



Design, Development and Implementation of Purchasing Management System

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Abstract: In this work, the proponents created a purchasing management system using Excel VBA macro program in assisting the purchasing department of Lyceum of the Philippines University – Laguna (LPU-L). The program shall be able to help the client in getting inputs and sending items virtually to the administrator. The program responds to the requested items of the clients. The admin shall then canvass the requested items. After successful canvassing, the admin shall then input the prices of requested items and it will be sent to the client for the notice of payment. These specifications were all done in the Microsoft Excel (as its main repository) with the use of built-in functionalities of Visual Basic for Applications (VBA). It was realized that the program created was able to help the client and admin of purchasing department in the requisition and approval of items. The developed program was able to simplify their tasks. The program was able to provide them a tangible monitoring and recording system of essential data and information. The system was tested for requisition and approval of items as evidenced in different screen shots. Indeed, the system's work is successful.

Key Words: Purchasing management; VBA macro program, Microsoft Excel, Repository

1. INTRODUCTION

1.1 Background of the Study

The acquisition of goods and products nowadays have been more convenient than before. Technology has already taken part in the lives of every human; from the light bulb we often use everyday up to the computers. Combined with the system and technology, the proponents will make use of high-level programming language in the implementation of the purchasing system. The proponents will automate the manual purchasing

processes using Excel Visual Basic macro program. The proponents will establish a Graphical User Interface and it will be linked with Microsoft Excel, which will serve as the central repository of the entire system. With the use of this software, the proponents will be able to monitor and control the vital information needed and maintained by purchasing department of the institution.

The core responsibility of the purchasing department is to purchase the required goods and services in running LYCEUM OF THE PHILIPPINES – LAGUNA. As its viable objective, the department is responsible for implementing cost-

cutting measures. It is also responsible for negotiating competitive price and obtaining quality products. Ergo, it assures on-time delivery. Supplier selection and management are other key objectives. The principles of Purchasing Management include the following: 1. buying the Material at right PRICE, 2. Buying the Material at right QUALITY, 3. in the right QUANTITY, 4. at the right TIME, 5. from the right SOURCE, 6. at the right PLACE, and 7. with right mode of TRANSPORT.

It was observed and analyzed that one big problem encountered by the purchasing department is that the clients often request items with lacking specifications, thereby delaying the approval of such items. The person in-charge will have to coordinate again to the client and ask for further specifications. Also, speed and efficiency is a big problem when it comes to manual labor because there are many activities to be done in order to organize each elements in the inventory. With this proposed system, the proponent is confident to mitigate the problems encountered through tangible purchasing management system. And with this system, there will be minimized human errors since the system will do all the required task in purchasing for a certain department or faculty. The admin needs only to click the right buttons in order to make the system do its functionality.

The proponents took advantage of the Visual Basic Programming functionality of Microsoft Excel in the implementation of the system. Visual Basic (VB) is a programming environment from Microsoft in which a programmer uses a graphical user interface (GUI) to choose and modify preselected sections of code written in the BASIC programming language. Microsoft Excel is a software developed and manufacture by Microsoft Corporation that allows users to organize, format, and calculate data with formulas using a spreadsheet system broken up by rows and columns. With the use of this IDE, the programmers came up with a virtual Purchasing System that will assess the needs of clients and the admin in a much faster and easier way compared to the manual way [1][2][3](Caldo, 2012).

1.2 Objectives of the Study

The focal objective of the study is to create a program to help the client and admin of purchasing department in the requisition and approval of items.

- This study aims to:
- Design a system that will ask for clients' option.
 - Ask the client for the items to be requested.
 - Display the items requested to the admin.
 - Specify prices of items via admin approval.
 - Assist the client in purchasing for the required amount.
 - be able to print the requested items in tabular form in the Excel environment.
 - Quicken the required tasks to be done by the admin.
 - Provide efficiency in managing the admin's required items.
 - Minimize human errors in placing and transferring of items to various excel files that may cause confusion.

2. METHODOLOGY

2.1 Excel VBA Macro Program

In this study, the proponents will use Excel VBA macro program for the simulation of the project. The system is a multi-purpose system, which will display the requested items of the client and send it to the admin for approval. The system shall also be able to calculate the total amount to pay and notify the admin if transaction is approved. Most importantly the entire purchasing cycle will be covered by the system. This includes the following: Get Requirement from User Department, Send the INQUIRY to the Vendors (Suppliers), Get the QUOTATIONS from Vendors, Make COMPARATIVE Statement, NEGOTIATE Fix the Price and Terms & Conditions, Place the ORDER to the right Vendor, FOLLOW up with Vendor and INVOICE & PAYMENT. The Purchasing Management Process will include four major stages: 1. Purchasing Planning, 2. Purchasing Tracking, 3. Purchasing Reporting, and 4. Negotiate.

2.2 Block Diagram

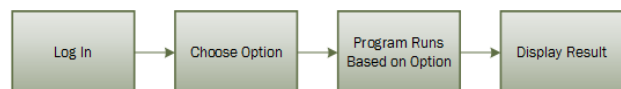


Figure 1: Block diagram of the project

Figure 1 is the block diagram of the project. The program will ask for a registration. Then, the user will be prompted to input their registered account and will activate it. Then the user shall choose 1 of 7 options and the program will show what's next based on the option chosen. Then each option will display an output and it'll display the result.

2.4 Purchasing System Process Flow

For Client Privileges:

1. Log in screen prompted. Input client password.
2. Choose an option.
3. -If Option1 selected, accept input from user. Inputs item name, description, quantity, supplier, etc. Transfers to Requested Items sheet. A copy is saved in the Admin's PC for briefing. Go back to Step 2.

-If Option2 selected, open "Requested Items" sheet.

Go back to Step 2.

-If Option3 selected, input item name or supplier name. Searches "Requested Items" sheet for a matching name.
 Go back to Step 2.

-If Option4 selected, clear contents of "Request Items".

-If Option5 selected, Type in the message to send to admin.

Contents are printed to a Text file and saved to admin's PC. Go back to Step 2.

-If Option6 selected, log out account.

4. Exit Program.

For Admin Privileges:

1. Log in screen prompted. Input Admin password.
2. Choose an option.
3. -If Option1 selected, Open Requests sheet. Content of the sheet is read from the saved worksheet file from the client. Go back to Step 2.

-If Option2 selected, open "Completed Requests" sheet.

Go back to Step 2.

-If Option3 selected, input item name or supplier name. Searches "Requested Items" sheet for a matching name.

Go back to Step 2.

-If Option4 selected, Open "Capex.xlsm".

-If Option5 selected, Type in the message to send to admin.

Contents are printed to a Text file and saved to Client's PC. Go back to Step 2.

-If Option6 selected, log out account.

4. Exit Program.

3. EXPERIMENTS AND ANALYSIS OF RESULTS

3.1 Functions of the System

The system accepts input from clients and displays the items in the system or in excel form. The system also takes in message from the admin and displays to the client.

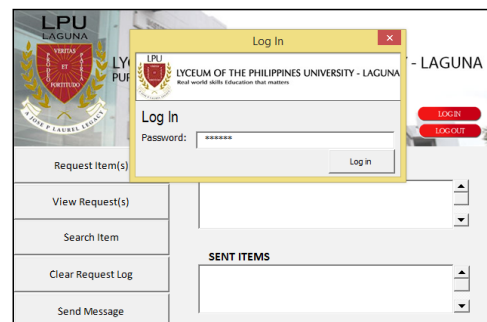


Figure 2 Log-in screens for client privilege



Figure 3 Main screen of the system

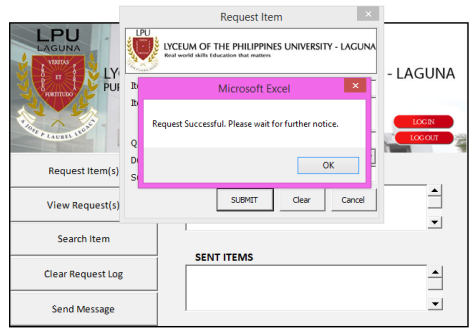
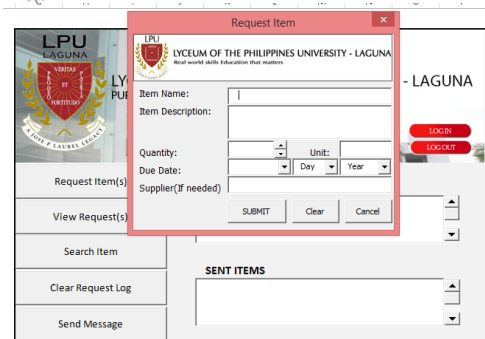


Figure 4 Screen shots for item requisition

The system does not accept incomplete specifications therefore, the admin does not need to back and forth to the client in order to get the details of the order, decreasing time and effort wastage.

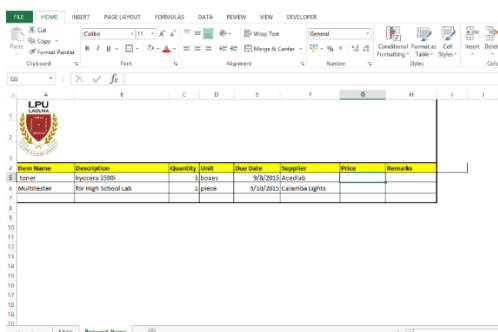


Figure 5 Requested item(s) sent to worksheet

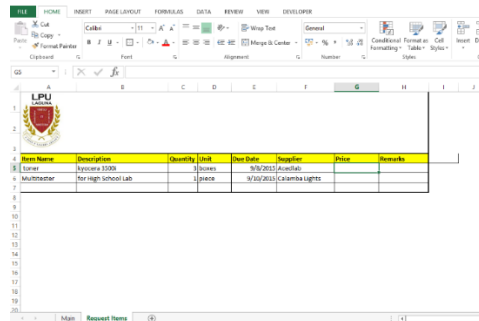


Figure 6 Viewing items

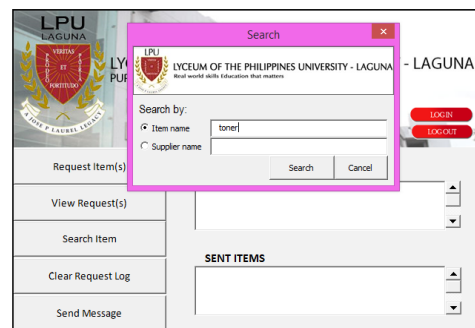


Figure 7 Searching items

Searching for items are made faster by the use of the search function of the system.

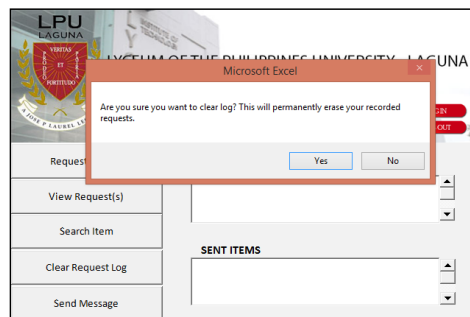


Figure 8 Message box prompts to warn client of permanent erasure of items logged.

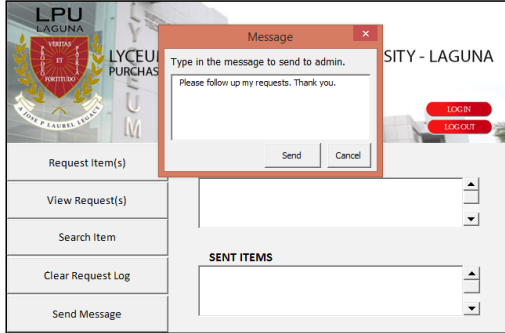


Figure 9 Userform shows and asks for client's message to send

Messaging functionality provides swifter information exchange between admin and client if ever further information is required.

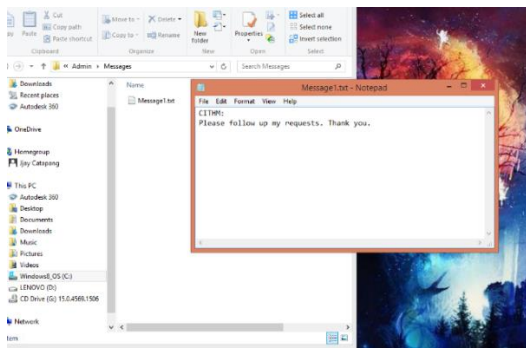


Figure 10 System outputs to a text file and saved in admin's pc.

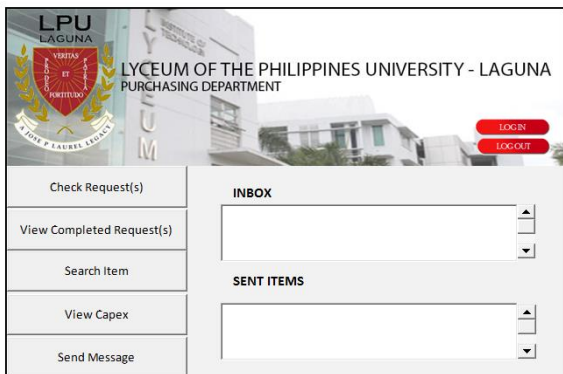


Figure 11 Admin's main screen

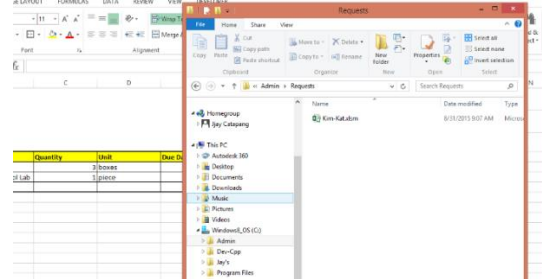


Figure 12 Check requisition

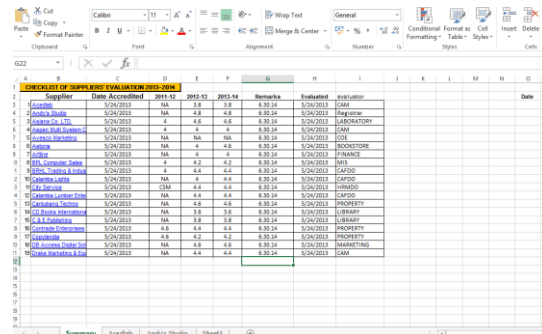


Figure 13 Opens "SuppliersMonitoring.xlsx" if YES is pressed

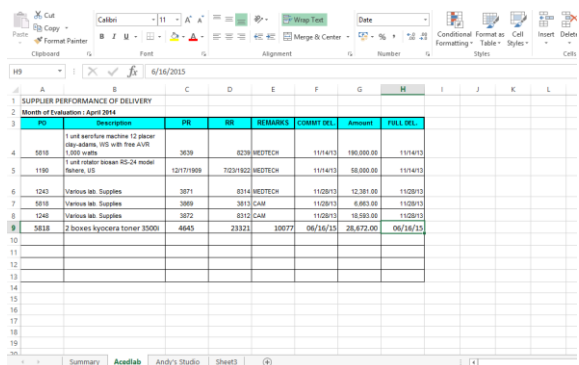


Figure 14 Programs searches for sheet name equal to inputted supplier name and transfers data to first empty row.

With this function, transferring of inventory items are faster and efficient compared to manual labor where human error is prone.

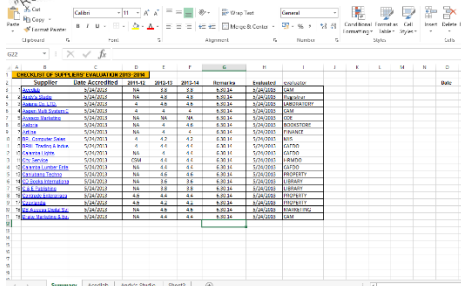


Figure 15 Opens “SuppliersMonitoring.xlsx”

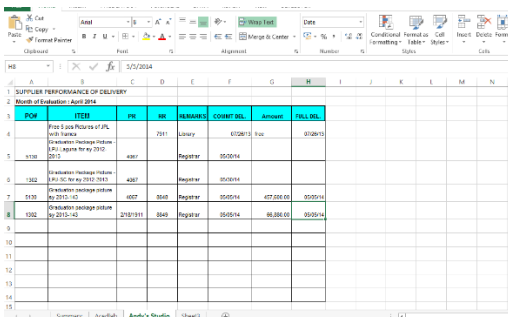


Figure 16 Searches sheets for equal supplier names in previous workbook

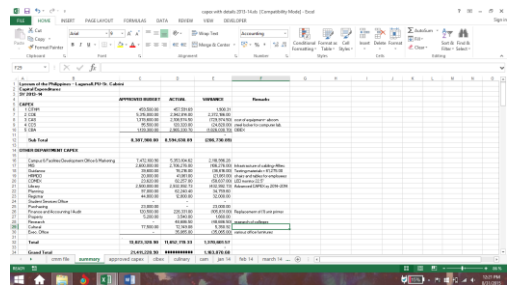


Figure 17 Opens “CAPEX.xlsx”

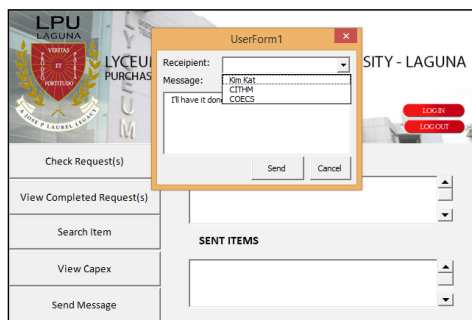


Figure 18 Userform shows and asks for admin’s message to send to a chosen client.

4. CONCLUSION

In this work, Excel VBA-based macro program was created to automate the manual process of purchasing management system. The developed program was able to help the admin and the client of purchasing department in simplifying their tasks. The program was able to provide them a tangible monitoring and recording system of essential data and information. The system was tested and it was tested for requisition and approval of items as evidenced in different screen shots in Section 3. Indeed, the system’s work is successful.

5. RECOMMENDATION

The proposed system has not yet gotten some proper statistics of the changes or improvements that took place after its testing. Although there are no negative feedbacks coming from the department, it is recommended that actual figures of the changes should be noted down in order to see the efficiency in its exact numbers in the long run. The proponents shall include the results of such test on future papers should they still be needed.

6. ACKNOWLEDGEMENT

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