INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue II
November 2024
Available online at https://www.instabrightgazette.com

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I-QRMO NSBI: INTEGRATING QUICK AND RELIABLE METHODS FOR AN ORGANIZED DATA MANAGEMENT OF NSBI

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ABSTRACT

The National School Building Inventory (NSBI) plays a crucial role in managing and monitoring the condition and availability of school infrastructure. However, the traditional methods of data collection and management are often time-consuming and prone to inaccuracies, hindering effective decision-making. This study, titled "I-QRMO NSBI: Integrating Quick and Reliable Methods for an Organized Data Management of NSBI," aims to address these challenges by introducing an integrated system that modernizes data handling processes. The I-QRMO system incorporates digital tools and automated data collection methods to enhance the accuracy, efficiency, and accessibility of NSBI data.

Through a mixed-methods approach, this research examines the effectiveness of the I-QRMO system in improving the speed and reliability of data management for school building inventories. The study also explores the potential of the system to reduce errors, minimize redundancy, and ensure real-time data updates. By leveraging technology, the proposed system seeks to provide education stakeholders with a more organized and comprehensive overview of school building conditions.

The findings of this study will offer valuable insights into how technology integration can transform school infrastructure management, contributing to more efficient and data-driven decision-making processes in the education sector.

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Key words: *National School Building Inventory (NSBI),data management, I-QRMO system, digital tools, automated data collection, efficiency, accuracy, real-time updates, infrastructure planning, technology integration*

CONTEXT AND RATIONALE

The National School Building Inventory (NSBI) is an initiative implemented by the Department of Education (DepEd) to ensure an accurate record of the condition, availability, and status of school infrastructure across the country. It provides essential data that informs infrastructure planning, resource allocation, maintenance, and future construction projects.

In recent years, there has been a growing need to modernize data management systems in public education to meet the demands of the evolving educational landscape. The integration of technology in school inventory systems offers the potential to address these inefficiencies. Quick and reliable data collection methods, when integrated with digital tools, can simplify the data management process, ensuring timely, accurate, and organized records.

I-QRMO NSBI: Integrating Quick and Reliable Methods for an Organized Data Management of NSBI responds to this pressing need. The proposed system seeks to transform the way school building data is collected, organized, and utilized by education stakeholders. By implementing automated and real-time data collection methods, the I-QRMO system aims to provide accurate and up-to-date information about school facilities, allowing for more informed decision-making and better resource distribution.

This research initiative is grounded in the understanding that an efficient and reliable school infrastructure system is vital for fostering quality education. As school buildings and facilities significantly affect learning environments, the ability to monitor and maintain them effectively through organized data management systems is of paramount importance. By improving the data management process for NSBI, the I-QRMO system will not only enhance administrative operations but also contribute to the overall educational experience of pupils and teachers and stakeholders.

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INNOVATION, INTERVENTION AND STRATEGY

Innovation:

The innovative aspect of the system lies in the unique QR code assigned to each room in every school building. These QR codes are designed to modernize the National School Building Inventory (NSBI) by providing an easy and accessible way to manage data for every room. The QR codes are printed on waterproof, scratch-proof sticker paper, ensuring their durability and visibility. Additionally, a hardcopy compilation of all QR codes is maintained for backup and manual reference. This innovation allows for real-time tracking of room conditions, usage, and maintenance needs with minimal manual intervention.

Intervention:

The intervention focuses on digitizing and automating the data collection process for school infrastructure. By integrating QR codes, the system replaces traditional, manual inventory methods that are often prone to errors and delays. This digital system ensures that anyone with internet access can scan the QR codes to view room information, while only the school property custodian and school head have the authority to edit and update the data in real time. This controlled access ensures the accuracy and security of the information, allowing for timely updates and more organized data management.

Strategy:

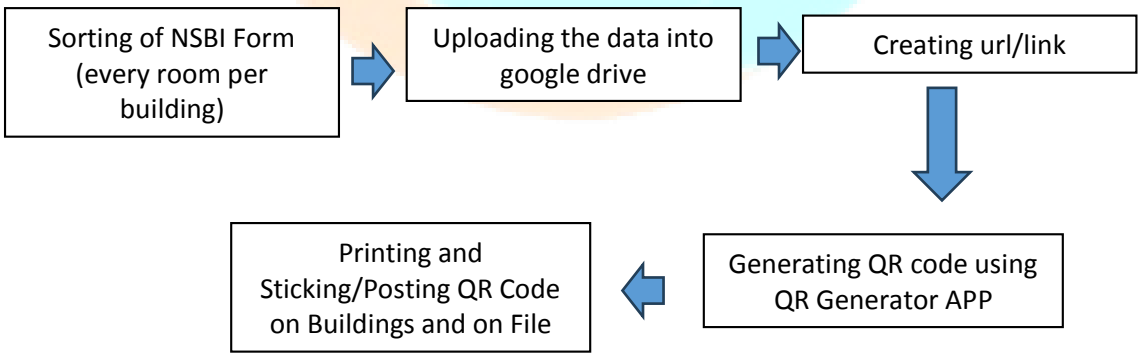

Figure 1 Data Acquisition

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INSTABRIGHT e-GAZETTE
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This flowchart outlines the process of implementing Project I-QRMO NSBI, focusing on how data is managed efficiently and transformed into QR codes for easy access.

The process begins by organizing and categorizing forms containing detailed information about each room within the school buildings.

Once sorted, the data is uploaded to Google Drive, ensuring it is securely stored and accessible online.

A unique URL or shareable link is generated for each document or set of data stored on Google Drive. This ensures that the specific information can be accessed directly through the link.

The links are converted into QR codes using a QR code generator app. These codes allow instant access to the data when scanned.

The final step involves printing the QR codes on waterproof, scratch-proof sticker paper. These stickers are placed on the corresponding rooms/buildings and a physical file for backup.

Action Research Questions

Specifically, the study seeks to answer the following questions:

1. What are the features of the Project I-QRMO NSBI?
2. What is the impact of the Project I-QRMO NSBI in terms of:
   a. Efficiency of data collection and management?
   b. Accuracy and reliability of school infrastructure data?
   c. Accessibility and usability of the system for various stakeholders?
3. What action plan can be proposed to strengthen the implementation and sustainability of the Project I-QRMO NSBI?

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Action Research Methods

a. Participants and/or Other Sources of Data and Information

This study utilized a survey questionnaire as instrument of this study. The survey questionnaire was used to determine the impact of the Project I-QRMO

The participants in this study were comprised of the teaching and non-teaching personnel and parents. Consensus was applied as all the teaching and non-teaching were asked to participate in this study. A total of 17 teachers participated and 3 parents in this study.

b. Data Collection

A quantitative method was employed in this study to collect and analyze the impact of Project I-QRMO NSBI. This involved the use of structured surveys and questionnaires distributed to participants to quantify their perceptions and experiences regarding the implementation and effectiveness of the system. Data collected included metrics on usability, accessibility, and the perceived impact on decision-making related to school infrastructure.

c. Data Analysis

The data was analyzed using descriptive statistics to summarize and interpret the collected information. Frequency distributions were calculated to understand how often specific responses were given, while graphical representations (pie charts) were used to visually present the results related to the impact of Project I-QRMO NSBI. This approach facilitated an easy understanding of the findings and helped highlight key trends and insights drawn from the data.

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DISCUSSION OF RESULTS AND REFLECTION

1. Feature of the Project I-QRMO NSBI

The Project I-QRMO NSBI offers several innovative features aimed at improving the efficiency and organization of school building data management. These features are:

Features	Description
Unique QR Codes for Each Room	Every room in each school building is assigned a unique QR code. This allows users to easily access information related to the room by scanning the code with a mobile device. Each QR code is linked to a digital platform where data such as the room's condition, usage, and maintenance needs can be stored and accessed.
Waterproof, Scratch-proof QR Stickers:	The QR codes are printed on durable, waterproof, and scratch-proof sticker paper to ensure longevity and visibility. This durability ensures that the codes remain intact and functional even in challenging environments.
Real-Time Data Access	Anyone with data or internet access can scan the QR codes to view real-time information about the room or building. This feature enhances transparency and accessibility for stakeholders, such as teachers, students, and school administrators.
	While the data is accessible to many users, only authorized personnel—specifically the school

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Restricted Editing Capabilities	property custodian and the school head—are allowed to edit and update the information in real time. This controlled access ensures the integrity and accuracy of the data.
Hardcopy Backup of QR Codes	To safeguard against potential technical issues or loss of internet connectivity, a hardcopy compilation of all QR codes is maintained. This backup ensures that room information can still be accessed manually, providing a fail-safe option for data management.

2. Impact of the Project I-QRMO NSBI in terms of:

2.a. Efficiency of Data Collection

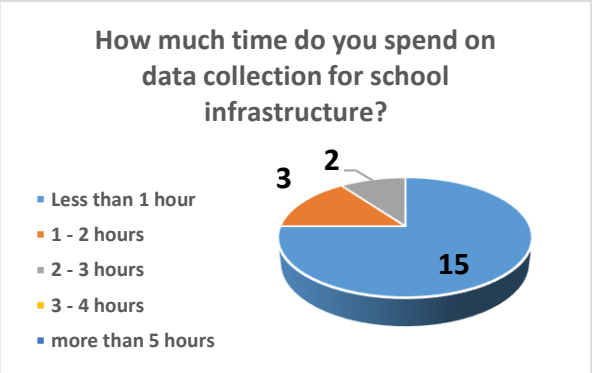

Figure 2

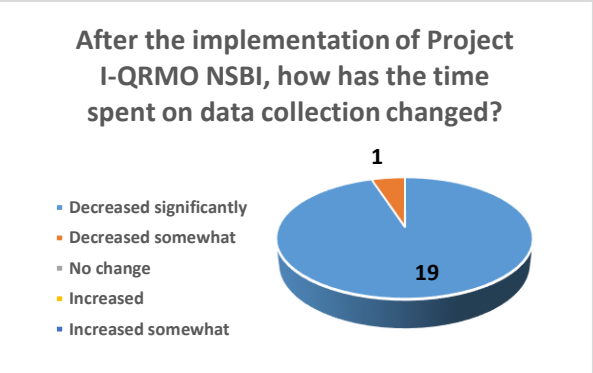

Figure 3

The majority of respondents (15 out of 20) reported spending 1-2 hours on data collection for school infrastructure, indicating a manageable time commitment. Post-implementation feedback reveals a **significant decrease** in time spent on data collection, with 19 respondents indicating this improvement. This suggests that Project I-QRMO NSBI

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ISSN: 2704-3010
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effectively streamlined data collection processes, likely reducing the burden on administrative tasks and allowing educators to focus more on teaching.

2.b. Efficiency of Data Management

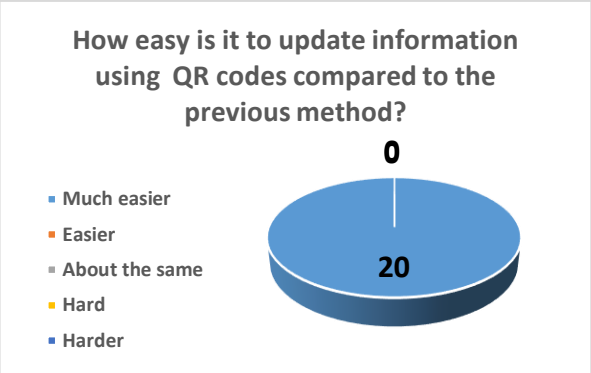

Figure 4

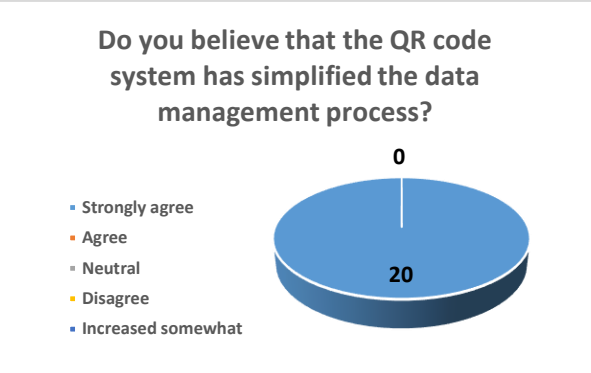

Figure 5

Respondents indicated that updating information using QR codes is **much easier** compared to previous methods, with 20 participants choosing this option. Furthermore, all respondents (20) **strongly agreed** that the QR code system has simplified the data management process. These findings reflect a significant enhancement in the overall efficiency of data management, supporting the effectiveness of integrating technology into administrative processes.

2.c. Accuracy and Reliability of School Infrastructure Data

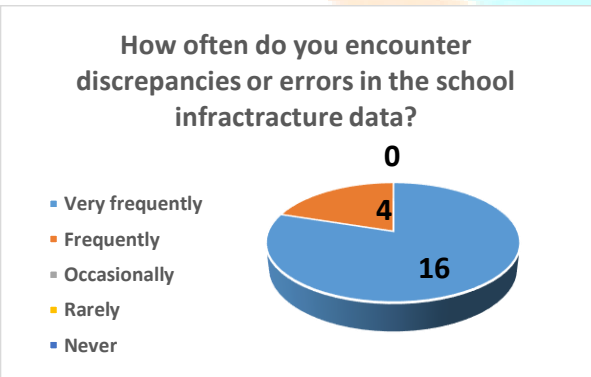

Figure 6

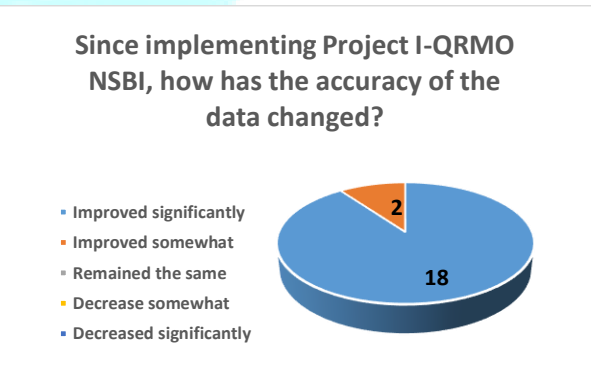

Figure 7

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
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2.c.1. Data Integrity

A substantial number of respondents (16 out of 20) reported encountering **frequent discrepancies or errors** in school infrastructure data before implementing Project I-QRMO NSBI. However, 18 respondents noted that the accuracy of data has **improved significantly** since the project's introduction. This improvement in accuracy indicates that the QR code system enhances data integrity, reducing errors and promoting reliable data for stakeholders.

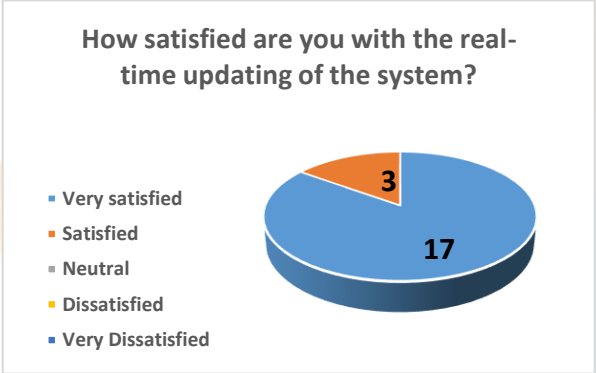

Figure 8

2.c.2. Real-Time Updates

The satisfaction levels with the real-time updating capability are high, with 17 respondents expressing that they are **very satisfied**. This satisfaction suggests that stakeholders value the ability to access the most current data, thereby improving the overall reliability of school infrastructure data.

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2.c.3 Accessibility and Usability of the System for Various Stakeholders

2.c.3.1. User Access

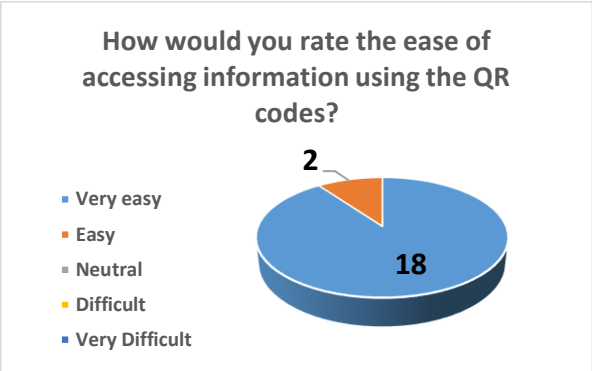

Figure 9

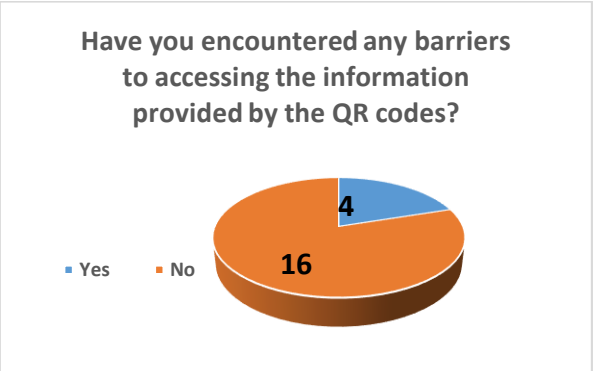

Figure 10

A remarkable 18 respondents found it **very easy** to access information using QR codes, while only a small number (2) rated it as **easy**. However, 4 respondents identified **internet access** as a barrier to obtaining information. This indicates that while the system is generally accessible, external factors such as connectivity can hinder its effectiveness.

2.c.3.2. Usability

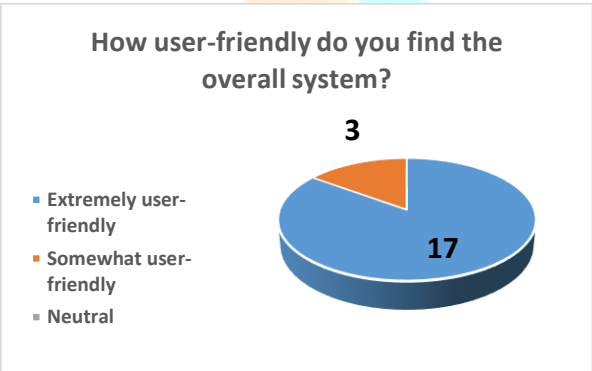

Figure 11

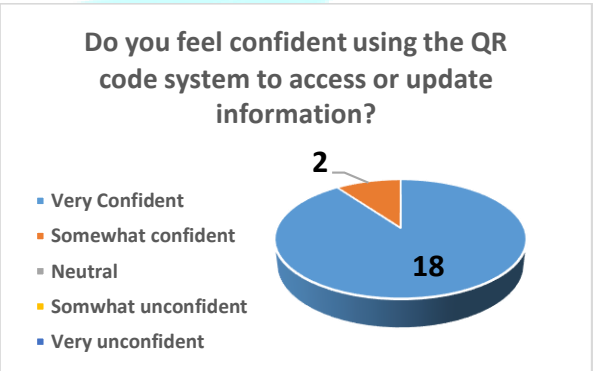

Figure 12

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ISSN: 2704-3010
Volume VI, Issue II
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The system's user-friendliness is well-regarded, with 17 respondents rating it as **extremely user-friendly**. Confidence in using the QR code system is also high, with 18 respondents feeling **very confident** in accessing or updating information. This indicates a positive reception towards the system's usability, which is critical for ensuring that stakeholders can effectively engage with the data.

Project I-QRMO NSBI has demonstrated significant impacts across multiple areas, particularly in improving the efficiency, accuracy, accessibility, and usability of data management systems within schools. The findings suggest that the integration of technology, specifically QR codes, has empowered stakeholders to make informed decisions and allocate resources effectively, ultimately enhancing the management of school infrastructure. Continued attention to internet accessibility and further training may be beneficial to maximize the system's potential and address any existing barriers.

Action Plan to Strengthen the Implementation and Sustainability of Project I-QRMO NSBI

Activities	Timeline	Resources
1. Training and Capacity Building		
- Conduct workshops for stakeholders	November 2024	Training materials, venue, trainers
2. Technical Support and Maintenance		
Establish a dedicated support team	November 2024	Personnel for support team, training for team
Schedule regular system updates and maintenance	December 2024	IT support services, maintenance software

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3. Infrastructure Improvements		
Enhance internet connectivity	January 2025	Partnership with local stakeholders funding
Upgrade necessary equipment	January 2025	Budget for hardware/software upgrades

Financial Report

Items	Amount
6 pcs of sticker paper	Php 18.00
6 pcs cold laminating sheet	Php 24.00

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