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Assessment of Facility Management Performance: A Basis for Digitalizing Reporting Systems in Educational Institutions

John Vincent L. Santos*[1], Leo M. Ramos[2], Marvin O. Mallari[3]
[1]Holy Cross College, Sta. Rosa, N.E., Inc., Nueva Ecija, Philippines
[2]Wesleyan University Philippines, Nueva Ecija, Philippines
[3]Nueva Ecija University of Science and Technology, Nueva Ecija, Philippines
[3]Holy Cross College, Pampanga, Philippines

*Corresponding Author Email: j.vince103@gmail.com

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Abstract. Facility management is essential for maintaining a safe and functional learning environment in educational institutions. At Holy Cross College in Santa Rosa, Nueva Ecija, manual reporting practices for maintenance issues lead to delays, inefficiencies, and safety risks, highlighting the need for improvement. This study evaluates the maturity and performance of the institution's facility management processes. It proposes a digital reporting system to enhance operational efficiency and safety. Employing the Balanced Scorecard (BSC) approach and an Input-Process-Output (IPO) framework, the research utilized a sequential exploratory design. Quantitative maturity assessments and Likert-scale surveys, supplemented by qualitative stakeholder insights, revealed a "Starting" maturity level characterized by reactive practices and misalignment with institutional goals. Strengths were noted in staff professionalism and training (Learning and Growth: 2.82), while weaknesses emerged in budget responsiveness (Financial Perspective: 2.58). Facility challenges, including inadequate space, outdated equipment, and inconsistent maintenance, significantly affect operations and user satisfaction. To address these, the study recommends adopting a digital reporting system to streamline issue management, improve accountability, and enhance responsiveness. Practical implications include infrastructure modernization, increased funding for maintenance, and establishing a General Services Office to align facility management with institutional growth objectives.

Keywords: Balanced scorecard; Digital reporting; Educational institutions; Facility management; Process optimization

1.0 Introduction

Facility management is a cornerstone of ensuring educational institutions operate efficiently, providing a safe and conducive environment for learning (Aceves-Avila & Berger-García, 2019). It encompasses services such as building maintenance, utility management, and safety compliance, all of which directly influence the quality of education and operational efficiency (Opoku & Lee, 2022). A well-maintained infrastructure not only minimizes disruptions but also enhances the overall learning experience, fostering a positive atmosphere for both students and staff (Santika et al., 2021). While the significance of facility management is evident at all educational levels, it becomes particularly critical in higher education, where institutions often deal with expansive campuses and specialized facilities.

Despite its importance, facility management frequently encounters challenges, particularly with manual reporting systems that delay issue resolution and heighten safety risks (Gingue, 2022). These systems often lead to inefficiencies, allowing minor maintenance concerns to escalate into significant disruptions, impacting daily operations and campus safety (Okafor & Onuoha, 2016). Furthermore, budget constraints and resource limitations compound the problem, resulting in deferred repairs and deteriorating facilities (Aceves-Avila & Berger-García, 2019). Such challenges contribute to safety hazards, reduced engagement, and increased operational costs (Munajat Zurainan et al., 2021).

Digital tools have emerged as a transformative solution, enabling real-time reporting and efficient tracking of maintenance issues (Santos & Jocson, 2024). Systems like Google Forms facilitate streamlined communication, offering automated notifications, centralized data storage, and mobile accessibility (Dulguun, 2023). These tools empower institutions to transition from reactive to proactive maintenance, improving response times, accountability, and cost-effectiveness (Ramos et al., 2024). Despite the widespread adoption of digital solutions in corporate and large educational institutions, their application in smaller, resource-constrained settings remains underexplored.

Holy Cross College in Santa Rosa, Nueva Ecija, serves as the focal point of this study, exemplifying the challenges of manual facility management reporting. This research evaluates the institution's current practices, identifies areas for improvement, and proposes a digital, forms-based reporting system to address inefficiencies and enhance safety. By integrating digital tools, the study aims to establish a more effective maintenance process. The study's broader implications lie in its potential to provide a replicable model for mid-sized educational institutions. While digitalization has been extensively studied in larger settings, this research explores its scalability and adaptability for smaller institutions, contributing valuable insights to the field.

2.0 Methodology

2.1 Research Design

This study employed a sequential explanatory research design to assess facility management performance at Holy Cross College, Sta. Rosa, N.E., aiming to support the development of a digital forms-based reporting process. The design involved two phases: first, quantitative data were collected through a facility management maturity assessment and a Likert scale survey to measure performance; second, qualitative data were gathered via open-ended questions to explore participants' perceptions, challenges, and recommendations.

2.2 Research Participants

A purposive sampling method was used to select participants. This approach ensured that the respondents had direct experience and familiarity with the institution's facility management processes, allowing for accurate and relevant data collection. The sample included 44 employees directly involved in or impacted by facility management at Holy Cross College.

2.3 Research Instruments

This study utilized two primary data-gathering instruments to assess the facility management system at Holy Cross College comprehensively. The first instrument was the 20-item facilities management maturity assessment adopted from ServiceChannel (2023), which measured the overall maturity level of the facility management processes at the institution. The second instrument was a Likert scale survey specifically designed to capture the perceptions and experiences of faculty members, administrative staff, maintenance personnel, and students regarding facility management performance at Holy Cross College. Open-ended questions were also included to gather qualitative responses on the implications, challenges, and recommendations for facility management. This allowed for a deeper understanding of the nuances and context surrounding facility management practices, complementing the quantitative data collected through the structured instruments.

2.4 Data Analysis

Weighted mean and thematic analysis were used for the data analysis. A weighted mean approach was used to address questions related to facility management maturity and performance across the four BSC perspectives (financial, customer, internal process, and learning and growth). This allowed greater weight to responses based on their importance or relevance to specific aspects of facility management. This technique highlighted how

different stakeholder groups perceived each perspective and identified key performance areas. Qualitative responses were analyzed using thematic analysis for questions concerning the implications of facility management performance on campus operations and respondents' recommendations for improvement. This method involved identifying, analyzing, and interpreting patterns within the qualitative data, capturing the depth of participant experiences, perceived challenges and suggested improvements. Thematic analysis revealed insights into how current practices affected daily operations and guided recommendations for a digital forms-based reporting process.

2.5 Ethical Considerations

Ethical guidelines were strictly followed throughout the research process. Participants were informed of the study's purpose, procedures, and their voluntary participation, and informed consent was obtained. Confidentiality and anonymity were ensured, with data securely stored and only used for research purposes. These measures safeguarded the participants' rights and privacy, ensuring the ethical integrity of the research.

3.0 Results and Discussion

3.1 Financial Management Performance

Financial Perspective

The Financial Perspective yielded a general weighted mean of 2.58 (Agree), indicating that participants find resource allocation for facility maintenance satisfactory (see Table 1). However, the relatively low score for addressing facility-related issues quickly (2.39, Disagree) reveals inefficiencies in responsiveness. This aligns with the findings by Zheng et al. (2021), emphasizing that financial delays can hinder operational sustainability and affect long-term institutional growth. Improvements in funding prioritization and timely response mechanisms are essential to enhance financial performance.

Table 1. *Weighted mean of financial perspective*

Indicators	Mean	SD	Interpretation
1. The school allocates sufficient resources for facility maintenance.	2.70	0.55	Agree
2. Facility-related issues that need funding are addressed quickly.	2.39	0.71	Disagree
3. Facility services are delivered cost-effectively without compromising quality.	2.65	0.70	Agree
4. Spending priorities for campus facilities align with overall college needs.	2.65	0.76	Agree
5. I am satisfied with using financial resources for campus facility upkeep.	2.52	0.83	Agree
General Weighted Mean	**2.58**	**0.63**	**Agree**

Customer Perspective

The Customer Perspective scored a weighted mean of 2.72 (Agree), suggesting that facility services meet users' basic needs and contribute to a productive academic experience (see Table 2). However, addressing feedback and ensuring consistent safety (2.65, Agree) still needs attention. Research highlights that customer-centric approaches, including proactive service adjustments and feedback integration, improve user satisfaction and institutional reputation (Bennett, 2024).

Table 2. *Weighted mean of customer perspective*

Indicators	Mean	SD	Interpretation
1. Facility services meet my needs and expectations.	2.65	0.64	Agree
2. Facility conditions are conducive to a productive academic experience.	2.78	0.66	Agree
3. Campus users feel safe and comfortable in all facility areas.	2.65	0.70	Agree
4. The quality of facility services enhances the college environment.	2.87	0.61	Agree
5. I am satisfied with how my feedback about facilities is addressed.	2.65	0.70	Agree
General Weighted Mean	**2.72**	**0.57**	**Agree**

Internal Processes Perspective

As shown in Table 3, the Internal Processes Perspective achieved a weighted mean of 2.70 (Agree), showing strengths in timely issue resolution and clear reporting methods (2.91, Agree). However, gaps in preventive maintenance practices (2.78, Agree) point to a reactive management approach. Ambrogio et al. (2022) emphasize that incorporating digital tools into facility management can improve efficiency, minimize disruptions, and shift towards a proactive maintenance style.

Table 3. *Weighted mean of internal processes perspective*

Indicators	Mean	SD	Interpretation
1. Facility issues are addressed promptly.	2.61	0.77	Agree
2. Maintenance work is scheduled with minimal disruption.	2.65	0.64	Agree
3. Reporting methods are clear and easy to use.	2.91	0.50	Agree
4. Preventive maintenance practices are regularly followed.	2.78	0.66	Agree
5. I am satisfied with how facility management handles issues on campus.	2.57	0.72	Agree
General Weighted Mean	**2.70**	**0.56**	**Agree**

Learning and Growth Perspective

The Learning and Growth Perspective garnered the highest score with a general weighted mean of 2.82 (Agree), reflecting strong staff professionalism and adequate training (2.87, Agree). Despite this, the need for continuous professional development and the adoption of modern digital tools remains. Abulibdeh et al. (2024) stress that investing in staff growth and technological integration is critical to keeping pace with evolving facility management demands.

Table 4. *Weighted mean of learning and growth perspective*

Indicators	Mean	SD	Interpretation
1. Facility management staff are knowledgeable in their roles.	2.87	0.61	Agree
2. Facility staff receive adequate training for their responsibilities.	2.83	0.64	Agree
3. Facility staff are capable of handling current facility challenges.	2.78	0.66	Agree
4. Facility staff are professional in their interactions with the campus community.	2.87	0.61	Agree
5. I am satisfied with the development of facility management services.	2.74	0.68	Agree
General Weighted Mean	**2.82**	**0.54**	**Agree**

Summary

The combined general weighted mean of 2.71 (Agree) across all Balanced Scorecard perspectives indicates satisfactory performance. The highest score in Learning and Growth suggests strengths in personnel capacity, while the lower score in Financial Perspective highlights inefficiencies in budget allocation and responsiveness. These findings highlight the need for targeted improvements in financial management, proactive maintenance, and customer engagement to elevate overall performance. Studies advocate leveraging technology and staff development to address these gaps and ensure sustainable, user-focused facility management (Bennett, 2024; Zheng et al., 2021).

Table 5. *Summary of Financial Management Performance*

Area	Mean	SD	Interpretation
Financial Perspective	2.58	0.63	Agree
Customer Perspective	2.72	0.57	Agree
Internal Processes Perspective	2.70	0.56	Agree
Learning and Growth Perspective	2.82	0.54	Agree
General Weighted Mean	**2.71**	0.54	**Agree**

3.2 Implications of Current Facility Management Performance

Table 6 revealed that current facility management performance at Holy Cross College presents several challenges, particularly regarding facility adequacy, maintenance, and accessibility. These issues significantly impact daily operations and the overall campus environment. Inadequate Facilities encompasses the recurring issue of insufficient laboratory and classroom spaces, severely limiting the institution's capacity to deliver quality education, especially in science-related courses. Respondents also cited inadequate air conditioning and outdated facilities, compromising comfort and hindering focus. These findings align with Fomba et al. (2023), who emphasize that inadequate infrastructure negatively impacts student and faculty performance, reducing institutional effectiveness.

The lack of tambayan areas, insufficient comfort rooms (CRs) for faculty and students, and temperature regulation issues emerged as significant concerns. These shortcomings affect students' ability to relax and regroup, while faculty members face challenges finding exclusive break spaces. Addressing these gaps is crucial for fostering a more welcoming and functional campus environment. Participants recognized some improvements, such as the construction of a gym and the cleanliness of existing facilities. However, these developments were seen as isolated

successes that failed to address the broader systemic issues. The limited scope of these advancements underscores the need for more comprehensive and integrated solutions to improve campus facilities.

Table 6. *Identified themes on the implications of current facility management performance*

Question	Themes	Codes
How does the current state of campus facilities impact your daily activities at the campus?	Inadequate Facilities	Limited laboratory and classroom space, insufficient air conditioning, outdated facilities
	Lack of Comfort and Accessibility	Absence of tambayan areas, insufficient CRs for faculty and students, temperature issues
	Partial Positives	Gym improvements, cleanliness of usable facilities
	Learning Environment Challenges	Inefficiency in work/study due to facility limitations
Are there specific facility-related issues that affect your experience on campus?	Maintenance and Upkeep Issues	Insufficient aircon maintenance, inconsistent internet, outdated equipment
	Safety and Accessibility	Lack of emergency exits, poor ergonomics in faculty chairs
	Resource Limitations	Limited library and canteen space, absence of waiting/tambayan areas
	Development Needs	Need for workshops, updated laboratory materials, and new equipment.

Facility limitations, such as overcrowded spaces and outdated equipment, were noted to detract from the overall learning environment. Respondents described how these issues affect productivity and academic performance, emphasizing the necessity for improvements that promote effective teaching and learning. Participants highlighted inconsistent maintenance of air conditioning units, outdated equipment, and poor upkeep of comfort rooms. Marocco and Garofolo (2021) advocate integrating digital tools and regular maintenance as essential strategies for reducing disruptions and optimizing facility management. Addressing these issues would significantly improve the campus experience.

Safety concerns were frequently mentioned, including the lack of emergency exits and ergonomic furniture. These deficiencies compromise physical safety and affect the comfort and productivity of students and faculty. As recommended by Gaza et al. (2024), user-centric approaches to facility design are essential for creating a safe and accessible campus environment. The limited availability of library and canteen spaces and the absence of waiting or tambayan areas highlight the inadequacy of current campus resources. Expanding these spaces would enhance the overall campus experience, providing students and faculty with essential amenities for daily use.

Respondents expressed the need for workshops, updated laboratory materials, and new equipment to improve academic delivery and practical learning. Addressing these development needs is critical for ensuring facilities meet modern educational demands and standards. The current state of facility management affects operational efficiency and the overall campus experience. Inefficient facilities impede educational delivery, compromise safety and comfort, and create barriers to effective teaching and learning. The absence of well-maintained and adequately equipped spaces reduces productivity and morale among students and faculty.

3.3 Recommendations for Improvement

As shown in Table 7, respondents highlighted several key areas requiring improvement to address facility management challenges at Holy Cross College. Among these, infrastructure upgrades emerged as a dominant theme. Suggestions included expanding laboratory spaces to accommodate the growing student population, creating tambayan areas, and updating equipment in classrooms, laboratories, and the library. Improving air conditioning systems and adding ergonomic furniture were also commonly mentioned to enhance comfort and productivity. These recommendations align with studies emphasizing the role of well-maintained infrastructure in promoting academic success and student satisfaction (Bueno, 2023).

Resource allocation was another critical concern, with calls for increased funding for maintenance and equipment upgrades. Respondents also emphasized the need for regular maintenance practices, including routine checks and faster processing of repair requests. Delegating responsibilities to a dedicated General Services Office was proposed to improve efficiency and accountability in facility management. Respondents also recognized the potential of digital tools in enhancing facility management processes. Suggestions included developing mobile

applications and online portals for reporting and monitoring maintenance issues. These systems could streamline communication between stakeholders and enable real-time updates on the status of requests. Implementing project management tools for budget tracking and resource allocation was another recommendation to ensure transparency and accountability. Additionally, the need for improved communication channels was emphasized, with respondents proposing mechanisms for providing feedback and updates on facility concerns. Studies support the effectiveness of digitalization in improving operational efficiency and decision-making in facility management (Atta & Talamo, 2020).

Table 7. *Identified themes in the recommendations for improvement*

Question	Themes	Codes
Based on your experiences, what improvements would you suggest for campus facilities?	Infrastructure Upgrades	Expanded laboratories, larger canteen, better audio-visual rooms, ergonomic furniture.
	Comfort and Accessibility	Tambayan areas, exclusive CR for faculty, improved classroom air conditioning.
	Maintenance Practices	Delegation to maintenance officers, daily checks, quicker repair response.
	Resource Allocation	Increased funding for maintenance, updated equipment, and facility improvements.
	Policy and Personnel	Establish a General Services Office; hire and train utility staff.
Are there digital tools or processes that would improve the reporting or resolution of facility issues?	Digital Reporting Tools	Mobile apps, online portals, computerized reporting, and monitoring systems.
	Project Management	Budget allocation and tracking systems; clearer reporting and log flow.
	Communication Channels	Feedback and update mechanisms for facility concerns.
	Surveillance and Safety	CCTV systems for enhanced security and monitoring.

3.4 Proposed Digital Forms-Based Reporting Process

To address the challenges in facility management at Holy Cross College, the study proposes integrating a digital forms-based reporting process that uses software to be developed into the facility management workflow. This process solution aims to streamline the reporting, tracking, and resolution of facility-related issues, replacing traditional paper-based methods with a system that enhances communication, transparency, and efficiency.

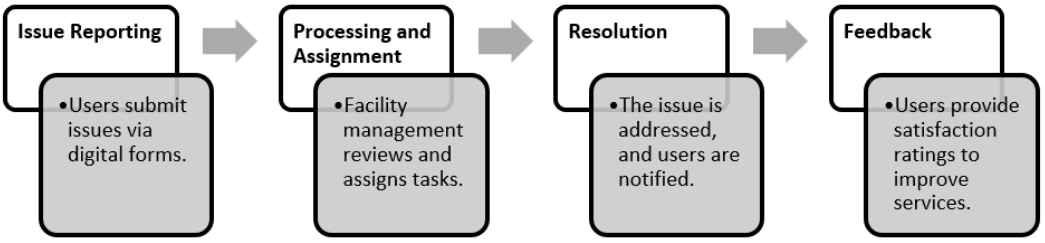

Figure 1. *Proposed digital forms-based reporting process*

The proposed digital forms-based reporting workflow aims to streamline and enhance the facility management process at Holy Cross College. The workflow begins with issue reporting, where users submit issues through digital forms. This method ensures that problems are accurately recorded and categorized, reducing human error and delays in the reporting process. Research has shown that digital tools, such as apps or online portals, significantly improve the efficiency of issue identification and user participation, making the reporting process more accessible and user-friendly (Northmore & Hudson, 2022). Once an issue is reported, it enters the processing and assignment phase, where facility management reviews the reported problem and assigns it to the appropriate personnel for resolution. By leveraging digital systems, tasks can be quickly assigned and tracked, ensuring that urgent issues are addressed promptly. This approach enhances the efficiency of operations, as digital tools allow

for real-time updates and tracking of task status, reducing response times and ensuring accountability (Ngcobo et al., 2024).

In the resolution phase, the assigned personnel work on fixing the reported issue, and users are notified once the problem has been addressed. This ensures transparency and keeps users informed about the progress of their reported issues. Timely resolution of issues contributes to minimizing disruptions and improving overall user satisfaction, as users experience fewer delays in their daily activities (Rane et al., 2023). Finally, the feedback phase allows users to rate their satisfaction with the resolution process. This feedback is crucial for continuous improvement, as it provides insights into the effectiveness of the facility management services and highlights areas for further enhancement. By incorporating user feedback into the workflow, facility management can address recurring problems and refine their processes over time, leading to more efficient and responsive operations (Chen & Tsai, 2021). Overall, this proposed workflow fosters a proactive approach to facility management by improving reporting accuracy, task assignment, issue resolution, and user satisfaction. By embracing digital tools, Holy Cross College can significantly enhance the quality of its facility management services, ensuring a more efficient, transparent, and user-centered approach to maintaining campus facilities.

4.0 Conclusions

The Facility Management Maturity Assessment and Financial Management Performance evaluation findings at Holy Cross College underscore the critical need for modernizing facility management practices. The "Starting" maturity level indicates a predominantly reactive approach, characterized by paper-based processes and minimal data integration. These limitations hinder operational efficiency, delay maintenance resolution, and restrict the institution's ability to make informed, data-driven decisions. Transitioning to digital tools and systems is a pivotal step toward addressing these challenges, enhancing transparency, and enabling more effective resource management. The evaluation of financial management performance through the Balanced Scorecard perspective revealed adequate resource allocation. However, it highlighted inefficiencies in key areas, including facility-related funding, delayed repairs, and inconsistent user-centered practices. These gaps indicate the need for a more proactive strategy that prioritizes timely interventions and integrates user feedback into decision-making. Aligning with existing literature, the findings reaffirm the role of effective facility management in promoting academic success, ensuring operational sustainability, and supporting long-term institutional growth.

Current issues, such as limited space, outdated equipment, and insufficient maintenance practices, significantly impact the campus environment and overall learning experience. These findings emphasize the urgency of adopting a systematic, digital-driven facility management process. The proposed digital forms-based reporting system, augmented by project management tools and enhanced communication channels, offers a practical and scalable solution to streamline operations, reduce inefficiencies, and improve user satisfaction. In conclusion, embracing digital transformation and prioritizing infrastructure upgrades and regular maintenance will enable Holy Cross College to transition from reactive to proactive facility management. This shift will optimize operational efficiency and foster a safer, more user-friendly campus environment, ultimately enhancing learning outcomes and driving sustainable institutional growth.

Several strategic recommendations are crucial to enhance facility management at Holy Cross College. First, adopting digital tools for reporting and tracking issues is essential. Transitioning from paper-based methods to digital platforms such as mobile apps or online portals would improve communication, streamline workflows, and allow for more accurate tracking of maintenance requests. This shift could lead to faster response times and higher user satisfaction by providing real-time updates on the status of reported issues. Second, significant investment in infrastructure upgrades is necessary, particularly in expanding laboratory spaces, enhancing classroom and laboratory equipment, and improving air conditioning systems. These improvements are vital for addressing space constraints and ensuring students' and faculty's comfort and productivity. Additionally, facility management practices must be enhanced by implementing preventive maintenance schedules and quicker response times to resolve recurring issues, such as inconsistent air conditioning and outdated equipment. Preventive maintenance is proven to reduce long-term costs and disruptions. Increased resource allocation for maintenance and facility improvements is also critical. Allocating more funding to upkeep and new equipment would prevent delays in addressing facility-related problems and ensure the availability of updated resources.

Moreover, strengthening communication channels through feedback mechanisms and improving transparency in the issue-resolution process would foster a more responsive and accountable management system.

Another key recommendation is establishing a dedicated General Services Office (GSO) to centralize facility management tasks. This would enhance coordination, task delegation, and accountability, leading to more efficient management. Implementing these changes would significantly improve the overall experience of campus users, aligning with global best practices in facility management. In terms of future research, exploring the long-term impact of digital tools on facility management efficiency could offer valuable insights. Research could focus on comparing digital versus traditional systems regarding speed, accuracy, and user satisfaction. Additionally, studies on the effectiveness of preventive maintenance in educational institutions and the impact of infrastructure upgrades on academic performance could contribute to evidence-based strategies for improving facility management. Further research into the role of sustainability in facility management—such as energy-efficient systems or eco-friendly designs—could also be an important area for future exploration. Understanding the broader implications of these recommendations could help formulate more sustainable, cost-effective solutions for academic institutions.

5.0 Contributions of Authors

The authors confirm the equal contribution in each part of this work. All authors reviewed and approved the final version of this work.

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7.0 Conflict of Interests

All authors declare that they have no conflicts of interest

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