

# A Study on the Development of Antique School Needs Management System (ASNMS)

Justin A. Abuela<sup>1</sup>, Archie Renz L. Aban<sup>2</sup>, Irade C. Piano<sup>3</sup>, Kenrick Agustin S. Secugal<sup>4\*</sup>

**Abstract:** This study deals with the development of an online Antique School Needs Management System (ASNMS), a system in the Department of Education (DepEd), Division of Antique, Office of Social Mobilization and Networking (SOCMOB), that can monitor the needs of every school in the province of Antique. It is a web-based system developed using an iterative model. The system was designed to have two (2) user types, which are the Administrator and the Head of every school. Each user has their own functions in every module. The Administrator authorizes the registration of new user accounts, while the head of every school can only request what the school needs. The system will be helpful to provide a faster assessment, monitoring, and procurement of the needs of every school under the supervision of DepEd, province of Antique.

**Keywords:** Antique school needs management system (ASNMS), DepEd, School needs, Iterative model

## 1. Introduction

Over these past years, the Department of Education (DepEd) of the province of Antique has been doing a good job of providing government services to personnel and staff of the different schools in the province. As an institution that handles affairs in the education field, problems concerning the quality of provided services arise due to the demands of the changing world. One of the common problems was the coordination during the annual event “Brigada Eskwela”, which is the DepEd’s annual program that engages all education stakeholders to contribute their time, efforts, and resources in ensuring that public schools are all set in time for class opening [1][2]. It involves physical cleaning, painting, repainting, and doing minor repairs to classrooms and their surroundings.

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<sup>1</sup> College of Computer Studies, University of Antique, Sibalom, Antique, Philippines  
Email: jabuela@gmail.com

<sup>2</sup> College of Computer Studies, University of Antique, Sibalom, Antique, Philippines  
Email: abanarchie23@gmail.com

<sup>3</sup> College of Computer Studies, University of Antique, Sibalom, Antique, Philippines  
Email: pianoirade013@gmail.com

<sup>4\*</sup> College of Computer Studies, University of Antique, Sibalom, Antique, Philippines  
Email: kenrickagustin.secugal@antiquespride.edu.ph (Corresponding Author)

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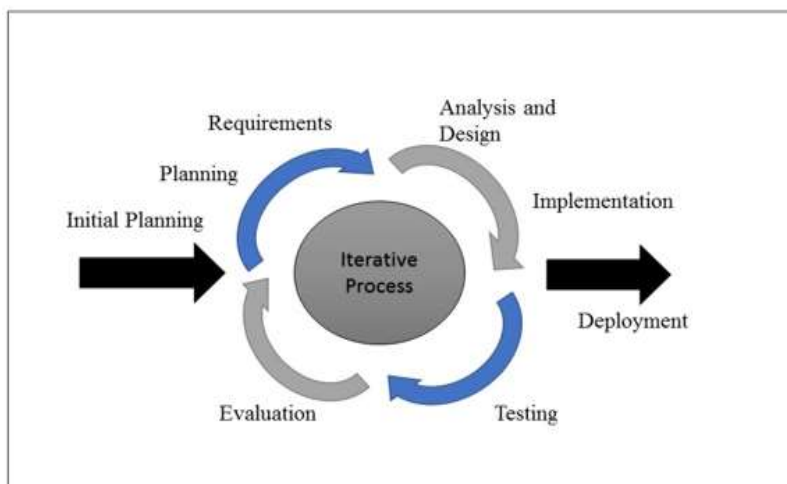
This study is conducted to address the difficulties of the Social Mobilization (SOCMOB) team of the School Governance and Operations Division (SGOD) office of DepEd, Division of Antique. They have a difficult time organizing each of the schools in the province in preparation for every annual Brigada Eskwela event. These problems include the schools' geographic location, accessibility of resources, communication between them and the said office, and registry of partners for sponsorship [3]. The schools' accessibility in a registry or directory of partners or sponsors for their school needs acquisition also faces various challenges [4][5]. In this regard, this study aims to help address these issues by developing the Antique School Needs Management System for easy access and processing of requests for school needs.

With the Internet available mostly everywhere nowadays, the DepEd – Antique School Needs Management System can cater to requests and address the difficulties and challenges of the office of SGOD. The proposed ASNMS is a web-based system that acts as a portal for every school in Antique to access a registry of available partners depending on their school needs that they require in order to participate in the annual event. The system can be accessed as long as there is available Internet connectivity or a Wi-Fi hotspot for mobile accessibility. If the problem of accessibility can't be addressed, then delays in organizing and preparing for this annual Brigada Eskwela event will likely be the main challenge.

The rest of this paper is organized as follows: Section 2 outlines the methodology used to develop the proposed ASNMS; Section 3 discusses the objectives, functionalities, and operations of the ASNMS; and Section 4 concludes the study.

## **2. Methodology**

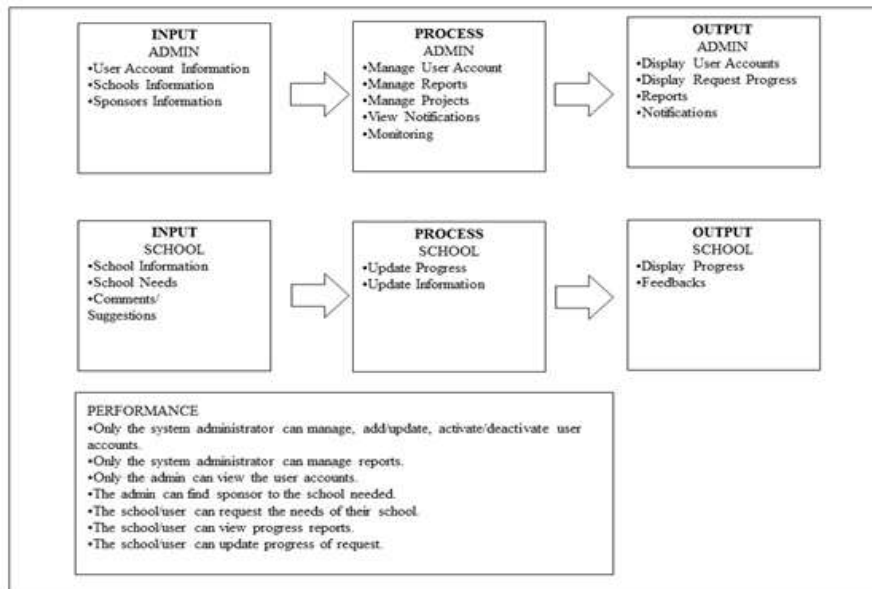
The proposed ASMS is developed using an iterative methodology, which begins with specifying and implementing a part of the system that can then be reviewed in order to identify further requirements. After a few test runs, the clients would send feedback to identify further changes and improvements to the system. This process is iterated until the clients are satisfied with the functionalities of the system and the system can be released for deployment. However, if they are not yet satisfied, an iteration process takes place to further improve and enhance the features of the system. Figure 1 depicts the iterative approach used in developing the proposed ASNMS.



**Figure 1.** Iterative Model

## 2.1 Planning Phase

In this stage, the concepts of ASNMS based on the requirements of the stakeholders and their viability are envisioned and prioritized. Interviews are conducted with the stakeholders to gather all the necessary information. The functionalities of the system are outlined but are not yet finalized for further improvements. As a deliverable of this stage, an Input-Process-Output operation diagram has been created, as shown in Figure 2.



**Figure 2.** Input-Process-Output Operations of ASNMS

The Input-Process-Output operations are divided into five components:

*Input:* The system will require the username and password of the Admin's user account, as well as the School Head's user account, to access the system.

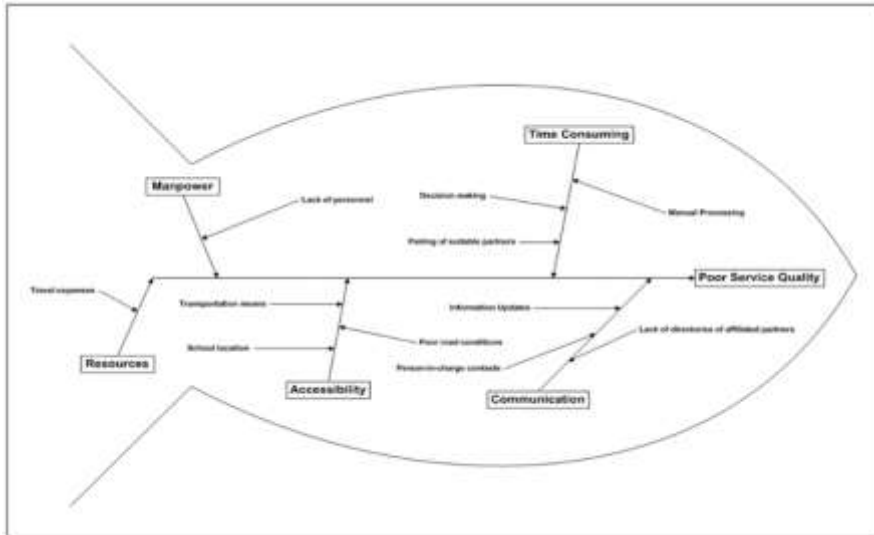
- The system administrator can add a new account for users or schools.
- The system administrator can search for a sponsor for the requester.

*Process:* The system processes the activities of Admin, School Heads, and Partners. Only the system administrator can add a new account for schools and partners, manage user information, update user accounts, change passwords, and manage reports about concerns and suggestions.

*Output:* After the processes and changes in the different users, the system will automatically show the output of the process. The system will display the request progress for every school.

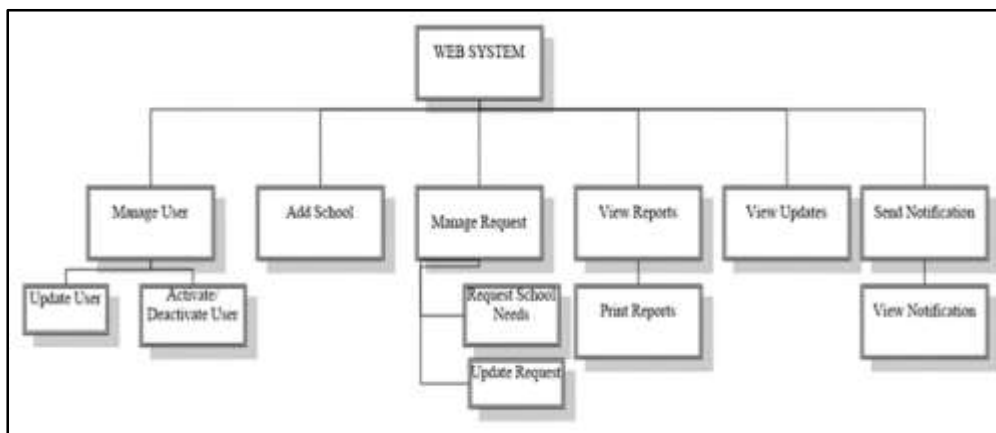
*Performance:* Since it's a web-based system, the functionality will be based on the speed of the Internet connectivity; the greater the speed of the Internet, the better the performance. The same goes with random access memory (RAM); the higher RAM capacity installed, means better ease of use for ASNMS.

*Control:* The Admin and School Heads are the users of the system. School Heads will be the ones who can request their school needs, send their concerns and suggestions in the comment section, and view the progress report of their requests.



**Figure 3.** Fishbone Diagram for the ASNMS

In addition to the Input-Process-Output operations diagram, a fishbone diagram, also called the cause-and-effect or Ishikawa diagram, is created, as depicted in Figure 3. This visualization tool can be used to classify the problems and identify their causes. For example, the reasons for having difficulties meeting school needs are as follows: manpower, time consumption, resources, accessibility, communication.



**Figure 4.** Functional Decomposition Diagram

Moreover, the functional decomposition diagram has been created, as shown in Figure 4, to illustrate the functional components of the proposed ASNMS.

## 2.2 Analysis and Design Phase

In this phase, the deliverables from the previous phase were analyzed to come up with the database model (shown in Figure 5), the system flowchart (shown in Figure 6), and the use case (shown in Figure 7). The graphical user interface (GUI) of the proposed ASNMS is also designed, as shown in Figure 8.

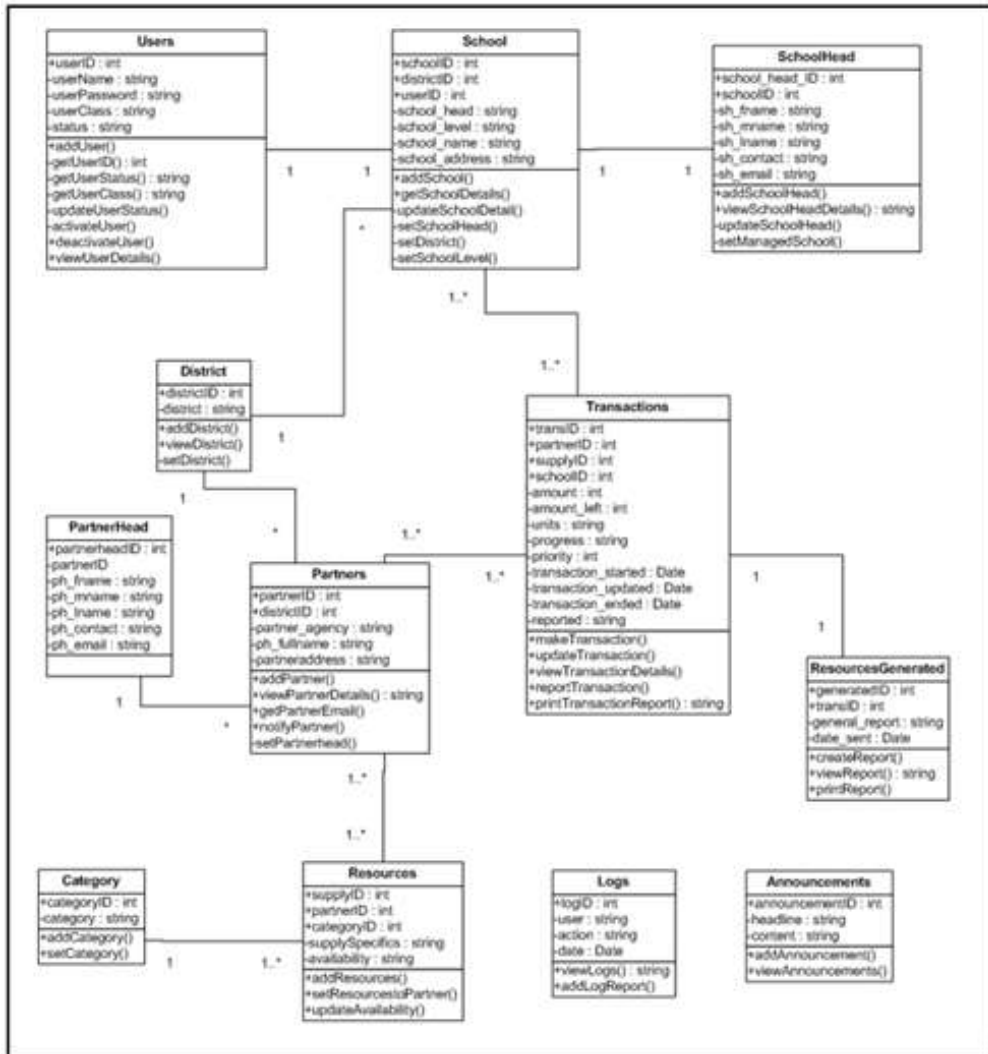


Figure 5. Entity Relationship Diagram

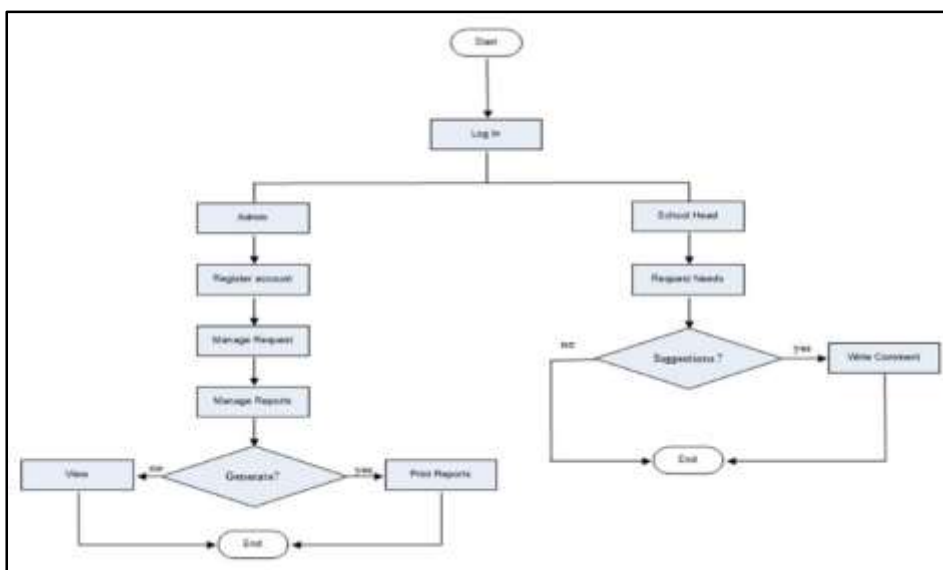
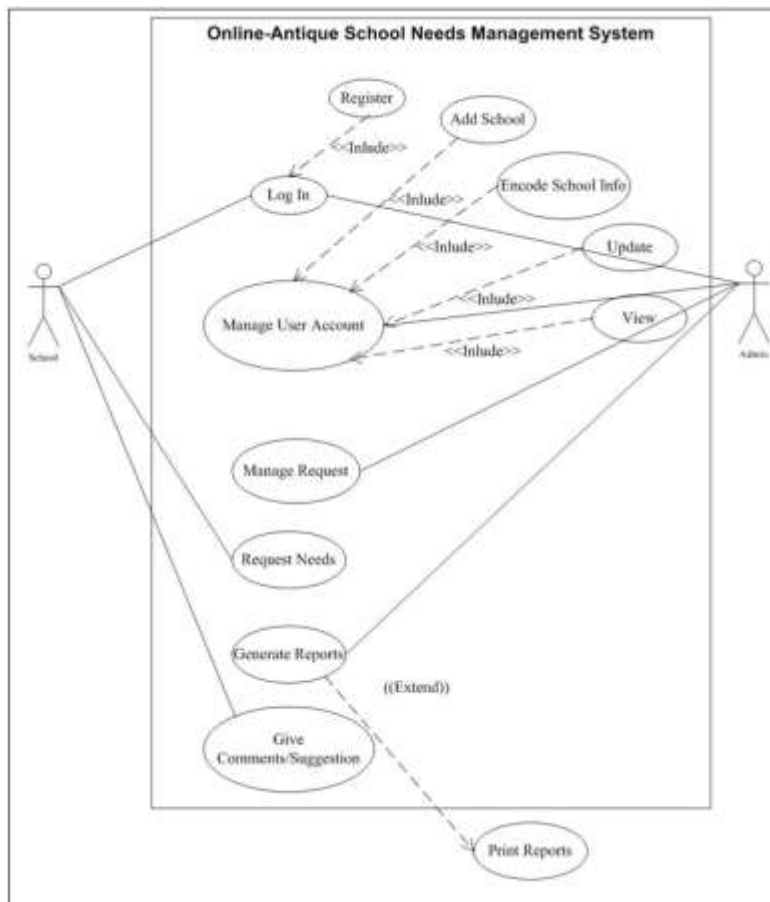


Figure 6. System Flowchart



**Figure 7.** Use Case Diagram



**Figure 8.** Graphical User Interface

### 2.3 Implementation Phase

In this phase, the proposed ASNMS is developed by coding, and the user interface is built, not fully developed for further improvements.

*Programming Environment:* The Admin user account can access user accounts, generate reports, and send notifications. The Principal/Head of the School can request needs, view notifications, and send feedback.

*Front End:* The HyperText Markup Language (HTML) is used to develop the front end of the system. It provides worthy development tools to all developers on any platform. HTML supports several programming languages, such as Visual Basic, and PHP, and it is applicable and suitable for system design.

*Back End:* JavaScript, jQuery, PHP, and MySQL were used to develop the back end of the ASNMS system. JavaScript and jQuery were utilized in hiding divisions inside HTML and generating the canvas chart for the dashboard. MySQL was used for the database of the system, which is an open source relational database system.

## 2.4 Testing Phase

This is the most important phase of the development, where the developed ASNMS system is set out to be tested in the field. The system is evaluated to see if it is functioning well. An example test case is shown in Table 1, indicating login unit testing.

**Table 1.** Login Unit Testing

1.0 Login	
Actors	Admin/School Head
Stimulus	The users will enter their username and password and click the Login button.
Response	The users entered the correct username and password.

## 2.5 Evaluation Phase

Once all prior stages have been completed, it is time to evaluate the developed ASNMS. The evaluation phase allows examination of ASNMS by clients, sponsors, and other outside parties to determine if the functionalities are working efficiently, the design is satisfactory, the system is usable, and other factors. Client's should review the system and send feedback if it satisfies them. If the system needs revision, changes will be incorporated into the system and adjustments will be made for another iteration process.

## 3. The Proposed ASNMS

The proposed ASNMS is a web-based data management system developed using the My Standard Query Language (MySQL) database, PHP Hypertext Preprocessor programming language, and cross-platform Apache, MySQL, PHP, and Perl (XAMPP) for local web-servers. For deployment, the system utilized Linux, Apache, MySQL, PHP (LAMP), shared hosting for the system server, along with data from 534 schools – 480 elementary and 54 secondary in the province of Antique – and an email function for notification.

The proposed ASNMS will include a double security module, that includes the login function and the activation/deactivation function of a user account. A dashboard module is also included for the moderator to analyze the statistics of the system within a certain period of time for future reference, a pairing function for the schools' and partners' transactions as well as a view list for all users to know the progress of their request, a log module for the moderator to monitor every activity going on in the

system, a comment section to let the moderator know of the opinion of the users both the schools and the sponsors, and a list of registry for the schools to know which sponsor to transact with depending on the school need that they are in demand as well as a registry for the sponsors to choose which school they are going to support depending on the availability of their resources. Any type of report can be printed.

The proposed ASNMS includes the following functionalities:

- A functionality that can provide communication for requesting school needs during an annual event.
- An Administrator Dashboard Module for analysis of the moderators, depicted in Figure 9. A dashboard module provides the moderators with a statistical view as to which school to prioritize, which school needs are mostly in demand, and records for future reference for their operation.



Figure 9. Admin Dashboard



Figure 10. User Login Form

- A user account management module to protect the system from unauthorized access. It would allow the administrator to register, log in, and log out, as shown in Figures 10 and 11. There are two types of users in ASNMS: Administrator/Moderator and School/Requester. Each user type has different functions and uses. Administrator/Moderator has all of the



abilities and functionality. Admin can perform functions such as creating, editing, activating, and deactivating users; admin can access all modules and records. ASNMS requires at least one administrator, but it is also recommended to have more than one in case the administrator is unavailable or is no longer with the company. On the other hand, the School/Requester is the most common of the user types. The School/Requester can request the needs of their school and can email the administrator for comments or suggestions.



**Figure 11.** User Account Update

- Entry module for projects where the information is inputted and processed, as shown in Figure 12.



**Figure 12.** User Account Update

- Integrate the database category module to provide an organized database for prioritizing of school needs and the availability of materials or resources.
- A feature to prioritize and decide can identify which are the most important requests, as shown in Figure 13.



**Figure 13.** Transaction Priorities

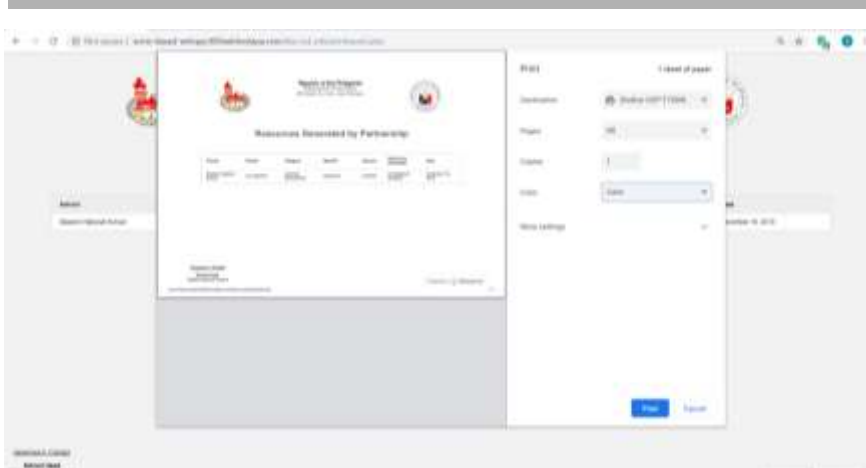
- Monitoring module that is used to track the changes in outputs and performance over time, as shown in Figure 14.



**Figure 14.** Statistics



**Figure 15.** List of Reports



**Figure 16.** Printing Reports

- Report Generation Module that will print statistical reports of projects, as shown in Figures 15 and 16.
- An announcement module to help everyone know what the upcoming events are.
- Additional features include:
  - Email notification that lets the head of school know if the request is in process.
  - Filter function to minimize the list of sponsors available according to the school needs requested.
  - Feedback Module to help Administrator/Moderator identify what items to provide to the School/Requester.

This system was designed and developed for the staff of SGOD to meet the needs of every school in Antique. This system is very useful to the staff as well as the different schools in Antique. This proposed system will benefit the following:

The staff of SGOD can easily provide for the needs of every school for the upcoming events using this portal without visiting the school.

The Principal/Head of school can easily request what the school needs for upcoming activities. They don't need to travel to meet their needs.

#### **4. Conclusions and Recommendations**

This study has proposed the Antique School Needs Management System (ASNMS), which can help lessen the efforts to communicate between schools and the SOCMOB team of the SGOD office. It ensures faster transactions with the use of the Internet. Compared to manual transactions, this system is more efficient, especially time-saving, cheaper to operate, and more accurate. In manual transactions, the SOCMOB team at SGOD usually travels long distances to reach and assess the needs of a particular school, which can be costly and time-consuming. The proposed ASNMS also incorporates a chat box to facilitate the communication between the SOCMOB officer and the school head in real-time and does not need to wait for email notifications or other means of communication.

In the future, the SMS function will be incorporated as well as the integration of new technologies to further enhance the functionalities of the system.

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