

DEVELOPMENT OF A MID-LEVEL CENTRALIZATION  
MANAGEMENT SYSTEM FOR THE CITY OF MANILA

A Thesis

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## INTRODUCTION

The study aimed to design and develop a web-based system titled "Mid-Level Centralization Management System" for the City of Manila. The system was intended to provide a platform for users to process their documents electronically while administering municipal administrators the capability to oversee and manage the services rendered by the system. The project is subject to several potential limitations, including complex and strict ordinance for the information of the processes within the City. The study aims to streamline the services and eliminate the exhausting way of processing city hall documents and payments. The rapid advancement of technology in the modern period has an influence on practically every aspect of our lives. The system is a significant advancement in modernizing municipal management, ensuring sustainable growth, and strengthening communities. It provides an Artificial Intelligence (AI) chatbot to offer immediate assistance to users, addressing their inquiries regarding the services provided by the system. By implementing the system, municipalities can improve service delivery by simplifying their financial operations, improving the citizen experience, and optimizing resource allocation. It is crucial to become aware of the wide-ranging effects of this worldwide technological spread. As towns grow and take on more duties, the requirement for durable systems that maximize various activities like revenue collection becomes critical. Application for Community Tax Certificate or Cedula  
Transaction history where users can see their past purchases. Apply for verification where user can upload valid ID. Improving payment practices can help improve government and municipality efficiency,<sup>2</sup> public welfare, and economic activity. The World Economic Forum is a global organisation dedicated to promoting economic and social prosperity. For more information, visit: [www.weforum.org](http://www.weforum.org).

## METHOD

This is to highlight the interaction of the actors and the use cases in the perspective of both Client and Admin. The user can also view the system notifications and email to check the status of the transactions. The admin can view the details of the users in the user list and verify the users who have applied for verification. The users can also submit forms for Real Property Tax Payments and Business Permit. The transactions are labeled as transactions with transactions labeled as ?Actor?s?. The user must pay for the transaction and then wait for the admin to process the transaction, marking the transaction status as completed or rejected. The user has viewed the transaction details of the transaction. A postcondition PDF file is downloaded containing the SOA of the transactions. The admin dashboard contains statistics related to their respective roles. The users' profile information and account settings are displayed along with their current account details. The AI chatbot is tasked to track the changes made by the system and manage audit trails. The research is part of the first data gathering process that the researchers collect and analyze the data to understand the system. The researchers assessed the functional suitability and security of the system as criteria in the rating system's 4-point Likert scale shown in Table 28. The users can either login as an admin or a regular user. The CTC/Cedula Admin manages the transaction that involves applying for CTC or Cedula and the Business Permit Admin manages business permit transactions. The researchers conducted operation and testing procedures to be able to guarantee the correct and accurate functionality, features, and capabilities of the system. The web application is composed of six admins: Chief Admin, Registry Admin, Real Property (RP) Tax Admin, Community Tax (CTC) or Cedula Admin, and Business Permit Admin. The system checks if the user is registered before allowing the user to use the web application. It also uses the Gmail API to send and receive email messages. The researchers also provided a demonstration on how to properly use the system was executed. The project design of the study is outlined below using Unified Modeling ? Use Case Diagram, System Flowchart, and System Architectural Designer. The administration component is responsible for handling information, transactions, and connection to

the client database. The client database, in turn, forwards user requests to the web host. The tools and resources are scrutinized after the data gathering and advances in designing the application. The results of the overall weighted mean rating for each criterion were calculated and converted into a qualitative interpretation. The application has thirteen entities namely: user, admin, personal information, contact, government information, verification, RP tax, business permit, CTC/Cedula, birth certificate, death certificate, marriage certificate, and transaction. All these actors must be logged in to access their privilege in the application. Each admin has different access privilege and perspective when using the system. The system would be deemed acceptable if all the tests' expected results were met and all the specified test cases were completed. The UML Use Case diagram of the developed system is divided into two: Client and Admin Use Case diagrams. Each use case is evaluated with ISO/IEC 25010 as the standard. Each actor has a different access privilege in the system. The Chief Admin oversees all system services, including adding and managing admin accounts and audit trails. The user can also view his or her past transactions by viewing his/her transaction history. The system was set up to set up services, such as Google Authentication, Facebook, and OTP-Time-TP. The Vite project was developed using the React framework and the Variant as JavaScript. It was built using Windows PowerShell and Express on Windows. The case testing was then rated as either 'passed' or 'failed'. The issue or problem causes the system to crash. The web host is integrated into the Mid-Levelization process. The project design, project development, operation and testing procedure of the study is presented in this chapter. The next chapter presents the project development and evaluation procedure of this study. The researchers gathered 30 people for the study. The researchers must verify and correct if there are any bugs identified. There were 30 people gathered by the researchers, which consisted of 20 IT professionals, 5 Municipal Staffs, and 5 Ordinary Users. The study was published in the open-source journal, "Firebase," on November 14, 2013. The report was published by the Open Software Institute, a nonprofit organization based in San Francisco. It was the first of its kind and is available online.

## RESULTS

This enables the admin to view the details of the transaction. The system provided an Admin perspective for Registry Admin where the admin can view the user list and user verification. The users can fill up the input fields with their information to create a transaction in business permit. In this page, the chief admin can add a new admin account to the system. A password guideline is also provided to guide the user in changing the password for added security. The user can search and find the specific transaction they are looking for. The system provided an Admin perspective where specific admins can view specific transactions. Users can upload their ID to apply for verification, allowing them to use the services the system offers. The system obtained a weighted mean of 3.87 with an equivalent descriptive rating as "Very Acceptable". The users can see the previous transactions they created in the system. The users are able to pay for their pending transactions. The dashboard page for the Registry Admin shows the user registry (total number of users), and the top locations of users. The system also featured a contact page with the following information: (1) details of the Manila City Hall including address, telephone number, and location, and (2) contact details where the user can receive their documents in the city hall. The users can download their Statement of Account in the transaction history page. Clicking the cancel transaction will cancel the pending transaction of the user. The Chief Admin can edit the credentials of a user by clicking the edit admin button. The system also features a payment webpage of the system. The system provided a transaction history where users can view their past transactions. The system enabled the generation of comprehensive reports based on the presented data. The users must fill up all input fields with their information to create their account. The AI Chatbot is a feature that allows the users to get answers to their inquiries related to the system. The "complete" status means the application sent by the users is finished and can now be claimed. The privacy policy page also states how the information could be collected, used, and analyzed. The Mid-Level Centralization Management System was developed to digitalize and centralize the transactions in the City of Manila. Users can filter the transactions by date, transaction ID, type, and status. The "check" and "x" symbol allowed

the user to efficiently process a transaction. The system provided transactions for requesting a Business Permit User Forgot Password Page. The users can learn the location, opening and closing hours, and the email of the Manila City Hall. The dashboard displays total transactions, total gross revenue, user registry, and other statistics. The login page for the citizens indicates that the system provides an effective authentication mechanism. The system provided transactions for requesting a CTC or Cedula. The first cycle of testing yielded 91% of the test cases as 'passed' in terms of functional suitability and security, resulting in a weighted average grade of 3.89. The users can view and edit their first name, middle name, last name, etc. on this page. , it downloads the data from the shortcomingsdashboard to a pdf format. The developed system has the following capabilities: It can be used to create a birth certificate request form page. It can also be used as a form to fill out birth certificates. The system can be downloaded from the following sites: GitHub, Google Drive, and Microsoft Office 365. It is available in the UK for free on the Mac and PC versions of the software. It has been available in beta for a few months.

## **DISCUSSION**

The system was developed to enhance efficiency and centralize the transactions in the Local Government of Manila. The system was evaluated as 'Very Acceptable' in terms of functional suitability and security. The users can view and edit profile information such as personal, contact, and government information, interacting with AI chatbot. The application was successfully developed using various development tools such as Visual Studio Code Workbench, Reactjs, and Git/Github. It also allows the users to submit application for transactions including Tax Payment and TaxClearance.