysia previously does not have a means of handling out of available assistance to their potential domestic violence victims. Also, lack of manpower, funds, and resources of Non-Government Organization is also one of the primary causes of this. However, with the cases rising, there are applications that started to launch to combat domestic violence but the application TINA (Think I Need Aid) provides additional features that can encourage users emotionally and psychologically by their numerous functions of the app. An example of this is the users participating in a domestic survivor group chat in WhatsApp and a free counselling with the Women's Aid Organization, a local non-governmental organization in Malaysia.

**Crime Report Application**

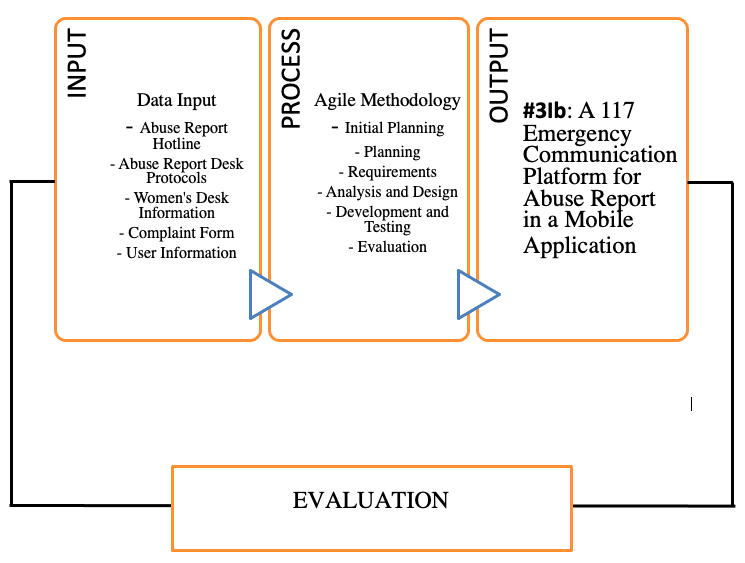
         As with the rise of android mobile smartphones, its popularity and simplistic design became prominent to people as it has numerous functions and its portability. Therefore, with this wide range of potential available users, in a certain function of We Safe App, a user can notify all users of the app to find missing persons. With their general appearance information and photograph provided by the user, other users will be notified through the app. This process of functionality can be used by the police to track down people who are potential criminals provided in their wanted list.

         Users can add their friends and families into the contact information to the system as introduced in the Interactive Internet of Things for real time Crime Reporting as who they seem fit. In this way, the app alerts them first of the unexpected crime as the user sends alarms and current information about them. The individuals who were registered as immediate contacts can act swiftly as the app alerts them.

         Furthermore, the contact system that alerts first their close relatives and friends is also seen at the study, Eyes and Apps on the Streets: From Surveillance to Sousveillance using Smartphones. According to the author, this is done to enhance the safety of the user. It also has an adding image function when users add an event in the app to provide possible evidence. This functionality can make documenting of abuses easier.

In a study from A Cloud-Based Crime Reporting System with Identity Protection, the informer uses an integrated circuit card or smart card to report an event even without his/her identity. The smart card will verify the identity of the reporter and can be used to log in the system without their identities being shown. Without compromising the reporter's identity information, their statements would hold more information and can provide more definite testament.

         The researchers looked at similar research on the internet and identified additional elements that may be included in the suggested system. The researchers have been noticing the rising cases of domestic abuses happening in the Philippines alone appearing in the local news. Also, as seen from the related studies and literature domestic abuse is still happening and is increasing because of the pandemic.  Due to the rise of the coronavirus pandemic, the help and the aids the victims normally get from these cases becomes more slow-acting due to the strict implementations of social distancing and the stay-at-home order.



*Figure 1. Conceptual Framework*

A conceptual framework explains why a certain study should be carried out. The conceptual framework establishes the methodological underpinnings of the research endeavor and describes the state of known information (Varpio et al., 2020). The conceptual framework is made up of input-process-output. The proposed system's Conceptual Framework will demonstrate how the study will be conceived and realized.

As stated in the diagram above shown by the researchers, the following items listed in the input box are the source of data that is needed to process using the application. The software that will be used to develop the application are Java, Firebase (Realtime Database) and Android Studio. The hardware that will be used are Android Phone and Laptop. The Data that will be used to provide information to the application came from the information gathered from the interview of police officers and website. In the process phase, the given information and tools in developing the prototype application will follow the agile methodology. With the help of the inputs and processes the mobile application will be developed. The researchers and end users will test the system to see if it works properly, and if bugs or errors are discovered, the developers will troubleshoot the issue, and once it has been resolved, the developers will test the system again to see if there are any remaining issues or if the system is working properly.

**Definition of Terms**

The following terms are defined either operationally or conceptually:

**Abuse -** the act of maltreatment towards a person or thing, with such cruelty on a repeated or regular basis, but in this study, it refers to the act of harming a certain person for the benefit of the other.

**Counselling -** defined as the process of having professional advice or help after experiencing a traumatic event.

**Data Analytics -** defined as the process of collecting (raw) information and classifying the acquired data into an organized outcome or conclusion.

**Domestic Abuse -** is any incident or act of controlling, maltreatment, or threatening behavior towards intimate partners or family members regardless of gender or sexuality.

**Economic Abuse -** defined as the act that attempts to make a woman financially dependent to the spouse/partner, in accordance to the R.A. 9262 Anti-violence Against Women and Their Children Act of 2004.

**Emergency Communication Platform -** An application or website that serves as the new accommodating institution that provides much secured protocols and assistance.

**Firebase -** A realtime database that is being hosted by a cloud NoSQL database, that allows users to store and sync data and use access from any device (web or mobile).

**Psychological Abuse -** defined as the act of causing the victim to have a mental or emotional suffering, such as intimidation, harrasment, stalking, public humiliation, verbal abuse and mental infidelity, in accordance to the R.A. 9262 Anti-violence Against Women and Their Children Act of 2004.

**Pandemic-** affects multiple countries or continents. It has a larger impact and kills more people than an epidemic. In this study, the specific pandemic pertained to is the COVID-19 pandemic.

**Physical Abuse -** defined as the acts that includes bodily or physical harm, in accordance to the R.A. 9262 Anti-violence Against Women and Their Children Act of 2004.

**Sexual Abuse -** defined as the acts which is sexual in nature, that is commited againts the will of a woman or a child, such as rape, sexual harrasment, or treating a woman as sex object, in accordance to the R.A. 9262 Anti-violence Against Women and Their Children Act of 2004.

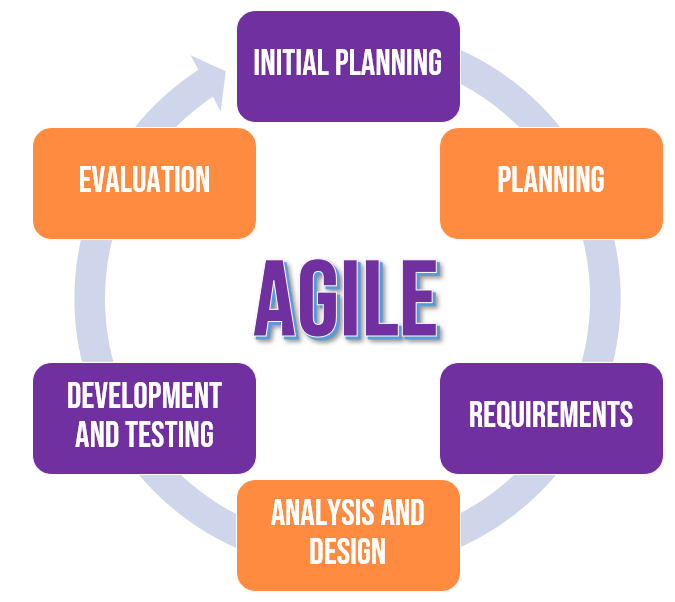
**METHODOLOGY**

Methodology is a set of procedures or techniques for locating, selecting, processing, and analyzing information about a subject. The methodology portion of a research article allows the reader to critically examine the study's overall validity and dependability (Leedy, 2021). This section will answer the questions such as how will the researchers gather the necessary data and analyze it. The researchers will discuss the research design, research instruments and the standards that will be used to analyze the data that will be collected.

**Systems Development Methodology and Research Design**

The researchers will use a quantitative descriptive type of research design because the purpose of the proposed study is to serve as a helpful way of reporting abuse cases through a mobile application and also to gather data regarding the abuse cases in the target locale. Quantitative research involves collecting numerical data and analyzing it mathematically to understand phenomena. Quantitative research is further distinguished by the use of instruments such as questionnaires, interviews, and computers. Descriptive research is described as a research method that aims to accurately characterize existent occurrences. The term "existing phenomena '' distinguishes descriptive research from experiment research, which examines not only existing phenomena but also phenomena following a time of treatment (Atmowardoyo, 2018). Descriptive study designs are helpful for describing the desirable characteristics of the sample under investigation (Omair, 2015).

System development life cycle (SDLC) is a project management concept that describes the stages of an information system development project, from the first feasibility study to the ongoing maintenance of the finished product (Gillis, 2019). SDLC assists in the transformation of a concept into a fully functional and operating system. The researchers will use agile methodology for software development of the application. The agile model emphasizes the collaboration of the group, user feedback, continuous improvement, and the capacity to adapt to changing activity. The stages of the methodology that the researchers used are initial planning, planning, requirements, analysis and design, development and testing, and evaluation.



*Figure 2 Agile Systems Methodology*

**Initial Planning**

The researchers will collect data from different related literature, studies, and existing applications related to crime about abuse. The PNP Women Desk and officials from Local Government Units (LGUs) were interviewed as part of the study. The researcher will be able to better understand the demands of the application's users and some of the victims who have been reported with the support of official government input. Browsing the materials for the mobile application's development will also be done.

**Planning**

The researchers will evaluate the collected information in order to create all of the possible plans and objectives, as well as the application's concept and target clients. Examine the present mobile application's features to determine its capabilities.

**Requirements**

In order to complete all of the study's requirements. The researchers will begin organizing the data with the use of some hardware such as personal computers and various software in order to construct and analyze the study.

**Analysis and Design**

Using different methods such as Data Flow Diagram (DFD) and Entity-Relationship Diagram (ERD), the researchers will design and conceptualize the layout and techniques of the mobile application in this phase. The flow of the #31b mobile application was analyzed using DFD and ERD based on its function.

**Development and Testing**

The researchers will begin developing the application at this point, based on the ideas generated during the analysis and design, as well as the data acquired and the needs. The testing stage of the mobile application will verify if the mobile application is functioning properly and if it contains any possible errors or bugs. A variety of tests will be carried out to confirm that all relevant features are present.

**Evaluation**

Using ISO/IEC 25010 and Likert Scale to determine the level of acceptance and usability of the #31b mobile application. Following the evaluation, the researchers will devise a strategy for improving and maintaining the mobile application in accordance with the findings.

**Research Instrument**

The research instrument will be in the form of a survey questionnaire through google forms. The survey questionnaires contain questions, this questionnaire will help the researchers to determine and prove that the problem statement is correct. The method of doing research through surveys that researchers send to survey respondents is known as survey research. Survey data is then statistically examined in order to draw significant study results ("Survey research: Definition, examples and methods | QuestionPro," 2021). One of the most effective research methodologies has been demonstrated to be surveys. Survey assists in gathering essential information from a huge number of people, allowing you to reach a valid and objective judgment (Formplus Blog, 2020).

The researchers will use Likert Scale to analyze the statistical data from the survey questionnaires and the evaluation tool. A likert scale is a psychometric response scale that is commonly used in surveys to determine a participant's preferences or level of agreement with a statement or collection of statements. Likert scales are a type of noncomparative scaling technique that measures only one trait. Respondents are asked to use an ordinal scale to indicate their level of agreement with a specific proposition (Bertram, 2017). The gathered data will then be analyzed using the weighted mean and be interpreted. The verbal interpretation that will be used to interpret the weighted mean are the following: (1) 1.00-1.80: Needs Improvement; (2) 1.81-2.60: Fair; (3) 2.61-3.40: Good; (4) 3.41-4.20: Very Good; (5) 4.21-5.00: Excellent.

The system will be evaluated using the software quality standard called International Organization for Standardization (ISO) / International Electrotechnical Commission (IEC) 25010 for the evaluation of the system. The researchers will follow the standard of ISO/IEC 25010 to categorize the mobile application functionalities. The ISO/IEC 25010 categorization of software quality requirements are follows: functional stability - to know what the mobile application does, performance efficiency - to know if the mobile application uses an optimal amount of resources, compatibility - to know if the mobile application can work cross-platform, usability - to know if the specific user can use the mobile application in specific condition, reliability- to know if the mobile application is stable enough to cater the needs of the user, security - to know if the mobile application can protect information and data, maintainability -  to know if the mobile application can be possible to be modified or improved in the future or will it adapt to changes of the environment, and  portability -  to know if the mobile application can be used in various environments. (Britton, 2019)

**Organizational Assessment of subjects**

The researchers will use random sampling design to determine the sample population within Pampanga. A sampling strategy in which each sample has an equal chance of being chosen is known as random sampling. A sample drawn at random is supposed to be a fair reflection of the entire population ("What is random sampling? Definition of random sampling, random sampling meaning," 2021) . According to the 2015 Census, Pampanga has a population of 2,198,110 people ("Pampanga," n.d.). The researchers used the Raosoft website to determine the sample population which resulted in three hundred seventy seven (377). Cluster sampling design is a probability sampling technique in which all elements of a population are classified into mutually exclusive and exhaustive groupings known as clusters (Frey, 2018) . The Pampanga is divided into four (4) districts, the researchers will randomly select one (1) district and it will be the selected sample population for the study. 377 respondents will be equally divided into the six (6) municipalities that are under the selected district which is the 2nd Congressional District of Pampanga.

The municipalities located in the 2nd Congressional District are; Floridablanca, Guagua, Lubao, Porac, Santa Rita, and Sasmuan. It has a total of 672,645 residents, taking up the 3.26% total population of Pampanga (Philippine Statistics Author (PSA), 2015) with 159 barangays (Philippine Standard Geographic Code (PSGC), 2021).

The characteristics of the respondents are as follows; thirteen (13) years old and above, residing in the said municipalities, victims of abuse, witnesses of abuse, male, female or LGBTQ+. Only current living residents of Second district will be included. Any non-resident respondent will be excluded. Ages twelve (12) years old and below are considered as volatile participants and will not be taken into consideration for the study.

**Required Specification and Analysis**

The proposed system will benefit the users by providing a mobile application named #31b Emergency App, that would assist them to report the dangerous situation that they experienced. The said mobile application will enable them to describe their situation and report it to the authorities. In case of emergency, the nearest local authorities will respond immediately. The mobile application also displays information about other services offered by the municipal sector centered on abuse. Other services such as victim counselling, protection orders, shelter and support. These services will help the victims to regain and improve their welfare.

One of the business processes that the researchers and the clients require is a management process which governs the system of operation of the client’s organization. These are case reporting and emergency response. Next, the supporting processes such as office personnel are put in place. The user’s requirement is to have an account that will be used in the mobile application and also a valid mobile number for the verification of details.  For the #31b Emergency App to be tested and give the researchers a chance to evaluate the said proposed system.

The researchers analyzed similar studies found on the internet and noted more usable features that can be implemented in the proposed system. Therefore, the researchers came up with the idea that a handheld device is best suited for the reporting of abuse. The Android operating system found in these types of devices is more commonly used and most suitable to create customized applications to create appropriate responses suited for different needs of the user.

Data flow diagrams were created by the researchers to illustrate a graphical representation of data flow via an information system and to define how the system would look and work. The Data Flow Diagram (DFD) depicts the flow of data through an information system, but it does not depict program logic or processing stages. A series of DFDs creates a logical model that demonstrates what and how the system works. As seen in Figure 4, the entities involved in the data flow diagram are the user, super admin, admin, and the system. The super admin and the admin will be the ones who will manage and maintain the system, while the user is the one who will be using the system and is the source of data that will be managed by the system and the administrators. The system is the output that will manage the data and will be monitored by the administrators. The processes were also seen in the figure, as the user inputs data into the system, the system will then process the data and produce an organized information that will be sent into the database and will be monitored by the administrators.

The researchers used an Entity Relationship Diagram to show the relationship between each table in the database. An entity-relationship diagram (ERD) is a sort of data modeling that depicts the relationships between items or concepts within an information system or organization using a graphical representation. Entity Relationship Diagrams (ERDs) show how databases are organized logically. An entity-relationship diagram (ERD) is a widely used visual model for describing corporate entities, their attributes, and their interrelationships. During the conceptual design stage of an information management system, diagrams become an indispensable tool. The Figure 6 shows the tables and fields that will be used to manage the data inputs in the system. The tables include the tables for the users, admin, cases and offenders. The fields of tables include the lastname, firstname, middlename, age, gender, contact, email, password and other important data needed to be processed. This data will also be used to show data analytics of the cases, offenders in the municipalities. These data representations will be able to help the authorities to strengthen their response services and to provide more protection to their locale.

The researchers also used flowcharts to show the processes and decisions that will be encountered in using the mobile application. A flowchart is a process that is represented graphically or symbolically. Each process step is represented by a separate symbol and includes a brief description of the stage (Hebb, 2021). The flowchart shows the starting process where the user will login or sign up into the application and then will land into the main page of the application. Then the user will see the different buttons that serve the choices of the services that will be catered by the application. The possible results of the choices are also shown in the flowchart and the processes until the end.

The researchers will analyze the gathered data from survey questionnaires given to the respondents to determine the need of the study and to prove the existing problem. With the help of the gathered data from the respondents, the researchers will formulate a plan of a system that will be able to solve the problem. After planning, the researchers will then proceed to designing the system and programming. Admin account privileges will be showing the current difference from gathered data through graphs. The data that will be represented through graphs are cases in the municipalities, age of victims, age of offenders etc. The major functions of the system are as follows: Direct emergency hotlines of a specific municipality that are connected to the database of the proposed system, online filling of abuse complaint reports and other services for the welfare of the victim will be used for the development of the said mobile application.

In the database of the system, the database tables were normalized to prevent the redundancy of the data. Unique primary keys were used as Index identifier of the tables. Primary keys serve as the connecting keys of tables that form the relationship. The data in the tables consists of basic information of the complainant, the offender and the case.

The researchers will use the complaint form from the women’s help desk as the basis for the system. The complaint form is a paper that is needed to be filled up by the complainant and to be submitted to the help desk before the further investigation. Online filling of abuse reports in the proposed application primarily includes the abuser and the victim’s information as seen also in manual reporting. The color concept found in the user interface matches the Campaigns against Violence Against Women and Children (VAWC), the Philippine Commission on Women (PCW), and also the Domestic Abuse Awareness Campaigns which are the colors violet and orange. To create a suitable mobile application that can cater this project, the researchers will use the Android Studio to develop and simulate its overall graphical user interface to review the designs and arrange objects when the application runs on an actual android phone. The researchers will also use MySQL as the primary database service to connect the application and database. The report data will be sent to the database where the police personnel and administrators can view and access it.

*Table 1.1: Development Hardware Specifications*

| **HARDWARE SPECIFICATIONS** | |
| --- | --- |
| **Item (Laptop)** | **Specifications** |
| Processor | Intel® Core™ i5-8300H 2.30GHz |
| Memory | 20480MB DDR4 SDRAM |
| Disk Space | 240GB SSD, 1TB HDD |
| Graphics | Nvidia GTX 1050 Ti 4GB |
|  | |
| **Item (Android Phone)** | **Specifications** |
| Processor | MediaTek Helio G85 Octa-core |
| Memory | 6GB RAM |
| Disk Space | 128GB ROM |
| Graphics | Mali-G52 MC2 |

*Table 1.2 Development Software Specifications*

| **SOFTWARE SPECIFICATIONS** | | |
| --- | --- | --- |
| **Item (Laptop)** | **Name** | **Version** |
| Operating System | Microsoft Windows | 10 |
| Integrated Development Environment (IDE) | Android Studio | 4.2.1 |
| Database | Firebase Realtime Database |  |
| Cloud Communication Platform | Sinch | 2021 |
|  | | |
| **Item (Android Phone)** | **Name** | **Version** |
| Operating System | Android 11 XOS | 7.6 |

The list of hardware components used by the researchers during the development of the system are shown in *Table 1.1 Development Hardware Specifications* and the following software programs of the described components are shown in *Table 1.2 Development Software Specifications* for the overall development and simulation of the application.

**Implementation Plan**

The proposed system is a prototype of a Mobile Application for Emergency Abuse Reporting. It means that the system requires the usage of an Android smartphone. During this phase, the researchers ensured that all of the goals stated during the planning and design phases were met, and that the system was thoroughly tested to ensure that all of the system's features and functional criteria were met. The existing system and the proposed system will be evaluated using the ISO/IEC 25010 as the systems evaluation tool. The results of each system will then be compared and analyzed. For the succeeding evaluation of the proposed system, the researchers will have the application tested by Information technology professionals and respondents to test the application’s ability and reliability. Then, the researchers will be able to conduct training sessions for the ones who will manage the system and for primary users. The training sessions will serve as the way to explain how the system works and how to properly use it and execute the operations. By the end of the training sessions, the assigned admins and primary users must be able to apply what they learned in the session and execute it accordingly. There will be a thorough monitoring of the proposed system's implementation for possible future usage in the local authority’s office. For the economic analysis report of the existing system, the clients used report forms when writing complaint details about involved individuals in a case report. With the use of #31b mobile application, the office reporting will be paperless.

**References**

Abellán, E. (2020, February 6). What’s the Agile methodology and how can it benefit your enterprise? Digital Marketing Agency and Consultancy Online | WAM. <https://www.wearemarketing.com/blog/what-is-the-agile-methodology-and-what-benefits-does-it-have-for-your-company.html>

Abdullah, J., et al. (2020). An Application of the Theory of Planned Behavior in Predicting Child Abuse Reporting Intention of Malaysian Society. KnE Social Sciences, 225-238. https://doi.org/10.18502/kss.v4i10.7411

Atmowardoyo, H. (2018, January). Research Methods in TEFL Studies: Descriptive Research, Case Study, Error Analysis, and R & D. Home-Academy Publication. https://academypublication.com/issues2/jltr/vol09/01/25.pdf

Balahadia, F., & Mortel, Z. (2020). iJuanaHelpMo: Web and Mobile Application for Reporting Violence: A Framework for Developing Violence Against Women Application. Asia, 30-36. https://www.researchgate.net/publication/344382104\_iJuanaHelpMo\_Web\_and\_Mobile\_Application\_for\_Reporting\_Violence\_A\_Framework\_for\_Developing\_Violence\_Against\_Women\_Application

Bertram, D. (2017, May). Likert Scales. Welcome to Digilib UIN Sunan Ampel Surabaya - Digilib UIN Sunan Ampel Surabaya. https://digilib.uinsby.ac.id/750/6/Bab%203.pdf

Britton, J. (2021, May 6). *What is ISO 25010?* Perforce Software. https://www.perforce.com/blog/qac/what-is-iso-25010

Ceccato, V. (2019). Eyes and Apps on the Streets: From Surveillance to Sousveillance Using Smartphones. Criminal Justice Review, 44(1), 25-41. https://doi.org/10.1177/0734016818818696

Calleja, J. (2020, October 9). Domestic violence all the rage in Philippine lockdown. ucanews.com.https://www.ucanews.com/news/domestic-violence-all-the-rage-in-philippine-lockdown/89821

Campbell, J. (2020, July 6). Coronavirus and Domestic Violence: What You Should Know. Johns Hopkins Medicine. https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-and-domestic-violence-what-you-should-know

Formplus Blog (2020, November 3). Survey research: Types, examples & methods. Create Free Online Forms & Surveys in 2 Mins | Formplus. https://www.formpl.us/blog/survey-research

Frey, B. (2018). Cluster sampling - SAGE research methods. SAGE Research Methods: Find resources to answer your research methods and statistics questions. https://methods.sagepub.com/reference/the-sage-encyclopedia-of-educational-research-measurement-and-evaluation/i4962.xml

Gillis, A. (2019, June 21). What is a systems development life cycle? - Definition from WhatIs.com. SearchSoftwareQuality. https://searchsoftwarequality.techtarget.com/definition/systems-development-life-cycle

Gonzalez, G. (2020, December 14). Violence against women and girls: A pandemic we must end now - Philippines. ReliefWeb. https://reliefweb.int/report/philippines/violence-against-women-and-girls-pandemic-we-must-end-now

Harpe, S. (2015). How to analyze Likert and other rating scale data. ScienceDirect.com | Science, health and medical journals, full text articles and books. <https://www.sciencedirect.com/science/article/pii/S1877129715200196?via%3Dihub>

Hebb, N. (2021). What is a flow chart? Flowchart Software and Excel Utility Add-ins | BreezeTree. <https://www.breezetree.com/articles/what-is-a-flow-chart>

Ibrahim, E., et al. (2021). Tina: Empowerment Based Design for Domestic Violence Survivors Mobile Application. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(3), 2129-2135. https://doi.org/10.17762/turcomat.v12i3.1155

Kluger, J. (2021, February 3). Domestic Violence Is a Pandemic Within the COVID-19 Pandemic. Time. <https://time.com/5928539/domestic-violence-covid-19/>

Kuehn, B. M. (2020, August 18). Surge in Child Abuse, Harm During COVID-19 Pandemic Reported. JAMA Network | Home of JAMA and the Specialty Journals of the American Medical Association. https://jamanetwork.com/journals/jama/fullarticle/2769482

Leedy, P. (2021, May 26). *LibGuides: Research support: Research methodology*. LibGuides at University of the Witwatersrand. <https://libguides.wits.ac.za/c.php?g=693518&p=4914913>

Makati Medical Center. (2020, October 28). Domestic Violence and the Pandemic: What You Should Know. https://www.makatimed.net.ph/news-and-exhibits/news/domestic-violence-and-the-pandemic-what-you-should-know

Neelam, V. (2018). Mobile Application for Survivors of Domestic Violence. Georgia State University. https://scholarworks.gsu.edu/iph\_capstone/94/

Norowi, N., Hairudin, S., & Abdullah, L. (2021). RELAYVIO: Mobile Application for Documenting Domestic Violence. Asia-Pacific Journal of Information Technology and Multimedia, 63-73. dx.doi.org/10.17576/apjitm-2021-1001-06

Omair, A. (2015, August 27). Selecting the appropriate study design for your research: Descriptive study designs. ResearchGate | Find and share research. https://www.researchgate.net/profile/Aamir-Omair-2/publication/281223251\_Selecting\_the\_appropriate\_study\_design\_for\_your\_research\_Descriptive\_study\_designs/links/583d323608ae3cb63656dfff/Selecting-the-appropriate-study-design-for-your-research-Descriptive-study-designs.pdf

Ortuoste, J. (2021, March 12). Violence against women, a major concern during pandemic. Manila Standard. https://manilastandard.net/mobile/article/349238

Pampanga. (n.d.). PhilAtlas. https://www.philatlas.com/luzon/r03/pampanga.html

Pereda, N., & Díaz-Faes, D. A. (2020). Family violence against children in the wake of COVID-19 pandemic: A review of current perspectives and risk factors. Child and Adolescent Psychiatry and Mental Health, 14(1). https://doi.org/10.1186/s13034-020-00347-1

Philippine Statistics Authority. (n.d.). Retrieved October 2, 2021, from https://psa.gov.ph/classification/psgc/?q=psgc%2Fcitimuni%2F035400000.

Ranada, P. (2020, May 9). *During coronavirus lockdown: Abused women, children more vulnerable*. Rappler. <https://www.rappler.com/newsbreak/in-depth/during-coronavirus-lockdown-abused-women-children-more-vulnerable>

Rashkovits, R., & Lavy, I. (2021, February). MAPPING COMMON ERRORS IN ENTITY RELATIONSHIP DIAGRAM DESIGN OF NOVICE DESIGNERS. International Journal of Database Management Systems (IJDMS). [https://d1wqtxts1xzle7.cloudfront.net/66039693/13121ijdms01.pdf?1615963444=&response-content disposition=inline%3B+filename%3DMAPPING\_COMMON\_ERRORS\_IN\_ENTITY\_RELATION.pdf&Expires=1626883647&Signature=EHFM-Ag1dDlmQvyc6~-GJnWIKH7HzbZTb62FcbUgY~ok2BcoYDIBZITdW7mA~gQ-J-GhlYPgxkw5AJuvWvTo1uYb7jtufaxkZAJ~1rfBYFtByPGTmDE0Zv9hfTw5~9XT5ildtYyZqGJLojLEOhtUZuPvYOGn2DtqdWlC-WHTyIBjOkEcLZal7rUNjSk2djw2ujy~ord8zlV1Xapx8GFQm6FwowHGPhAZs2uU2Bj1voLtKBqrkWX9qdKTf-LTY9aWEBY8pts7Fs5VKNU-W0FmGMunFo5e1kUppFTjhdSSUHVx9WRaFZCmYbA0VrD0xJUkC5TZvs~DpbLA4AkDREiFLg\_\_&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA](https://d1wqtxts1xzle7.cloudfront.net/66039693/13121ijdms01.pdf?1615963444=&response-content-disposition=inline%3B+filename%3DMAPPING_COMMON_ERRORS_IN_ENTITY_RELATION.pdf&Expires=1626883647&Signature=EHFM-Ag1dDlmQvyc6~-GJnWIKH7HzbZTb62FcbUgY~ok2BcoYDIBZITdW7mA~gQ-J-GhlYPgxkw5AJuvWvTo1uYb7jtufaxkZAJ~1rfBYFtByPGTmDE0Zv9hfTw5~9XT5ildtYyZqGJLojLEOhtUZuPvYOGn2DtqdWlC-WHTyIBjOkEcLZal7rUNjSk2djw2ujy~ord8zlV1Xapx8GFQm6FwowHGPhAZs2uU2Bj1voLtKBqrkWX9qdKTf-LTY9aWEBY8pts7Fs5VKNU-W0FmGMunFo5e1kUppFTjhdSSUHVx9WRaFZCmYbA0VrD0xJUkC5TZvs~DpbLA4AkDREiFLg__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA)

Republic of the Philippinesphilippine Commission on women. Philippine Commission on Women. (n.d.). Retrieved October 3, 2021, from https://pcw.gov.ph/vaw-faqs/.

Richards, T. N., & Nix, J. (2021, April 20). Domestic violence calls for help increased during the pandemic – but the answers haven't gotten any easier. The Conversation. https://theconversation.com/domestic-violence-calls-for-help-increased-during-the-pandemic-but-the-answers-havent-gotten-any-easier-156683

Shih, T., Chen, C., Syu, B., & Deng, Y. (2019). A Cloud-Based Crime Reporting System with Identity Protection. Symmetry, 11(2), 255. https://doi.org/10.3390/sym11020255

Srividhya, R., et al. (2021). Interactive Internet of things for real time crime reporting. Journal of Physics: Conference Series, 1916(1). doi.org/10.1088/1742-6596/1916/1/012134

Steadman, C. (2020, September 24). What is data analytics? - Definition from WhatIs.com.SearchDataManagement.<https://searchdatamanagement.techtarget.com/definition/data-analytics>

Survey research: Definition, examples and methods | QuestionPro. (2021). Free Online Survey Software and Tools | QuestionPro®. https://www.questionpro.com/article/survey-research.html

Taub, A. (2020, April 14). A new COVID-19 crisis: Domestic abuse rises worldwide. The New York Times - Breaking News, US News, World News and Videos.

Varpio, L., Paradis, E., Uijtdehaage, S., & Young, M. (2020, July). The distinctions between theory, theoretical framework, and ... : Academic medicine. LWW. https://journals.lww.com/academicmedicine/Fulltext/2020/07000/The\_Distinctions\_Between\_Theory,\_Theoretical.21.aspx

Wallace, A. A. (2020, November 4). 11 Things to Know About Domestic Violence During COVID-19 and Beyond. Healthline. <https://www.healthline.com/health/things-to-know-about-domestic-violence>

What is random sampling? Definition of random sampling, random sampling meaning. (2021). The Economic Times. <https://economictimes.indiatimes.com/definition/random-sampling>

World Health Organization. (2020, June 18). Countries failing to prevent violence against children, agencies warn. WHO | World Health Organization. https://www.who.int/news/item/18-06-2020-countries-failing-to-prevent-violence-against-children-agencies-warn

Yadav, S. (2019). We Safe (Anti-Crime Application). International Journal of Scientific Research & Engineering Trends, 5(1), 185-188. https://ijsret.com/2019/01/09/ijsret-volume-5-issue-1-jan-feb-2019/

Yarrabothu, R. S., & Thota, B. (2015). Abhaya: An Android app for the safety of women. 2015 Annual IEEE India Conference (INDICON). https://doi.org/10.1109/indicon.2015.7443652