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iJuanaHelpMo: Web and Mobile Application for Reporting Violence: A Framework for Developing Violence Against Women Application

Francis F. Balahadia and Zerah-Jane M. Mortel
College of Computer Studies, Laguna State Polytechnic University-
Siniloan Campus, Philippines
francis.balahadia@lspu.edu.ph, zerahjane.mortel@lspu.edu.ph

Abstract –*This study aims to create a framework for the development of Web and Mobile Application for Reporting Violence Against Women (VAW) that capable of using the as undetectable mobile application in reporting Violence against Women, a customizable e-reporting mechanism for pre-selected people to contact in times of emergency and provide essential information about the laws and right of a woman under Republic Act No. 9262. The study conducted literature reviews, benchmarking of different related existing web and mobile applications, and interview, focus group discussion, and observation to the Gender and Development (GAD) offices in Laguna District IV, Philippines. The Agile Methodology was used in the software development that integrates different Information, Communication, and Technology (ICT) tools and follows stages in the model like planning, requirements, Analysis and Design, Testing, Evaluation, and Deployment. This study can be a tool for awareness and prevention programs wherein related government agencies help the victims of VAW and give insight into creating good policies and activities for VAW with the used of the different methods applied in the study. The proposed framework for system development envisions to improve the well-being and knowledge of women's protection, increase the number of VAW cases, quickly reach the family or relative specifically in times of incidence. The study is also beneficial to the Province of Laguna, especially to the offices of Provincial GAD, PNP-Women Desk, DILG, DSWD and LGU's for a centralized database of VAW cases.*

Keywords*: Violence Against Women, Mobile Application, reporting system, a framework for development*

INTRODUCTION

Violence might occur in any place, wherein the street or house which must not be happening anymore. The Republic of the Philippines is known for its democratic nation. But many of the women in the Philippines are experiencing a harsh environment around them. The Philippines is making ways to eradicate violence against women by implementing Republic Act No. 9262. The R.A.9262 isthe law for Anti-Violence Against Women and Their Children Act of 2004 [1].

According to [2] the four-year record of Philippine National Police (PNP) in 2013-2016, there are 49,2883 violence occurred. Under gender-related crimes, physical injury is the utmost collective form of violence. Moreover, there are many other forms of abuse and violence experienced by women such as stalking, forced marriage, rape, physical injury, control over basic resources, isolating women, and among others [3],[4].

In the past 16 years, the total of violent cases on women reported to PNP was inclined by over 500 percent. The National Statistics Office found out that one (1) out of five(5) women experienced physical violence, and 14.4 percent of married women are physically abused or suffered domestic violence from husbands [5]. Despite these sad realities, the Philippine Government is committed to the challenge of attaining the SDGs to promote gender equality. The Philippine government, take action as a response to improving the

SDG on gender equality, issued a policy statement informing all government agencies to conduct data monitoring for female violence [6]. The government has constructed programs and campaigns to reinforce their call of action for this phenomenon.

Study shows that it is hard for a woman to report abuse because of many reasons. Some of the reasons of the victim are the fear to the partner action, difficulty in coping the violence, concerns about their children. Moreover, other women experience difficulty in leaving, and getting help about their situation because of the isolation made by the victim partner, deeply attachment of the victim to their partner, hoping that their partner will change. Lastly, some relatives and family cannot easily contact, and women may be economically dependent on their partners[7],[8].

One (1) in ten (10) victims stated that they experienced disappointment in reporting in the police, resulting in not reported the most recent violent incident that happened to them. While 8 percent was not reporting also the violence with the thought that the police would be unwilling to involve in the marriage quarrel. Women are more likely to seek help and support from the family and friends based on victimization data. The violence against women become criminal charges when it reaches the attention of police. According to the police-reported data, when the violence against women involved an intimate partner, physical injury, or a weapon, it particularly a case [10].

Several applications regarding women violence in many countries have embraced with enthusiasm emerging technology such that information dissemination, identifying victim location based on GPS, SOS emergency features and immediate contact to selected relatives and friend are the common features of existing applications like VAW Free PH, Womens Hub, Ana Bella App, Circle of 6, Harras Map, Watch Over Me and Nidarr. However, these still have weaknesses that need to improve to make it more useful for both victims and related government agencies to take immediate actions to respond violence.

In an stated by PCW Executive Director Emmeline L. Verzosa she said that The new technological innovations already used negatively in abusing women. Some of these forms are online harassment, fraud, and abuse. She also said that many people could also empower technology through accessible information and practical tools to bring meaningful change. Based on the study of [11] from World Health Organization creating mobile application about violence against women can help to raise awareness and supporting removal of taboos, especially in the generation of digital, empowerment through sharing & connecting (e.g. on social media), facilitation of interactions between VAW survivors and existing support institutions and provide an opportunity for comparably easy and quick access to information (multilingual).

OBJECTIVES OF THE STUDY

This study aims to create framework to develop mobile application for reporting violence against women which is the iJuanaHelpMo, that will be applying different technologies such as geo-mapping using Geolocation Information System, web and mobile application, SMS and code generator which can reinforce violence insights among the victims, as well as learning different violence prevention activities to increase wide dissemination of VAWC awareness to all woman and children. The system has features that can have used as undetectable mobile software capable of reporting Violence against Women and Children, a customizable e-reporting mechanism for pre-selected people to contact in times of emergency. Additionally, the system can also use as VAWC related Information and questionnaire module, expressed in the local language, and generate questionnaire assessment to tell if the individual is a VAWC Victim based on the rules of VAWC legislation in the Philippines.

REVIEW OF RELATED SYSTEM

According to the World Health Organization (WHO), about one (1) in three (3) women or (35%) in the world is experiencing either sexual violence and/or physical violence from intimate partner or non-partner. Based on the survey conducted in 2017 in the Philippines by the National Demographic Health, the Philippine Statistics Authority publicized one (1) out of four(4) Filipino women, ranging age from 15-49 were experiencing physical, emotional or sexual violence from their husband or partner. Through these numbers of increasing violence, innovative mobile phone applications were developed that provide a lifeline for female victims of violence and abuse. However, not all apps have a perfect feature that can provide all the necessary benefits of the community and related government offices.

One mobile application in the Philippines is *VAWFreePH,* it has SMS for the selected contact, GPS, SOS button, sound alarm to gain public attention, audio recording and image capture for evidences, reporting in one-button to 911, search nearest hospital, Police Women's Desk, directory of help lines and

service providers, awareness about Anti-Violence. While another application *WomensHub* has features of contacting police, social workers, hospitals, and judicial offices, reporting system, track service if survivor's needs are being addressed.

Distributed system with the centralized national data center, 3rd party software to connect, conduct seminar, workshop, projects in promoting gender using ICT. Moreover, *Ana Bella App* provides a lifeline for female victims, access the resources and support to escapes from dangerous, connect to survivor's network, emergency services, access to shelter and legal help, speak out about violence, connect women with an array of support services and program to rebuild lives, counseling, vocational training and job placement. It is helping women on a journey of healing and recovery. One of popular violence app is *Circle of 6*, which allows 6 friends into circle and pre-programmed SMS message to contact in terms of emergency, also it has GPS technology for location, a pre-programmed hotline for index crime, the minimal number of taps.

Moreover, Harras Map is a mobile application that can give anonymous sexual harassment reports through text messages (SMS). The reports are map real-time and updated. It also views the hotspot of sexual harassment and dangerous areas. The reports can characterize as, cat-calls, rape, sexual assault, stalking comments, phone calls, or touching, and the users can add details about the incident. While *Watch Over Me* is an application that can watch over you, and application will start tracking your location. Share some details, including a picture, add notes, etc. It has a Tap button "I'm Safe" when you feel safe, it can also shake your phone when you do not find time to call someone. The application can know when you enter in a high-crime area. Lastly, *Nidarr* is an application that reports a complaint on violence, wherein the violence victim could make different things like making phone calls, send text messages (SMS), and record and send evidence like video recordings of the violent incident. The application can also provide information about the nearest place for help, with identifications like name and contact numbers of the organizations registered in the mobile app. Communication among the organization to provide services to the victims.

The proponents created a customized, responsive web and mobile application to enhance the existing applications. The proponents combined all the ideas and integrated all the features in too one form such as SOS, Emergency call, recording of videos, audio, and images, fake calls, access to shelter and legal help, mapping for tacking location, pre-programmed messages, counseling, comprehensive VAW information, victim social hub, Family SMS contact, minimum tapping, sound alarm, a hotspot of harassment and dangerous areas, and assessment for VAW awareness. All of these features are present in Table 1, which shows the comparison of existing applications.

Table 1. Women Violence Existing Mobile Application

FEATURES	EXISTING WOMEN VIOLENCE RELATED SYSTEM AND APPLICATION							
	VawFree PH	*Womens Hub*	*Ana Bella*	*Circle of 6*	*Harras Map*	*Watch Over Me*	*Nidar*	*JuanaHelp Mo*
Emergency-SOS	/	/	/	/	/	/	/	/
SMS-Contact Relative/Family	X	/	X	/	/	/	X	/
Mapping	X	X	X	X	/	X	X	/
Tracker	/	X	X	/	X	/	X	/
Mobile and Web Application	X	X	X	X	X	X	X	/
Recording (images/video/audio)	/	X	X	X	X	/	/	/
Minimum Button Tap	/	X	/	/	/	/	/	/
Pre-Programmed Message	X	X	X	/	X	X	X	/
VAW Information	/	/	/	/	/	/	/	/
Counselling		X	/	X	X	X	X	/
Assistance for Shelter and Job	X	/	/	X	X	X	X	/
Victims Social Media Hub	X	X	/	X	X	X	X	/
Sound Alarm for violence	/	X	X	X	X	X	X	/
Fake Calls	X	X	X	X	X	X	X	/
Violence Hotspot	X	X	X	X	/	/	X	/
Assessment	X	X	X	X	X	X	X	/

METHODS

Research Design

In developing iJuanaHelpMo the researchers used the developmental research approach and descriptive method. The developmental research was use in designing and developing study systematically. It will also be used to evaluate procedures, instructional programs, and consistency, and the effectiveness of the product must be met based on the criteria. This study also utilized the System Developmental Method to incorporates the construction of the concept system design, building the system architecture, prototyping the system, product development, and transfer of technology [12].

In constructing the concept design, the study was use the gathered data from the interview of women in District IV of Laguna to forms an idea to solve the problem. In constructing the architecture of the system, the data flow diagram (DFD) will be applied to iJuanaHelpMo. The descriptive method will be used to identify the acceptability of the iJuanaHelpMo application by the women of District IV of Laguna.

Data Collection Instrument

The researchers conducted different methods to gather essential data for the study. Below are the lists of the data collection methods that will be performing:

Interview

The researchers used structured interview with the women in the different municipalities of District IV of Laguna. The researcher gathered necessary information that will be used in developing the application. The researchers obtained sample questionnaires for the respondents such as Gender and Development (GAD) heads, staff and selected women as the basis for the creation of the system.

Internet Research

In searching for a piece of information that will be useful to the study, the researchers used Internet for help them to gather useful information related to the different problems associated with VAWC and the mixed solutions that address the said problem. The Internet also helped as references to the various guidelines in developing the application and trusted sources such as Google books, Google Scholar, and different e-books.

Library Research

In gathering facts information, the researchers were usedthe library. This information helped the researchers in picking related literatures in different written materials such as books, theses, or different proofs for the study.

Statistical Treatment

The researcher conducted a survey using a Likert Scale to measure the software Usability and level of acceptance of the iJuanaHelpMo. Table 2 shows the Likert scale used in interpreting the result of the evaluation of the system.

Table 2. Likert Scale for Acceptability of the Systems

Scale	Range	Descriptive rating
5	4.21-5.00	Acceptable
4	3.41-4.20	Slightly Acceptable
3	2.61-3.40	Undecided
2	1.81-2.60	Slightly Unacceptable
1	1.0- 1.80	Unacceptable

Project Design

In developing the application, the researcher will use agile methodology for software development. There are many types of approaches to agile that can fit the best process of the project. Agile follows a short life cycle, which repeats during each iteration [13]. The agile model is used as a way of managing projects. It can be used in anything, but it was created for software development [13]. The agile model emphasizes groupwork, feedback of user, constant improvement, and the capability to adapt to shifting activities.

Figure 2. Agile Methodology Model.

*Initial Planning. The researchers will be going to g*ather data in the different related literature and existing application associated to VAWC crime or Intimate

Partner Violence. Published studies of Spatial Mapping, GPS, and application development as also a resource of ideas of the researchers. An interview with the different officials involved in the project conducted, the Laguna-DILG, GAD, DSWD, PNP Women Desk, and Local Government Unit (LGU) officials. The inputs of the official government will help the researcher know the needs of the user of the application and some reported victims. Browsing the materials in the development of the application will also be conducted.

Planning. The data gathered will be assessed by the researchers to construct all the possible plans and objectives to be done, the concept of the application, and target clients needed in the application. Look for different features of the existing application to assess its functionalities.

*Requirements. In c*ompleting all the requirements needed in the study. The researchers will start to organize the data, with the help of some hardware such as personal computers and different software in developing and analyzing the study.

Analysis and Design. In this phase, the researcher will be going to design and conceptualize the layout and techniques of the mobile application using different methods like Data Flow Diagram and Use Case. DFD and Use cases used to analyze the flow of the iJunaHelpMo mobile application base on its function.

Development and Testing. This stage, the researchers will start to develop the application using the ideas from the analysis and design, data gathered, and the requirements. The mobile application will go through the testing stage to determine if the software application is working correctly and if the application has possible errors or bugs. Series of different testing will be conducted to ensure that all necessary features will apply in the web and mobile application.

Evaluation. Conducting a survey using a Likert Scale to measure the level of acceptance of the iJuanaHelpMo application and its usability. After the evaluation, the researchers will plan to improve and have the maintenance of the application according to the evaluation.

Deployment. The last phase, after the application's evaluation will be implemented and be used by target users of the application in different municipalities in district IV of Laguna.

RESULTS AND DISCUSSION
Figure 1 depicts the key process of the proposed framework for the system development of iJuanaHelpMo Web and Mobile Application. It has four target users: Community (Users) that can be a victim, Government Officials (DSWD, PNP-Women's Desk), Health Personnel, and Family or Relative as a contact of the victims. Moreover, the application consisting of seven (7) modules that links to one another, such as E-Report, Evidence Module, Heal and Job Module, Emergency, Tracking, Awareness, and Assessment module. The application can be on invisible or no icon into the mobile phone as it will be customized by the user to use it secretly by the victim or abuse person, wherein it can dial a secret code to get help. The user will have a one-time registration, and the data will be saved in the iJuanaHelpMo database.
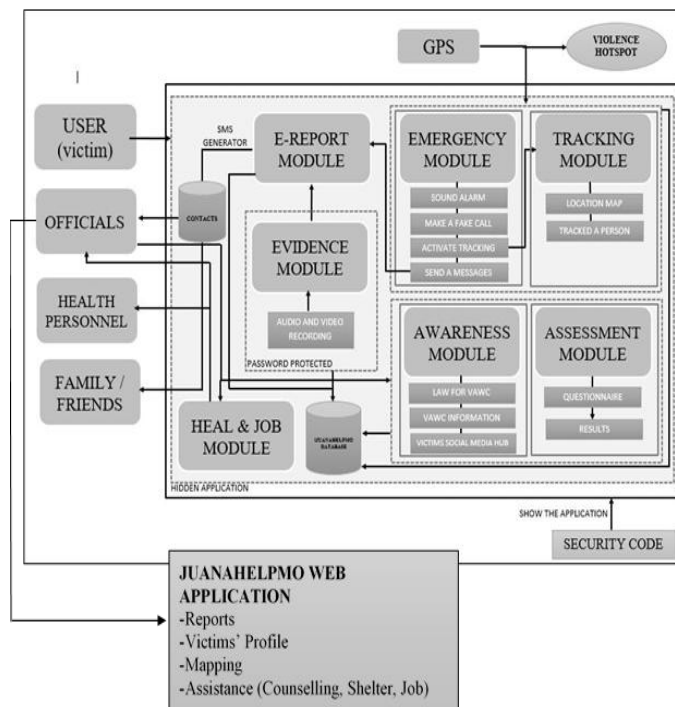

Figure 1. Proposed Framework of iJuanaHelpMo for System Development

The **E-Report Module** will help the user to send messages to the pre-selected contact persons that save in the database. The messages that will be sending is pre-programmed SMS messages like *"I am being abuse, please help me", "I need help", and "Please call me ASAP".*

The application has **a Tracker Module** connected to the e-Report module wherein the user/victim can track. This module will be using the Global Positioning System (GPS). Once the victim sends SMS for help, it also notifies the contact person about the exact user location using a global positioning system. Every action

can be accomplished with a minimal number of taps to make it easier to use in threatening situations.

The user can also create their messages with an attachment of the files from the Evidence Module. The Evidence Module will serve as the media in collecting pieces of evidence of crimes and abuse to the victims, such as images, videos, and audio recordings that can be send to the web application of the system. It is also password protected to secure the safety of the user.

The Emergency Module will help the user to distract the perpetrator in any case they are being attacked or to attacked. The Emergency Module has a sound alarm and creates a false loudspeaker calls to escape from emergencies. It triggers the mobile phone's flashlight and sound alarm to gain public attention once the victim is on streets or public places tapped SOS Button. A mobile application also has one-button dialing to 911 emergency helpline.

The system has Awareness Module that can help the users know essential information regarding their rights, laws, resources, and support regarding violence and abuse in the Philippines. In this module, users can read different laws and rights related to VAWC. The system hasan online social networks exclusive for victims of abuse. These social networks will help them to share experiences, reach out for help and support, and access information and resources to their co-victims of violence.

Assessment Module is an evaluation of the user in knowing the level of awareness or knowledge regarding their rights as women in terms of violence. The users will answer several questions to identify the category of violence under the R.A.9262 they are experiencing. The question was translated in the local language, and the result of the Questionnaire will be based on rules set by the VAWC Officials.

The Heal and Job Module is support services and programs to rebuild the lives of the victims through access to shelter and related assistance. Some of the supports are psychological counseling led by a health expert, vocational training, and job placement with the partnership to related government agencies. The advocate officials of Anti-VAWC will facilitate this module for the healing and recovery of the victim.

The system administrator will be PNP Women's Desk and the DSWD-VAW Reporting to provide an accurate record of the number of VAW cases through their databases and track service efficiency to see if survivors' needs are being addressed. It also attempts to lessen the trauma survivors suffered by ensuring that her experience is documented adequately from her first interview. It also has the advantage of being a secured application since data confidentiality and security are essential in cases like these. All the gathered reports are put on a map using the Geographical Information System that gives users (Officials)an overview of where probable hotspots of violence and unsafe areas located.

This proposed framework will help the victims, community, related government agencies to increase the number of reporting, awareness on the violence against women, empowerment of the women to fight and voice their rights and lessen the amount of VAW victims in the country. This application leads to a sustainable community that can raise the understanding of Gender and Development, which make government campaigns and programs to strengthen their responses and action not only to women but to all.

CONCLUSION AND RECOMMENDATION

The study deals with the increasing number of Violence Against Women in the Philippines that needs to take action. Technological innovation must help the alarming cases of violence through the development of system framework using ICT tools like web and mobile application. It can help raise awareness and empowerment by sharing and connecting (e.g. on social media), facilitating interactions between VAW survivors and existing support institutions, and providing opportunity for both government and community. The proposed framework for system development can be a tool for awareness and prevention programs in which related government agencies can maximize the number of personnel and community in disseminating the VAWC abuses/cases to the communities, schools, and others. It is convenient to gain insights for the development of VAWC prevention programs and policies by taking benefit of the data coming into the system. These tools help identify the types and frequency of abuses and map out locations with high percentages of VAWC incidents, among others.

This study limits for the proposing framework for developing of a system so that it is recommended to develop this as web and mobile application for Violence Against Women and the framework and planned methodology will be used in future studies. After the system is created stated in the proposed framework, it will be evaluated by IT experts and GAD personnel using Usability and Acceptability test. It will benefit the government to quickly seek action to the victim and benefit women who are experiencing the different violence inside their home or abuse caused by their

relatives. The study is also beneficial to the Province of Laguna, especially to the offices of Provincial of Laguna- DILG, DSWD, GAD, PNP-Women Desk, and LGU's for a centralized database of VAW cases.

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