

Assistance Monitoring System Module for Local Government Unit

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Abstract —The Assistance Monitoring System (AMS) is an ICT application that will help facilitate transactions in local government unit (LGU). The development of the system utilized the waterfall model involving requirement specifications, system design, design implementation, verification and testing, system deployment and software maintenance. The system was evaluated and garnered a “very good” rating. It is an integral part of the Local Government Automation System in the City Government of Malolos that has objective to transform the manual operation to digital automation.

Keywords — Assistance Monitoring System, eGovernment, ICT for Development, Information System for Local Government Units

I. INTRODUCTION

According to Singh (2010), the advent of Information Technology (IT) has transformed the way people live, communicate and work. It has been seen that while private companies are able to reap the advantages of Information and Communication Technology (ICT) for improving their business, the government is lagging behind in terms of offering services to the people [8]. Many municipalities continue to rely on manual processes for fulfilling record requests. Through the use of technology, governments can improve the delivery of services to constituents and increased the efficiency of their own work processes. These improvements can also lead to greater citizen satisfaction, increased government transparency and significant reductions in operating costs [5].

As discussed in a forum, among the emerging ICT applications, information system is one of those technologies which have the potentials of greater enabling the government units to serve efficiently and effectively. Information system is such where data are collected, classified and put into process interpreting the result thereon in order to provide an integrated series of information for further communicating and analyzing. In a progressively more spirited worldwide atmosphere, Information System plays the role as 'enabler and facilitator', which endows with tactical values to the bureaucracy

and considerable step up to the excellence of administration [9]. LGUs implementing IT are able to provide better services and thereby able to improve their transaction diversity. At the present time, the importance of IT has been strongly sensed and applied in the local services sectors.

The City of Malolos rests in Metro-Bulacan, together with Baliuag, Calumpit, Marilao, and Meycauayan City. AS posted in the provincial website, the prime city of Bulacan was recently identified and ranked 8th in the launching of the “Annual Report on the Top 10 Next Waved Cities (NWC): The Philippine Best IT-BPO locations” on March 15, 2012. Business Processing Association of the Philippines (BPAP) and Department of Science and Technology (DOST) recognize City of Malolos as one of the ICT hubs beyond Manila.[3] It is a clear confirmation that the City of Malolos has the access to technologies.

The City Government of Malolos aims to deliver diverse service to its entire people. Indigent residents of the city may avail financial, burial and medical assistance. As the department receiving the requests for assistance handles voluminous transaction daily, the record management has become a fiddly concern. Providing easy-access to information is one place where technology offers a number of options. And to take part in helping the realization of the undertakings of the City Government of Malolos to monitor, organize and improve the system of providing assistance to its indigent people, the College of Information and Communications Technology of the Bulacan State University, designed and developed the “Assistance Monitoring System Module” as part of the Local Government Automation System Plan of the Malolos City.

II. PROJECT OBJECTIVES

General Objectives

The general objective of this study is to develop Assistance Monitoring System (AMS) module that will provide database for the record-keeping, organizing, improving and monitoring of the system in giving assistance to the people in the local government unit (LGU).

Specific Objectives

- A. **System Design.** To plan, design and adapt the most suitable software development model in the implementation of the proposed system.
- B. **User Interface Design.** To design and create a user-friendly graphical user interface (GUI).
- C. **Report Generation.** To generate timely and accurate data reports for the various units and departments of LGU.
- D. **Document and Study.** To provide documentation of the system as reference for the future improvements and development

III.SCOPE AND LIMITATIONS OF THE PROJECT

As LGU handles voluminous requests for various sort of assistance every month, monitoring-related problems continuously arises. The Assistance Monitoring System provides solution to this dilemma and response to the scope of the system. The system has a user-friendly interface. It can track the records of the requested or approved assistance in the local government unit. The system is also capable to speed-up transactions and improves processing time of the aids or claims. It also provides the means of monitoring assistance budget allocation. And the most important feature is the capability of the system to generate necessary reports including allocations per barangay, the number of request for assistance based on gender and age-related data filtering. The actual approval of the assistance claims, as well as the generation of the actual payment check is excluded in the system.

IV.SIGNIFICANCE OF THE PROJECT

Through the implementation of the Assistance Monitoring System, LGU can easily handle and organize the bulk number of assistance requests. They can easily track the requests' status and provide timely and accurately reports. LGU can generate data reports including demographic profile of assistance allocations, approved or pending status, age and gender group profile, and date-related outputs. The generated reports can serve as basis for rational distribution of the assistance budget allocation. This also provides the LGU constituents a more convenient service by delivering faster transactions and inquiries.

V. CONCEPTUAL FRAMEWORK

The researchers used the Input-Process-Output (IPO) model as the conceptual framework of the study and utilized Waterfall Model as the

development framework. Waterfall Model in which progress is seen as flowing steadily downwards, linear and sequential through the phases of **requirement specifications, system design, design implementation, verification and testing, system deployment and software maintenance**. Waterfall Model allows the developers to find the glitches or errors in the development. Waterfall model is the earliest SDLC approach that was used for software development.

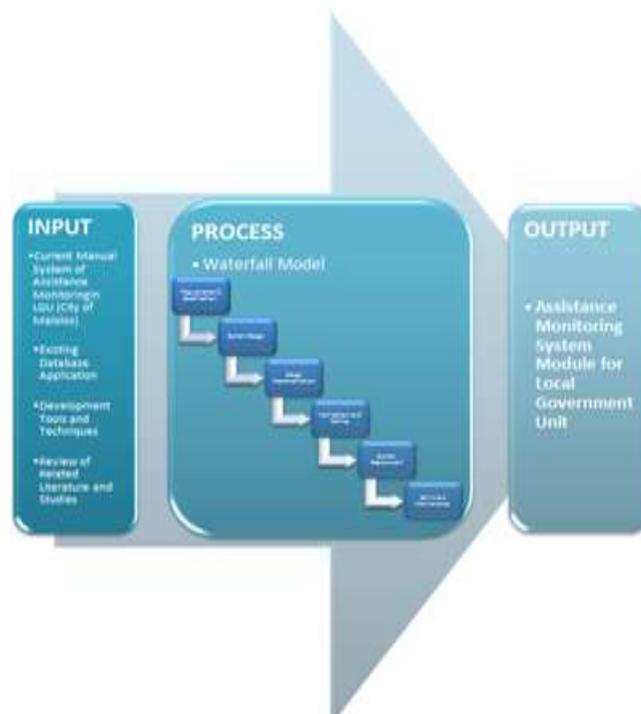


Figure 1. Conceptual Model of the Study

As shown in Figure 1, several steps were done in the development of the system. In the **requirements specification phase**, the researchers gathered operational requirements of the Local Government Unit of the City of Malolos through interview and observation how the employees in the unit are carrying out their transactions. The requirements are then converted into functional specifications which must be utilized by the developed information system. In the **system design phase**, the system was designed by identifying the intended features, the design of the interface, system control and the appropriate database design for easy retrieval and generation of pertinent reports. This also involves the overall system architecture. **Design implementation** is the phase which the system accepts inputs and feedback from the users for verification and testing. In **verification and testing phase**, the development team examined the system bugs that were possibly overlooked during the system design and design implementation phases. It was then followed by the integration testing where all the units are integrated into the system after testing of each

component. In post integration, the entire system is tested for any flaws and drawbacks. When verification and testing were done, the system was installed, referred as the *system deployment phase*. Pilot run and testing were done. The final phase is **software maintenance**. Regular updating, verifying and debugging of the software is intended in this stage.

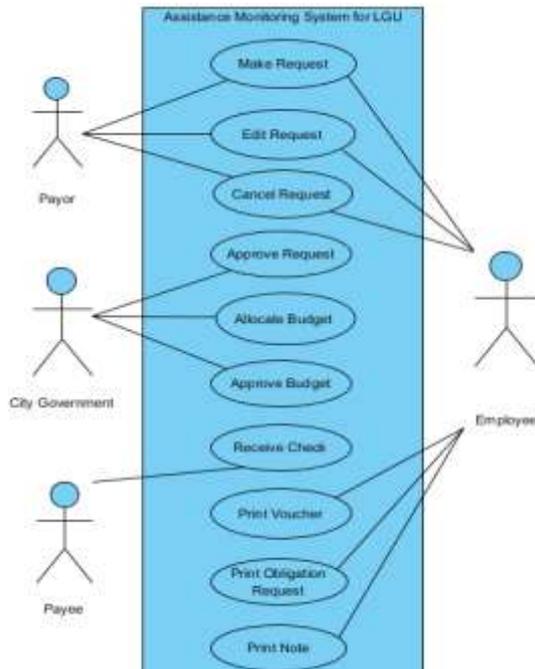


Figure 2. Use Case diagram for Assistance Monitoring System Module for Local Government Unit

VI. ASSISTANCE MONITORING SYSTEM (AMS)

System Functions

The AMS provides a login page before entering to the Home page for security purposes. This includes error message in case the password and username didn't match. It also includes *Remember Me* checkbox whenever the user likes to display the homepage upon the entry to the system.



Figure 3. Log-in Page

Records Pane

This panel is divided into three sections. In this pane, you will see the (1) list of requests, (2) the number(s) of transacted requests or applied requests and (3) approved budget and number(s) of approved and declined or cancelled requests.

Request Table

It listed the most recent records added to the system's database. It shows the *Request ID*, *Date added*, the name of the *Payor*, the name of the *Payee*, current *Status* and the *action buttons*. The action buttons corresponds to specific function. The search box can search for *Request ID*, *Payor's Name*, and *Payee's Name*. Thus, it only accepts name with this format "[LAST NAME], [First Name], [Middle Name/M.I]".



Figure 4. Records Pane

No.	Request ID	Date	Payor Name	Payee Name	Status	Actions
1	PR-2015-001	2015-08-01	Real City Government	Real City Government	Approved	View Edit Cancel
2	PR-2015-002	2015-08-01	Real City Government	Real City Government	Approved	View Edit Cancel
3	PR-2015-003	2015-08-01	Real City Government	Real City Government	Approved	View Edit Cancel
4	PR-2015-004	2015-08-01	Real City Government	Real City Government	Approved	View Edit Cancel

Figure 5. Request Table

View Button

This will show a screen with the complete information of the request. In the header, you'll see the Request ID, the date request has been applied and the current status of the request.



Figure 6. View Information

Edit Button

This will show a screen with editable fields such as the current status and the approved amount. Same with the view screen, it also shows the request ID, the date the request applied, and the current status of the request. **Update Status** shows the Remarks field where there's an options for the status of the request such as approved, cancelled, pending, CBO (budget office), and ACCTG (accounting office). In the **Receive Cheque/Check** portion is where the cheque/check number and the approved amount are specified.



Figure 7. Editing

Cancel Button

This will cancel the request. Once the request is cancelled, the request will not be set to pending status. The payor needs to apply again for the assistance.

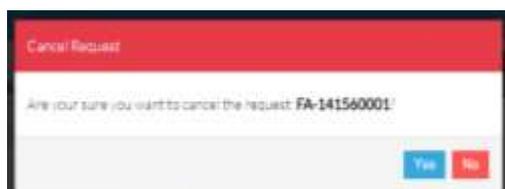


Figure 8. Cancel Screen

The figure below shows the screen for the daily assistance transactions based on different types of assistance.

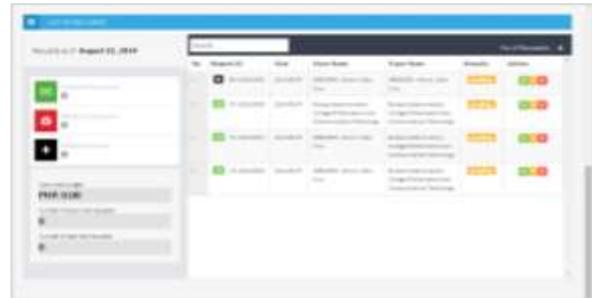


Figure 9. Assistance Transaction Screen

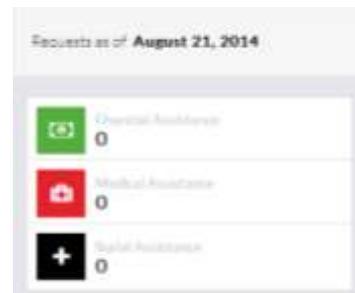


Figure 10. Summary

Add Request Page – This page has the step-by-step procedure in adding request. There are 3 steps; (1) selecting/choosing the type of assistance, (2) getting the information and (3) verifying the information.

Step 1 Choosing Type of Assistance – In this step, the user is allowed to choose the type of assistance being requested for. After choosing the type of assistance, the **Next** button will be enabled for *Step 2*. The list of options in the dropdown box includes *Financial Assistance*, *Burial Assistance*, and *Medical Assistance*. Each colour in the *Step 2* represents the type of assistance that can be requested.

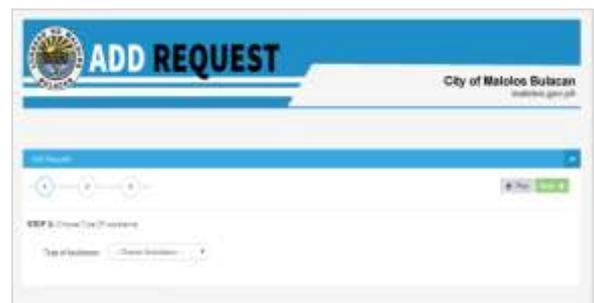


Figure 11. Add Request Screen

Step 2 Get Information – The users need to fill up the required fields in Step 2 to check if there is any existing request under the same name. Then, the

user is now allowed to cancel or update the specific request. After filling up the required fields in *Step 2* the **Next** button will be enabled for *Step 3*.

The figure shows the fields to be filled up in the Payor’s section. This shows the automated search for requests that has the same information with the current payor’s information. This will allow the user to edit, view and delete the request that will appear on the table. Information to be filled up in the payor’s section is the information of the person or the organization that will apply for assistance.



Figure 12. Payor’s Section

section. Payee is the person or the organization that will receive the assistant. Example of payee is the hospital where the payor is being admitted or the funeral parlor that provide service for the payor.



Figure13. Payor’s Information

Step 3 Information Summary – This will summarize the information being encoded by the user. The user may confirm the request by clicking the checkbox located at the bottom-left of the system “Confirm Information, Click next to Continue”, and then the request will be saved in the database which is “pending” by default. The figure below shows the screenshot of the Information Summary.



Figure 14. Information Summary

Graph page – This page shows the statistics of all the requests, depends on what the user wanted to retrieve, in a graphical representation. The developer used HighCharts, it is one of the most widely used plug-in for web application for creating graphs and the most suitable plug-in for Bootstrap framework.



Figure 15.1 Graph 1 Screen

Text field to identified the accumulated requests in a specific range of dates. Once the **View** button is hit, it will show the number of requests summed based on type of assistance for each of the specified date, represented in a bar graph. As a special feature for HighCharts, it will allow you to download the displayed graph by clicking the toggle button located at the top-right corner of the chart and choose what type of file they wanted to download.

If the graph 1 shows the number of requests for a specific date, the graph 2 shows the number of requests based on location either ‘Malolos’ or ‘Outside Malolos’ area. It shows a stacked bar chart that will allow you to see the division of requests depending on its status.

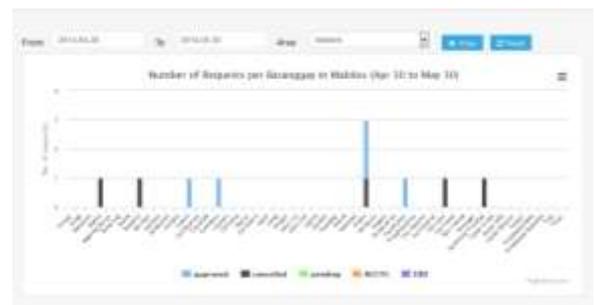


Figure 15.2 Graph 2 Screen

Reports Page – This page shows the generated report by the user. The filter is divided into four (4) categories, ‘Request Status’, ‘Date or Period’, ‘Location’ and ‘Sort by’. The **View Table** button will show the list of requests and generates a PDF document.



Figure 16. Report Page

Generate PDF – By clicking this button, the system will generate a PDF file in another tab in the web browser. This includes the lists of the request and the statistics of every type of assistance. The generated report will show total approved amount, total declared amount, percentage of approved amount that is equal to the numbers of approved requests and the total amount regardless of its status, and the percentage and total amount of approved requests.

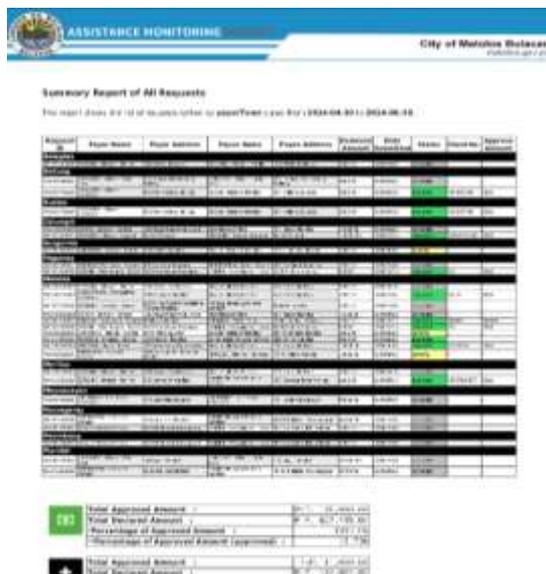


Figure 17. Generating Reports

Software Evaluation

Table 1 below shows the summary of the evaluation of the Assistance Monitoring System (AMS). The Assistance Monitoring System garnered a grand mean of 4.17, interpreted as “**Very Good**”. The evaluators agree that the overall performance of the system conformed to the given criteria. **Functionality** was rated as the highest with 4.32, “**Reliability**”, “**Usability**”, “**Maintainability**”, “**Portability**” and “**Training and Documentation**” were also rated “**Very Good**”.

Table 1. Summary of Evaluation

Indicators	Mean	Interpretation
Functionality	4.32	VERY GOOD
Reliability	4.24	VERY GOOD
Usability	4.29	VERY GOOD
Maintainability	4.11	VERY GOOD
Portability	4.06	VERY GOOD
Training and Documentation	4.00	VERY GOOD
GRAND MEAN	4.17	VERY GOOD

VII. CONCLUSIONS

The Assistance Monitoring System is an integral part of the Local Government Automation System of the City Government of Malolos in Bulacan that has the objective to fully transform the manual operations to digital automation. The development process of this system utilized the waterfall model. There are several features integrated in this system which conformed to the requirements as identified in the requirements specification phase. Trainings for the users were initially conducted. The Assistance Monitoring System focuses on listing and tracking the assistance transactions in City Government of Malolos every day. AMS was evaluated in terms of Functionality, which was rated as the highest with 4.32, “**Reliability**”, “**Usability**”, “**Maintainability**”, “**Portability**” and “**Training and Documentation**”. The system garnered overall rating of 4.17 interpreted as “**Very Good**”. The functions of the system have been tested and persuasive enough to deliver timely and accurate outputs.

VIII. RECOMMENDATIONS

Based on the aforementioned conclusions, the following recommendations were drawn:

1. Several training sessions for the users of the system is recommended to ensure the efficiency of the system operations.
2. Documents and manuals should be readily available for easy system operation reference.
3. A secured online version of the system may also be considered by Local Government Unit.
4. Further improvements and studies may be conducted as need arises and technology advances.

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