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# Improving Auditing System in Pre-Primary and Primary Education: An Information System Integration Approach

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## Abstract

The rapid evolution of technology resulted to the increase in dependability of the users to it. Everything is becoming automated which are designed to make our lives easier and more convenient. The integration of automated information systems to an organization improves the quality of work and decreases the room for error that paves way to delays or any unnecessary processes which disrupts the flow of the operations. The objectives of the study are (1) to assess the information technology and auditing related information system of the school and (2) to recommend an implementation framework and auditing information system. The school was experiencing a bottleneck in terms of their inaccuracy of data and poor recording of accounts. The researchers improved the auditing process by designing a data flow diagram (DFD) which illustrates the flow of the enhanced system when automated. The automated system was developed to maximize the accuracy of recording data and provide convenience to the personnel in charge of auditing the data.

## Keywords
Automated Information System, Information Technology (IT), Auditing System

## 1. Introduction

Many databases are extensions of the traditional files and records of business and government organizations. An important activity in these traditional information system is that of auditing which helps to record the activities as a basis for management decisions, and errors and malpractices in administration to be brought to light (Florentin, 1972) and automated auditing system would bring more efficiency, productivity, and accuracy. Although, to have benefits through automated auditing system, 'how' to use the system should be ensured (Love, et al., 2019) to avoid system malfunction and incompatibilities that may affect the organization itself (Florentin, 1972).

In other countries, automated auditing system is already adapted in school administration and accounting system nowadays. Electronic Data Processing (EDP) has replaced the manual method and effectiveness of the EDP is still in doubt (Oladunjoye, 2012). However, implementation issues may not be a primary concern for researchers, as researchers should focus on benefits to the firm (Grabski et al., 2011). For EDP to be effective for school auditing, the school must be in such a way that it is auditable (Oladunjoye, 2012).

Most of the medium sized schools in the Philippines, especially located in province area, are still having a manual auditing system starting from issuing the receipt to having a financial statement for monthly checking of cash flow of the school's financial activity. According to the directress, who researchers interviewed for data gathering, lack of budget on financial activity caused them to use manual auditing system. The researchers conducted an audit on the expense report of the school in which the group discovered four (4) issues while auditing. These are recording without receipt, misplaced records, erroneous recording and unrecorded receipt. Tables 1.1 to 1.4 shows the breakdown of the

frequency of each. On the other hand, Table 1.5 shows the summary of the tallied reports per issue per month. As a whole, the researchers discovered that during the month of June, July, and August of 2019, the school accumulated a discrepancy of Php 76,894.22 for the actual and recorded audit of expenses.

Given the company's situation, this study aims to assess the current auditing process of the private pre-primary and primary school in Antipolo, Rizal, Philippine. Another objective is to construct an improved auditing process through the use of information system.

This would benefit the school administrations to track the record more accurately that would help the school's decision-making in financial activities. Government like DepED (Department of Education) would have more schools with high-leveled system that would grow the responsibility of an organization. For further researchers, this study would give a basic idea on improving school auditing system and furtherly expand its research on how, and benefits.

Table 1.1 Issue: Recording without receipt

| ISSUE: RECORDING WITHOUT RECEIPT | | | | |
|---|---|---|---|---|
| **Month** | **Account Title** | **Audited amount (recorded)** | **Audited amount (actual)** | **Discrepancy** |
| July | LRC Expense | ₱ 680.00 | ₱ - | ₱ 680.00 |
| August | Miscellaneous | ₱ 5,157.00 | ₱ - | ₱ 5,157.00 |
| | | | Total | ₱ 5,837 |

Table 1.2 Issue: Misplaced records

| ISSUE: MISPLACED RECORDS | | | | |
|---|---|---|---|---|
| **Month** | **Account Title** | **Audited amount (recorded)** | **Audited amount (actual)** | **Discrepancy** |
| July | ICI Ministry Inc. | ₱ - | ₱ 37,942.50 | ₱ 37,942.50 |

Table 1.3 Issue: Erroneous Recording

| ISSUE: ERRONEOUS RECORDING | | | | |
|---|---|---|---|---|
| **Month** | **Account Title** | **Audited amount (recorded)** | **Audited amount (actual)** | **Discrepancy** |
| June | Transportation | ₱ 17,520.00 | ₱ 20,920.00 | ₱ 3,400.00 |
| June | School/Office Supplies | ₱ 58,978.00 | ₱ 62,909.00 | ₱ 3,931.00 |
| June | Repair/Maintenance | ₱ 45,307.00 | ₱ 67,279.53 | ₱ 21,972.53 |
| June | Clinic Expense | ₱ 5,795.00 | ₱ 2,835.75 | ₱ 2,959.25 |
| July | Transportation | ₱ 45,330.00 | ₱ 45,410.00 | ₱ 80.00 |
| July | School/Office Supplies | ₱ 31,867.07 | ₱ 32,300.63 | ₱ 433.56 |
| July | Repair/Maintenance | ₱ 5,805.50 | ₱ 5,811.50 | ₱ 6.00 |
| July | Clinic Expense | ₱ 5,795.00 | ₱ 5,650.00 | ₱ 145.00 |
| | | | Total | ₱ 32,927.34 |

Table 1.4 Issue: Unrecorded receipt

| ISSUE: UNRECORDED RECEIPT | | | | |
|---|---|---|---|---|
| **Month** | **Account Title** | **Audited amount (recorded)** | **Audited amount (actual)** | **Discrepancy** |
| July | Club Expense | ₱ - | ₱ 187.38 | ₱ 187.38 |

Table 1.5 Summary of Issues

| SUMMARY OF ISSUES | | | | |
|---|---|---|---|---|
| **List of issues** | **June** | **July** | **August** | **Total** |
| Recording without receipt | 0 | 1 | 1 | 2 |
| Misplaced records | 0 | 1 | 0 | 1 |
| Erroneous recording | 4 | 4 | 0 | 8 |
| Unrecorded receipt | 0 | 1 | 0 | 1 |

## 2. Methodology

The researchers went to a private school to conduct various interviews with the cashier, auditor, principal, and a member of the board of directors. They were able to assess and tour around the facility and collect financial data. Through these supporting evidences and the use of the why-why analysis, the researchers were able to diagnose the root causes of the main problem. The company is incurring discrepancies between the actual expense data with the recorded one because of (1) poor recording policy and procedure and (2) manual auditing of all expenses.

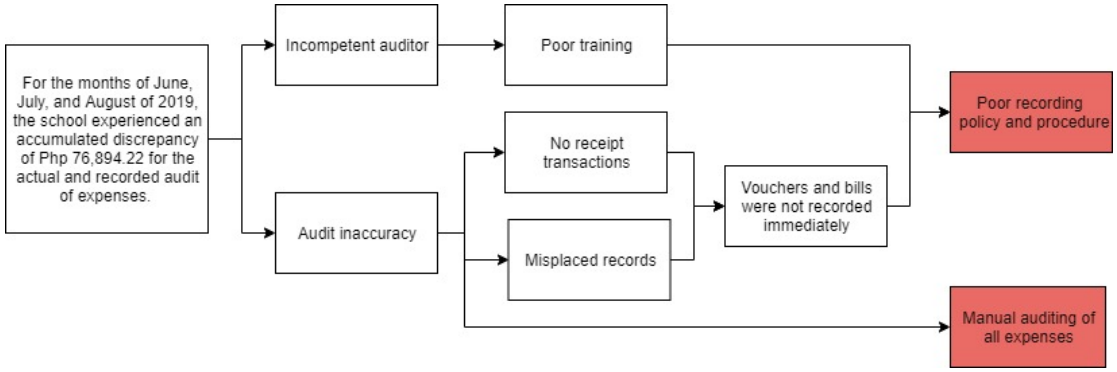


Figure 2.1 Why-Why Diagram

As shown in Figure 1, the first root cause identified is the poor recording policy and procedure implemented by the school. Given this, the cashier and auditor lack knowledge of the correct way of doing their tasks. As mentioned during the interview, the cashier has been working for the school since 2018 and yet she is not totally familiar with all the recording policies. Aside from that, vouchers and bills are not documented immediately. This is another consequence to their poor recording procedures. It results to misplaced documents and transactions that do not have receipts. Receipts are important because it is a way for the cashier to keep track of all the expenses. As evidence, there are a total of 2 recorded accounts without receipts and 1 misplaced voucher as shown in Figure 1.2 and 1.3 respectively.

The second root cause identified by the researchers is the manual auditing of expenses. The auditing of expenses is handled by the cashier which in return is checked by the auditor. Since the expenses are manually inputted in a spreadsheet, audit accuracy is inevitable. Thus, leading to discrepancies between the actual and recorded data.

### 2.1 Decision Analysis

Based from the Why-Why analysis, the researchers identified two (2) root causes for the discrepancy experienced by the school specifically the poor recording process and the manual auditing of expenses respectively. From these two (2) root causes, the researchers devised two (2) alternative solutions for each root cause. Each alternative was subjected to cost analysis to further analyze the effectiveness of the proposed alternatives

To address the first root cause, the first alternative is to re-train the current cashier and auditor of the school with the improved recording procedure. This retraining of the employees shall incur additional costs such as material cost and training cost. For the second alternative, the researchers considered hiring additional cashier. This additional workforce shall also undergo training for the recording process which will also incur material costs and training costs. Below shows the cost analysis for the two (2) alternatives.

Table 2.1 Alternative 1 for root cause 1

| **Alternative 1: Retraining of Cashier and Auditor with Improved Recording Procedure** | |
|---|---|
| **COST** | **AMOUNT** |
| Material Cost | ₱ 31,510.00 |
| Training Cost | ₱ 44,974.00 |
| **TOTAL COST** | **₱ 76,484.00** |

Table 2.2 Alternative 2 for root cause 1

| **Alternative 2: Hiring and Training of Additional Cashier** | |
|---|---|
| **COST** | **AMOUNT** |
| Material Cost | ₱ 31,510.00 |
| Training Cost | ₱ 57,178.00 |
| **TOTAL COST** | **₱ 88,688.00** |

For the second root cause which is the manual auditing of all expenses, the researchers also recommended two (2) alternative solutions. The first alternative is to purchase a licensed accounting system. SAP Business One is the considerable purchase since it is a prominent accounting software system used by many organizations. With the assumption that the purchasing shall be a one-time cost only, purchasing, installing, and training for the employees for this software will entail a higher cost. The second alternative aims to create an in-house accounting software designed to be used within the organization only. By hiring software developers, the project shall be completed within three (3) months while incurring costs such as material and labor cost.

Table 2.3 Alternative 1 for root cause 2

| **Alternative 1: Purchasing SAP Business One Accounting System** | |
|---|---|
| **COST** | **AMOUNT** |
| Purchase and Installation Cost | ₱ 327,534.00 |
| Training Cost | ₱ 168,090.00 |
| **TOTAL COST** | **₱ 495,624.00** |

Table 2.3 Alternative 2 for root cause 2

| **Alternative 2: In-House Accounting Software Development** | |
|---|---|
| **COST** | **AMOUNT** |
| Material Cost | ₱ 45,000.00 |
| Labor Cost | ₱ 254,250.00 |
| **TOTAL COST** | **₱ 299,250.00** |

## 3. Results and Discussion

### 3.1 Review of Current Process Regarding Recording of Expenses

This study focuses mainly on the auditing process of expenses. As shown in Figure 3.1, the process starts once the cashier receives a request form or bill. A bill pertains to the utilities, equipment, renovation expenses and etc. incurred by the company. Meanwhile, a request form is given by a teacher who has concern in terms of school supplies, learning materials, and transportation expenses. The form is approved once it is signed by the directress. The cashier then creates a cash voucher for the bill or approved form. For small expenses, the payment is gotten from the petty cash while for large payables, a check is made. The recording of the vouchers and bills depend on the workload of the cashier. If she/he has other work to prioritize on, the recording is first set aside by filing these documents in a folder. However, if the cashier has a spare time, she/he records the expenses immediately by inputting it on a spreadsheet. Once all the expenses have been recorded, the spreadsheet is then forwarded to the auditor to be checked. If the financial statements are not balanced, the accounts listed are repeatedly examined to include all expenses.

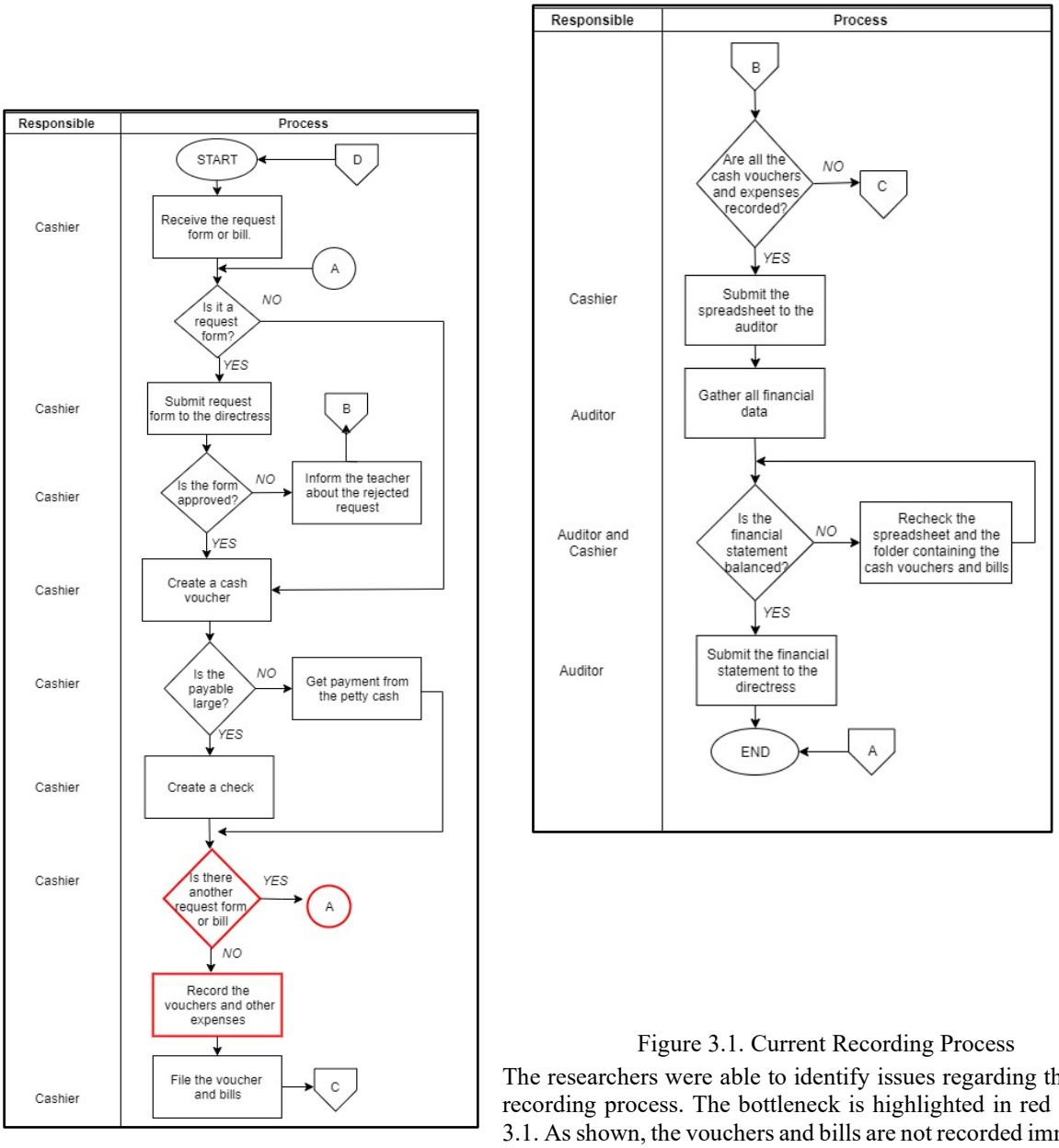


Figure 3.1. Current Recording Process

The researchers were able to identify issues regarding the current recording process. The bottleneck is highlighted in red in Figure 3.1. As shown, the vouchers and bills are not recorded immediately. As mentioned in the why-why analysis, this leads to misplaced documents and transactions without no receipts.

### 3.2 Design of Improved Recording Process

The researchers created an improved recording process of expenses for the company. They proposed that the recording of the vouchers and bills be done instantly after organizing the cash or check payment. This is to eliminate the delay in submitting the report to the auditor. Also, to provide ample time in checking for the data, the researchers thought of implementing a due date; the cashier must submit the expense report 1 week before the month ends.

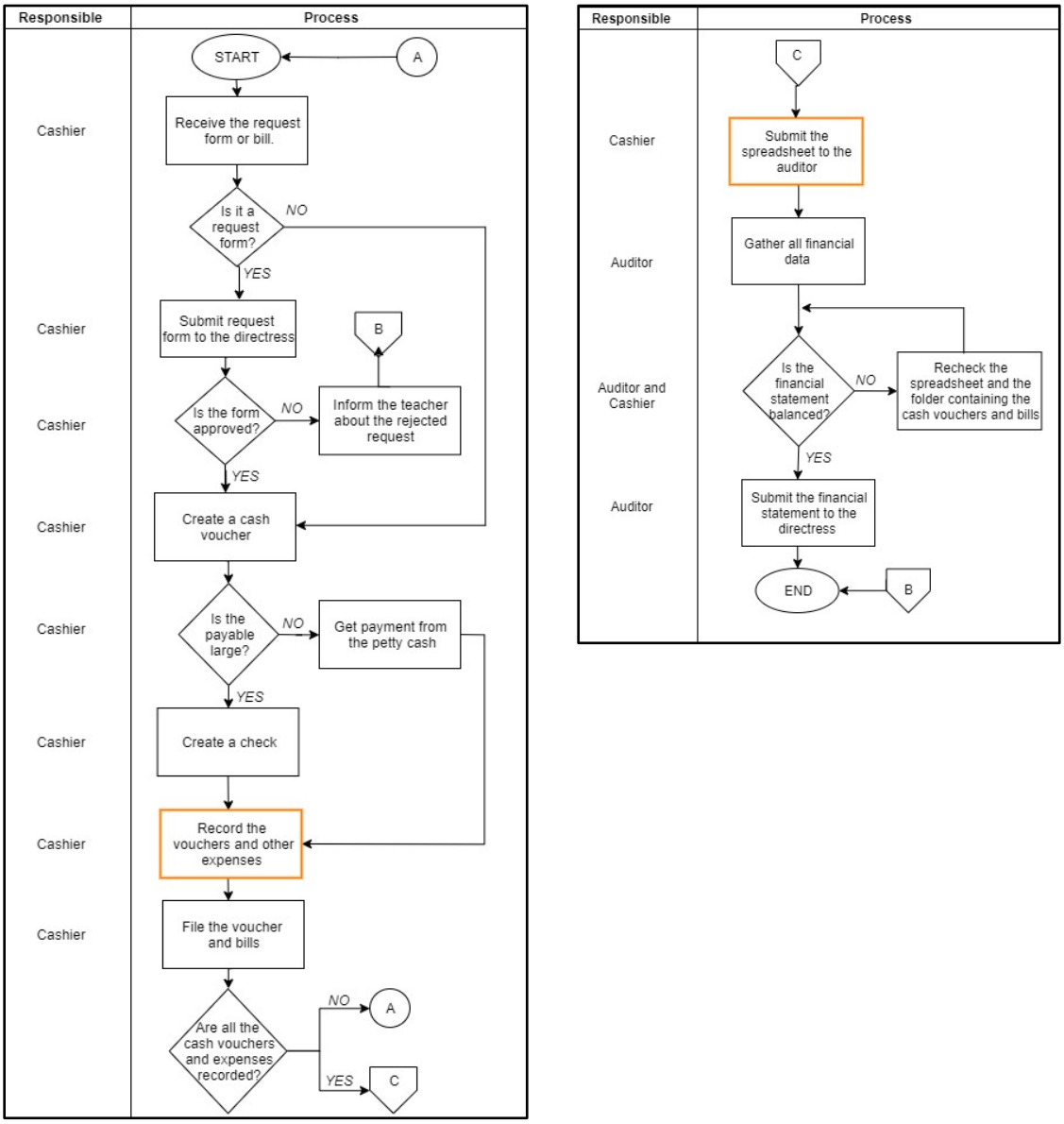


Figure 3.2 Improved Recording Process

### 3.3 Design for an Automated Recording System

For efficiency and accuracy of auditing data of school accounting system, an automated auditing program was designed. The Data Flow Diagram in Figure 3.3 shows the flow of data and process with automated auditing system to address the key issues of current manual auditing system.

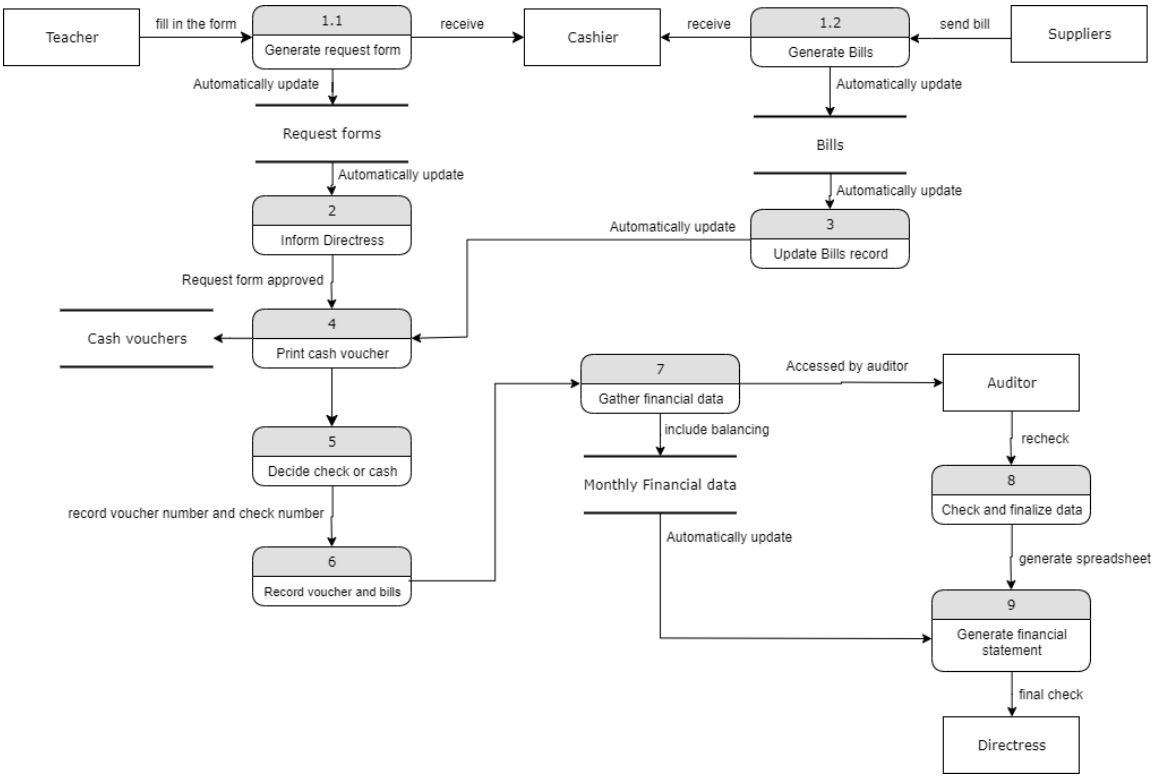


Figure 3.3 Data flow Diagram of improved system

Automated auditing system is the Microsoft Access-based process that automatically updates the financial data and statement by handling all vouchers, bills, check and cash that is involved in the accounting process. Proposed system is to maximize the accuracy of gathered financial data for a certain month and avoid the situation where audit is piled up until auditor has a difficulty in handling those data. By using the proposed system, it prevents delay and inaccuracy in recording of every financial activity that happens during any time of the school year. There are various entities which is involved in the system that includes teacher who fills the printed request form, suppliers who generate the bills to school, cashier who received the request form and bills and update directress regarding the request form, Auditor who checks the gathered financial data and finalize to show it to the last entity who is the directress of the school. Total of ten (10) processes are established and the first processes are generating of bills and request form. When bills and request form is generated, it will go directly to database of request form and bills which will be updated in cash voucher and expenses database. When the request form is received by cashier, he or she will pass it to the directress for approval, and when it is approved, cash voucher is printed, and voucher is stored in cash voucher database with the bills. Depending on the amount of payable whether it is big or small, it is automatically decided with the level that auditor set and recorded in expense database. Expensive database will next generate the financial data which is reviewed and checked by the auditor if it is balanced with the receipts gathered for accuracy purpose. When financial data is approved by auditor, system automatically generates the financial statement which is viewed by directress as a final step of accounting system. The speed of processing and retrieving data with new automated auditing system will enable much work to be performed within a short time. Apart from input from programming errors, the computer will not make mistakes likened to human errors thereby increasing the reliability of the system (Oladunjoye, 2012).

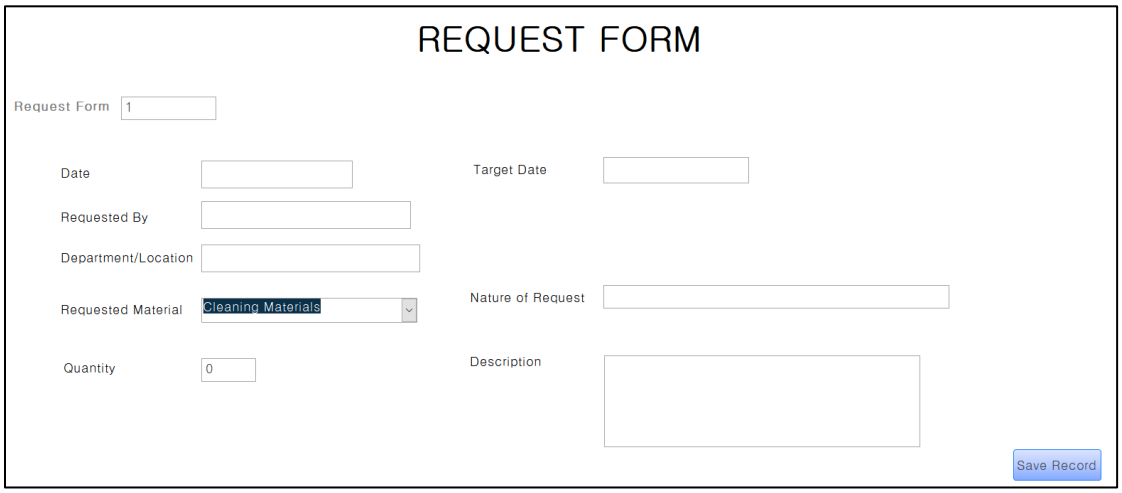


Figure 3.4. Request form user interface

The request form user interface is to be used by the teachers who will request their needed materials to school. Instead of using the paper request form which causes delay in approval when piled up and chances of missing, improved auditing system recommends information system that will be directly passed to school directress for approval of the form.

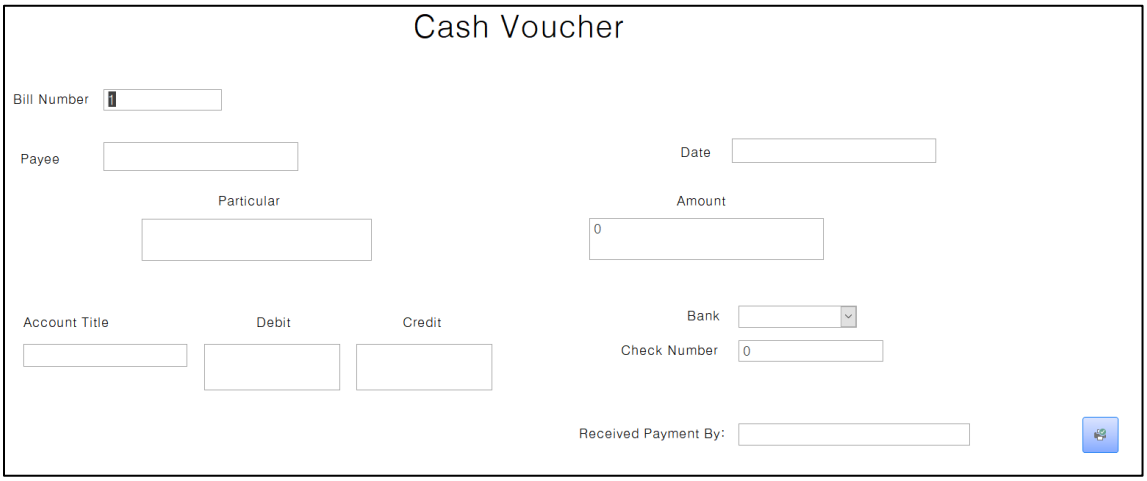


Figure 3.5. Cash Voucher user interface

At the time when the request form is approved by directress and materials are bought and at the time when bills are received by cashier, cashier would generate the cash voucher using the information system. This will be automatically updated in monthly financial data with financial statement for monthly and annual audit and review.

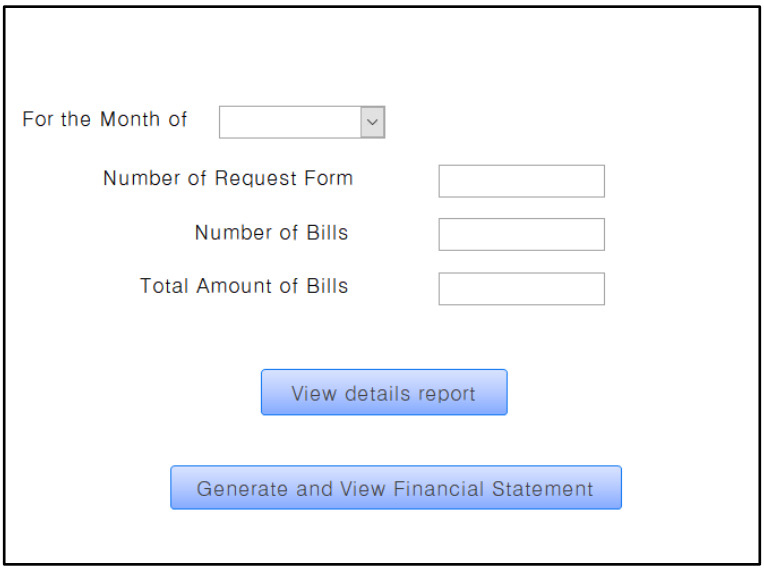


Figure 3.6. Cash Voucher user interface

For the instance where auditor wants to check the monthly financial data including bills, cash voucher, check number etc., this interface will be used. Auditor can select the month he or she wants to view, and the system will automatically summarize the number of request forms, number and total amount of bills. For the detailed data or report, auditor can access it by clicking the "View details report" button. "Generate and View Financial Statement" button will be used for the auditor or the school directress when he or she wants to view the financial statement for the month.

## 4. Conclusion

This study aims to assess the current auditing process of the private pre-primary and primary school in Antipolo, Rizal, Philippine. Another objective is to construct an improved auditing process through the use of information system. Through the conducted interviews and assessment of the current system, the researchers identified the key issues of the current auditing system of the school. The school has poor recording policy and procedure which results to misplacement of records and clerical errors. Additionally, the auditing activity of the school is done manually which also invites possible inaccuracy of data. With this, the researchers devised two (2) alternative solutions for each root cause to improve the auditing system of the school.

Based from the cost analysis conducted by the researchers, the best alternative to solve the poor recording procedure is to retrain the current cashier and auditor with the improved recording procedure. This generated a much lower cost than hiring additional cashier. On the other hand, the best alternative to solve the problem of manual auditing is to develop an in-house accounting system for the school. This alternative is cheaper and more practical than incurring extremely high cost of purchasing expensive software. With this, the researchers created an improved auditing process which eliminates the delay in the submission of reports to the auditor. Additionally, the researchers created a data flow diagram of an automated auditing system that can handle the recording of expenses and other transactions of the school. With this, financial data can be easily stored and retrieved upon request. Also, this eliminates the chances of clerical errors in the process.

This study can be further improved by extending the scope of the research. The future researchers can include an assessment of the tuition fee recording process of the school and improve it since the process is also done manually.

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## Biographies

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**Dave Cullen G. Yap** is a 5th year undergraduate of Mapúa University with a degree in B.S Industrial Engineering. He is an active member of the Philippine Institute of Industrial Engineers (PIIE) and Operations Research Society of the Philippines (ORSP). He is a self-motivated and highly reliable university student positioned to contribute strongly to societal progress with research about information system and its positive effects in various industries.