

## **Chapter 1**

### **THE PROBLEM AND ITS SETTING**

#### **Background of the Study**

Barangay is the basic political unit that serves as the primary planning and implementing unit of the programs, projects and activities of the government as stated by the local government. Barangay officials are responsible to formulate measures, maintain cleanliness and beautification and maintain barangay-owned properties and infrastructures. (Lorenzo, et al., 2019)

Barangay officials overburdened by queries and needs of the community and rapid growth of cases of COVID. Manual transactions like it used to before can seem to be a drawback on their duties. Barangay is aspiring to adjust technical ways in achieving accountabilities to make a change in the lives of individuals. It means replacing human efforts with machines to keep track of the advances of technology. The researchers will conduct a study about Barangay using manual processes. It is tedious or labor-intensive in terms of recording that may cause inconvenience.

Stated on a website called Rubrik (n.d.), Data is one of the most important assets every business or system has; keeping the saved information always protected and available is one of the important features a system should have. Backing up files and data is necessary to avoid problems such as data loss, prevention from malicious attacks such as phishing and ransomware, and repetition of data.

Data has the potential to provide a lot of value, to unlock this value, it needs the analytic component. Data analytics refers to the procedure of observing datasets to draw assumptions about the data they contain. It enables raw data to uncover patterns to extract valuable insights from it. Some benefits from data analytics include improved decision making, more insights to what your user service needs, and more efficient operation (Lotame, 2019).

The term crowdsourcing according to Samonte et.al (2019) is a mix of two words that is crowd and outsourcing. It is a type of a sourcing method, which gathers information and contributions from the users of the internet to receive ideas, and helpful services that will be needed. Another most common transaction with barangay is processing a document for a business or individual, and requesting these documents will use some resources of the barangay so it could have a cost.

One of the best and most convenient ways to be on top of finances is to make use of electronic payment. The benefits of electronic payment are its convenience and having the capability to track your spending. With the obvious demand for more outlets and resources for electronic payment, there is no other way to get around but for our country's payment system to adapt to it (Padillio, 2019).

The researchers aim to develop the Barangay and Residents' Information System that can prevent data loss and lessen the workload of barangay officials. Next is to make a solution for BaRIS to avoid and prevent malicious attacks that can harm the system and to keep the data safe, because these data can be used by people with bad intentions and may endanger the lives of the people in the barangay. Furthermore, create a mobile application that has a crowdsourcing functionality which is about processing complaints by automating the process of manual filing, handling, and creating data analysis. This type of recording for complaints around the barangay will be helpful to the barangay if implemented since it fastens the processing of complaints and can be solved faster.

Lastly, data analytics will be used to raw data to get valuable insights about the barangay. After this analysis, the barangay can better understand the problems of their community and will come up with an effective solution easier.

## **Objectives of the Study**

The general objective of the study is to develop a Progressive Web Application for Barangay and Residents' Information System

Specifically, the study aims to:

1. To design a Progressive Web Application for Barangay and Residents' Information System with the following features:
  - a. Online application of barangay clearance, certificate of indigency, residency, cedula, and business permit. Online payment and via Kiosk or 7 eleven.
  - b. Delivery via email of document with password together with the receipt or delivery via courier
  - c. Profiling system
  - d. Recording of blotter, complaints, health and emergency services and cases
  - e. Post barangay programs and announcements.
  - f. Centralized barangay information.
  - g. Backup, Audit Trail, and Archiving.
  - h. Generate reports and organize data through Data Analytics.
2. To create the proposed application by using Hypertext Processor (PHP) and JavaScript, ReactJS as an open-source library for web and React Native for mobile development. In addition, the researchers will use MongoDB for the database. Lastly, Visual Studio Code will be the preferred IDE.

3. To test and further improve the system's accuracy and portability of both web and android apps to reach the expectations and requirements.
4. To evaluate the performance of the proposed web and mobile application based on ISO 25010 criteria for quality software which are Functionality, Suitability, Performance Efficiency, Compatibility, Usability, Reliability, Security, Maintainability, and Portability.

### **Scope and Limitations of the Study**

The study focuses on developing a progressive web application for barangay and residents' information systems. The proposed system will be used by a specific barangay which is Barangay Canlubang located in Calamba Laguna. Features like online document application and payment for users need to have a certain level of authenticity to be able use this action. The system also offers registration of a certain program of a barangay such as daycare enrollment and health care services of a barangay. The website can be installed on any mobile phone from a browser.

The proposed system will be developed by using Hypertext Preprocessor (PHP) and JavaScript using ReactJS for web development. For mobile application development, the researcher will use React Native. Open-source web technologies such as HTML, JavaScript and CSS for web pages and web applications. The researcher will use Visual Studio Code as the Integrated Development Environment (IDE). MongoDB is the database management system that will be used by the system for storing, retrieving and analyzing data.

The proposed system will accommodate cross-platform devices like IOS and android for mobile phones while for computer devices, the minimum operating system version will be windows 7 and the recommended is windows 10. The system will be evaluated by a certain

number of guests, residents, and barangay officials from the selected barangays using features such as online document application and payment, crime and emergency report, and other features of the system.

The proposed system will only be accessible for devices mentioned above that have access with internet connection, storage, and camera and other permission needed by the system.

### **Significance of the Study**

The study will benefit not only the barangays but also the nation as a whole. Local government and enhance the delivery of basic services to the community. With the system, the collection of information will be much easier thus; improvement in the services coming from the local government will be more efficient. Effectively finding ways to solve problems coming from the collected data that was analyzed by the system and the proper implementation of this solution with the help of the said system will surely be a great help to our country and its citizens.