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Utilization of Business Intelligence Tools in Managing Resources and Assets in the Local Government Unit

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Abstract*— *The City Government of Malolos consists of the Mayor's Office, Human Resource Management Office, City Administrator's Office, City Administrator's Office & City General Service Office, City Budget Office, City General Service Office, City Economic & Enterprise Development Office, City Engineering Office, City Local Civil Registry Office and City Health Office. In relation to the study, General Services Office guarantee the smooth operation of the City Government of Malolos that is closely linked to the daily life of the people and performs wide ranging research activities; the General Services Office department performs personnel asset management and welfare management. Every month the General Services Office of has to prepare the following reports: a) the Fixed Assets and Supplies Accountabilities Report (also known as FASAR); and monitor all the records of each regular employee's monthly maintenance of cars and also other assets that was loaned on a particular employee. The General Services Office manages encoding of every data, searching, tracking, and also in producing monthly report. Through the utilization of the Fixed Asset Management System for the General Services Office managing of their assets can be done more efficiently. The utilization of Business Intelligence tools that will handle all the records of accountabilities of the City Government employees and to keep track of those accountabilities and even to produce accurate and timely reports. It may also help them in identifying ICT resource requirements and formulating the information systems plan and achieve the General Services Office main objective to set and manage the overall account for the Local Government Unit.

Keywords*— *Business Intelligence Tools, Asset Management, General Services Office, Local Government Unit, Fixed Asset, Fixed Assets and Supplies Accountabilities Report

I. INTRODUCTION

The adoption of Information Technology (IT) in organizations or companies has been growing at a rapid pace. Consequently, both international and national, large, medium, and even small scale businesses as well as organization make their own way of adapting the well known technological advancement which in to grab the immense advantage of global competitiveness.

Nowadays, organizations rely on Business Intelligence tools for their daily operations, in terms of protecting and managing IT assets. Assets are formally controlled and managed within larger organizations via the use of asset tracking tools that monitor the purchasing, upgrading, servicing, licensing, disposal, etc., of both physical and non-physical assets that has been tested and proven to lessen the complexity of manual processes conducted by most people. The advent of this technology and its variety of benefits have been made conducting business easier and more accessible, these are one of the capabilities Information Technology asset management involves the management of IT infrastructure like computer, monitor, keyboard and even software installers.

IT asset management helps in tracking and configuring all IT devices within one information system, it also includes the detailed analysis of all the assets of the organization. IT asset management involves the managing of the existing equipment and other physical assets. The objective of asset management is to maximize the use of an asset. In managing the asset properly, it does not only maximize the life or the use of an asset but it also improves the production costs and quality that the assets can provide. Managing the assets includes the regular maintenance of the asset and keeping it in working condition. It also involves replacing it when it becomes obsolete or too costly to operate and maintain.

II. BACKGROUND OF THE STUDY

The province of Bulacan has a total land area of 279,610 hectares or roughly 15 percent of the total area of Central Luzon, the biggest Philippine island, and 0.9% of the country's total land area. The province has 21 municipalities, 3 component cities and 569 barangays. These are the Cities and Municipalities that are located in Bulacan the Angat, Balagtas, Baliuag, Bocaue, Bulakan, Bustos, Calumpit, Doña Remedios Trinidad, Guiguinto, Hagonoy, Malolos City, Marilao, Meycauayan City, Norzagaray, Obando, Pandi, Paombong, Plaridel, Pulilan, San Ildefonso, San Jose del Monte,

Santa Maria, San Miguel, San Rafael. Malolos City in the south-western part is the capital of the province. The City Government of Malolos consists of the Mayor's Office, Human Resource Management Office, City Administrator's Office, City Administrator's Office & City General Service Office, City Budget Office, City General Service Office, City Economic & Enterprise Development Office, City Engineering Office, City Local Civil Registry Office and City Health Office

A. Conceptual Framework

The study Utilization of Business Intelligence Tools in managing Resources and Assets in the Local Government Unit follows the process called IPO that stands for Input-Process-Output. The IPO model is a general system model and used to convey systems overview and it is a preliminary investigation tool in systems processes as shown in Fig. 1 the first frame of the diagram is the input which refers to all raw materials required in the development and producing output. The most common input includes the user requirement, research done by the researcher, data gathered through interview, development tools and techniques, and the review of the related studies and literature that will define the system process.

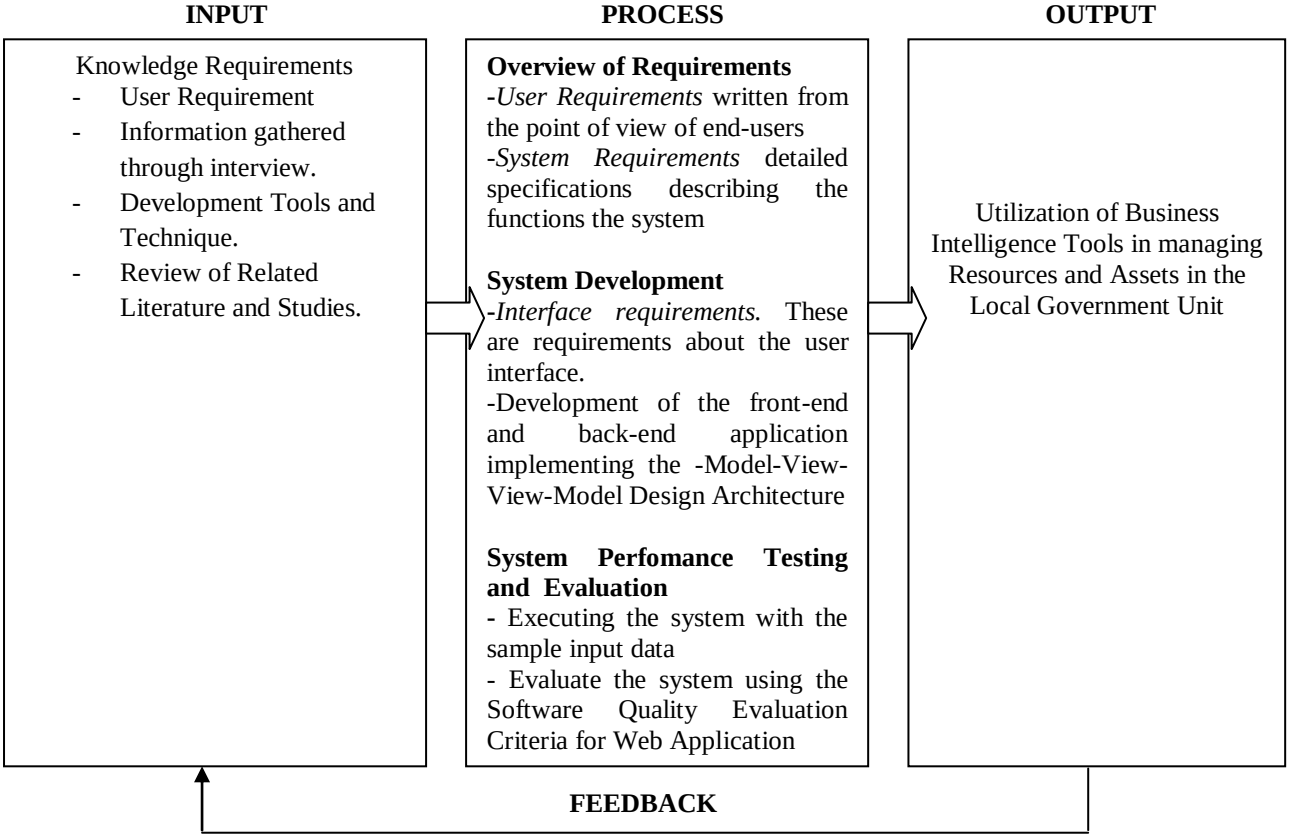

Figure 1 Theoretical Framework

The second frame is the processing side which involves different stages. The first stage includes planning and analysis which discusses the overview of the requirements such as: User Requirements, System Requirements and converting into technical aspect resulting of programming and development. During this activity the researchers discovers ambiguities and inconsistencies in the transaction management particularly in the General Services Office for the City Government of Malolos. The result of the analysis is a system model annotated with attributes, operations, and associations. Interface of the system is properly lay-out as what has been planned during the Overview of Requirements stage. Development stage includes the programming side such as the development of the front-end application and back-end application. For better quality, System Performance Testing and Evaluation is being applied under this stage, the differences between the system and its model are found by executing the system with the sample input data.

During the implementation stage the developed Resource and Asset Management for the City Government of Malolos becomes operational. This includes user training and software installation. The maintenance part will accommodate all necessary enhancements to the system as well as correction of any error encountered. Upon completing all the stages in the process, the final output will be a fully functional Resource and Asset Management System for the City Government of Malolos.

B. Hardware Architecture

The hardware architecture of the local government automated system presents a configuration based on existing hardware of the city government offices and new hardware required. It is based on the Intel® Xeon® E3-1200v2 product family architecture, using one physical server. Additionally, the logical perspective is provided as well. Finally estimates of the system's throughput in terms of hardware resources/load are provided.

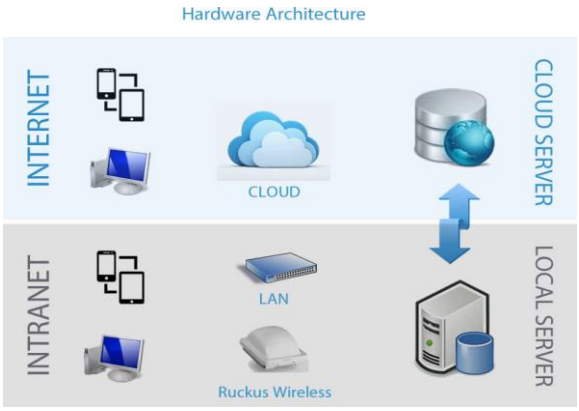

Figure 2 Hardware Architecture

C. Software Framework

The local government automated system will be the widely used open source software architecture, commonly known as LAMP (Linux, Apache, MySQL and PHP). Building the web application that will run seamless in both local and cloud. Moreover, maintaining source codes will be much easier for the project. To easily manage the development, the project will use an online source version repository (SVN) which will provide easy access to students in uploading and testing their work. Also, downloading libraries created by other group can be done to maximize the core of the system. In addition, the group will be using backend and frontend framework to develop the local government automated system.

PHP Framework

Laravel is a web application framework with expressive, elegant syntax. Laravel attempts to take the pain out of development by easing common tasks used in the majority of web projects, such as authentication, routing, sessions, and caching.

Frontend Framework

Twitter's Bootstrap is an excellent set of carefully crafted user interface elements, layouts, and javascript tools, freely available to use in your next web design project.

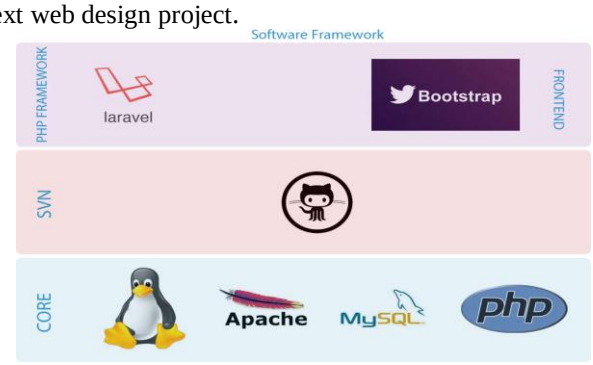

Figure 3 Software Framework

Table 1 Module Definition

No.	LGAS015
Department	City General Service Office
Module	FAMM – Fixed Asset Management Module
Description	Just like Inventory Management Module, Fixed Asset Management Module manages all acquisitions of fixed assets and monitors the depreciation, amortization and revaluation of a machine, building and equipment. It also tracks the movement from one department to another or from one assigned personnel to another. Insurance and annual maintenance are also monitored by the module to ensure extreme cautions in managing the assets.

III. EVALUATION AND INTERPRETATION

This section presents the analysis, interpretation and implication of the summarized test results, as well as observation on the limits of the system capabilities. It also discusses the test data used, and the results of the tests. In order to determine the summarized results, the researcher gathered all the data through the evaluation of the system.

The respondents of the evaluation consisting of six IT Experts (6), City Government General Service Office Head (1), General Service Office Employee (3) and IT Students (15). The interpretation and presentation of the tables discuss the overall mean distribution in each of the criteria. It also shows the interpretation that ranges from Poor, Fair, Good, Very Good and Excellent as the highest interpretation of the mean distributions.

Table 2 Respondents Of The Evaluation

Respondents	Frequency	Percentage
IT Experts	**6**	**11**
City Health Office Employees	**14**	**25**
IT Students	**34**	**62**
TOTAL	**54**	**100**

An instrument used to assess the operational feasibility of the system. The following criteria were provided in order to evaluate the developed system: (a) Functionality, (b) Reliability, (c) Usability, (d) Maintainability and (e) Portability, (f) Training and Documentation.

The researcher used several tools in gathering data needed for the study. The following were the tools used in gathering the data. During the evaluation of the developed system, the researchers distributed questionnaires to the respondent of the system and was evaluated by a pool of six experts: an Information Technology Developer / Consultant with three years of experience with system development and five Associate Software Engineers with two years of experience in the IT Industry, and from the target client the developed system was evaluated by the City General Service Head and City General Services Office Employees.

Table 3 Five Point Likert Type Attitude Scale

Scale	Range	Descriptive Rating
1	1.00 – 1.49	Poor
2	1.50 – 2.49	Fair
3	2.50 – 3.49	Good
4	3.50 – 4.49	Very Good
5	4.50 – 5.00	Excellent

Table 3 Summary Of The Weighted Mean For Fixed Asset Management Module For The City Government Of Malolos

Criteria	Experts Response	
	Weighted Mean	Description
Functionality	3.95	Very Good
Reliability	3.89	Very Good
Usability	4.19	Very Good
Maintainability	4.1	Very Good
Portability	3.86	Very Good
Training and Documentation	3.81	Very Good
Overall weighted mean	**3.97**	**Very Good**

The data reveal that the system was rated “Very Good” in terms of Functionality (3.95); Reliability (3.89); Usability (4.19); Maintainability (4.1); Portability (3.86); and Training and Documentation (3.81). Comparatively lower ratings were given to the system in terms of Training and Documentation (3.81). As a whole, the obtained mean value of 3.97 indicates the system was “Very Good”, and was recommended for use in City General Services Office.

To ensure the functionality of the Fixed Asset Management Module for the City Government of Malolos its Functionality, Reliability, Usability, Maintainability, Portability and Training and Documentation were evaluated.

In terms of functionality, the experts graded the developed system as “Very Good” in terms of Suitability with a weighted mean of (4.07) which indicates that functions are appropriate to specifications. In terms of Accurateness, the respondents mark as “Very Good” with a mean performance of (4.07) which means Functions are correct. In terms of Interoperability, Software can interact with other components or systems the respondents gave a “Very Good” remark with a mean performance of (3.93). The compliance indicator that define adherence to standards recorded a mean value of (3.81). The Security indicator that measures provision for security requirements the respondents mark as “Very Good” with a mean value of (3.85). As a whole, the proposed system recorded a mean value of (3.95) which means that the system is excellent in terms of Functionality.

The Reliability of the Fixed Asset Management Module for the City Government of Malolos rated as “Very Good”: Absence of failures of the system was (3.7) and Fault Tolerance (3.7) was very good. In terms of the ability to produce correct computations, output or reports the respondents gave a “Very Good” remarks with a mean performance of (4.3). It may be safely concluded that the system has the capability to withstand client breakdown and hold independent running application.

The Usability of the Fixed Asset Management Module for the City Government of Malolos rated as “Very Good.” Among the four items presented, item (1) Ease of which the systems functions can be understood got the highest mean rating of 4.26 which is “Very Good” as perceived by the system evaluators. The Learnability criterion got (4.0), Operability (4.3) and Provision for comfort and convenience got a mean rating of (4.19). It may be safely agreed that the system is visually appealing and at the same time easy to learn.

Maintainability of the Fixed Asset Management Module for the City Government of Malolos rated as “Very Good”: the ability to identify the root cause of a failure within the software got a weighted mean of (3.81) Very Good. Software adjusts well to different screen dimensions, color depths, and font sizes. Different interfaces can be chosen to suit

beginners and more advanced users got a weighted mean of (4.52) Excellent; and ability of the software to be easily stability. Characterizes the sensitivity to change of a given system (3.96) Very Good. It may be safely concluded that the system exhibits robust maintainability measures and presented a user-friendly interface of the system.

Portability of the Fixed Asset Management Module for the City Government of Malolos is rated as "Very Good": the application has the ability to change to new specifications or operating environments (3.81) Very Good; the application provides different options available for installation and the software is easy to install (3.78) Very Good; and the ease of exchanging a given software component within a specified environment and system coupling (3.96) Very Good. In terms of provision for portability of operating system used the system got a weighted mean of (3.81), absence of other software requirements such as runtime system or standard database management engine got a weighted mean of (3.86).

IT experts rated Training and Documentation of the Fixed Asset Management Module for the City Government of Malolos as "Very Good": every data inserted is correct was rated (4.00) Very Good; Documentation content is organized in a logical manner and the provision for help component got a weighted mean (3.85) were Very Good. It may be securely concluded that the system's provides guides and printed documentation and all information is readily accessible for reference.

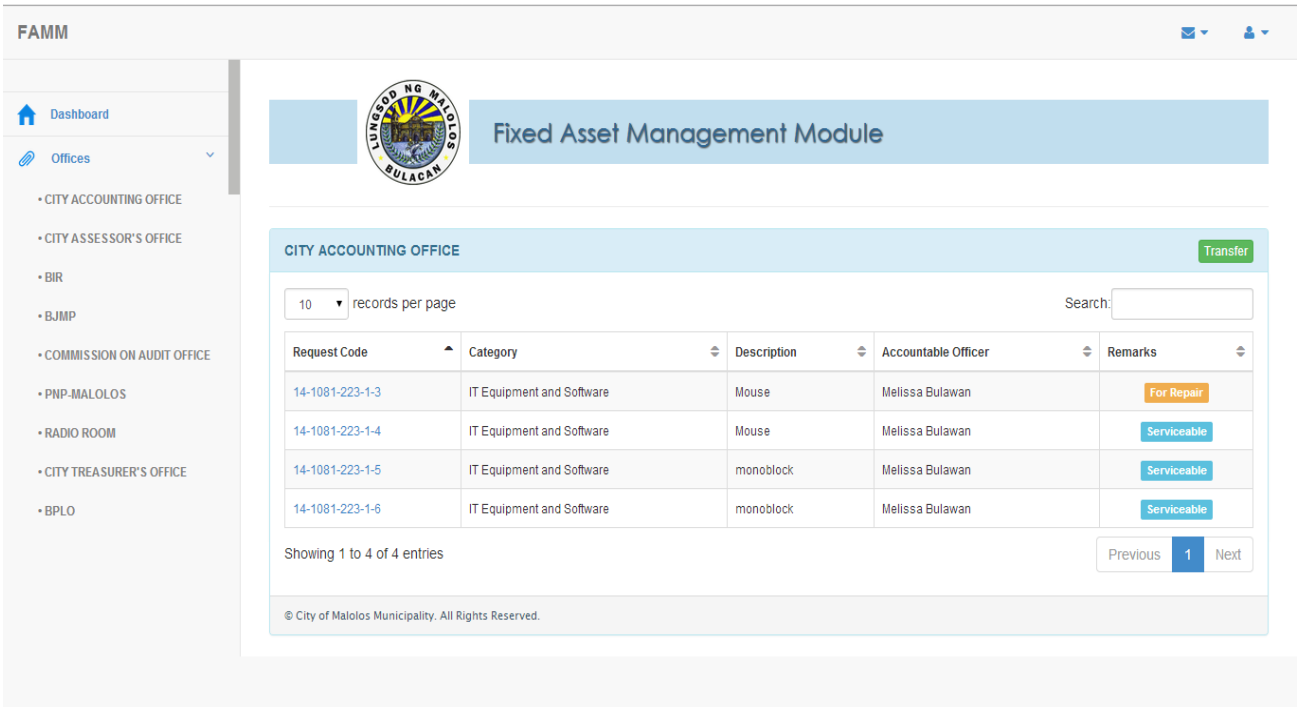

Figure 4 Master List of Acquired Assets per Department

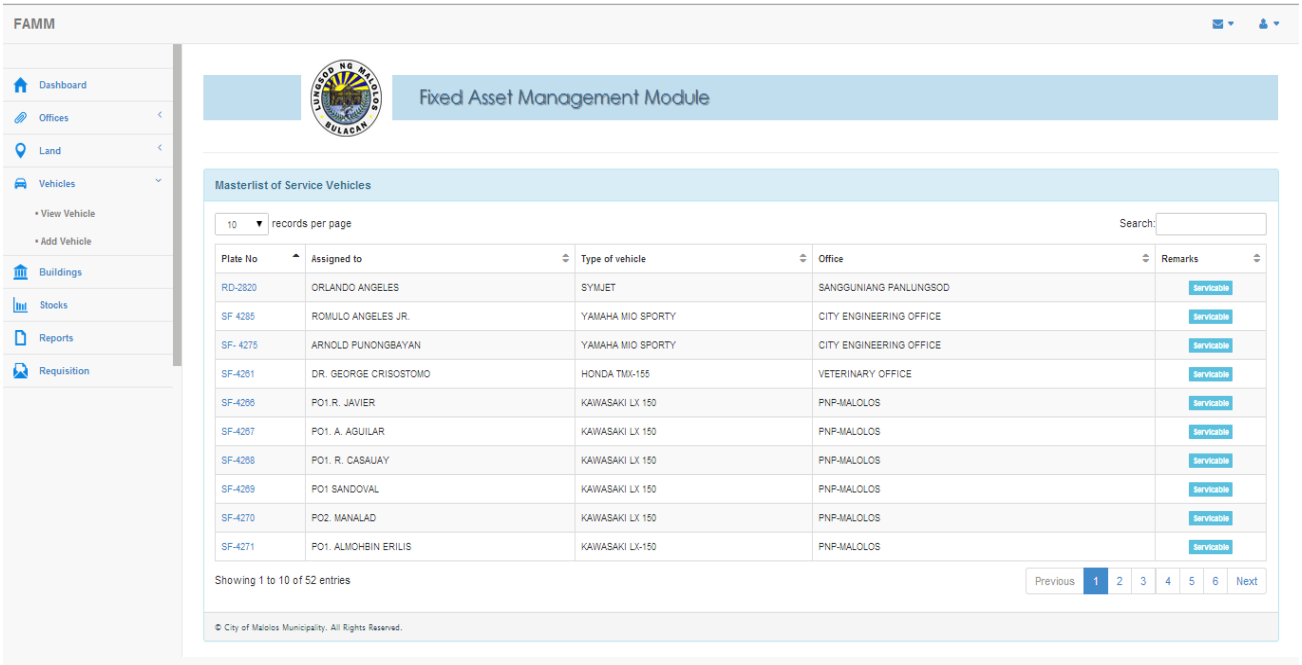

Figure 5 Master List Vehicles

IV. CONCLUSIONS

This section gives an assessment to the development of Fixed Asset Management Module for the City Government of Malolos. In this study, the explanation and justification on the project objectives were discussed. The general objective of this study is to develop a Fixed Asset Management Module for the General Services Office, through the use of the developed system, tracking and managing of fixed asset is much easier and retrieval of records from the database is possible. The significant features of the Fixed Asset Management Module for the City General Office are the following:

The develop system aid in performing the function of the General Service Office department personnel such as tracking of asset, file and record management of an affixed asset to each employee/faculty from request to maintenance to disposal is properly monitored. The system permits the system administrator and the General Service Office Department to manage the information of each employee and track history of logs regarding affixed asset. The system also covers the evaluation generating of reports needed such as total number of acquired asset per department. The on-line dashboard provides notification of total asset requested, in stocks and for disposal. The said system also permits the viewing of asset details and user-level access for the employees. The history log features records all transactions, changes or operations that the system users perform.

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