



Republic of the Philippines  
**Department of Education**  
REGION IV-A CALABARZON  
CITY SCHOOLS DIVISION OF BIÑAN CITY

**“The Efficiency of E-SBM (Electronic- School-Based Management) Database and Its Impact on School Personnel’s Function”**



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**ABSTRACT**

This study evaluates how the Electronic School-Based Management System (E-SBM) has impacted data management efficiency in a school setting. The research indicates that the implementation of E-SBM has led to a substantial improvement in data management efficiency, as reflected in an increase in mean scores from 5.85 to 7.61.

The assessment of E-SBM components, including Accessibility and Visual Content, Content Management, and Security and Data Tracking, revealed significant improvements in means from 3.92, 3.85, and 3.81 to 4.56, 4.59, and 4.42, respectively, leading to a shift in participants' responses from "Agree" to "Strongly Agree".

A non-parametric paired response test demonstrated a significant difference between pre-assessment and post-assessment data, both in terms of overall rating and E-SBM components, confirming the system's effectiveness.

The thematic analysis explored the impact of E-SBM on school personnel functions. Before the upgrade, most participants relied on the old E-SBM database for their school functions. However, after the implementation of the improved E-SBM, participants found it to be an efficient system for managing school data and monitoring school Projects, Programs, and Activities (PPA), and evaluations. Some participants were unaware of E-SBM's impact until they used it. Additionally, E-SBM served as a source of school information and as a catalyst for innovation.

In conclusion, the Electronic School-Based Management System (E-SBM) has successfully modernized the process of gathering and organizing school data, ensuring secure document storage and easy accessibility for school personnel. The study's findings highlight the significant improvement in data management efficiency, and participants recognized the system's importance

in achieving school objectives related to data management, innovation, monitoring, and evaluation. E-SBM emerged as a valuable tool for teachers and a fundamental source of school information, emphasizing the need for innovation in school management.

**Keywords:** *Electronic School Based Management, Innovation, Efficient Data Management*

## INTRODUCTION

Educational institutions have been established to provide education services to learners and the community. Schools, like any other organization, observe processes and procedures that involve admission, processing of data, storing and organizing, and generating documents. These processes are made possible through a school-based data management system that will assist school administrators, teachers, and non-teaching staff manage the school's data. The use of a school webpage enables efficient digital tracking of data which addresses the complexity of manual filing and accessing school artifacts. Further, if data management is licensed, it improves social interaction and extends information and learning beyond the school community. The web offers better services, easy access to information and data, wider availability, and significant cost savings.

Study shows that the use of technology to update school facilities has a significant impact on student accomplishment, therefore the need to develop an integrated electronic School-based management system based on a centralized database will improve the quality of school services (Balcita and Palaoag, 2020). Durnail, (2013), reveals that there are improvements in terms of data collection, processing, storage, accuracy and analysis, and dissemination of student data when comparing them before and after e-School was implemented in their school. In school-based management, the record-keeping of data on how programs, projects, and activities operate becomes empirical and validates the learner's performance and the school's efforts in realizing DepEd's thrust while establishing connections with stakeholders. The researchers conducted this research to ensure that school documents are managed efficiently through a data-based

management system, which will enhance the performance of school personnel. This was done within the context of improving overall efficiency in school management.

The complexity encountered by many school organizations in filing, storing, and accessing school data has impelled school leaders and teachers to innovate practices and processes that would displace the traditional manual procedures. With the adoption of digital or electronic transmission of information and data, the researchers intended to enhance School-based Management practices and attainment through database management systems. Through this, school personnel in the organization can increase their access to data and help end-users share accurate information and complete documents easier and faster.

Keeping school records and managing them efficiently is the school's advantage in terms of keeping documents in their rightful place to ensure quality processing and record-keeping. This will also help school managers in their decision-making process and to also enhance the implementation of usable records in schools that will lead to cost savings, transparency, easy accessibility, accountability, and retrieval of required information from their storage (Akinloye, Adu, & Ojo, 2017).

This action research introduced a school-based data management system that assisted school administrators, teachers, and non-teaching staff in automatically managing the school's data, thereby decreasing paperwork, and enabling efficient digital tracking of data. Every documentation, including narrative reports, quarterly reviews, and other data, has been successfully managed. The database management system enables secure, efficient, and swift data sharing across the organization/department,

providing quick access to accurate data by promptly responding to database requests.

During the pandemic, school transactions were affected, especially the transmission of documents. Since most of the documents were submitted in hardcopy there was a delay in submitting the reports. Thus, the idea of creating a database management system came across.

The purpose of conducting this study was to innovate the system of collecting and organizing school data through the use of an electronic database system which would thereby secure documents as well as promote a systematic way of handling documents for easy access among school personnel.

## METHODOLOGY

This action research sought to utilize E-SBM as a free school-based website using Google Sites to collect, organize, and track data that would improve the school's data management practice.

Specifically, it aims to answer the following questions?

1. What is the efficiency level of data management of the school before the implementation of the improved E-SBM Database?
2. What is the efficiency level of data management of the school after the implementation of the improved E-SBM Database?
3. How does the improved E-SBM Database impact School Personnel's functions?

The participants of this study were 28 Junior High School Teachers of Southville 5A Integrated National High School for the School Year 2023-2024. Participants are permanent and with plantilla items of the school.

The study utilized the Mixed Method Research Design. A survey questionnaire combined with a 5-point Likert Scale Questionnaire was crafted and submitted for validation. Once validated, it was used to assess the school's efficiency level of data management (qualitatively and quantitatively) before and after the implementation of the E-SBM.

The procedure for data collection is summarized below:

A letter of request to the School Principal of Southville 5A Integrated National High School was submitted to formally request the conduct of a survey among the teaching personnel on the school's level of data management and its impact on their function.

After knowing the level of data management in school through its conventional practice, as well as the impact of this on the school personnel's function, the participants were exposed to the E-SBM Database. They utilized it for one quarter to be acquainted with the system. The questionnaires were utilized again to check the level of data management in school through the proposed innovative system together with its impact on their function.

Ethical considerations were also observed and only the researchers have access to all files collected. A folder in Google Drive was created to store all files related to this study.

## RESULTS

Table I shows the efficiency level of data management of the school before and after the implementation of the improved E-SBM Database.

**Table I. School's Efficiency Level of Data Management**

Indicator	Before (mean)	Interpretation	After (mean)	Interpretation
<b>I. Rate from 0-10 with 10 as very efficient, 5 as neither efficient nor not efficient, and 1 as not efficient.</b>	5.85	Neither Efficient nor Not Efficient	7.61	Efficient
<b>II. Actual Assessment (Likert Scale 1-5)</b>				
<b>A. Accessibility and Visual Content</b>	3.92	Agree	4.56	Strongly Agree
<b>B. Content Management</b>	3.85	Agree	4.59	Strongly Agree
<b>C. Security and Data Tracking</b>	3.81	Agree	4.42	Strongly Agree
<b>III. Overall Rating (85 highest possible score)</b>	65.61	-	77.04	-

The participants rated data management as neither efficient nor inefficient before, with a mean score of 5.85. After utilizing the improved E-SBM, the mean score improved to 7.61 and it was interpreted as efficient.

After the E-SBM database was utilized, the following improvements were observed: the accessibility and visual content increased from a mean of 3.92 (Agree) to 4.56 (Strongly Agree); content management improved from a mean of 3.85 (Agree) to 4.59 (Strongly Agree); and security and data tracking showed an increase in mean from 3.81 (Agree) to 4.42 (Strongly Agree).

To test whether the abovementioned change in means is significant, the data were subjected to the Wilcoxon Signed-Rank Test, a non-parametric test. The following hypotheses have been stated for this test:

Ho: There is no significant difference between the overall rating before and after the utilization of the improved E-SBM.

Hi: There is a significant difference between the overall rating before and after the utilization of the improved E-SBM.

Ho: There is no significant difference between the accessibility and content before and after the utilization of the improved E-SBM.

Hi: There is a significant difference between the accessibility and content before and after the utilization of the improved E-SBM.

Ho: There is no significant difference between the content management before and after the utilization of the improved E-SBM.

Hi: There is a significant difference between the content management before and after the utilization of the improved E-SBM.

Ho: There is no significant difference between the security and data tracking before and after the utilization of the improved E-SBM.

Hi: There is a significant difference between the security and data tracking before and after the utilization of the improved E-SBM.

Table 2 summarizes the results of the test.

**Table 2. Wilcoxon Signed-Rank Test**

Indicator	Wilcoxon Signed-Rank Test (W-value)	p-value	z-value	Decision
<b>I. Overall Rating</b>	<b>20</b>	<b>0.0002</b>	<b>-3.7143</b>	The result is significant at $p < 0.05$
<b>A. Accessibility and Visual Content</b>	<b>20.5</b>	<b>0.00058</b>	<b>-3.4414</b>	The result is significant at $p < 0.05$
<b>B. Content Management</b>	<b>10</b>	<b>0.00016</b>	<b>-3.7822</b>	The result is significant at $p < 0.05$
<b>C. Security and Data Tracking</b>	<b>19</b>	<b>0.00048</b>	<b>-3.4901</b>	The result is significant at $p < 0.05$



Based on Table 2, a significant difference was established between the overall rating before and after the utilization of the improved E-SBM database. Significant differences were also established among the accessibility and visual content, content management, and security and data tracking. These results demonstrate that the school's data management efficiency was enhanced by using the upgraded E-SBM Database.

Tables 3 and 4 serve as the summary of the participants' responses to the question "How does the improved E-SBM Database impact School Personnel's functions?". Thematic analysis was employed to summarize the responses.

**Table 3. Coded and Thematized Responses Before the Utilization of the Improved E-SBM**

	Codes	Themes
Pre-Assessment	<ul style="list-style-type: none"> <li>Ease of Service</li> <li>Helps in accessing and finding data</li> <li>Data Gathering</li> <li>Accessible data and ease of providing needed data</li> <li>Easily available data</li> <li>Sharing of data</li> </ul>	Efficiency in Managing School Data
	<ul style="list-style-type: none"> <li>Improve school programs</li> <li>Easily identify challenges and give possible intervention</li> <li>Reveal Changes and provide feedback for decision-making</li> </ul>	Effective Monitoring and Evaluation tool
	<ul style="list-style-type: none"> <li>Knowing how and what to do</li> <li>Doing things more clearly</li> <li>Function better</li> <li>Academic excellence</li> <li>Responsible &amp; effective teacher and academic achievement</li> <li>Effectiveness and efficiency of teachers</li> <li>Helps teachers to be competent</li> <li>Provides adequate guide</li> <li>More efficient and effective</li> <li>Increase independence, responsibility &amp; accountability</li> <li>Gives ideas on coordinatorship tasks</li> <li>Awareness of the teacher's task</li> </ul>	Guide for Teachers in Doing School Tasks
	<ul style="list-style-type: none"> <li>None</li> <li>Not aware of E-SBM</li> <li>Not familiar</li> <li>None</li> <li>None</li> </ul>	Unfamiliarity of the E-SBM

Participants' responses were analyzed through thematic analysis. This reveals 4 themes for these responses such as Efficiency

in managing school data with 6 coded statements; Effective Monitoring and Evaluation Tool with 3 coded statements; Guide for teachers in doing school tasks with 12 coded statements; and Unfamiliarity of the E-SBM with 5 coded statements. The E-SBM appeared to have served as a helpful tool for school personnel to carry out their duties more efficiently. It is also worth noting that some school personnel were unaware of the E-SBM before its enhanced version was introduced.

**Table 4. Coded and Thematized Responses After the Utilization of the Improved E-SBM**

	Codes	Themes
Post-Assessment	<ul style="list-style-type: none"> <li>Makes work easier and faster</li> <li>Do tasks faster and more efficient</li> <li>Ease of data access and time efficiency</li> <li>Easy access and updated data</li> <li>Easy to access data</li> <li>Easily access data that will develop skills</li> <li>More effective in gathering data</li> <li>Accessibility of data</li> <li>Easily helps in finding important files</li> <li>Easily access school programs</li> <li>Easily access data</li> <li>Easier to access information</li> <li>Useful in filing data</li> <li>Easy access and filing of a document</li> <li>Effective data management</li> <li>Easily access data</li> </ul>	Efficiency in Managing School Data
	<ul style="list-style-type: none"> <li>Tracking school records</li> <li>Update of the school project</li> <li>Professional development, updating events and school projects</li> <li>Gives ideas on how to resolve pressing issues</li> <li>Helps in developing a plan</li> </ul>	Effective Monitoring and Evaluation Tool
	<ul style="list-style-type: none"> <li>Makes teachers work efficiently</li> <li>Guide for school personnel</li> <li>Helps in accomplishing reports</li> </ul>	Guide for Teachers in Doing School Tasks
	<ul style="list-style-type: none"> <li>Helps in knowing the school</li> </ul>	Source of School Information
	<ul style="list-style-type: none"> <li>Helps to make innovation for children and the community</li> <li>Helps teachers to be innovative</li> </ul>	Way for Innovation

After analyzing participants' responses to the survey questionnaire following the use of the improved E-SBM, the researchers identified five (5) themes, including three (3) that were present in the pre-assessment, albeit with varying degrees, and two (2) new themes. Sixteen (16) coded statements suggest that the E-SBM is efficient in managing school data. The two (2) new themes that emerged are E-SBM as a source of school information, and a way for

innovation. It is worth noting that the school personnel became aware of the E-SBM after it was fully utilized in the school.

## DISCUSSION

This study demonstrates a significant improvement in the efficiency of data management after implementing E-SBM, with mean scores increasing from 5.85 to 7.61.

After assessing the E-SBM components, including Accessibility and Visual Content, Content Management, and Security and Data tracking, the researchers discovered significant improvements in means from 3.92, 3.85, and 3.81 to 4.56, 4.59, and 4.42, respectively. A change in the verbal interpretation from “Agree” to “Strongly Agree”.

A non-parametric paired response test was conducted to determine if there was a significant difference between the pre-assessment data and post-assessment data. The results of the Wilcoxon Signed-Rank Test showed that there was a significant difference between the overall rating measured before and after the use of E-SBM. The same outcome was observed on the E-SBM Components.

The researchers conducted a thematic analysis to compare the impact of the E-SBM database on school personnel functions before and after its utilization. The findings revealed that before the upgrade, most participants relied on the old E-SBM database to perform their school functions. However, after implementing the improved E-SBM database, the participants found it to be an efficient system for managing school data. The participants utilized the E-SBM for monitoring school PPAs and evaluation on both versions. Some participants were unaware of E-SBM's impact on their school function until they used it. Two (2) additional impacts of E-SBM utilization were noted and these are E\_SBM as a source of school information to the school personnel and others, and E-SBM as a way for innovation.

The Electronic School-Based Management System (E-SBM) was developed to modernize the process of gathering and organizing school data. This system ensures

that documents are securely stored and easily accessible to school personnel. The study successfully achieved this objective, resulting in a significant improvement in the efficiency of the data management according to participant assessments following the implementation of the E-SBM database. The participants came to understand the significance of an effective school-based management database for achieving the school's objectives of innovating a data management system that is crucial in addressing school-related issues and concerns. They also realized the value of E-SBM management in terms of its efficiency in managing school data; as an effective monitoring and evaluation tool for school PPAs; as a guide for teachers in doing school tasks; as the fundamental source of information about the school; and as an area where innovation is needed.

The researchers recommend the following to further improve this project:

1. To fully reap the benefits of the Electronic School-Based Management System (E-SBM), it is highly recommended that school personnel undergo continuous training and professional development. This will ensure that all users are familiar with the system's features and capabilities, allowing them to utilize it efficiently. Conducting regular workshops and training sessions can assist in keeping everyone up-to-date and skilled in using E-SBM effectively.
2. A mechanism should be created to gather feedback from users regarding their experience with E-SBM. The users should be encouraged to provide input and suggestions for further improvements. This feedback loop can then be utilized to guide the ongoing development of the system, ensuring that it meets evolving needs and expectations.
3. As school data is highly sensitive, it is necessary to continually improve the security features of E-SBM. Consistently updating security protocols and investing in data protection measures will help to

uphold the confidentiality and integrity of school-related information.

4. The E-SBM system should be designed to be customized according to the unique requirements of each school. The system must offer multiple options for customization to enable schools to adapt it to their specific processes and objectives. Additionally, it is crucial to ensure that the system can be scaled up to accommodate potential growth in data volume and user base. This will help to make the system more efficient and effective in managing school operations.

Conducting action research on the implementation of the Electronic School-Based Management System (E-SBM) has been an enlightening experience. The journey from the idea's conception to the research execution and analysis of results has provided valuable insights into how innovative solutions can impact educational institutions. During the research, the researchers witnessed significant improvement in data management efficiency, with mean scores increasing notably after E-SBM's implementation. This transformation was not just about numbers; it represented a fundamental shift in the way the school operated. The transition from a conventional, manual data management system to a modern, electronic platform was met with enthusiasm from school personnel. The improved accessibility, content management, and security features made daily tasks more streamlined and data-driven. One of the most striking findings was the shift in participants' responses from "Agree" to "Strongly Agree" regarding the system's components. It was evident that E-SBM had exceeded expectations, fostering a deeper level of trust and satisfaction. Furthermore, thematic analysis demonstrated the system's impact on school personnel's functions, particularly in areas such as monitoring, evaluation, and as a source of valuable information.

The implementation of the Electronic School-Based Management System (E-SBM) is expected to have significant impacts on various stakeholders, including students, teachers, school administrators, and the Department of Education.

Teachers can use E-SBM under the principle of Curriculum and Instruction to track student progress and personalize teaching methods aligned with effective teaching pedagogies of the school. This leads to better learning outcomes and efficient use of instructional time. E-SBM can reduce the administrative burden on teachers by creating a more systematic way of filing reports and school data which will result in more efficient data management. This allows educators to focus more on teaching and less on paperwork.

School administrators can make informed decisions based on data analysis using the E-SBM database which can help them allocate resources, adjust curriculum, and manage staffing. This can result in better management of school resources and improved performance in the overall school environment. E-SBM can assist administrators in streamlining administrative tasks and thereby reducing the time and effort needed for data management, which ultimately leads to more efficient school operations.

The information gathered and analyzed using E-SBM has significant value for the Department of Education as it helps to evaluate the effectiveness of educational policies and initiatives. It enables evidence-based decision-making at a larger scale, aligning with the department's objectives of enhancing educational quality, innovation, and transparency. The implementation of E-SBM demonstrates the department's commitment to modernizing and improving the educational system.

Overall, the study has a significant impact on various stakeholders. It leads to better educational experiences, more efficient administrative processes, and improved decision-making, all of which are aligned with

broader educational goals. E-SBM has the potential to positively transform the educational landscape at the school level, benefiting both the immediate school community and the larger educational ecosystem.

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